



Adult Literacy Fundamental Mathematics: Book 2 – 2nd Edition

Adult Literacy Fundamental Mathematics: Book 2 – 2nd Edition

Wendy Tagami and Liz Girard

BCCAMPUS
VICTORIA, B.C.



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- **Easy navigation.** This resource has a linked table of contents and uses headings in each chapter to make navigation easy.
- **Accessible math equations.** Many of the equations in this resource have been written in LaTeX and rendered with MathJax, which makes them accessible to people using screen readers that are set up to read MathML. The rest of the equations are rendered as images with appropriate alternative text.
- **Accessible images.** All images in this resource that convey information have alternative text. Images that are decorative have empty alternative text.
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Element	Requirements	Pass?
Headings	Content is organized under headings and subheadings that are used sequentially.	Yes
Images	Images that convey information include alternative text descriptions. These descriptions are provided in the alt text field, in the surrounding text, or linked to as a long description.	Yes
Images	Images and text do not rely on colour to convey information.	Yes
Images	Images that are purely decorative or are already described in the surrounding text contain empty alternative text descriptions. (Descriptive text is unnecessary if the image doesn't convey contextual content information.)	Yes
Tables	Tables include row and/or column headers that have the correct scope assigned.	Yes
Tables	Tables include a title or caption.	Yes
Tables	Tables do not have merged or split cells.	Yes
Tables	Tables have adequate cell padding.	Yes
Links	The link text describes the destination of the link.	Yes
Links	Links do not open new windows or tabs. If they do, a textual reference is included in the link text.	Yes
Links	Links to files include the file type in the link text.	Yes
Formulas	Formulas have been created using LaTeX and are rendered with MathJax.	Yes
Formulas	If LaTeX is not an option, formulas are images with alternative text descriptions.	Yes
Font	Font size is 12 point or higher for body text.	Yes
Font	Font size is 9 point for footnotes or endnotes.	Yes
Font	Font size can be zoomed to 200% in the webbook or eBook formats.	Yes

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This textbook is available in the following formats:

- **Online webbook.** You can read this textbook online on a computer or mobile device in one of the following browsers: Chrome, Firefox, Edge, and Safari.
- **PDF.** You can download this book as a PDF to read on a computer (Digital PDF) or print it out (Print PDF).
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- **HTML.** An HTML file can be opened in a browser. It has very little style so it doesn't look very nice, but some people might find it useful.

For more information about the accessibility of this textbook, see the Accessibility Statement.

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How can I use the different formats?

Format	Internet required?	Device	Required apps	Accessibility Features	Screen reader compatible
Online webbook	Yes	Computer, tablet, phone	An Internet browser (Chrome, Firefox, Edge, or Safari)	WCAG 2.0 AA compliant, option to enlarge text, and compatible with browser text-to-speech tools	Yes
PDF	No	Computer, print copy	Adobe Reader (for reading on a computer) or a printer	Ability to highlight and annotate the text. If reading on the computer, you can zoom in.	Unsure
EPUB	No	Computer, tablet, phone	An eReader app	Option to enlarge text, change font style, size, and colour.	Unsure
HTML	No	Computer, tablet, phone	An Internet browser (Chrome, Firefox, Edge, or Safari)	WCAG 2.0 AA compliant and compatible with browser text-to-speech tools.	Yes

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 - The **[Cntr] + [f]** and **[Command] + [f]** keys will also allow you to search a PDF, HTML, and EPUB files if you are reading them on a computer.
 - If using an eBook app to read this textbook, the app should have a built-in search tool.
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 - This textbook has a table of contents to help you navigate through the book easier. If using the online webbook, you can find the full table of contents on the book’s homepage or by selecting “Contents” from the top menu when you are in a chapter.
- **Annotate the textbook.**
 - If you like to highlight or write on your textbooks, you can do that by getting a print copy, using the Digital PDF in Adobe Reader, or using the highlighting tools in eReader apps.

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To the Learner

Welcome to *Adult Literacy Fundamental Mathematics: Book 2*.

You have the skills you need to be a strong student in this class. Your instructor knows this because you have passed the Adult Literacy Fundamental Mathematics Level 1 class, or you have been assessed into this level.

Adult math learners have many skills. They have a lot of life experience. They also use math in their everyday lives. This means that adult math learners may already know some of what is being taught in this book. Use what you already know with confidence!

How to Use This Book

This textbook has:

- A **Table of Contents** listing the units, the major topics, and the subtopics.
- A **Grades Record** to keep track of your marks.
- Many **Exercises** to practice what you learned. Some are quite short, but others have a great number of questions. You do not have to do every single question!
 - Do as many questions as you feel are necessary for you to be confident in your skill. It is best to do all the word problems.
 - If you leave out some questions, try doing every second or every third question. Always do some questions from the end of each exercise because the questions usually get harder at the end. You might use the skipped questions for review before a test.
 - If you are working on a difficult skill or concept, do half the exercise one day and finish the exercise the next day. That is a much better way to learn.
- **Self-tests** at the end of most topics have an “Aim” at the top. If you do not meet the aim, talk to your instructor, find what is causing the trouble, and do some more review before you go on.

Mark /18 Aim 15/18


- A **Review and Extra Practice** section is at the end of each unit. If there is an area of the unit that you need extra practice in, you can use this. Or, if you want, you can use the section for more review.

- A **Practice Test** is available for each unit. You may:
 - Write the practice test after you have studied the unit as a practice for the end-of-chapter test, OR
 - You might want to write it before you start the unit to find what you already know and which areas you need to work on.
- **Unit Tests** are written after each unit. Again, you must reach the Aim before you begin the next unit. If you do not reach the aim, the instructor will assist you in finding and practising the difficult areas. When you are ready, you can write a B test to show that you have mastered the skills.
- A **Final Test** is to be written when you have finished the book. This final test will assess your skills from the whole book. You have mastered the skills in each unit and then kept using many of them throughout the course. The test reviews all those skills.

Grades Record

You have also been given a sheet to write down your grades. After each test, you can write in the mark. This way you can keep track of your grades as you go through the course. This is a good idea to use in all your courses.

Grade Record – Book 2

Unit	Practice Test	Date of Test A	Test A	Date of Test B	Test B
Example		<i>September 4, 2020</i>	<i>25/33</i>	<i>September 7, 2020</i>	<i>25/33</i>
1					
2					
3					
4					
5					
Final Test					

How to Deal with Math Anxiety

Emotions and Learning

Emotions, or what we feel about something, play a big part in how we learn. If we are calm, we learn well. If we are afraid or stressed, we do not learn as well.

Many people are afraid of math. They fear making a mistake. “Math anxiety” is the fear of math. People who suffer from math anxiety may get headaches, sick stomachs, cold hands, or they may just sweat a lot or just feel scared. Math anxiety can happen for a few different reasons:

- Feeling anxious when writing tests
- Negative experiences in a past math class
- Embarrassment in a past math class
- Social pressures and expectations to not like math or not do well in math
- The want to get everything right
- Negative self-message (“I don’t know how to do it,” or “I hate math”)

Math anxiety is a learned habit. If it is learned, it can be unlearned. Most math anxiety comes from bad memories while learning math. It may be from doing badly on a test or asking a question then being made fun of. These bad memories can make learning math hard.

Everyone can learn math. There is no special talent for math. There are some people who are better at math than others, but even these people had to learn to be good at math.

Do You Suffer from Math Anxiety?

Read the list below and put a check mark beside the ones you feel when thinking about or doing math.

- Are your palms moist?
- Is your stomach fluttering?
- Do you feel like you can’t think clearly?
- Do you feel like you would rather do anything else than learn math?
- Are you breathing faster than normal?
- Is your heart pounding?
- Do you feel cold?
- Do you feel sweaty?

If you answered yes to two or more of these items, you may have math anxiety.

If you have math anxiety, a first step to understanding it is to look at where it all started.

Make a list of your experiences with learning math. Think back to the first math experiences you had and write about them. Think about learning math in school from the younger grades to the higher grades and write about your experiences and feelings. Include this class and how you are feeling right now about learning math.

Beside each experience, write if it was a positive or negative experience.

Look at the examples below to give you an idea:

Positive or negative?	Math experience
Negative	My teacher in elementary school lined the whole class up in a row and made us play a multiplication game. I could see which question was mine, and I didn't know the answer so I had to figure it out on my fingers before my turn came up. I got the answer right, but I was so nervous that I would be teased because I didn't know the answer off the top of my head. I still don't know my times tables.
Positive	In high school, I could use a calculator to figure out the simple multiplication problems, and then I could figure out the tougher problems without worrying about knowing my times tables.
Negative	Now that I am upgrading my math, I feel nervous every time I even think about opening the book. I want to get all the answers right, and I know that I won't be able to. I really need everything to be right so that I know that I am getting it.

Once you have made a list of experiences, go over the stories with your instructor, or by yourself and try to find some common themes.

- Can you see when you felt anxiety?
- Can you see why you are now anxious about math?
- Is there any experience you could use now to help you feel calmer about math?

Hopefully by examining the beginnings of the anxiety, you can feel more in control of it.

How to Deal with Math Anxiety

Anyone can feel anxiety that will slow down learning. The key to learning is to be the “boss” of your anxiety. Here are an overview of some strategies that may help deal with your anxiety:

- Use breathing exercises
- Think positive math messages
- Know your textbook

- Understand test-taking anxiety

Remember, learning to deal with your math anxiety may take some time. It took you a long time to learn math anxiety, so it will take some time to overcome it.

Use Breathing Exercises

One way to be the “boss” is to relax. Try this breathing exercise.

Breathing Exercise

Start by breathing slowly to the count of four. It may help to close your eyes and count.

Now hold your breath for four counts and then let your breath out slowly to the count of four.

The counting is silent and should follow this pattern: “Breath in, two, three, four. Hold, two, three, four. Breath out, two, three, four. Wait, two, three, four.”

With practice, the number of counts can be increased. This is an easy and good way to relax.

Now, try this exercise quietly and repeat it five times slowly.

Each time you feel anxious about learning, use the breathing exercise to help calm yourself. Ask yourself if what you tried worked. Do you feel calmer?

Think Positive Math Messages

Another way to be the “boss” is to give yourself positive math messages.

Read and think about the positive math messages listed below. Do you say any of those things to yourself?

- If the answer is yes, then great, keep doing that.
- If your answer is no, try to add this little mental trick to your day. The result will probably be that you start to see math as something you can do and that you may even like!

I like math.

I am good at math.

I understand math.

I can relax when I am studying math.

I am capable of learning math.

Math is my friend.

My math improves every day.

I am relaxed, calm and confident when I study math.

I understand math when I give myself a chance.

Math is creative.

Pick three statements that you like and say them to yourself as much as you can in each day. You can also write the statements out on paper and post them around your house so that you read them throughout the day.

Know Your Textbook

Look at the Table of Contents in the front of your textbook. It tells you what you will be learning. You may see some things that you already know, some things that you may have forgotten, and some things that are new to you.

Flip the pages. You can see that the textbook is split into units. Each unit is something to learn.

Each unit has exercises to do. Notice the answers are at the end of the exercise. You can check your answers as soon as you are done. You can also check your answer before moving on if are not sure if you are doing the question right.

At the end of each unit is a self-test. It is a chance for you to see how well you have learned the skills in the unit. If you do well, you can move on. If you don't do well, you can go back and practice those skills.

Knowing your textbook gives you a good skill. If you get frustrated, you can use the Table of Contents to go back and find some help.

Understand Test-Taking Anxiety

There are four reasons people are anxious when writing tests. Any of the four reasons listed below might be the reason a person might feel anxious in a test-taking situation.

1. Not feeling prepared for the test
2. Not sure how to write the test in the best way
3. Feeling too much mental pressure
4. Poor health habits before writing a test

Here is an explanation of each reason and how to work your way out of the anxiety you may feel during tests.

1. Not feeling prepared for the test

Many students feel anxiety about taking math tests because they do not feel prepared for the test. To feel prepared, a student needs to have studied the work and know that they can do the problems they will be given. Get help from your classmates, friends, or your instructor to find out how you can improve your study habits.

Getting ready for a test starts on the first day of class. Everything you do in class and at home is part of that getting ready.

- **Always do as many exercises as you need to help you understand.** Once you understand, do ten more questions, then you will know for sure that you really understand.
- **Always correct your exercises.** It is good to know that you are understanding and getting the questions right. It is also good to know if you are not understanding and need some help.
- **Always do the self-tests.** The self-tests can show things that you are not sure of.
- **Always do the review.** Review is part of this book. It is a chance to go over all the things you have learned in a unit before moving on. It prepares you for what will be on the test.
- **Always do a practice test.** A practice test gives you a chance to see how many questions and what kind of questions are on the test.

2. Not sure how to write the test in the best way

Here are some strategies students should know about how to write a test to do the best as possible on it:

- Before the Test
 1. **Arrive early.** Get out all the supplies you need to do the test (pencils, ruler, calculator, watch, etc.).
 2. **Be comfortable, but alert.** Choose a good spot in the room, and make sure you have enough space to work. Maintain a comfortable posture in your seat, but don't "slouch."
 3. **Stay relaxed and confident.** Keep a good attitude. If you find yourself anxious, take several slow, deep breaths to relax. Don't talk about the test to other students just before entering the room: their anxiety can be contagious.

- During the test.
 1. **Look over the test.** Take a look at the whole test before starting. This takes very little time. Use a highlighter to highlight the questions that you know you can do easily, note key terms, mark the test with comments that come to mind. As you work, put a star beside any questions that you would like to go over again when you finish the test.
 2. **Relax.** Before starting the test, imagine yourself somewhere where you are calm and confident. Go there in your mind. Focus on how good you feel and how in control you are. If you become anxious during the test, in your mind go to the calming place. Focus on how calm you feel. Then go back to your test.
 3. **Read the directions carefully.** This may be obvious, but it will help you avoid careless errors.
 4. **Answer questions in a strategic order.**
 - Answer the easy questions first. This will help to build confidence and score points. It may also help you make connections with more difficult questions.
 - Then answer the difficult questions. Work on these harder questions with all the energy of the easier ones.
 5. **Review your answers.** Resist the urge to leave as soon as you are done writing. Spend as much time as you can going over your test to see if you:
 - Answered all the questions.
 - Wrote the answers in right.
 - Did not make simple mistakes.

3. Feeling too much mental pressure

There are many reasons why a student may feel mental pressure when writing a test. Listed below are a few main reasons:

- Negative beliefs about one's math abilities
- Low self-esteem when it comes to math
- Too high expectations of success
- Fear that failure or low grades will affect the future
- Feelings of pressure of not wanting to let down family members

When students feel this kind of pressure, it is very hard to feel calm and relaxed about a test. The key to success in a math test is to keep the anxiety at a manageable level. You can do this in two ways:

1. **Change negative self-talk.** Any time a negative thought creeps into your head, it will make it harder to stay positive and relaxed about your test. If you have a negative thought like "I can't do it", try to replace it with a positive thought like "I can do this".

2. **Use relaxing and calming techniques.** Use the calming breathing mentioned earlier in this section. This will help you keep calm. Also, do not study in the last half hour before the test. You will be calmer by spending time relaxing and breathing deeply in that last half hour.

4. Poor health habits before writing a test

When your body and mind are healthy, you will have a better chance of doing well on a test. Eat well, drink plenty of water and get daily exercise. The better you feel, the better you can perform (and a test is a performance!).

Unit 1: Number Sense

Topic A: Place Value

Introduction to Place Values

Each place in a number has a value.

Ones

The ones place tells how many ones there are.

3 means 3 ones.

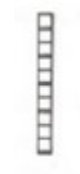


9 is the largest amount that we can express (write or say) with one digit.

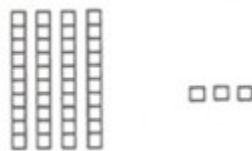
Tens

The tens place shows how many tens there are. The ones place must have a digit in it before there can be a digit in the tens place.

Every ten is ten ones.



43 means 4 tens and 3 ones

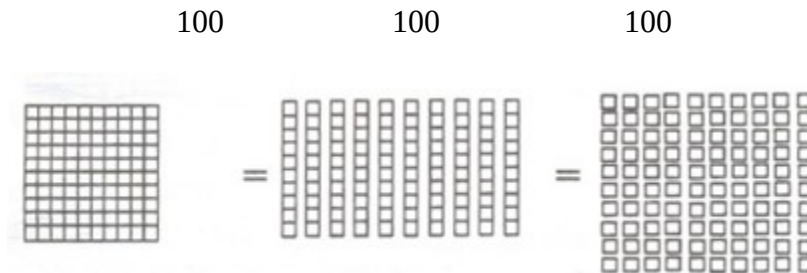


99 means 9 tens and 9 ones. 99 is the largest amount that we can express (write or say) using only two digits.

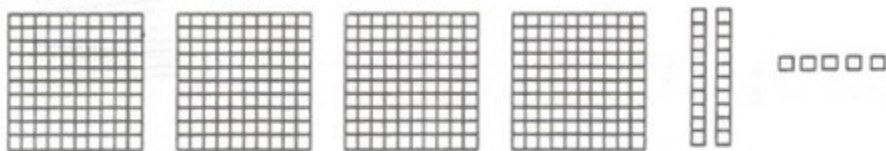
Hundreds

The place to the left of the tens place is the hundreds place. It shows how many hundreds there are. A number written using three whole digits has a hundreds place, a tens place, and a ones place.

Every hundred is ten tens — every hundred is the same as one hundred ones.



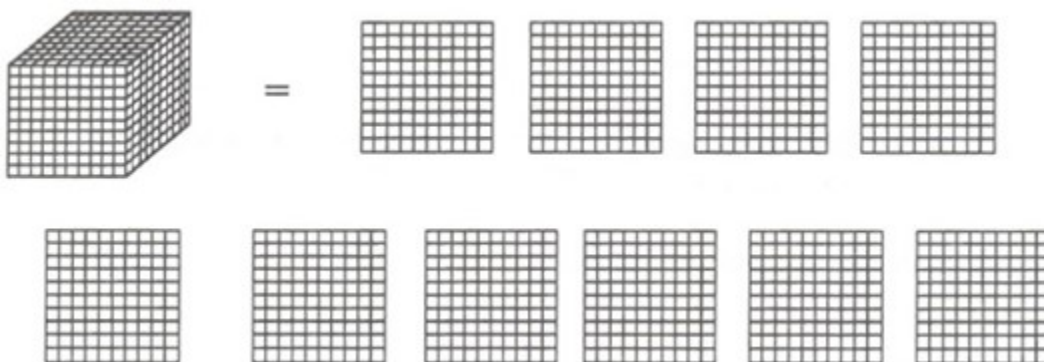
425 means 4 hundreds, 2 tens, and 5 ones.



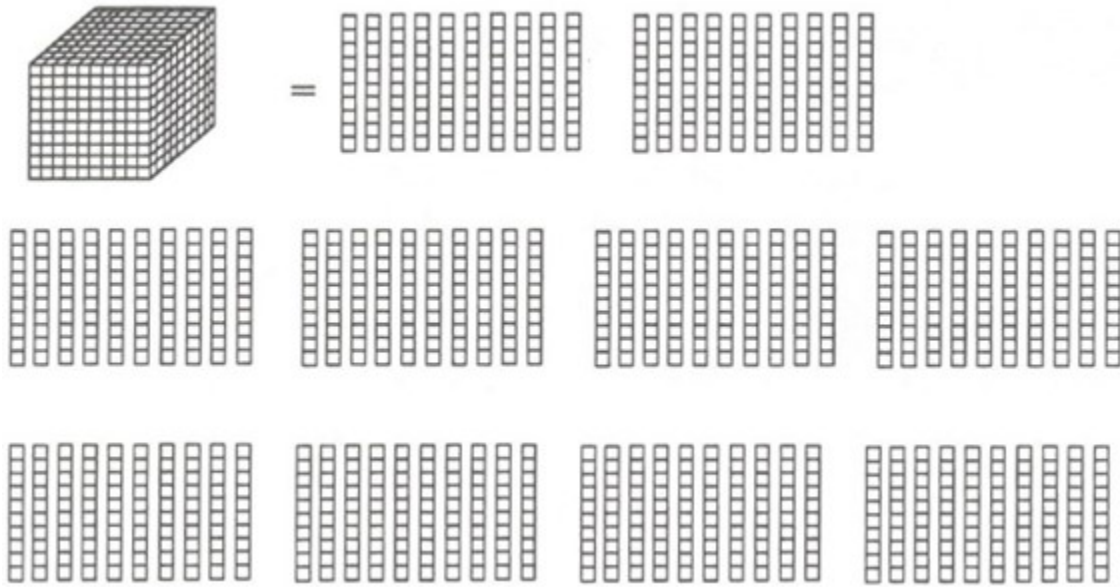
Thousands

The place to the left of the hundreds place is the thousands place.

One thousand is the same as ten hundreds.



One thousand is the same as one hundred tens.



One thousand is the same as one thousand ones. (You will have to imagine the picture of the one thousand ones!)

Thousands Separator: Use a Space

When we write numerals, a little space is left between the thousands place and the hundreds place. The space makes it easier to read large numerals.

4 392 8 253 23 693

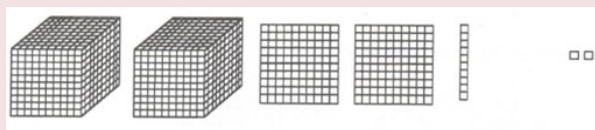
Large numerals used to be written with a comma (,) instead of a space and you may still see numerals like this:

4,392 8,253 23,693

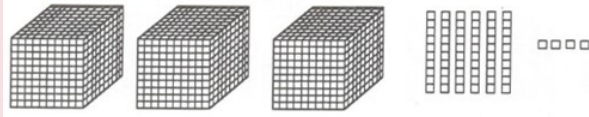
Learn to use the space instead of a comma because that is the preferred style.

Example A

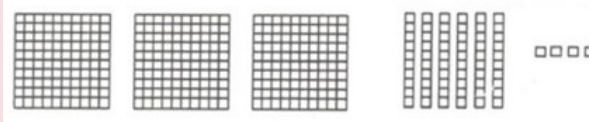
2 212 means 2 thousands, 2 hundreds, 1 ten, and 2 ones



3 064 means 3 thousands, 0 hundreds, 6 tens, and 4 ones



What happens if the 0 is not written to hold the hundreds place? The numerals would then be 364 which stands for the number 3 hundreds, 6 tens, and 4 ones.



364 is not the same as 3 064.

Exercise One

Fill in the blanks to make each sentence true. Draw a sketch if you wish. Check your work using the answer key at the end of the exercise.

- 8 261 = ___ thousands ___ hundreds ___ tens ___ ones
- 4 005 = ___ thousands ___ hundreds ___ tens ___ ones
- 2 931 = ___ thousands ___ hundreds ___ tens ___ ones
- 1 034 = ___ thousands ___ hundreds ___ tens ___ ones
- 2 608 = ___ thousands ___ hundreds ___ tens ___ ones
- 7 543 = ___ thousands ___ hundreds ___ tens ___ ones
- 2 900 = ___ thousands ___ hundreds ___ tens ___ ones

Answers to Exercise One

- 8 thousands 2 hundreds 6 tens 1 ones
- 4 thousands 0 hundreds 0 tens 5 ones
- 2 thousands 9 hundreds 3 tens 1 ones
- 1 thousands 0 hundreds 3 tens 4 ones
- 2 thousands 6 hundreds 0 tens 8 ones
- 7 thousands 5 hundreds 4 tens 3 ones
- 2 thousands 9 hundreds 0 tens 0 ones

Ten thousands

The place value to the left of thousands is ten thousands. As you can tell by the name, one ten thousand

is ten thousands. You are not going to get a sketch of these large place values because the page isn't big enough!

Example B

43 692 = 4 ten thousands, 3 thousands, 6 hundreds, 9 tens, and 2 ones

43 692 can also be thought of as 43 thousands, 6 hundreds, 9 tens, and 2 ones.

Exercise Two

Fill in the blanks. Check your work using the answer key at the end of the exercise.

	ten thousands	thousands	hundreds	tens	ones
80 300	8	0	3	0	0
OR		80	3	0	0

a.

	ten thousands	thousands	hundreds	tens	ones
36 981					
OR					

b.

	ten thousands	thousands	hundreds	tens	ones
31 205					
OR					

c.

	ten thousands	thousands	hundreds	tens	ones
99 999					
OR					

d.

	ten thousands	thousands	hundreds	tens	ones
15 002					
OR					

e.		ten thousands	thousands	hundreds	tens	ones
	75 125					
	OR					

Answers to Exercise Two

a.		ten thousands	thousands	hundreds	tens	ones
	36 981	3	6	9	8	1
	OR		36	9	8	1

b.		ten thousands	thousands	hundreds	tens	ones
	31 205	3	1	2	0	5
	OR		31	2	0	5

c.		ten thousands	thousands	hundreds	tens	ones
	99 999	9	9	9	9	9
	OR		99	9	9	9

d.		ten thousands	thousands	hundreds	tens	ones
	15 002	1	5	0	0	2
	OR		15	0	0	2

e.		ten thousands	thousands	hundreds	tens	ones
	75 125	7	5	1	2	5
	OR		75	1	2	5

Hundred thousands

Have you heard the expression, “They have a 6 figure salary.” That means they earn at least one hundred thousand dollars, which takes six digits to write! The place value to the left of ten thousands is hundred thousands. There is definitely not room on the page for a picture of this place value! Ten ten thousands makes one hundred thousand.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
432 467	4	3	2	4	6	7
803 214	8	0	3	2	1	4

Millions

And if we look one more place to the left, the place value is millions. One million is 1 with six zeros after it: 1 000 000.

A space is left between the millions place and the hundred thousands place. A space is left between the thousands place and the hundreds place.

- 2 368 100
- 3 150 213
- 14 263 942
- 5 521 671

Place values overview

This place value chart may help you to remember the place values.

hundred billions			hundred millions			hundred thousands			hundreds		
↓	ten billions		↓	ten millions		↓	ten thousands		↓	tens	
	↓	billions		↓	millions		↓	thousands		↓	ones
		↓			↓			↓			↓
1	2	3	4	5	6	7	8	9	1	2	3

Notice the groups of three digits. Look at the pattern for the three places which is repeated in each place value group – the pattern is hundreds, tens, ones.

Our number system is called a decimal system because it is based on the number ten. *Deci* is a Latin word that means ten. Starting with ones, the place values are each ten times greater.

ones place =	one
tens place =	10 ones
hundreds place =	10 tens
thousands place =	10 hundreds
ten thousands place =	10 thousands
hundred thousands place =	10 ten thousands
millions place =	10 hundred thousands
ten millions place =	10 millions
hundred millions place =	10 ten millions

... and so on.

Our number system is very tidy. When you learn to use the metric measurement system, you will see the metric system is based on ten just like the number system.

Exercise Three

Write the place value name for each bolded digit. Check your work using the answer key at the end of the exercise.

- | | |
|--|---|
| a. 23 206 – the place value for “3” <u>is thousands</u> | g. 48 076 – the place value for “4” |
| b. 2 468 – the place value for “6” <u>is tens</u> | h. 5 5 55 – the place value for the second “5” |
| c. 622 – the place value for “6” | i. 12 245 – the place value for “5” |
| d. 92 002 – the place value for “9” | j. 92 002 – the place value for the second “0” |
| e. 92 002 – the place value for the first “0” | k. 12 026 – the place value for the first “2” |
| f. 14 262 – the place value for “6” | l. 6 348 – the place value for “6” |

Answers to Exercise Three

- | | |
|------------------|------------------|
| a. thousands | g. ten thousands |
| b. tens | h. hundreds |
| c. hundreds | i. ones |
| d. ten thousands | j. tens |
| e. hundreds | k. thousands |
| f. tens | l. thousands |

Exercise Four

Identify the digit for the place value named. Check your work using the answer key at the end of the exercise.

- | | |
|------------------------------|------------------------------|
| a. thousands 416 245 | g. hundreds 74 322 |
| b. tens 363 482 | h. hundred thousands 685 413 |
| c. ten thousands 36 482 | i. thousands 221 300 |
| d. hundreds 1 456 | j. ten thousands 10 000 |
| e. hundred thousands 206 415 | k. ones 16 394 |
| f. thousands 63 421 | l. tens 684 |

Answers to Exercise Four

- | | |
|------------------------|------------------------|
| a. 41 <u>6</u> 245 – 6 | g. 74 <u>3</u> 22 – 3 |
| b. 363 <u>4</u> 82 – 8 | h. <u>6</u> 85 413 – 6 |
| c. <u>3</u> 6 482 – 3 | i. 22 <u>1</u> 300 – 1 |
| d. 1 <u>4</u> 56 – 4 | j. <u>1</u> 0 000 – 1 |
| e. <u>2</u> 06 415 – 2 | k. 16 <u>3</u> 94 – 4 |
| f. <u>6</u> 3 421 – 3 | l. <u>6</u> 84 – 8 |

Reading and Writing Numerals

You know that the digits are 0 1 2 3 4 5 6 7 8 9 and that digits are arranged in different places so we can count larger amounts than our ten fingers!

When we use digits, we call what we write the “numeral.”

- 328 is a numeral
- 46 is a numeral
- 3 is a numeral

We use numerals to represent numbers.

Numerals under 1000

The numerals from 1 to 12 have special words. These are

- | | |
|--------|---------|
| 0 zero | 2 two |
| 1 one | 3 three |

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4 four

5 five

6 six

7 seven

8 eight

9 nine

10 ten

11 eleven

12 twelve

The numerals from 13 to 19 are

13 **thirteen**

14 **fourteen**

15 **fifteen**

16 **sixteen**

17 **seventeen**

18 **eighteen**

19 **nineteen**

The word names for the numbers 20 to 90 are

20 twenty

30 thirty

40 forty

50 fifty

60 sixty

70 seventy

80 eighty

90 ninety

The names for the numbers between groups of tens also follow a pattern. The first number tells us how many tens. The second number tells us how many ones.

20s

Number	Tens Ones
20	twenty
21	twenty- one
22	twenty- two
23	twenty- three
24	twenty- four
25	twenty- five
26	twenty- six
27	twenty- seven
28	twenty- eight
29	twenty- nine

30s

Number	Tens Ones
30	thirty
31	thirty- one
32	thirty- two
33	thirty- three
34	thirty- four
35	thirty- five
36	thirty- six
37	thirty- seven
38	thirty- eight
39	thirty- nine

40s

Number	Tens Ones
40	forty
41	forty- one
42	forty- two
43	forty- three
44	forty- four
45	forty- five
46	forty- six
47	forty- seven
48	forty- eight
49	forty- nine

The written names for numbers that have tens and ones are written with a hyphen (-) between them. This pattern with the hyphen continues up to ninety-nine (99).

When we write hundreds in words, we need two words. The first word tells us **how many** hundreds. The second word tells us we are counting hundreds.

200 **two hundred**

You now know how to write numbers in words up to 999.

Example C

367 is made of **3** hundreds **6** tens **7** ones
 Each part is written: three hundreds sixty seven Put the parts together: **three hundred sixty-seven**

Remember:

- hyphen (-) between the tens and units no hyphen anywhere else
- no “s” on the hundred
- no “and” between the hundreds place and the tens place

Here is another example. Watch out for the empty space!

Example D

504 is made of **5** hundreds **0** tens **4** ones
 Each part is written: five hundreds 4 Put the parts together: **five hundred four**

Here is another example. Watch out for the empty space!

Example E

890 is made of **8** hundreds **9** tens **0** ones
 Each part is written: eight hundreds ninety Put the parts together: **eight hundred ninety**

Here is another example. Watch out for the empty spaces!

Example F

100 is made of **1** hundreds **0** tens **0** ones
 Each part is written: one hundred Put the parts together: **one hundred**

Remember: empty spaces are not written in words.

Numerals over 1000

Large numerals are read in the place value groups of three that you noticed in the place value chart. You have been practicing reading numerals with three digits or less. Now practice reading the thousands group.

Example G

423 796 is made of

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
Numeral digits	4	2	3	7	9	6
Numeral words	four hundred	twenty	three thousand	seven hundred	ninety	six

Each is written:

- The thousands group is written: four hundred twenty-three **thousand**.
- The hundreds, tens, and ones are written: seven hundred ninety six.

Put the parts together: 423 796 is four hundred twenty-three thousand seven hundred ninety-six.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
26 201 is made of		2	6	2	0	1
Each is written	twenty-six thousand			two hundred		one
Put the parts together	twenty-six thousand two hundred one					

26 201 is twenty-six thousand two hundred one.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
400 000 is made of	4	0	0	0	0	0
Each is written	four hundred thousand					
Put the parts together	four hundred thousand					

400 000 is four hundred thousand.

Exercise Five

Write the word names for the numerals. Check your work using the answer key at the end of the exercise.

a. 491 200

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
Numeral digits						
Numeral words						

a. Each is written:

a. Thousands:

b. Hundreds, tens, ones:

b. Put the parts together:

b.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
19 631 is made of						
Each is written						
Put the parts together						

c.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
623 009 is made of						
Each is written						
Put the parts together						

d. 923 471 _____

e. 53 679 _____

Answers to Exercise Five

a. 491 200

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
Numeral digits	4	9	1	2	0	0
Numeral words	four hundred	nintey	one thousand	two hundred		

a. Each is written:

a. Thousands: Four hundred ninety-one thousand

b. Hundreds, tens, ones: Two hundred

b. Put the parts together: Four hundred ninety-one thousand two hundred

b.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
19 631 is made of		1	9	6	3	1
Each is written	nineteen thousand			six hundred	thirty	one
Put the parts together	nineteen thousand six hundred thirty-one					

c.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
623 009 is made of	6	2	3	0	0	9
Each is written	six hundred twenty-three thousand					nine
Put the parts together	six hundred twenty-three thousand nine					

d. nine hundred twenty-three thousand four hundred seventy-one

e. fifty-three thousand six hundred seventy-nine

Now, just for fun, take a look at these very large numerals. Say —million for the group to the left of the thousands group.

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
2 643 182 is made of	2	6	4	3	1	8	2
Each is written	two million	six hundred forty-three thousand			one hundred	eighty	two
Put the parts together	two million six hundred forty-three thousand one hundred eighty-two						

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
6 510 231 is made of	6	5	1	0	2	3	1
Each is written	six million	five hundred ten thousand			two hundred	thirty	one
Put the parts together	six million five hundred ten thousand two hundred thirty-one						

Exercise Six

Write the word names for the numerals. Check your work using the answer key at the end of the exercise.

a.

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
2 851 234 is made of							
Each is written							
Put the parts together							

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
b.							
	3 186 662 is made of						
	Each is written						
	Put the parts together						

c. 3 916 875 _____

d. 4 873 519 _____

Answers to Exercise Six

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
a.							
	2 851 234 is made of	2	8	5	1	2	3
	Each is written	two million	eight hundred fifty-one thousand		two hundred	thirty	four
	Put the parts together	two million eight hundred fifty-one thousand two hundred thirty-four					

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
b.							
	3 186 662 is made of	3	1	8	6	6	2
	Each is written	three million	one hundred eighty-six thousand		six hundred	sixty	two
	Put the parts together	three million one hundred eighty-six thousand six hundred sixty-two					

c. three million nine hundred sixteen thousand eight hundred seventy-five

d. four million eight hundred seventy-three thousand five hundred nineteen

Work on reading these numerals with someone else and then ask your instructor to listen as you read them.

- 241 962 107
- 483 450
- 27 800

- 2 345 409
- 164 231
- 260 164 342

- 138 000
- 410 623
- 912 050
- 24 900
- 227 695
- 105 576

Exercise Seven

Now practice writing numerals from number names. Check your work using the answer key at the end of the exercise.

- a. Eight hundred twenty-three thousand nine hundred forty-one

	eight hundred twenty-three thousand			nine hundred forty-one		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	8	2	3	9	4	1
823 941						

- b. Three million four hundred eighty-one thousand five hundred sixty-seven

three million	four hundred eighty-one thousand			five hundred sixty- seven		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
3	4	8	1	5	6	7
3 481 567						

- c. Two hundred seventy-six thousand five hundred eight

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

d. One million six hundred fifty-eight thousand three hundred twenty-five

	One million six hundred fifty-eight thousand three hundred twenty-five					
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

e. Four million eight hundred sixteen thousand two hundred thirty-two

	Four million eight hundred sixteen thousand two hundred thirty-two					
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

f. Two hundred seventy-nine thousand two hundred sixty-one

	Two hundred seventy-nine thousand two hundred sixty-one					
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones

Answers to Exercise Seven

c. Two hundred seventy-six thousand five hundred eight

	two hundred seventy-six thousand			five hundred eight		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	2	7	6	5	0	8
276 508						

- d. One million six hundred fifty-eight thousand three hundred twenty-five

one million	six hundred fifty-eight thousand			three hundred twenty-five		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
1	6	5	8	3	2	5
1 658 325						

- e. Four million eight hundred sixteen thousand two hundred thirty-two

four million	eight hundred sixteen thousand			two hundred thirty-two		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
4	8	1	6	2	3	2
4 816 232						

- f. Two hundred seventy-nine thousand two hundred sixty-one

	two hundred seventy-nine thousand			two hundred sixty-one		
millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
	2	7	9	2	6	1
279 261						

Exercise Eight

Write the number in each of the word problems. Check your work using the answer key at the end of the exercise.

- The Nile River in Africa is the longest river in the world. It is two thousand five hundred sixty-nine kilometers.
- Canada shares a border with the United States that is eight thousand eight hundred ninety-three kilometers.
- The distance around the Earth is forty thousand seventy-six kilometers.
- The population of British Columbia in 2009 was four million four hundred fifty-five thousand two hundred seven.

Answers for Exercise Eight

- | | |
|---------------------|----------------------|
| a. 2 569 kilometers | c. 40 076 kilometers |
| b. 8 893 kilometers | d. 4 455 207 people |

Topic A: Self-Test

Mark / 17 Aim 14/17

A. Write the place value for the underlined digit. (6 marks)

- | | |
|--|---|
| a. 8 <u>7</u> 65 the place value of 6 | d. 8 <u>5</u> 421 the place value of 5 |
| b. 9 <u>3</u> 0 the place value of 0 | e. <u>2</u> 79 673 the place value of 2 |
| c. <u>4</u> 7 932 the place value of 4 | f. <u>3</u> 97 the place value of 3 |

B. Write the word names for these numerals. (6 marks)

- | | |
|----------|-----------|
| a. 59 | d. 8 200 |
| b. 942 | e. 4 005 |
| c. 7 378 | f. 58 310 |

C. Write the numerals for these word names. (5 marks)

- eight hundred forty-seven
- four thousand three hundred eighty
- two hundred seventy-five thousand eighty-seven
- sixty thousand four hundred sixteen
- fifteen thousand twenty

Answers to Topic A Self-Test

- | | | |
|----|------------------|----------------------|
| A. | a. tens | d. thousands |
| | b. ones | e. hundred thousands |
| | c. ten thousands | f. hundreds |

- B.
- a. fifty-nine
 - b. nine hundred forty-two
 - c. seven thousand three hundred seventy-eight
 - d. eight thousand two hundred
 - e. four thousand five
 - f. fifty-eight thousand three hundred ten
- C.
- a. 847
 - b. 4 380
 - c. 275 087
 - d. 60 416
 - e. 15 020

Topic B: Expanded Form

When we write a number in expanded form, each digit is written with its place value.

Example:

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
598 is made of					5	9	8
Each is written					500	90	8
Expanded form	$500 + 90 + 8$						

Example:

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
1 068 is made of				1	0	6	8
Each is written				1 000		60	8
Expanded form	$1\ 000 + 60 + 8$						

Example:

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
243 690 is made of		2	4	3	6	9	0
Each is written		200 000	40 000	3 000	600	90	0
Expanded form	$200\ 000 + 40\ 000 + 3\ 000 + 600 + 90$						

Exercise One

a. 329

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
329 is made of					3	2	9
Each is written					300	20	9
Expanded form	$300 + 20 + 9$						

b. 762

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
is made of							
Each is written							
Expanded form							

c. 1 847

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
is made of							
Each is written							
Expanded form							

d. 6 301

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
is made of							
Each is written							
Expanded form							

e. 16 492

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
is made of							
Each is written							
Expanded form							

f. 74 296

	millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones
is made of							
Each is written							
Expanded form							

Answers to Exercise One

- a. $300 + 20 + 9$
- b. $700 + 60 + 2$
- c. $1\ 000 + 800 + 40 + 7$
- d. $6\ 000 + 300 + 1$
- e. $10\ 000 + 6\ 000 + 400 + 90 + 2$
- f. $70\ 000 + 4\ 000 + 200 + 90 + 6$

Exercise Two

Write each number from expanded form. Check your work using the answer key at the end of the exercise.

Example: $600 + 30 + 7 = 637$

Example: $7\,000 + 500 + 40 + 1 = 7\,541$

Example: $4\,000\,000 + 600\,000 + 70\,000 + 8\,000 + 900 + 3 = 4\,678\,903$

- a. $400 + 10 + 6 =$
- b. $500 + 40 + 2 =$
- c. $5\,000 + 600 + 10 + 8 =$
- d. $4\,000 + 100 + 40 + 5 =$
- e. $20\,000 + 1\,000 + 800 + 10 + 2 =$
- f. $40\,000 + 200 + 5 =$
- g. $30\,000 + 4\,000 + 50 + 3 =$
- h. $200\,000 + 50\,000 + 3\,000 + 400 + 80 + 3 =$
- i. $300\,000 + 50\,000 + 6\,000 + 700 + 10 + 9 =$
- j. $1\,000\,000 + 400\,000 + 20\,000 + 3\,000 + 600 + 50 + 7 =$

Answers to Exercise Two

- | | |
|-----------|--------------|
| a. 416 | f. 40 205 |
| b. 542 | g. 34 053 |
| c. 5 618 | h. 253 483 |
| d. 4 145 | i. 356 719 |
| e. 21 812 | j. 1 423 657 |

Topic B: Self-Test

Mark / 12 Aim 10/12

A. Write each number in expanded form. (6 marks.)

- | | |
|----------|--------------|
| a. 643 | d. 94 205 |
| b. 759 | e. 367 542 |
| c. 4 821 | f. 1 850 643 |

B. Write each number from its expanded form. (6 marks.)

a. $300 + 60 + 9 =$

b. $700 + 5 =$

c. $1\ 000 + 400 + 90 + 1 =$

d. $20\ 000 + 1\ 000 + 500 + 80 + 4 =$

e. $500\ 000 + 40\ 000 + 2\ 000 + 700 + 30 + 9 =$

f. $3\ 000\ 000 + 900\ 000 + 60\ 000 + 8\ 000 + 400 + 30 + 1 =$

Answers to Topic B Self-Test

A. a. $600 + 40 + 3$

b. $700 + 50 + 9$

c. $4\ 000 + 800 + 20 + 1$

d. $90\ 000 + 4\ 000 + 200 + 5$

e. $300\ 000 + 60\ 000 + 7\ 000 + 500 + 40 + 2$

f. $1\ 000\ 000 + 800\ 000 + 50\ 000 + 600 + 40 + 3$

B. a. 369

d. 21 584

b. 705

e. 542 739

c. 1 491

f. 3 968 431

Topic C: Ordering Numerals

In this topic you will learn to arrange numerals in order from smallest to largest. Sorting numbered papers such as order forms, arranging items by the date and comparing prices are examples of the ways you use this skill. First look at pairs of numerals. Look at two numerals and tell which one is larger. How do you do this?

Exercise One

Identify the larger number in each pair.

- a. 431; **484** – 484 is larger
- b. 267; 251
- c. 684; 693
- d. 274; 315
- e. 932; 895
- f. 792; 810

Answers to Exercise One

- b. 267
- c. 693
- d. 315
- e. 932
- f. 810

To compare numerals, look at the place with the largest value.

Example A: Compare 1 628 and 1 599.

- thousands are the same.

- hundreds
 - 1 628 has 6 hundreds.
 - 1 599 has 5 hundreds.
- 1 628 is larger than 1 599.

Example B: Compare 13 562 and 13 612

- ten thousands are the same
- thousands are the same
- hundreds
 - 13 562 has 5 hundreds
 - 13 612 has 6 hundreds
- 13 612 is larger than 13 562.

Example C: Compare 673 234 and 673 423

- hundred thousands are the same
- ten thousands are the same
- thousands are the same
- hundreds
 - 673 234 has 2 hundreds
 - 673 423 has 4 hundreds
- 673 423 is larger than 673 234.

Note: Numerals with one digit are always less than numerals with two digits. Numerals with two digits are always less than numerals with three digits, and so on.

- 9 is less than 15
- 87 is less than 107
- 999 is less than 1 001

Exercise Two

Draw a box around the larger numeral in each pair. Check your work using the answer key at the end of the exercise.

- | | |
|-------------------|-------------------|
| a. 1016; 1316 | f. 31 276; 31 576 |
| b. 1 229; 1 329 | g. 46 821; 46 801 |
| c. 5 230; 5 210 | h. 343; 3 740 |
| d. 2 151; 2 159 | i. 8 325; 8 236 |
| e. 83 476; 93 475 | |

Answers to Exercise Two

- | | |
|-----------|-----------|
| b. 1 329 | f. 31 576 |
| c. 5 230 | g. 46 821 |
| d. 2 159 | h. 3 740 |
| e. 93 476 | i. 8 325 |

Now use the same ideas to arrange more than two numerals in order.

For example, to arrange 6, 616, 1, 66, 666, 61, and 16 in order from smallest to largest, use the following method:

1. First, sort the numerals with the same number of digits into groups.
 - 6, 1
 - 66, 16, 61
 - and 616, 666
2. The group of one digit numerals contains 6 and 1. As 1 is smaller than 6, the list starts with 1, then 6.
3. The group of two-digit numerals contains 66, 61, and 16. Use your skills in ordering numerals to see that 16 is smallest, then 61, and 66 is the largest of this group. The list now reads, 1, 6, 16, 61, 66.
4. Finally, look at the three-digit numerals, 616 and 666. As 616 is smaller than 666, it will come first. The list now reads:
 - 1, 6, 16, 61, 66, 616, 666.

Exercise Three

Arrange these numbers in order from smallest to largest. Check your work using the answer key at the end of the exercise.

- a. 1 235; 1 352; 1 523; 1 253
- b. 47 259; 42 759; 45 279; 47 592
- c. 73 050; 76 940; 79 053; 73 502
- d. 456 719; 465 981; 546 423; 564 082
- e. 12 546; 5 781; 423; 172 901
- f. 114 444; 444; 14; 1 114 444; 44
- g. 777; 17; 71; 7 177; 717; 77 177

Answers to Exercise Three

- a. 1 235, 1 253, 1 352, 1 523
- b. 42 759, 45 279, 47 259, 47 592
- c. 73 050, 73, 502, 76 940, 79 053
- d. 456 719, 465 981, 546 423, 564 082
- e. 423, 5 781, 12 546, 172 901
- f. 14, 44, 444, 114 444, 1 114 444
- g. 17, 71, 717, 777, 7 177, 77 177

Greater Than, Less Than, Equal

The sign $<$ means is less than (smaller than).

The sign $>$ means is greater than (bigger than).

The greater than and less than signs always point to the smaller number (that is, the small part of the sign is close to the small number.)

$5 < 12$ 5 is less than 12

$6 > 3$ 6 is greater than 3

The sign $=$ means equals and is used when two amounts are the same.

The sign \neq means not equal to and is used when two amounts are not the same.

Exercise Three

Write $<$, $>$, or $=$ in each blank as needed. Check your work using the answer key at the end of the exercise.

- a. 4 376 ____ 12 376
- b. 342 981 ____ 324 762
- c. 1 520 ____ 1 530
- d. 5 821 ____ 5 821
- e. 3 674 ____ 3 296
- f. 6 214 ____ 6 251

Answers to Exercise Three

- | | |
|--------|--------|
| a. $<$ | d. $=$ |
| b. $>$ | e. $>$ |
| c. $<$ | f. $<$ |

Topic C: Self-Test

Mark /12 Aim 10/12

A. Box the larger number of each pair. (6 marks)

- a. 9 784; 7 892
- b. 56 663; 56 566
- c. 13 204; 14 420
- d. 721 011; 721 101
- e. 461 300; 416 003
- f. 2 879 921; 2 987 721

B. Arrange these numerals in order from smallest to largest. (2 marks)

- a. 75; 754; 475; 47; 5 747; 5 774; 77 575
- b. 18; 23 070; 429; 7 824; 37; 994; 1 120

C. Write $>$, $<$, or $=$ in each blank to make a true statement. (4 marks)

- a. 3 678 ____ 3 768
- b. 14 002 ____ 14 000
- c. 38 463 ____ 3 846
- d. 10 010 ____ 10 010

Answers to Topic C: Self-Test

- A.
 - a. 9 784
 - b. 56 663
 - c. 14 420
 - d. 721 101
 - e. 461 300
 - f. 2 987 721
- B.
 - a. 47, 75, 475, 754, 5 747, 5 774, 77 575
 - b. 18, 37, 429, 994, 1 120, 7 824, 23 070
- C.
 - a. $<$
 - b. $>$
 - c. $>$
 - d. $=$

Topic D: Rounding Numbers

We use numbers a lot in our everyday lives. List some of the ways you use numbers.

- _____
- _____
- _____

You may have written money, shopping, time, and counting as part of your answer.

Think about time. Let's say it takes eight minutes to walk to the bus. If someone asks you how long it takes, you will probably say, "About ten minutes."

If you buy a sweater that costs \$29, you may say, "Oh, it was around thirty dollars."

How far is it from Vancouver to Prince George? The map says 796 km, but we would probably say, "About 800 kilometres."

You have just read examples of **rounding numbers**.

We round numbers for many reasons:

- We may not know the exact number.
- The exact number may not be important for what we are doing.
- We may need a **quick way to figure** something out.

When you are rounding numbers, use zeros to hold the places at the end of the number. Work through the following examples and exercises carefully. **Rounding is an important skill.**

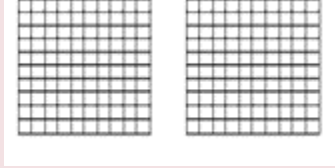
Rounding to the Nearest Hundred

A number rounded to the nearest hundred will have zeros in the ones place and in the tens place. The number will end with 000, 100, 200, 300, 400, 500, 600, 700, 800, or 900.

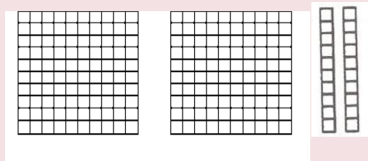
When rounding to the nearest 100, we are looking for the closest group of 100.

Example: 200, 220 and 300.

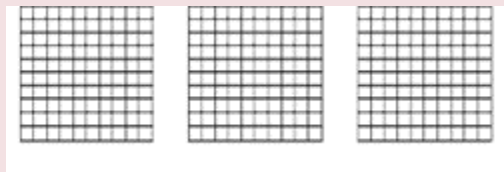
200



220



300



Is 220 closer to 200 or 300? It is closer to 200.

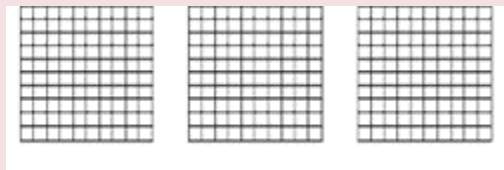
Which gives a better estimate of 220 ... 2 hundreds or 3 hundreds? 2 hundreds

If we round 220 to nearest hundred, the result would be 200.

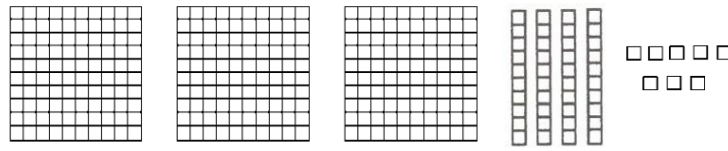
Remember: The rounded number has zeroes in the tens and ones places.

Example: 300, 348 and 400.

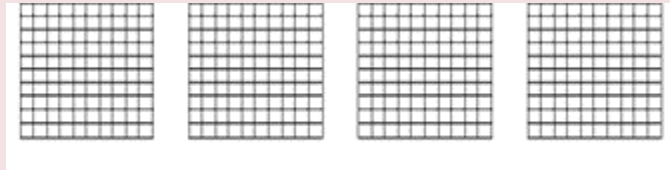
300



348



400



Is 348 closer to 300 or 400? It is closest to 300.

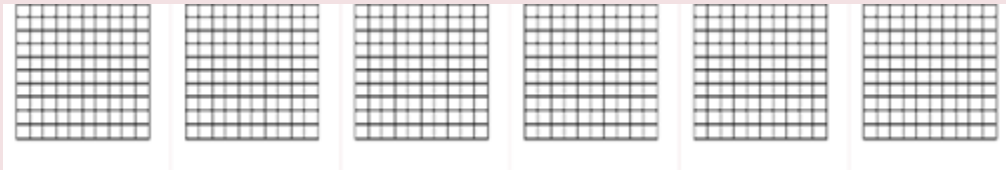
Which gives a better estimate of 3483 hundreds or 4 hundreds? 3 hundreds

If we round 348 to the nearest 100, the result would be 300.

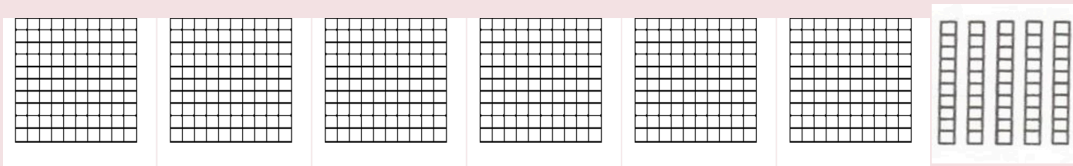
Remember: The rounded number has zeroes in the tens and ones places.

Example: 600, 650 and 700

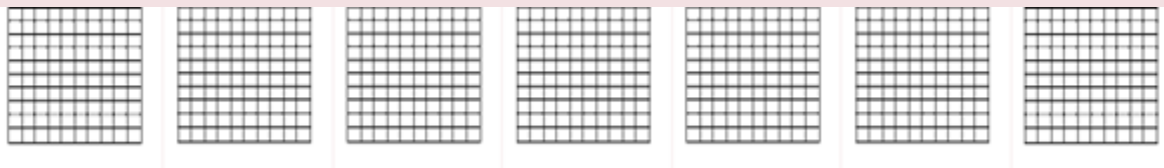
600



650



700



Is 650 closer to 600 or 700? It is closer to 700.

Which gives a better estimate of 650..... 6 hundreds or 7 hundreds? 7 hundreds. If we round 650 to the nearest hundred, the result would be 700.

When we round a number which has a 5 in the tens place, we always round up to the next hundred.

If we round 650 to nearest hundred, the result would be 700.

Example: Round 584 to the nearest 100.

584 is between 5 hundreds and 6 hundreds.

584 is closer to 6 hundreds.

Rounded number is 600.

Exercise One

Round each number to the nearest 100. Check your work using the answer key at the end of the exercise.

- a. 232 is between ____ hundreds and ____ hundreds.
232 is closest to ____ hundreds.
Rounded number is ____ .
- b. 647 is between ____ hundreds and ____ hundreds.
647 is closest to ____ hundreds.
Rounded number is ____.
- c. 881 is between ____ hundreds and ____ hundreds.
881 is closest to ____ hundreds.
Rounded number is ____.
- d. 152 is between ____ hundreds and ____ hundreds.
152 is closest to ____ hundreds.
Rounded number is ____.
- e. 326 is between ____ hundreds and ____ hundreds.
326 is closest to ____ hundreds.
Rounded number is ____.

	Number	Closer to ___ hundreds	Rounded Number
f.	43	0 hundreds	0
g.	188		
h.	275		
i.	620		
j.	750		
k.	549		
l.	499		
m.	821		
n.	999		

Answers to Exercise One

- | | |
|-------------------|----------------------|
| a. 2 hundreds 200 | h. 3 hundreds 300 |
| b. 6 hundreds 600 | i. 6 hundreds 600 |
| c. 9 hundreds 900 | j. 8 hundreds 800 |
| d. 2 hundreds 200 | k. 5 hundreds 500 |
| e. 3 hundreds 300 | l. 5 hundreds 500 |
| f. 0 hundreds 0 | m. 8 hundreds 800 |
| g. 2 hundreds 200 | n. 10 hundreds 1 000 |

Now look at a shorter method to round to the nearest 100.

When rounding to the nearest hundred, do this:

Step 1: Underline the hundreds place.

468

Step 2: Look at the digit following in the tens place.

↓

468

Step 3: If the digit in the tens place is less than 5,

- write a zero in the tens place and the ones place.
- leave the hundreds digit as it is.

↓

329 rounds to 300 (329 is nearer to 300 than to 400)

↓

846 rounds to 800

↓

608 rounds to 600**Step 4: If the digit in the tens place is 5 or more,**

- write a zero in the tens place and the ones place.
- add one more hundred to the hundreds place.

↓

362 rounds to 400 (362 is nearer to 400 than to 300)

↓

852 rounds to 900

↓

964 rounds to 1 000 (one hundred more than 9 hundreds is 10 hundreds)

Note: If you are rounding to the nearest hundred, one and two-digit numerals round like this:

- the numbers from 0 to 49 round to 0
- the numbers from 50 to 99 round to 100.

Exercise Two

Round your answer to the nearest hundred. Check your work using the answer key at the end of the exercise.

a. $426 = \underline{\quad}$

f. $211 = \underline{\quad}$

b. $395 = \underline{\quad}$

g. $965 = \underline{\quad}$

c. $638 = \underline{\quad}$

h. $438 = \underline{\quad}$

d. $95 = \underline{\quad}$

i. $703 = \underline{\quad}$

e. $31 = \underline{\quad}$

j. $796 = \underline{\quad}$

Any number can be rounded to the nearest hundred.

↓

$4\ \underline{8}27 \approx 4\ 800$

↓

$92\ \underline{6}59 \approx 92\ 700$

↓

$3\ \underline{9}75 \approx 4\ 000$

k. $8\,372 = \underline{\quad}$

o. $125\,438 = \underline{\quad}$

l. $2\,082 = \underline{\quad}$

p. $12\,651 = \underline{\quad}$

m. $21\,639 = \underline{\quad}$

q. $3\,888 = \underline{\quad}$

n. $42\,983 = \underline{\quad}$

r. $9\,109 = \underline{\quad}$

Answers to Exercise Two

a. 400

g. 1 000

m. 21 600

b. 400

h. 400

n. 43 000

c. 600

i. 700

o. 125 400

d. 100

j. 800

p. 12 700

e. 0

k. 8 400

q. 3 900

f. 200

l. 2 100

r. 9 100

Rounding to the Nearest Thousand

A number rounded to the nearest thousand will have zeros in the ones, tens, and hundreds places. The number will end with 0 000, 1 000, 2 000, 3 000, 4 000, 5 000, 6 000, 7 000,

8 000, or 9 000.

When rounding to the nearest thousand, do this:

Step 1: Underline the thousands place.

$$\underline{4}\,398$$

Step 2: Look at the digit following in the hundreds place.

$$\begin{array}{c} \downarrow \\ \underline{4}\,398 \end{array}$$

Step 3: If the digit in the hundreds place is less than 5,

- write a zero in the hundreds place, the tens place, and the ones place.
- leave the thousands digit as it is.

$$\begin{array}{c} \downarrow \\ \underline{4}\,398 \end{array} \quad \text{rounds to } 4\,000 \text{ (4 398 is nearer to 4 000 than to 5 000)}$$

$$\begin{array}{c} \downarrow \\ 325\,\underline{2}63 \end{array} \quad \text{rounds to } 325\,000$$

Step 4: If the digit in the hundreds place is 5 or more,

- write a zero in the hundreds, tens, and ones places.
- add one more thousand to the thousands place.

↓
 $\underline{2}884$ rounds to 3 000 (2884 is nearer to **3** 000 than to 2 000)

↓
 $8\underline{6}583$ rounds to **87** 000

↓
 $29\underline{9}65$ rounds to **30** 000

Note: If you are rounding to the nearest thousand, one, two, and three-digit numerals round like this:

- numerals from 0 to 499 round to **0**
- numerals from 500 to 999 round to **1 000**.

Exercise Three

Round your answer to the nearest thousand. Check your work using the answer key at the end of the exercise.

- | | |
|----------------|------------------|
| a. 3 829 = ___ | g. 2 096 = ___ |
| b. 2 499 = ___ | h. 23 719 = ___ |
| c. 8 309 = ___ | i. 45 245 = ___ |
| d. 4 520 = ___ | j. 8 129 = ___ |
| e. 9 724 = ___ | k. 123 542 = ___ |
| f. 386 = ___ | l. 91 871 = ___ |

Answers to Exercise Three

- | | |
|-----------|------------|
| a. 4 000 | g. 2 000 |
| b. 2 000 | h. 24 000 |
| c. 8 000 | i. 45 000 |
| d. 5 000 | j. 8 000 |
| e. 10 000 | k. 124 000 |
| f. 0 | l. 92 000 |

Rounding to the Nearest Ten Thousand

A number rounded to the nearest ten thousand will have zeros in the ones, tens, hundreds and

thousands places. The number will end with 0 000, 10 000, 20 000, 30 000, 40 000, 50 000, 60 000, 70 000, 80 000, or 90 000.

When **rounding to the nearest ten thousand**, do this:

Step 1: Underline the ten thousands place.

42 398

Step 2: Look at the digit following in the thousands place.

↓
42 398

Step 3: If the digit in the thousands place is less than 5,

- write a zero in the thousands place, the hundreds place, the tens place, and the ones place.
- leave the ten thousands digit as it is.

$\begin{array}{l} \\ \\ \\ \\ \end{array} \downarrow \text{and } \underline{4}2, 398 \text{ and } \text{rounds to } 40\,000$
(42 398 is nearer to 40 000 than to 50 000)

Similarly:

$ \downarrow \text{and } 2\underline{5}3, 263 \text{ and } \text{rounds to } 250\,000$

Step 4: If the digit in the thousands place is 5 or more,

- write a zero in the thousands, hundreds, tens, and ones places.
- add one more ten thousand to the ten thousands place (or in other words, add 1 to the ten thousands digit)

↓
28 884 rounds to **29** 000 (28 884 is nearer to 29 000 than to 28 000)

↓
867 583 rounds to **870** 000

↓
299 965 rounds to **300** 000

Note: If you are rounding to the nearest ten thousand, one, two, three and four- digit numerals round like this:

- numerals from 0 to 4 999 round to 0
- numerals from 5 000 to 9 999 round to 10 000.

Exercise Four

Round your answer to the nearest ten thousand. Check your work using the answer key at the end of the exercise.

- | | |
|------------|--------------|
| a. 123 542 | f. 73 816 |
| b. 91 871 | g. 41 171 |
| c. 41 724 | h. 52 963 |
| d. 80 910 | i. 829 527 |
| e. 14 639 | j. 1 624 099 |

Answers to Exercise Four

- | | |
|------------|--------------|
| a. 120 000 | f. 70 000 |
| b. 90 000 | g. 40 000 |
| c. 40 000 | h. 50 000 |
| d. 80 000 | i. 830 000 |
| e. 10 000 | j. 1 620 000 |

Rounding to the Nearest Hundred Thousand

A number rounded to the nearest hundred thousand will have zeros in the ones, tens, hundreds, thousands and ten thousands places. The number will end with 000 000, 100 000, 200 000, 300 000, 400 000, 500 000, 600 000, 700 000, 800 000, or 900 000.

When rounding to the nearest hundred thousand, do this:

Step 1: Underline the hundred thousands place.

414 398

Step 2: Look at the digit following in the ten thousands place.

↓

414 398

Step 3: If the digit in the ten thousands place is less than 5,

- write a zero in the ten thousands place, the thousands place, the hundreds place, the tens place, and the ones place.
- leave the hundred thousands digit as it is.

↓
414 398 rounds to 400 000 (414 398 is nearer to 400 000 than to 500 000)

↓
536 263 rounds to 500 000

Step 4: If the digit in the thousands place is 5 or more,

- write a zero in the ten thousands place, thousands place, hundreds place, tens place, and ones place.
- add one more hundred thousand to the hundred thousands place (or add 1 to the hundred thousands digit).

↓
281 884 rounds to **300** 000 (281 884 is nearer to 300 000 than to 200 000)

↓
672 583 rounds to **700** 000

↓
999 965 rounds to **1 000** 000

Note: If you are rounding to the nearest hundred thousand, one, two, three, four and five-digit numerals round like this:

- numerals from 0 to 49 999 round to 0
- numerals from 50 000 to 99 999 round to 100 000.

Exercise Five

Round your answer to the nearest hundred thousand. Check your work using the answer key at the end of the exercise.

- | | |
|------------|------------|
| a. 143 829 | f. 386 174 |
| b. 12 499 | g. 221 096 |
| c. 861 309 | h. 283 716 |
| d. 472 520 | i. 457 245 |
| e. 96 724 | j. 87 129 |

Answers to Exercise Five

- | | |
|------------|------------|
| a. 100 000 | c. 900 000 |
| b. 0 | d. 500 000 |

e. 100 000

h. 300 000

f. 400 000

i. 500 000

g. 200 000

j. 100 000

Rounding to the Nearest Million

A number rounded to the nearest million will have zeros in the ones, tens, hundreds, thousands, ten thousands and hundred thousands places. The number will end with 0 000 000, 1 000 000, 2 000 000, 3 000 000, 4 000 000, 5 000 000, 6 000 000, 7 000 000, 8 000 000, or 9 000 000.

When rounding to the nearest million, do this:

Step 1: Underline the millions place.

4 214 398

Step 2: Look at the digit following in the hundred thousands place.

4 214 398

Step 3: If the digit in the hundred thousands place is less than 5,

- write a zero in the hundred thousands place, the ten thousands place, the thousands, the hundreds place, the tens place, and the ones place.
- leave the millions digit as it is.

4 214 398 rounds to 4 000 000 (4 214 398 is nearer to 4 000 000 than to 500 000)

5 367 263 rounds to 5 000 000

↓

4 214 398 rounds to 4 000 000 (4 214 398 is nearer to 4 000 000 than to 5 000 000)

↓

5 367 263 rounds to 5 000 000

Step 4: If the digit in the hundred thousands place is 5 or more,

- write a zero in the hundred thousands place, the ten thousands place, the thousands place, the hundreds place, tens place, and ones place.
- Add one more million to the millions place.

2 818 884 rounds to 3 000 000 (2 818 884 is nearer to 3 000 000 than to 2 000 000)

6 729 583 rounds to 7 000 000

9 991 965 rounds to 10 000 000

↓

2 818 884 rounds to **3** 000 000 (281 884 is nearer to 300 000 than to 200 000)

↓

6 729 583 rounds to **700** 000

↓

9 991 965 rounds to **10** 000 000

Exercise Six

Round your answer to the nearest million.

Note: If you are rounding to the nearest million, one, two, three, four, five and six-digit numerals round like this:

- numerals from 0 to 499 999 round to 0
- numerals from 500 000 to 999 999 round to 1 000 000.

- | | |
|--------------|--------------|
| a. 6 123 542 | f. 3 736 816 |
| b. 2 391 871 | g. 3 413 171 |
| c. 5 419 724 | h. 4 525 963 |
| d. 2 801 910 | i. 1 829 527 |
| e. 941 639 | j. 1 624 099 |

Answers to Exercise Six

- | | |
|--------------|--------------|
| a. 6 000 000 | f. 4 000 000 |
| b. 2 000 000 | g. 3 000 000 |
| c. 5 000 000 | h. 5 000 000 |
| d. 3 000 000 | i. 2 000 000 |
| e. 1 000 000 | j. 2 000 000 |

Exercise Seven

For each problem, round to the number asked. Check your work using the answer key at the end of the exercise.

Example: Juan had 1 094 baseball cards. Adamo has 2 106 baseball cards. Ho has 1 589 baseball cards. Round each number to the nearest 100.

Name	Number	Rounded Number
Juan	1 094	1 100
Adamo	2 106	2 100
Ho	1 589	1 600

- a. On Friday, 5 479 people went the football game. On Saturday, 4 388 people went to the football game. On Sunday, 4 834 people went to the basketball game. Round each number to the nearest hundred.

Day	Number	Rounded Number
Friday		
Saturday		
Sunday		

- b. Mount Logan in the Yukon is the highest mountain in Canada. It is 5 956 meters. Mount Waddington is the highest mountain in British Columbia. It is 4 019 meters. Mount Columbia is the highest mountain in Alberta. It is 3 741 meters. Round each number to the nearest hundred.

Mountain	Number	Rounded Number
Mount Logan		
Mount Waddington		
Mount Columbia		

- c. The Connaught Tunnel is 8 082 meters long. The Mount MacDonald Tunnel is 14 700 meters long. The Deas Island Tunnel is 629 meters. Round each number to the nearest thousand.

Tunnel	Number	Rounded Number
Connaught Tunnel		
Mount MacDonald Tunnel		
Deas Island Tunnel		

Answers to Exercise Seven

a.	Day	Number	Rounded Number
	Friday	5 479	5 500
	Saturday	4 388	4 400
	Sunday	4 834	4 800
b.	Mountain	Number	Rounded Number
	Mount Logan	5 965 meters	6 000 meters
	Mount Waddington	4 019 meters	4 000 meters
	Mount Columbia	3 741 meters	3 700 meters
c.	Tunnel	Number	Rounded Number
	Connaught Tunnel	8 082 meters	8 000 meters
	Mount MacDonald Tunnel	14 700 meters	15 000 meters
	Deas Island Tunnel	692 meters	1 000 meters

Topic D: Self-Test

Mark /36 Aim 30/36

A. Round your answer to the nearest hundred. (4 marks)

- a. 329
- b. 2 481
- c. 8 065
- d. 3 916

B. Round your answer to the nearest thousand. (4 marks)

- a. 5 521
- b. 21 813
- c. 46 499
- d. 34 860

C. Round your answer to the nearest ten thousand. (4 marks)

- a. 15 521
- b. 26 318
- c. 176 994
- d. 864 86

D. Round your answer to the nearest hundred thousand. (4 marks)

- a. 523 521
- b. 821 932
- c. 761 949
- d. 464 051

E. Round your answer to the nearest million. (4 marks)

- a. 7 312 908
- b. 6 009 280
- c. 9 152 801
- d. 576 679

F. For each problem, round to the number asked. 16 Marks

- a. The longest river in North America is the Mississippi River which is 6 275 kilometers long. The longest river in Canada is the Mackenzie River which is 4 242 kilometers long. The Yukon River is 3 701 kilometers long. The St. Lawrence River is 3 058 kilometers long. Round each number to the nearest hundred.

River	Number	Rounded Number
Mississippi River		
Mackenzie River		
Yukon River		
St. Lawrence River		

- b. In 2009, the population of Shanghai, China was 13 831 900. The population of Moscow, Russia was 10 508 971. The population of New York City, United States of America was 8 363 710. The population of Vancouver, Canada was 578 041. Round each of these numbers to the nearest hundred thousand.

City	Number	Rounded Number
Shanghai, China		
Moscow, Russia		
New York City, USA		
Vancouver, Canada		

Answers to Topic D Self-Test

- | | | |
|----|------------|------------|
| A. | a. 300 | c. 8 100 |
| | b. 2 500 | d. 4 000 |
| B. | a. 6 000 | c. 46 000 |
| | b. 22 000 | d. 35 000 |
| C. | a. 20 000 | c. 180 000 |
| | b. 30 000 | d. 860 000 |
| D. | a. 500 000 | c. 800 000 |
| | b. 800 000 | d. 500 000 |

Unit 1 Review: Number Sense

You will now practice all the skills you learned in Unit 1. Check your work using the answer key at the end of the review.

- A. Write the place value names (ones, tens, hundreds, thousands, ten thousands, hundred thousands, millions) for each bolded digit.

- | | |
|-------------------|----------------------|
| a. 4 3 92 | e. 3 6 41 758 |
| b. 7 6 5 | f. 4 26 153 |
| c. 1 8 293 | g. 8 429 576 |
| d. 56 4 28 | h. 4 258 |

- B. Using the number **349 285 106**, write the digit that is in each of the following place values.

- | | |
|------------------|-----------------------|
| a. millions | e. hundreds |
| b. ones | f. hundreds thousands |
| c. ten thousands | g. tens |
| d. thousands | |

- C. Underline the digit for the place value named.

- | | |
|--------------------------|-------------------------------|
| a. hundreds, 5 321 | d. hundred thousands, 891 402 |
| b. tens, 8 703 | e. thousands, 72 491 |
| c. ten thousands, 34 891 | f. millions, 4 201 856 |

- D. Write the word names for the numbers.

- | | |
|-----------|--------------|
| a. 818 | d. 1 984 152 |
| b. 1 678 | e. 42 803 |
| c. 29 764 | f. 226 917 |

E. Write the numerals for these word names.

- a. twenty-five thousand one hundred thirty-two
- b. one thousand two hundred seven
- c. two hundred fifteen thousand twenty-four
- d. one million six hundred ninety-five thousand four hundred twenty
- e. seven hundred twenty-six
- f. nine thousand four

F. Write each number in expanded form.

- a. 184
- b. 3 908
- c. 61 281
- d. 1 539 587
- e. 366 524

G. Write each number from expanded form.

- a. $50\,000 + 6\,000 + 600 + 90 + 8$
- b. $200\,000 + 70\,000 + 8\,000 + 200 + 60 + 1$
- c. $3\,000 + 800 + 80 + 5$
- d. $1\,000\,000 + 400\,000 + 70\,000 + 6\,000 + 100 + 50 + 3$
- e. $700 + 1$

H. Arrange these numbers in order from smallest to largest.

- a. 18; 34 937; 727; 1 487; 147 832
- b. 769; 6 790; 697; 76 976; 76 796

I. Write $<$, $>$, or $=$ in each blank as needed.

- a. 9 698 ____ 6 899
- b. 7 542 ____ 7 452
- c. 34 682 ____ 39 421
- d. 124 693 ____ 124 693
- e. 738 423 ____ 783 423
- f. 45 832 ____ 54 123

J. Round each number to the nearest hundred.

- a. 774
- b. 2 581
- c. 21 204
- d. 692
- e. 572 098
- f. 7 652 931

K. Round each number to the nearest thousand.

- | | |
|------------|----------|
| a. 948 | d. 479 |
| b. 75 767 | e. 3 976 |
| c. 288 869 | f. 5 012 |

L. Round each number to the nearest ten thousand.

- | | |
|------------|--------------|
| a. 4 028 | d. 9 794 487 |
| b. 226 917 | e. 87 805 |
| c. 126 804 | f. 5 912 |

M. Round each number to the nearest hundred thousand.

- | | |
|--------------|--------------|
| a. 687 029 | d. 4 766 883 |
| b. 1 326 876 | e. 8 182 390 |
| c. 523 715 | f. 792 013 |

N. Round each number to the nearest million.

- | | |
|---------------|---------------|
| a. 1 009 627 | d. 9 778 656 |
| b. 28 101 052 | e. 80 379 591 |
| c. 894 063 | f. 3 102 975 |

O. Word Problems.

- a. The three heaviest sharks are the whale shark weighing 30 500 kilograms. The basking shark weighing 9 258 kilograms. The great white shark weighing 3 507 kilograms. Round each number to the nearest thousand.

Shark	Number	Rounded Number
Whale shark		
Basking shark		
Great White Shark		

- b. Three of the largest islands in the world are New Guinea covering 785 753 square kilometers, Baffin Island covering 503 944 square kilometers and Honshu Island covering 227 413 square kilometers. Round each number to the nearest ten thousand.

Island	Number	Rounded Number
New Guinea		
Baffin Island		
Honshu Island		

Answers to Unit 1 Review – Number Sense

- A.
- a. tens
 - b. ones
 - c. thousands
 - d. hundreds
 - e. hundred thousands
 - f. ten thousands
 - g. millions
 - h. thousands
- B.
- a. 9
 - b. 6
 - c. 8
 - d. 5
 - e. 1
 - f. 2
 - g. 0
- C.
- a. 5 321
 - b. 8 703
 - c. 34 891
 - d. 891 402
 - e. 72 491
 - f. 4 201 856

- D.
- eight hundred eighteen
 - one thousand six hundred seventy-eight
 - twenty-nine thousand seven hundred sixty-four
 - one million nine hundred eighty-four thousand one hundred fifty-two
 - forty-two thousand eight hundred three
 - two hundred twenty-six thousand nine hundred seventeen
- E.
- | | |
|------------|--------------|
| a. 25 132 | d. 1 695 420 |
| b. 1 207 | e. 726 |
| c. 215 024 | f. 9 004 |
- F.
- | | |
|--------------------------------------|---|
| a. $100 + 80 + 4$ | d. $1\,000\,000 + 500\,000 + 30\,000 + 9\,000 + 500 + 80 + 7$ |
| b. $3\,000 + 900 + 8$ | e. $300\,000 + 60\,000 + 6\,000 + 500 + 20 + 4$ |
| c. $60\,000 + 1\,000 + 200 + 80 + 1$ | |
- G.
- | | |
|------------|--------------|
| a. 56 698 | d. 1 476 153 |
| b. 278 261 | e. 701 |
| c. 3 885 | |
- H.
- | | |
|------------------------------------|------------------------------------|
| a. 18, 727, 1 487, 34 937, 147 832 | b. 697, 769, 6 790, 76 796, 76 976 |
|------------------------------------|------------------------------------|
- I.
- | | |
|------|------|
| a. > | d. = |
| b. > | e. < |
| c. < | f. < |
- J.
- | | |
|-----------|--------------|
| a. 800 | d. 700 |
| b. 2 600 | e. 572 100 |
| c. 21 200 | f. 7 652 900 |
- K.
- | | |
|------------|----------|
| a. 1 000 | d. 0 |
| b. 76 000 | e. 4 000 |
| c. 289 000 | f. 5 000 |
- L.
- | | |
|------------|--------------|
| a. 0 | d. 9 790 000 |
| b. 230 000 | e. 90 000 |
| c. 130 000 | f. 10 000 |

Unit 2: Addition

Topic A: Addition

Addition puts amounts together. The answer of addition is called the sum or the total.

The plus sign + means to add.

$$\diamond \diamond \diamond + \diamond \diamond = \diamond \diamond \diamond \diamond \diamond$$

$3 + 2 = 5$ says **three plus two equals five** or **three and two is five**.

The **sum** is 5.

Exercise One

Check out your addition facts by doing this exercise as quickly as possible without counting. The highest total or sum (what the numbers add up to) for these number facts is 20. Check your work using the answer key at the end of the exercise. Then, make a list of any addition facts you do not know or which are slow – practice them. If you feel you need more practice, see your instructor.

a.	6	e.	1	i.	7
+	7	+	2	+	6
	13				
b.	8	f.	6	j.	0
+	3	+	4	+	3
	11				
c.	4	g.	5	k.	9
+	2	+	8	+	7
d.	8	h.	2	l.	7
+	7	+	5	+	2

Answers to Exercise One

a. 13

e. 3

i. 13

b. 11

f. 10

j. 3

c. 6

g. 13

k. 16

d. 15

h. 7

l. 9

Addition of Larger Numbers

Use these steps to complete each addition question.

- Step 1: Add the ones to the ones.
- Step 2: Add the tens to the tens.
- Step 3: Add the hundreds to the hundreds.
- Step 4: Add the thousands to the thousands.
- Step 5: Add the ten thousands to the ten thousands.

Example A: $23 + 56 =$

Step 1: Add the ones to the ones. 3 ones + 6 ones = 9 ones

$$\begin{array}{r} 23 \\ + 56 \\ \hline 9 \end{array}$$

Write the answer in line with the ones in the question.

Step 2: Add the tens. 2 tens + 5 tens = 7 tens

$$\begin{array}{r} 23 \\ + 56 \\ \hline 79 \end{array}$$

The sum of $23 + 56 = 79$

Exercise Two

Find the sums. Check your work using the answer key at the end of the exercise.

	37		51		23
a. +	42	i. +	23	q. +	64
	55		12		53
b. +	22	j. +	46	r. +	42
	70		17		60
c. +	17	k. +	21	s. +	23
	27		70		49
d. +	32	l. +	28	t. +	10
	87		54		75
e. +	12	m. +	23	u. +	13
	33		62		58
f. +	64	n. +	14	v. +	21
	44		15		31
g. +	50	o. +	12	w. +	28
	34		45		24
h. +	11	p. +	23	x. +	13

Answers to Exercise Two

a. 79	i. 74	q. 87
b. 77	j. 58	r. 95
c. 87	k. 38	s. 83
d. 59	l. 98	t. 59
e. 99	m. 77	u. 88
f. 97	n. 76	v. 79
g. 94	o. 27	w. 59
h. 45	p. 68	x. 37

Exercise Three

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 32 \\ a. + 64 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ b. + 54 \\ \hline \end{array}$$

$$\begin{array}{r} 61 \\ c. + 22 \\ \hline \end{array}$$

$$\begin{array}{r} 83 \\ d. + 11 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ e. + 45 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ f. + 33 \\ \hline \end{array}$$

$$\begin{array}{r} 75 \\ g. + 24 \\ \hline \end{array}$$

$$\begin{array}{r} 46 \\ h. + 12 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ i. + 35 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ j. + 42 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ k. + 38 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ l. + 45 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ m. + 32 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ n. + 42 \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ o. + 44 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ p. + 14 \\ \hline \end{array}$$

$$\begin{array}{r} 57 \\ q. + 21 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ r. + 54 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ s. + 23 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ t. + 42 \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ u. + 41 \\ \hline \end{array}$$

$$\begin{array}{r} 60 \\ v. + 25 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ w. + 62 \\ \hline \end{array}$$

$$\begin{array}{r} 77 \\ x. + 21 \\ \hline \end{array}$$

Answers to Exercise Three

a. 96

b. 77

c. 83

d. 94

e. 77

f. 96

g. 99

h. 58

i. 79

j. 67

k. 79

l. 99

m. 57

q. 78

u. 54

n. 77

r. 96

v. 85

o. 76

s. 57

w. 96

p. 36

t. 67

x. 98

To add three or more numbers together, use the following steps.

- Step 1: Add the ones to the ones.
- Step 2: Add the tens to the tens.
- Step 3: Add the hundreds to the hundreds.
- Step 4: Add the thousands to the thousands.
- Step 5: Add the ten thousands to the ten thousands.

Example B: $24 + 52 + 73 =$

Step 1: Add the ones. 4 ones + 2 ones + 3 ones = 9 ones

$$\begin{array}{r} 24 \\ 52 \\ + 73 \\ \hline 9 \end{array}$$

Step 2: Add the tens. 2 tens + 5 tens + 7 ten = **14** tens

$$\begin{array}{r} 24 \\ 52 \\ + 73 \\ \hline 149 \end{array}$$

Exercise Four

$$\begin{array}{r} 21 \\ 34 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 61 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ 35 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 20 \\ 43 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 13 \\ 42 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 33 \\ 64 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ 50 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 37 \\ 42 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 55 \\ 24 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ 17 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 45 \\ 32 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 70 \\ 21 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ 54 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ 61 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ 23 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 33 \\ 55 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ 12 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ 31 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ 42 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ 31 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 32 \\ 45 \\ + \\ \hline \end{array}$$

$$\begin{array}{r} 24 \\ 65 \\ \text{v.} \quad + \quad 30 \end{array}$$

$$\begin{array}{r} 51 \\ 27 \\ \text{w.} \quad + \quad 41 \end{array}$$

$$\begin{array}{r} 22 \\ 14 \\ \text{x.} \quad + \quad 31 \end{array}$$

Answers to Exercise Four

a. 99

b. 87

c. 99

d. 99

e. 89

f. 119

g. 118

h. 89

i. 109

j. 149

k. 129

l. 139

m. 128

n. 108

o. 149

p. 109

q. 128

r. 159

s. 109

t. 169

u. 128

v. 119

w. 119

x. 67

Exercise Five

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 32 \\ 53 \\ \text{a.} \quad + \quad 14 \end{array}$$

$$\begin{array}{r} 52 \\ 24 \\ \text{d.} \quad + \quad 63 \end{array}$$

$$\begin{array}{r} 41 \\ 32 \\ \text{g.} \quad + \quad 96 \end{array}$$

$$\begin{array}{r} 42 \\ 25 \\ \text{b.} \quad + \quad 11 \end{array}$$

$$\begin{array}{r} 54 \\ 23 \\ \text{e.} \quad + \quad 71 \end{array}$$

$$\begin{array}{r} 31 \\ 43 \\ \text{h.} \quad + \quad 85 \end{array}$$

$$\begin{array}{r} 24 \\ 81 \\ \text{c.} \quad + \quad 13 \end{array}$$

$$\begin{array}{r} 25 \\ 60 \\ \text{f.} \quad + \quad 84 \end{array}$$

$$\begin{array}{r} 15 \\ 52 \\ \text{i.} \quad + \quad 82 \end{array}$$

$$\begin{array}{r} 43 \\ 21 \\ j. + 52 \end{array}$$

$$\begin{array}{r} 70 \\ 24 \\ o. + 65 \end{array}$$

$$\begin{array}{r} 71 \\ 16 \\ t. + 42 \end{array}$$

$$\begin{array}{r} 81 \\ 16 \\ k. + 42 \end{array}$$

$$\begin{array}{r} 25 \\ 41 \\ p. + 73 \end{array}$$

$$\begin{array}{r} 64 \\ 12 \\ u. + 90 \end{array}$$

$$\begin{array}{r} 56 \\ 31 \\ l. + 92 \end{array}$$

$$\begin{array}{r} 41 \\ 66 \\ q. + 32 \end{array}$$

$$\begin{array}{r} 55 \\ 21 \\ v. + 43 \end{array}$$

$$\begin{array}{r} 37 \\ 12 \\ m. + 80 \end{array}$$

$$\begin{array}{r} 24 \\ 33 \\ r. + 62 \end{array}$$

$$\begin{array}{r} 26 \\ 61 \\ w. + 82 \end{array}$$

$$\begin{array}{r} 63 \\ 25 \\ n. + 70 \end{array}$$

$$\begin{array}{r} 52 \\ 45 \\ s. + 21 \end{array}$$

$$\begin{array}{r} 44 \\ 53 \\ x. + 31 \end{array}$$

Answers to Exercise Five

a. 99

i. 149

q. 139

b. 78

j. 116

r. 119

c. 118

k. 139

s. 118

d. 139

l. 179

t. 129

e. 148

m. 129

u. 166

f. 169

n. 158

v. 119

g. 169

o. 159

w. 169

h. 159

p. 139

x. 128

Use these steps to complete each addition question.

- Step 1: Add the ones to the ones.
- Step 2: Add the tens to the tens.
- Step 3: Add the hundreds to the hundreds.

Example C: $372 + 415$

Step 1: Add the ones. 2 ones + 5 ones = 7 ones

$$\begin{array}{r} 372 \\ + 415 \\ \hline 7 \end{array}$$

Step 2: Add the tens. 7 tens + 1 ten = 8 tens

$$\begin{array}{r} 372 \\ + 415 \\ \hline 87 \end{array}$$

Step 3: Add the hundreds. 3 hundreds + 4 hundreds = 7 hundreds

$$\begin{array}{r} 372 \\ + 415 \\ \hline 787 \end{array}$$

Exercise Six

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 324 \\ a. + 865 \end{array}$$

$$\begin{array}{r} 673 \\ c. + 326 \end{array}$$

$$\begin{array}{r} 174 \\ e. + 922 \end{array}$$

$$\begin{array}{r} 514 \\ b. + 274 \end{array}$$

$$\begin{array}{r} 603 \\ d. + 375 \end{array}$$

$$\begin{array}{r} 250 \\ f. + 618 \end{array}$$

$$\begin{array}{r} 506 \\ g. + 182 \\ \hline \end{array}$$

$$\begin{array}{r} 514 \\ h. + 482 \\ \hline \end{array}$$

$$\begin{array}{r} 738 \\ i. + 510 \\ \hline \end{array}$$

$$\begin{array}{r} 321 \\ j. + 358 \\ \hline \end{array}$$

$$\begin{array}{r} 215 \\ k. + 584 \\ \hline \end{array}$$

$$\begin{array}{r} 416 \\ l. + 352 \\ \hline \end{array}$$

$$\begin{array}{r} 167 \\ m. + 522 \\ \hline \end{array}$$

$$\begin{array}{r} 315 \\ n. + 573 \\ \hline \end{array}$$

$$\begin{array}{r} 156 \\ o. + 732 \\ \hline \end{array}$$

$$\begin{array}{r} 713 \\ p. + 256 \\ \hline \end{array}$$

$$\begin{array}{r} 135 \\ q. + 564 \\ \hline \end{array}$$

$$\begin{array}{r} 105 \\ r. + 632 \\ \hline \end{array}$$

$$\begin{array}{r} 253 \\ s. + 644 \\ \hline \end{array}$$

$$\begin{array}{r} 535 \\ t. + 442 \\ \hline \end{array}$$

$$\begin{array}{r} 168 \\ u. + 421 \\ \hline \end{array}$$

$$\begin{array}{r} 834 \\ v. + 162 \\ \hline \end{array}$$

$$\begin{array}{r} 422 \\ w. + 361 \\ \hline \end{array}$$

$$\begin{array}{r} 327 \\ x. + 462 \\ \hline \end{array}$$

Answers to Exercise Six

a. 1 189

b. 788

c. 999

d. 978

e. 1 096

f. 868

g. 688

h. 996

i. 1 248

j. 679

k. 799

l. 768

m. 689

n. 888

o. 888

p. 969

q. 699

r. 737

s. 897

t. 977

u. 589

v. 996

w. 783

x. 789

Exercise Seven

Find the sums. Check your work using the answer key at the end of the exercise.

	754		705		675
a. +	231	i. +	261	q. +	214
	410		627		802
b. +	257	j. +	512	r. +	254
	653		357		524
c. +	142	k. +	130	s. +	321
	815		725		723
d. +	170	l. +	273	t. +	306
	243		753		243
e. +	146	m. +	902	u. +	152
	615		425		145
f. +	303	n. +	203	v. +	213
	124		652		262
g. +	762	o. +	137	w. +	321
	451		357		525
h. +	206	p. +	132	x. +	131

Answers to Exercise Seven

a. 985	i. 966	q. 889
b. 667	j. 1 139	r. 1 056
c. 795	k. 487	s. 845
d. 985	l. 998	t. 1 029
e. 389	m. 1 655	u. 395
f. 918	n. 628	v. 358
g. 886	o. 789	w. 583
h. 657	p. 489	x. 656

To add three or more numbers together, use the following steps.

- Step 1: Add the ones to the ones.
- Step 2: Add the tens to the tens.
- Step 3: Add the hundreds to the hundreds.

Example D: $372 + 415 + 210$

Step 1: Add the ones. 2 ones + 5 ones + 0 ones = 7 ones

$$\begin{array}{r} 372 \\ 415 \\ + 210 \\ \hline 7 \end{array}$$

Step 2: Add the tens. 7 tens + 1 ten + 1 ten = 9 tens

$$\begin{array}{r} 372 \\ 415 \\ + 210 \\ \hline 97 \end{array}$$

Step 3: Add the hundreds. 3 hundreds + 4 hundreds + 2 hundreds = 9 hundreds

$$\begin{array}{r} 372 \\ 415 \\ + 210 \\ \hline 997 \end{array}$$

Exercise Eight

$$\begin{array}{r} 345 \\ 132 \\ + 421 \\ \hline \end{array}$$

$$\begin{array}{r} 524 \\ 630 \\ + 721 \\ \hline \end{array}$$

$$\begin{array}{r} 305 \\ 131 \\ + 422 \\ \hline \end{array}$$

$$\begin{array}{r} 214 \\ 341 \\ + 932 \\ \hline \end{array}$$

$$\begin{array}{r} 821 \\ 324 \\ + 423 \\ \hline \end{array}$$

$$\begin{array}{r} 353 \\ 301 \\ + 624 \\ \hline \end{array}$$

$$\begin{array}{r} 435 \\ 201 \\ + 160 \\ \hline \end{array}$$

$$\begin{array}{r} 641 \\ 322 \\ + 833 \\ \hline \end{array}$$

$$\begin{array}{r} 132 \\ 254 \\ + 413 \\ \hline \end{array}$$

$$\begin{array}{r} 713 \\ 102 \\ + 860 \\ \hline \end{array}$$

$$\begin{array}{r} 245 \\ 321 \\ + 803 \\ \hline \end{array}$$

$$\begin{array}{r} 341 \\ 215 \\ + 840 \\ \hline \end{array}$$

$$\begin{array}{r} 524 \\ 243 \\ + 122 \\ \hline \end{array}$$

$$\begin{array}{r} 253 \\ 114 \\ + 321 \\ \hline \end{array}$$

$$\begin{array}{r} 272 \\ 315 \\ + 410 \\ \hline \end{array}$$

$$\begin{array}{r} 514 \\ 231 \\ + 620 \\ \hline \end{array}$$

$$\begin{array}{r} 246 \\ 351 \\ + 502 \\ \hline \end{array}$$

$$\begin{array}{r} 152 \\ 331 \\ + 216 \\ \hline \end{array}$$

$$\begin{array}{r} 164 \\ 233 \\ + 801 \\ \hline \end{array}$$

$$\begin{array}{r} 414 \\ 231 \\ + 552 \\ \hline \end{array}$$

$$\begin{array}{r} 362 \\ 627 \\ + 510 \\ \hline \end{array}$$

$$\begin{array}{r} 264 \\ 535 \\ \text{v. } + 600 \end{array}$$

$$\begin{array}{r} 432 \\ 653 \\ \text{w. } + 313 \end{array}$$

$$\begin{array}{r} 631 \\ 216 \\ \text{x. } + 552 \end{array}$$

Answers to Exercise Eight

a. 898

i. 799

q. 1 099

b. 1 875

j. 1 675

r. 699

c. 858

k. 1 369

s. 1 198

d. 1 487

l. 1 396

t. 1 197

e. 1 568

m. 889

u. 1 499

f. 1 278

n. 688

v. 1 399

g. 796

o. 997

w. 1 398

h. 1 796

p. 1 365

x. 1 399

Did you Know?

Some people like to check their addition by adding a second time, starting with the bottom number instead of the top number. For example.

$$\begin{array}{r} 63 \\ +35 \\ 98 \end{array}$$

Add: $3 + 5 = 8$
 $6 + 3 = 9$

Check: $5 + 3 = 8$
 $3 + 6 = 9$

Exercise Nine

Find the sums. Check your addition a second time by starting at the bottom. Place a check mark (✓) beside your answer after you have added from the bottom to the top. Check your work using the answer key at the end of the exercise.

	7 003		6 518		20 295
a. +	2 692	f. +	2 050	k. +	46 503
	6 217		1 023		62 041
b. +	3 732	g. +	1 553	l. +	12 857
	2 271		4 034		73 104
c. +	3 618	h. +	2 853	m. +	21 620
	5 992		5 234		40 835
d. +	3 006	i. +	1 244	n. +	25 034
	4 235		41 738		
e. +	1 162	j. +	38 051		

Answers to Exercise Nine

a. 9 695	f. 8 568	k. 66 798
b. 9 949	g. 2 576	l. 74 898
c. 5 889	h. 6 887	m. 94 724
d. 8 998	i. 6 478	n. 65 869
e. 5 397	j. 79 789	

If an addition question is written with the numbers side by side, rewrite the question in columns. Put the ones under the ones, the tens under the tens, the hundreds under the hundreds, and so on.

Example E: $263 + 25$

$$\begin{array}{r} 263 \\ + 25 \\ \hline 288 \end{array}$$

Example F: $316 + 9\,560$

$$\begin{array}{r} 316 \\ + 9560 \\ \hline 9876 \end{array}$$

Exercise Ten

Rewrite each question in columns and find the total. Check your work using the answer key at the end of the exercise.

a. $75 + 512$

e. $3\,457 + 112$

i. $3\,000 + 24\,132 + 70\,534$

b. $372 + 16$

f. $2\,403 + 340$

j. $34\,511 + 3\,012 + 40\,234$

c. $691 + 8$

g. $730 + 422 + 36$

d. $4 + 275$

h. $24 + 333 + 442$

Answers to Exercise Ten

a. 587

e. 3 569

i. 97 666

b. 388

f. 2 743

j. 77 757

c. 699

g. 1 188

d. 279

h. 799

Topic A: Self-Test

Mark /22 Aim 17/22

A. Find the sums. Be sure to check your answers. (6 marks)

$$\begin{array}{r} 63 \\ \text{a. } + 25 \\ \hline \end{array}$$

$$\begin{array}{r} 15 \\ \text{b. } + 72 \\ \hline \end{array}$$

$$\begin{array}{r} 43 \\ \text{c. } + 54 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ \text{d. } + 33 \\ \hline 14 \end{array}$$

$$\begin{array}{r} 34 \\ \text{e. } + 22 \\ \hline 52 \end{array}$$

$$\begin{array}{r} 21 \\ \text{f. } + 46 \\ \hline 72 \end{array}$$

B. Find the sums. Be sure to check your answers. (6 marks)

$$\begin{array}{r} 421 \\ \text{a. } + 354 \\ \hline \end{array}$$

$$\begin{array}{r} 832 \\ \text{b. } + 162 \\ \hline \end{array}$$

$$\begin{array}{r} 956 \\ \text{c. } + 730 \\ \hline \end{array}$$

$$\begin{array}{r} 375 \\ \text{d. } + 213 \\ \hline 611 \end{array}$$

$$\begin{array}{r} 211 \\ \text{e. } + 351 \\ \hline 515 \end{array}$$

$$\begin{array}{r} 731 \\ \text{f. } + 245 \\ \hline 312 \end{array}$$

C. Find the sums. Be sure to check your answers. (6 marks)

$$\begin{array}{r} 4\ 235 \\ a. + 4\ 730 \end{array}$$

$$\begin{array}{r} 51\ 672 \\ d. + 36\ 124 \end{array}$$

$$\begin{array}{r} 6\ 513 \\ b. + 4\ 182 \end{array}$$

$$\begin{array}{r} 25\ 146 \\ e. + 43\ 503 \end{array}$$

$$\begin{array}{r} 8\ 250 \\ c. + 3\ 647 \end{array}$$

$$\begin{array}{r} 42\ 196 \\ f. + 70\ 301 \end{array}$$

D. Add these numbers. (4 marks)

$$\begin{array}{r} 45 \\ a. + 21 \\ + 32 \end{array}$$

$$\begin{array}{r} 8\ 013 \\ c. + 1\ 246 \\ + 5\ 430 \end{array}$$

$$\begin{array}{r} 242 \\ b. + 325 \\ + 112 \end{array}$$

$$\begin{array}{r} 5\ 214 \\ d. + 40\ 230 \\ + 2\ 345 \end{array}$$

Answers to Topic A Self-Test

- A. a. 88
b. 87
c. 97

- d. 89
e. 108
f. 139

- B. a. 775
b. 994
c. 1 686

- d. 1 199
e. 1 077
f. 1 288

- C. a. 8 965
b. 10 695
c. 11 897

- d. 87 796
e. 68 649
f. 112 497

- D. a. 98
b. 679

- c. 14 689
d. 47 789

Topic B: Addition with Carrying

When the digits of one column add up to a two digit number (10 or more), you must carry the digit to the next column.

Example A: $27 + 55$

$$\begin{array}{r}
 27 \\
 + 55 \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 1 \\
 27 \\
 + 55 \\
 \hline
 2
 \end{array}
 \qquad
 \begin{array}{r}
 1 \\
 27 \\
 + 55 \\
 \hline
 82
 \end{array}$$

Step 1: Add the ones. 7 ones + 5 ones = 12 ones

Rename 12 ones as 1 ten and 2 ones. Write the 2 ones under the ones column and carry the ten to be added with the tens column.

Step 2: Add the tens. 1 ten + 2 tens + 5 tens = 8 tens

Example B: $58 + 76$

$$\begin{array}{r}
 58 \\
 + 76 \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 1 \\
 58 \\
 + 76 \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 1 \\
 58 \\
 + 76 \\
 \hline
 4 \quad 134
 \end{array}$$

Step 1: Add the one. 8 ones + 6 ones = 14 ones

Rename the 14 ones as 1 ten and 4 ones.

Write the 4 ones under the ones column and carry the ten to be added with the tens column.

Step 2: Add the tens. 1 ten + 5 tens + 7 tens = 13 tens

The 1 hundred can just be written in the sum because there are no other hundreds to add it to.

Exercise One

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 62 \\ a. + 18 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ h. + 58 \\ \hline \end{array}$$

$$\begin{array}{r} 29 \\ o. + 76 \\ \hline \end{array}$$

$$\begin{array}{r} 46 \\ b. + 37 \\ \hline \end{array}$$

$$\begin{array}{r} 68 \\ i. + 49 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ p. + 69 \\ \hline \end{array}$$

$$\begin{array}{r} 49 \\ c. + 42 \\ \hline \end{array}$$

$$\begin{array}{r} 66 \\ j. + 35 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ q. + 17 \\ \hline \end{array}$$

$$\begin{array}{r} 44 \\ d. + 26 \\ \hline \end{array}$$

$$\begin{array}{r} 99 \\ k. + 88 \\ \hline \end{array}$$

$$\begin{array}{r} 72 \\ r. + 33 \\ \hline \end{array}$$

$$\begin{array}{r} 17 \\ e. + 79 \\ \hline \end{array}$$

$$\begin{array}{r} 89 \\ l. + 74 \\ \hline \end{array}$$

$$\begin{array}{r} 26 \\ s. + 56 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ f. + 82 \\ \hline \end{array}$$

$$\begin{array}{r} 37 \\ m. + 15 \\ \hline \end{array}$$

$$\begin{array}{r} 38 \\ t. + 80 \\ \hline \end{array}$$

$$\begin{array}{r} 28 \\ g. + 91 \\ \hline \end{array}$$

$$\begin{array}{r} 55 \\ n. + 27 \\ \hline \end{array}$$

Answers to Exercise One

a. 80

e. 96

i. 117

b. 83

f. 105

j. 101

c. 91

g. 119

k. 187

d. 70

h. 112

l. 163

m. 52

p. 104

s. 82

n. 82

q. 71

t. 118

o. 105

r. 105

Need some extra practice? Who's the Pig? A Game of Chance.

- This game is played by two people with one set of dice. Ask your instructor for one set of dice.
- The first player to reach 100 or more points is the winner. Players take turns rolling the dice.
- You add the amounts on the dice to find your score.
- When it is your turn, you may roll as many times in a row as you like. Therefore, it is possible to score 100 or more points in one turn.
- However, during your turn if you roll a 1 on either die, you lose all your points for that turn, and your turn is over.
- If you roll a 1 on both dice, you lose all the points you have, and you have to start all over again at zero, and your turn is over.

Example C: $45 + 37 + 69$

$$\begin{array}{r}
 45 \\
 37 \\
 + 69 \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 \overset{2}{4}5 \\
 37 \\
 + \underline{69} \\
 1
 \end{array}
 \qquad
 \begin{array}{r}
 \overset{2}{4}5 \\
 37 \\
 + \underline{69} \\
 151
 \end{array}$$

Step 1: Add the ones. 5 ones + 7 ones + 9 ones = 21 ones

Rename 21 ones as 2 tens and 1 one.

Write the one in the sum under the ones column and carry the 2 tens to the tens column.

Step 2: Add the tens. 2 tens + 4 tens + 3 tens + 6 tens = 15 tens

15 tens is 1 hundred and 5 tens.

The one hundred can just be written in the sum because there are no other hundreds to add it to.

Exercise Two

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 67 \\ 78 \\ \text{a. } + 55 \\ \hline \end{array}$$

$$\begin{array}{r} 12 \\ 24 \\ \text{h. } + 89 \\ \hline \end{array}$$

$$\begin{array}{r} 22 \\ 52 \\ \text{o. } + 64 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ 13 \\ \text{b. } + 25 \\ \hline \end{array}$$

$$\begin{array}{r} 73 \\ 21 \\ \text{i. } + 37 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ 11 \\ \text{p. } + 75 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ 12 \\ \text{c. } + 49 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ 60 \\ \text{j. } + 47 \\ \hline \end{array}$$

$$\begin{array}{r} 34 \\ 32 \\ \text{q. } + 85 \\ \hline \end{array}$$

$$\begin{array}{r} 23 \\ 27 \\ \text{d. } + 84 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ 60 \\ \text{k. } + 71 \\ \hline \end{array}$$

$$\begin{array}{r} 27 \\ 51 \\ \text{r. } + 96 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ 52 \\ \text{e. } + 65 \\ \hline \end{array}$$

$$\begin{array}{r} 14 \\ 24 \\ \text{l. } + 51 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ 46 \\ \text{s. } + 43 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ 74 \\ \text{f. } + 21 \\ \hline \end{array}$$

$$\begin{array}{r} 56 \\ 23 \\ \text{m. } + 67 \\ \hline \end{array}$$

$$\begin{array}{r} 36 \\ 47 \\ \text{t. } + 52 \\ \hline \end{array}$$

$$\begin{array}{r} 47 \\ 18 \\ \text{g. } + 55 \\ \hline \end{array}$$

$$\begin{array}{r} 78 \\ 45 \\ \text{n. } + 89 \\ \hline \end{array}$$

$$\begin{array}{r} 53 \\ 67 \\ \text{u. } + 81 \\ \hline \end{array}$$

$$\begin{array}{r} 41 \\ 59 \\ \text{v. } + 99 \\ \hline \end{array}$$

$$\begin{array}{r} 31 \\ 83 \\ \text{w. } + 27 \\ \hline \end{array}$$

$$\begin{array}{r} 76 \\ 62 \\ \text{x. } + 25 \\ \hline \end{array}$$

Answers to Exercise Two

a. 200

b. 80

c. 92

d. 134

e. 158

f. 158

g. 120

h. 125

i. 131

j. 132

k. 184

l. 89

m. 146

n. 212

o. 138

p. 121

q. 151

r. 174

s. 114

t. 135

u. 201

v. 199

w. 141

x. 163

Use the same method for carrying when you add the columns of tens, hundreds, thousands, ten thousands, and so on. Look at these examples:

Example D: $347 + 438$

$$\begin{array}{r} 374 \\ + 438 \\ \hline \end{array}$$

$$\begin{array}{r} 11 \\ 374 \\ + 438 \\ \hline 812 \end{array}$$

Step 1: Add the ones.

4 ones + 8 ones = 12 ones = 1 ten and 2 ones

Write the 2 ones in the sum. Carry the 1 ten to the tens column.

Step 2: Add the tens.

7 + 3 + 1 ten you carried = 11 tens = 1 hundred and 1 ten Write the 1 ten. Carry the 1 hundred to the hundreds column.

Step 3: Add the hundreds.

$3 + 4 + 1$ hundred you carried = 8 hundreds. Write 8.

Example E: $4\,974 + 2\,385 + 6\,890$

$$\begin{array}{r}
 4\,974 \\
 2\,385 \\
 + \underline{6\,890} \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 1\,2\,2 \\
 4\,974 \\
 2\,385 \\
 + \underline{6\,890} \\
 \hline
 14\,249
 \end{array}$$

Step 1: Add the ones. 9 ones (write 9 ones in the sum)

Step 2: Add the tens. 24 tens = 2 hundreds + 4 tens (write 4 tens) Carry the 2 hundreds to the hundreds column.

Step 3: Add the hundreds and the 2 hundreds you carried.

22 hundreds = 2 thousands + 2 hundreds (write 2 hundreds)

Step 4: Add the thousands and the 2 thousands you carried.

14 thousands = 1 ten thousand + 4 thousands Write 14 thousands in the sum.

Example F: $246\,476 + 873\,706$

$$\begin{array}{r}
 246\,476 \\
 + \underline{873\,706} \\
 \hline
 \end{array}
 \qquad
 \begin{array}{r}
 1\,1\,1\,1 \\
 246\,476 \\
 + \underline{873\,706} \\
 \hline
 1\,120\,182
 \end{array}$$

Step 1: Add the ones. 12 ones = 1 ten + 2 ones Write 2 ones in the sum, carry the 1 ten over.

Step 2: Add the tens. 8 tens

Write 8 tens in the sum, nothing to carry.

Step 3: Add the hundreds. 11 hundreds = 1 thousand + 1 hundred Write 1 hundred in the sum, carry the 1 thousand.

Step 4: Add the thousands. 10 thousands = 1 ten thousand + 0 thousands Be sure to write the 0 to hold the thousands place in the sum.

Carry the 1 ten thousand.

Step 5: Add the ten thousands.

12 ten thousands = 1 hundred thousand + 2 ten thousands

Write the 2 ten thousands in the sum, carry the 1 hundred thousand.

Step 6: Add the hundred thousands.

11 hundred thousands = 1 million + 1 hundred thousand Write 1 million and the 1 hundred thousand in the sum.

And to read the answer, say, one million, one hundred twenty thousand, one hundred eight-two.

Exercise Three

Find the sums. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 231 \\ a. + 452 \\ \hline \end{array}$$

$$\begin{array}{r} 2846 \\ f. + 1437 \\ \hline \end{array}$$

$$\begin{array}{r} 6005 \\ k. + 273 \\ \hline \end{array}$$

$$\begin{array}{r} 520 \\ b. + 239 \\ \hline \end{array}$$

$$\begin{array}{r} 5128 \\ g. + 4907 \\ \hline \end{array}$$

$$\begin{array}{r} 2648 \\ l. + 1838 \\ \hline \end{array}$$

$$\begin{array}{r} 481 \\ c. + 306 \\ \hline \end{array}$$

$$\begin{array}{r} 6005 \\ h. + 239 \\ \hline \end{array}$$

$$\begin{array}{r} 5837 \\ m. + 2569 \\ \hline \end{array}$$

$$\begin{array}{r} 306 \\ d. + 83 \\ \hline \end{array}$$

$$\begin{array}{r} 8106 \\ i. + 3923 \\ \hline \end{array}$$

$$\begin{array}{r} 2846 \\ n. + 1457 \\ \hline \end{array}$$

$$\begin{array}{r} 5237 \\ e. + 2549 \\ \hline \end{array}$$

$$\begin{array}{r} 5028 \\ j. + 4907 \\ \hline \end{array}$$

$$\begin{array}{r} 3517 \\ o. + 4296 \\ \hline \end{array}$$

$$\begin{array}{r} 9\ 0\ 2\ 0 \\ p. + 6\ 8\ 4 \\ \hline \end{array}$$

$$\begin{array}{r} 2\ 6\ 4\ 8 \\ q. + 1\ 2\ 3\ 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 2\ 3\ 7 \\ r. + 6\ 9\ 6\ 8 \\ \hline \end{array}$$

Answers to Exercise Three

a. 683

b. 759

c. 787

d. 389

e. 7 786

f. 4 283

g. 10 035

h. 6 244

i. 12 029

j. 9 935

k. 6 278

l. 4 486

m. 8 406

n. 4 303

o. 7 813

p. 9 704

q. 3 886

r. 12 205

If you are having any problems with this work, ask your instructor to check your method of addition with carrying before you go any further.

If you feel that you need more practice, your instructor will give you more addition questions to do.

Adding Across

If an addition question is written with the numbers side by side, rewrite the question in columns. Put the ones under the ones, the tens under the tens, the hundreds under the hundreds, and so on.

Example G: $263 + 25$

$$\begin{array}{r} 263 \\ + 25 \\ \hline 288 \end{array}$$

Example H: $316 + 9\ 560$

$$\begin{array}{r} 316 \\ + 9\ 560 \\ \hline 9\ 876 \end{array}$$

Exercise Four

Rewrite each question in columns. Be careful to write ones under ones, tens under tens, hundreds under hundreds, and so on. Check your work using the answer key at the end of the exercise.

a. $476 + 392 + 483 =$

b. $986 + 483 + 524 =$

c. $3\,714 + 3\,189 + 4\,582 =$

d. $466 + 5\,973 + 821 + 83 =$

e. $697 + 7\,639 + 27 + 5\,396 =$

f. $1\,436 + 844 + 16\,009 =$

g. $242\,100 + 62\,418 + 32 + 528\,002 =$

h. $279\,661 + 475 + 49\,264 =$

Answers to Exercise Four

a. 1 351

b. 1 993

c. 11 485

d. 7 343

e. 13 759

f. 18 289

g. 832 552

h. 329 400

Topic B: Self-Test**Mark /15 Aim 12/15**

A. Find the sums. Be sure to check your answers. (12 marks)

$$\begin{array}{r} 85 \\ a. + 57 \\ \hline \end{array}$$

$$\begin{array}{r} 94 \\ b. + 48 \\ \hline \end{array}$$

$$\begin{array}{r} 982 \\ c. + 743 \\ \hline \end{array}$$

$$\begin{array}{r} 829 \\ d. + 303 \\ \hline \end{array}$$

$$\begin{array}{r} 7834 \\ e. + 2169 \\ \hline \end{array}$$

$$\begin{array}{r} 5976 \\ f. + 2081 \\ \hline \end{array}$$

$$\begin{array}{r} 46940 \\ g. + 86502 \\ \hline \end{array}$$

$$\begin{array}{r} 41801 \\ h. + 39199 \\ \hline \end{array}$$

$$\begin{array}{r} 3742 \\ i. + 4108 \\ \hline 7336 \end{array}$$

$$\begin{array}{r} 12350 \\ j. + 17629 \\ \hline 23244 \end{array}$$

$$\begin{array}{r} 352641 \\ k. + 432345 \\ \hline 720250 \end{array}$$

$$\begin{array}{r} 18060 \\ l. + 62549 \\ \hline 1375 \\ + 399 \end{array}$$

B. Add these numbers. (3 marks)

a. $74 + 32 + 67 + 85 =$

b. $721 + 8462 + 968 + 99 =$

c. $389 + 2517 + 2 =$

Answers to Topic B Self-Test

A. a. 142

b. 142

c. 1725

d. 1132

e. 10003

f. 8057

g. 133442

h. 81000

i. 15186

j. 53223

k. 1505236

l. 82383

B. a. 258

b. 10250

c. 2908

Topic C: Estimating Answers in Addition

Sometimes, an exact answer is not needed — especially when you just want a **quick idea** of what something will cost or total. This is called **estimating**. When you estimate, you round numbers and then add them. It helps you check if your final answer makes sense.

Why Estimate?

Imagine you are going away for the weekend:

- Hotel: about \$60
- Meals: about \$80
- Gas: about \$40
- Entertainment: about \$100

Instead of calculating exactly, you might say:

$$60 + 80 + 40 + 100 = 280$$

You estimated the total weekend cost: **\$280**.

Steps to Estimate a Sum

Step 1: Identify the Place to Round To

Round each number to the **highest place value they share**.

- If both numbers are two-digit numbers, round to the tens.
- Once again, always round to the **highest place value that both numbers share**. For example, if one number has thousands and the other has only hundreds, round both to the hundreds place. If one number has **hundreds** and the other has only **tens**, round both to the **tens** place.
- If both have thousands, round to the thousands.

This makes the numbers easier to add mentally.

Step 2: Round Each Number

Use the digit **to the right** of the one you are rounding to.

- If it is **5 or more**, round **up**.
- If it is **less than 5**, round **down**.

Step 3: Add the Rounded Numbers

This gives your **estimated sum**.

In these examples, **estimate** the answer. Round each number **BEFORE** you add.

Example A

$$\begin{array}{r}
 53 \text{ rounds to } 50 \\
 69 \text{ rounds to } 70 \\
 22 \text{ rounds to } 20 \\
 + 88 \text{ rounds to } + 90 \\
 \hline
 230
 \end{array}$$

Example B

$$\begin{array}{r}
 349 \text{ rounds to } 300 \\
 + 682 \text{ rounds to } + 700 \\
 \hline
 1\,000
 \end{array}$$

Example C

$$\begin{array}{r}
 43\,928 \text{ rounds to} \quad 40\,000 \\
 29\,785 \text{ rounds to} \quad 30\,000 \\
 88\,319 \text{ rounds to} \quad 90\,000 \\
 + \quad 243\,928 \text{ rounds to} \quad + \quad 240\,000 \\
 \phantom{+ \quad 243\,928 \text{ rounds to}} \quad 400\,000
 \end{array}$$

Tip: Round **both numbers to the same place** — the highest one they both have.

Exercise One

Estimate the sums. Check your work using the answer key at the end of the exercise.

	973 \approx	1 000		2 727
	496 \approx	500		2 329
a.	+ 382 \approx	+ 400	e.	+ 9 818
		1 900		
	519			4 113
	439			1 590
b.	+ 382		f.	+ 2 671
	1 234			38 985
	4 567			43 691
c.	+ 7 890		g.	+ 8 336
	3 519			42 163
	4 003			30 820
d.	+ 3 832		h.	21 911
				+ 60 422

$\begin{array}{r} 21\,472 \\ 46\,371 \\ \text{i. } 98\,393 \\ + 82\,218 \\ \hline 30\,706 \\ 29\,115 \\ \text{j. } 40\,082 \\ + 31\,621 \end{array}$	$\begin{array}{r} 431\,391 \\ 554\,423 \\ \text{k. } 913\,174 \\ + 282\,826 \\ \hline 171\,234 \\ 102\,085 \\ \text{l. } 460\,892 \\ + 542\,329 \end{array}$
--	--

Answers to Exercise One

- a. $1\,000 + 500 + 400 = 1\,900$
- b. $500 + 400 + 400 = 1\,300$
- c. $1\,000 + 5\,000 + 8\,000 = 14\,000$
- d. $4\,000 + 4\,000 + 4\,000 = 12\,000$
- e. $3\,000 + 2\,000 + 10\,000 = 15\,000$
- f. $4\,000 + 2\,000 + 3\,000 = 9\,000$
- g. $39\,000 + 44\,000 + 8\,000 = 91\,000$
- h. $40\,000 + 30\,000 + 20\,000 + 60\,000 = 150\,000$
- i. $20\,000 + 50\,000 + 100\,000 + 80\,000 = 250\,000$
- j. $30\,000 + 30\,000 + 40\,000 + 30\,000 = 130\,000$
- k. $400\,000 + 600\,000 + 900\,000 + 300\,000 = 2\,200\,000$
- l. $200\,000 + 100\,000 + 500\,000 + 500\,000 = 1\,300\,000$

Estimating Answers in Addition Word Problems

When you are solving word problems, an estimate tells you if your answer is sensible. You can use your estimate to help you check your answers. If your answer and the estimate are not close, then you know that you should add your numbers again.

Exercise Two

Estimate the following answers. Be sure to round to the largest place value possible before adding.

Remember to circle the information and underline what is being asked. Check your work using the answer key at the end of the exercise.

Example:

During one month, Chaska spends 11 432 minutes sleeping and 5 812 minutes eating. Estimate how much time he spends sleeping and eating.

During one month, Chaska spends 11 432 minutes sleeping and 5 812 minutes eating. Estimate how much time he spends sleeping and eating.

$$11\ 432 + 5\ 812$$

Estimate:

$$11\ 000 + 6\ 000 = 17\ 000$$

Chaska spent about 17 000 minutes sleeping and eating.

- During October, Amul drove 674 kilometres, 493 kilometres, 384 kilometres and 914 kilometres. Estimate the total kilometres Amul drove.
- The number of passengers using the ABE Taxi Company for the past three weeks were 3 205 passengers, 3 542 passengers and 2 821 passengers. Estimate the number of passengers that used the ABE Taxi Company.
- In 2008, the top three winning teams in the NHL were the Montreal Canadiens winning 2 980 games, the Boston Bruins winning 2 669 games and the Toronto Maple Leafs winning 2 535 games. Estimate the total number of games won by these three teams.
- The three deepest lakes in the world are Baikal Lake which is 1 741 metres, Tanganyika Lake which is 1 471 metres and the Caspian Sea which 1 025 metres. Estimate the total depth of the three lakes.

Answers to Exercise Two

- $700 + 500 + 400 + 900 = 2\ 500$ kilometres
- $3\ 000 + 4\ 000 + 3\ 000 = 10\ 000$ passengers
- $3\ 000 + 3\ 000 + 3\ 000 = 9\ 000$ games
- $2\ 000 + 1\ 000 + 1\ 000 = 4\ 000$ metres

Key Ideas to Remember

- Round to the **same place value** in both numbers.
- Round **up** if the next digit is 5 or more.
- Round **down** (i.e., the digit stays the same) if it is less than 5.
- Add the rounded numbers for your estimate.
- Estimating is **not exact** — it gives you a **ballpark answer**.

Topic C: Self-Test**Mark /15 Aim 11/15**

A. Estimate the sums. Show your work. (9 marks)

$$\begin{array}{r}
 7\,964 \\
 971 \\
 \text{a. } 6\,888 \\
 + 2\,021
 \end{array}$$

$$\begin{array}{r}
 75\,536 \\
 31\,807 \\
 \text{f. } 337\,427 \\
 + 7\,912
 \end{array}$$

$$\begin{array}{r}
 5\,365 \\
 5\,100 \\
 \text{b. } 9\,982 \\
 + 7\,752
 \end{array}$$

$$\begin{array}{r}
 898\,402 \\
 465\,766 \\
 \text{g. } 558\,485 \\
 + 324\,715
 \end{array}$$

$$\begin{array}{r}
 5\,211 \\
 1\,982 \\
 \text{c. } 3\,371 \\
 + 2\,801
 \end{array}$$

$$\begin{array}{r}
 6\,182\,390 \\
 2\,763\,393 \\
 \text{h. } 1\,326\,879 \\
 + 2\,743\,912
 \end{array}$$

$$\begin{array}{r}
 3\,395 \\
 2\,709 \\
 \text{d. } 18\,060 \\
 + 932\,335
 \end{array}$$

$$\begin{array}{r}
 1\,226\,590 \\
 687\,029 \\
 \text{i. } 533\,905 \\
 + 1\,359\,254
 \end{array}$$

$$\begin{array}{r}
 2\,364 \\
 62\,182 \\
 \text{e. } 549\,272 \\
 + 6\,395
 \end{array}$$

B. Estimate each of the following word problems. (6 marks) Be sure to include the unit of measure in your answer. (2 marks each)

Be sure to circle information and underline what is being asked.

- a. Yuan counted 854 old books and 519 new books. Estimate how many books there were altogether.
- b. A magazine has 34 783 subscribers. Last year the magazine had 26 876 subscribers. Estimate how many subscribers in total.
- c. The area of Canada is 9 984 670 square kilometres. The area of the United States is 9 629 091 square kilometres. The area of Mexico is 1 964 375 square kilometres. Estimate the total area of the three countries.

Answers to Topic C Self-Test

- | | | |
|----|------------|---------------|
| A. | a. 18 000 | f. 453 000 |
| | b. 28 000 | g. 2 300 000 |
| | c. 13 000 | h. 13 000 000 |
| | d. 956 000 | i. 3 800 000 |
| | e. 619 000 | |
- B.
- a. 1 400 books
 - b. 60 000 subscribers
 - c. 22 000 000 square kilometres

Unit 2 Review: Addition

You will now practice all the skills you learned in Unit 2. Check your work using the answer key at the end of the review

A. Find the sums.

$$\begin{array}{r} 23 \\ a. + 35 \end{array}$$

$$\begin{array}{r} 62 \\ c. + 36 \end{array}$$

$$\begin{array}{r} 64 \\ e. + 14 \end{array}$$

$$\begin{array}{r} 47 \\ b. + 52 \end{array}$$

$$\begin{array}{r} 51 \\ d. + 24 \end{array}$$

$$\begin{array}{r} 53 \\ f. + 32 \end{array}$$

B. Find the sums.

$$\begin{array}{r} 23 \\ a. + 34 \\ + 42 \end{array}$$

$$\begin{array}{r} 41 \\ c. + 58 \\ + 20 \end{array}$$

$$\begin{array}{r} 22 \\ e. + 46 \\ + 31 \end{array}$$

$$\begin{array}{r} 42 \\ b. + 35 \\ + 70 \end{array}$$

$$\begin{array}{r} 51 \\ d. + 43 \\ + 70 \end{array}$$

$$\begin{array}{r} 63 \\ f. + 24 \\ + 81 \end{array}$$

C. Find the sums.

$$\begin{array}{r} 518 \\ a. + 470 \end{array}$$

$$\begin{array}{r} 820 \\ c. + 149 \end{array}$$

$$\begin{array}{r} 240 \\ e. + 523 \end{array}$$

$$\begin{array}{r} 410 \\ b. + 316 \end{array}$$

$$\begin{array}{r} 631 \\ d. + 235 \end{array}$$

$$\begin{array}{r} 723 \\ f. + 126 \end{array}$$

D. Find the sums.

$$\begin{array}{r} 453 \\ 216 \\ + 320 \\ \hline \end{array}$$

$$\begin{array}{r} 212 \\ 345 \\ + 831 \\ \hline \end{array}$$

$$\begin{array}{r} 542 \\ 315 \\ + 641 \\ \hline \end{array}$$

$$\begin{array}{r} 231 \\ 425 \\ + 313 \\ \hline \end{array}$$

$$\begin{array}{r} 726 \\ 130 \\ + 443 \\ \hline \end{array}$$

$$\begin{array}{r} 314 \\ 245 \\ + 630 \\ \hline \end{array}$$

E. Find the sums.

$$\begin{array}{r} 3\ 168 \\ + 3\ 220 \\ \hline \end{array}$$

$$\begin{array}{r} 7\ 521 \\ + 3\ 167 \\ \hline \end{array}$$

$$\begin{array}{r} 54\ 373 \\ + 54\ 625 \\ \hline \end{array}$$

$$\begin{array}{r} 3\ 782 \\ + 4\ 217 \\ \hline \end{array}$$

$$\begin{array}{r} 52\ 163 \\ + 72\ 835 \\ \hline \end{array}$$

$$\begin{array}{r} 83\ 245 \\ + 13\ 450 \\ \hline \end{array}$$

F. Find the sums.

a. $45 + 104$

b. $523 + 364$

c. $5\ 231 + 346$

d. $4\ 661 + 2\ 138$

e. $42 + 707 + 350$

f. $63\ 613 + 45\ 165$

g. $22\ 514 + 43\ 262 + 21\ 102$

h. $72\ 510 + 4\ 127 + 13\ 041$

G. Find the sums.

$$\begin{array}{r} 96 \\ + 58 \\ \hline \end{array}$$

$$\begin{array}{r} 35 \\ + 89 \\ \hline \end{array}$$

$$\begin{array}{r} 54 \\ + 98 \\ \hline \end{array}$$

$$\begin{array}{r} 87 \\ + 57 \\ \hline \end{array}$$

$$\begin{array}{r} 48 \\ + 63 \\ \hline \end{array}$$

$$\begin{array}{r} 37 \\ + 65 \\ \hline \end{array}$$

H. Find the sums.

$$\begin{array}{r} 27 \\ 18 \\ a. + 35 \end{array}$$

$$\begin{array}{r} 58 \\ 37 \\ c. + 29 \end{array}$$

$$\begin{array}{r} 36 \\ 84 \\ e. + 57 \end{array}$$

$$\begin{array}{r} 52 \\ 16 \\ b. + 79 \end{array}$$

$$\begin{array}{r} 42 \\ 59 \\ d. + 26 \end{array}$$

$$\begin{array}{r} 21 \\ 54 \\ f. + 36 \end{array}$$

I. Find the sums.

$$\begin{array}{r} 527 \\ a. + 319 \end{array}$$

$$\begin{array}{r} 52\,368 \\ f. + 29\,240 \end{array}$$

$$\begin{array}{r} 11\,615 \\ 12\,573 \\ j. + 76\,125 \end{array}$$

$$\begin{array}{r} 382 \\ b. + 476 \end{array}$$

$$\begin{array}{r} 683 \\ 194 \\ g. + 276 \end{array}$$

$$\begin{array}{r} 321\,456 \\ 523\,214 \\ k. + 212\,304 \end{array}$$

$$\begin{array}{r} 3\,782 \\ c. + 4\,561 \end{array}$$

$$\begin{array}{r} 483 \\ 629 \\ h. + 753 \end{array}$$

$$\begin{array}{r} 12\,421 \\ 6\,815 \\ l. + 42\,916 \end{array}$$

$$\begin{array}{r} 6\,789 \\ d. + 4\,567 \end{array}$$

$$\begin{array}{r} 4\,216 \\ 3\,807 \\ i. + 4\,498 \end{array}$$

$$\begin{array}{r} 83\,245 \\ e. + 13\,876 \end{array}$$

J. Find the sums.

a. $234 + 357 + 526 =$

b. $435 + 16 + 127 =$

c. $4\,118 + 2\,671 + 1\,590 =$

d. $67\,543 + 17\,069 =$

e. $4\,235 + 6\,815 + 42\,916 =$

f. $231\,262 + 64\,221 + 7\,143 =$

K. Estimate the sums.

$$\begin{array}{r} 217 \\ 316 \\ a. + 142 \end{array}$$

$$\begin{array}{r} 31\,945 \\ 12\,214 \\ d. + 3\,142 \end{array}$$

$$\begin{array}{r} 3\,317 \\ 2\,154 \\ b. + 1\,212 \end{array}$$

$$\begin{array}{r} 41\,730 \\ 2\,151 \\ e. + 33\,225 \\ + 14\,659 \end{array}$$

$$\begin{array}{r} 21\,016 \\ 14\,527 \\ c. + 51\,202 \end{array}$$

$$\begin{array}{r} 2\,173\,317 \\ 3\,621\,154 \\ f. + 1\,421\,212 \end{array}$$

L. Estimate the following answers. Be sure to round to the largest place value possible before adding. Remember to circle the information and underline what is being asked.

- The Plumbers' Union has 456 members. The Carpenters' Union has 875 members. The Electricians' Union has 1 394 members. Estimate how many members these three unions have.
- Last year Seung shipped 42 169 orders from his warehouse. So far this year, Seung has shipped 5 837 orders. Estimate the total number of orders sent.
- Avani has driven 42 576 kilometres, 38 342 kilometres and 14 208 kilometres in the last three years. Estimate how many kilometres Avani has driven in the last three years.

Answers to Unit 2 Review

- | | | | |
|----|--------|--------|--------|
| A. | a. 58 | c. 98 | e. 78 |
| | b. 99 | d. 75 | f. 85 |
| B. | a. 99 | c. 119 | e. 99 |
| | b. 147 | d. 164 | f. 168 |
| C. | a. 988 | c. 969 | e. 763 |
| | b. 726 | d. 866 | f. 849 |

- D. a. 989 c. 1 388 e. 1 498
 b. 969 d. 1 299 f. 1 189
- E. a. 6 388 c. 10 688 e. 108 998
 b. 7 999 d. 124 998 f. 96 695
- F. a. 149 d. 6 799 g. 86 878
 b. 887 e. 1 099 h. 89 678
 c. 5 577 f. 108 778
- G. a. 154 c. 124 e. 152
 b. 144 d. 111 f. 102
- H. a. 80 c. 124 e. 177
 b. 147 d. 127 f. 111
- I. a. 846 e. 97 121 i. 12 521
 b. 858 f. 81 608 j. 100 313
 c. 8 343 g. 1 153 k. 1 056 974
 d. 11 356 h. 1 865 l. 62 152
- J. a. 1 117 c. 8 379 e. 53 966
 b. 578 d. 84 612 f. 302 626
- K. a. $200 + 300 + 100 = 600$
 b. $3\,000 + 2\,000 + 1\,000 = 6\,000$
 c. $20\,000 + 10\,000 + 50\,000 = 80\,000$
 d. $32\,000 + 12\,000 + 3\,000 = 47\,000$
 e. $42\,000 + 2\,000 + 33\,000 + 15\,000 = 92\,000$
 f. $2\,000\,000 + 4\,000\,000 + 1\,000\,000 = 7\,000\,000$
- L. a. $500 + 900 + 1\,400 = 2\,800$ members
 b. $42\,000 + 6\,000 = 48\,000$ orders
 c. $40\,000 + 40\,000 + 10\,000 = 90\,000$ kilometres

CONGRATULATIONS!!

Now you have finished Unit 2.

TEST TIME!

Ask your instructor for the Practice Test for this unit.

Once you've done the practice test, you need to do the unit 2 test.

Again, ask your instructor for this.

Good luck!

Unit 3: Subtraction

Topic A: Subtraction

Subtraction takes an amount **away** from another amount. The result of subtraction is called the **difference**.

The **minus sign** $-$ means to subtract.

$$9 - 3 = 6$$

This says nine minus three equals six or nine take away three is six. The **difference** between 9 and 3 is 6.

Subtraction is the opposite of addition. Look at the examples:

Addition	Subtraction
$5 + 4 = 9$	$9 - 4 = 5$
$4 + 5 = 9$	$9 - 5 = 4$
$\begin{array}{r} 8 \\ + 3 \\ \hline 11 \end{array}$	$\begin{array}{r} 11 \\ - 3 \\ \hline 8 \end{array}$
$\begin{array}{r} 3 \\ + 8 \\ \hline 11 \end{array}$	$\begin{array}{r} 11 \\ - 8 \\ \hline 3 \end{array}$

Subtraction facts are a tool that you use to do subtraction questions.

Exercise One

Check out your subtraction facts by doing this exercise as quickly as you can. Then, make a list of any subtraction facts you do not know or are tricky for you – practice them.

a. $\begin{array}{r} 5 \\ - 2 \end{array}$

b. $\begin{array}{r} 9 \\ - 1 \end{array}$

c. $\begin{array}{r} 12 \\ - 4 \end{array}$

$$\begin{array}{r} 4 \\ d. - 2 \end{array}$$

$$\begin{array}{r} 17 \\ e. - 9 \end{array}$$

$$\begin{array}{r} 2 \\ f. - 1 \end{array}$$

$$\begin{array}{r} 11 \\ g. - 9 \end{array}$$

$$\begin{array}{r} 7 \\ h. - 7 \end{array}$$

$$\begin{array}{r} 14 \\ i. - 6 \end{array}$$

$$\begin{array}{r} 16 \\ j. - 9 \end{array}$$

$$\begin{array}{r} 9 \\ k. - 3 \end{array}$$

$$\begin{array}{r} 8 \\ l. - 1 \end{array}$$

$$\begin{array}{r} 9 \\ m. - 0 \end{array}$$

$$\begin{array}{r} 14 \\ n. - 8 \end{array}$$

$$\begin{array}{r} 10 \\ o. - 5 \end{array}$$

$$\begin{array}{r} 15 \\ p. - 8 \end{array}$$

Answers to Exercise One

a. 3

b. 8

c. 8

d. 2

e. 8

f. 1

g. 2

h. 0

i. 8

j. 7

k. 6

l. 7

m. 9

n. 6

o. 5

p. 7

Note: There is no self-test for this topic.

Topic B: Subtraction of Larger Numbers

You can find the difference between two large numbers using the subtraction facts you have been practicing. Always take away or subtract the number after the minus sign.

Use these steps to complete each subtraction question.

- Step 1: Subtract the ones from the ones.
- Step 2: Subtract the tens from the tens.
- Step 3: Subtract the hundreds from the hundreds.
- Step 4: Subtract the thousands from the thousands.
- Step 5: Subtract the ten thousands from the ten thousands and so on.

Example A: $57 - 26$

Step 1: Subtract the ones from the ones. $7 \text{ ones} - 6 \text{ ones} = 1 \text{ one}$, write the answer in line with the ones in the question.

$$\begin{array}{r} 57 \\ - 26 \\ \hline 1 \end{array}$$

Step 2: Subtract the tens from the tens. $5 \text{ tens} - 2 \text{ tens} = 3 \text{ tens}$

The difference between 57 and 26 is 31.

$$\begin{array}{r} 57 \\ - 26 \\ \hline 31 \end{array}$$

Exercise One

Find the differences. Check your work using the answer key at the end of the exercise.

	36		64		84
a.	— 13		i. — 21		q. — 40
	72		85		74
b.	— 42		j. — 64		r. — 53
	48		98		97
c.	— 22		k. — 73		s. — 83
	55		76		89
d.	— 31		l. — 64		t. — 80
	93		86		79
e.	— 40		m. — 50		u. — 29
	76		95		89
f.	— 71		n. — 35		v. — 80
	95		28		67
g.	— 62		o. — 17		w. — 61
	39		69		48
h.	— 26		p. — 52		x. — 40

Answers Exercise One

a.	23	i.	43	q.	44
b.	30	j.	21	r.	21
c.	26	k.	25	s.	14
d.	24	l.	12	t.	9
e.	53	m.	36	u.	50
f.	5	n.	60	v.	9
g.	33	o.	11	w.	6
h.	13	p.	17	x.	8

Checking Subtraction

You can check your subtraction. Add the answer (the difference) to the number you took away (the second number). If your subtracting was correct, the result of the adding will be the number you started with (the top number) in the subtraction question.

Example B

$$\begin{array}{r} 928 \\ \text{The difference is } - \quad 416 \\ \hline 512 \end{array}$$

To check, add 512 to 416.

$$\begin{array}{r} 512 \\ + 416 \\ \hline 928 \end{array}$$

Exercise Two

Find the differences. Check your work by adding and then by using the answer key at the end of the exercise.

$$\begin{array}{r} 87 \\ \text{a. } - \quad 36 \end{array}$$

$$\begin{array}{r} 75 \\ \text{e. } - \quad 45 \end{array}$$

$$\begin{array}{r} 84 \\ \text{i. } - \quad 23 \end{array}$$

$$\begin{array}{r} 29 \\ \text{b. } - \quad 21 \end{array}$$

$$\begin{array}{r} 73 \\ \text{f. } - \quad 20 \end{array}$$

$$\begin{array}{r} 69 \\ \text{j. } - \quad 38 \end{array}$$

$$\begin{array}{r} 48 \\ \text{c. } - \quad 40 \end{array}$$

$$\begin{array}{r} 92 \\ \text{g. } - \quad 21 \end{array}$$

$$\begin{array}{r} 45 \\ \text{k. } - \quad 23 \end{array}$$

$$\begin{array}{r} 99 \\ \text{d. } - \quad 63 \end{array}$$

$$\begin{array}{r} 58 \\ \text{h. } - \quad 27 \end{array}$$

$$\begin{array}{r} 49 \\ \text{l. } - \quad 19 \end{array}$$

$$\begin{array}{r} 59 \\ m. - 14 \end{array}$$

$$\begin{array}{r} 89 \\ n. - 63 \end{array}$$

$$\begin{array}{r} 88 \\ o. - 15 \end{array}$$

$$\begin{array}{r} 56 \\ p. - 44 \end{array}$$

$$\begin{array}{r} 96 \\ q. - 75 \end{array}$$

$$\begin{array}{r} 37 \\ r. - 17 \end{array}$$

$$\begin{array}{r} 70 \\ s. - 50 \end{array}$$

$$\begin{array}{r} 38 \\ t. - 24 \end{array}$$

$$\begin{array}{r} 31 \\ u. - 10 \end{array}$$

$$\begin{array}{r} 27 \\ v. - 12 \end{array}$$

$$\begin{array}{r} 74 \\ w. - 53 \end{array}$$

$$\begin{array}{r} 45 \\ x. - 20 \end{array}$$

Answers to Exercise Two

a. 51

b. 8

c. 8

d. 36

e. 30

f. 53

g. 71

h. 31

i. 61

j. 31

k. 22

l. 30

m. 45

n. 26

o. 73

p. 12

q. 21

r. 20

s. 20

t. 14

u. 21

v. 15

w. 21

x. 25

Example C: $696 - 251 =$

Use these steps to complete each subtraction question.

Step 1: Subtract the ones from the ones. 6 ones $-$ 1 one $=$ 5 ones

$$\begin{array}{r} 696 \\ - 251 \\ \hline 5 \end{array}$$

Step 2: Subtract the tens from the tens. 9 tens $-$ 5 tens $=$ 4 tens

$$\begin{array}{r} 696 \\ - 251 \\ \hline 45 \end{array}$$

Step 3: Subtract the hundreds from the hundreds.

6 hundreds – 2 hundreds = 4 hundreds

$$\begin{array}{r} 696 \\ - 251 \\ \hline 445 \end{array}$$

The difference between 696 and 251 is 445.

Exercise Three

Find the differences. Check your work using the answer key at the end of the exercise.

a. $\begin{array}{r} 995 \\ - 452 \\ \hline \end{array}$

g. $\begin{array}{r} 953 \\ - 603 \\ \hline \end{array}$

m. $\begin{array}{r} 796 \\ - 172 \\ \hline \end{array}$

b. $\begin{array}{r} 877 \\ - 342 \\ \hline \end{array}$

h. $\begin{array}{r} 569 \\ - 403 \\ \hline \end{array}$

n. $\begin{array}{r} 864 \\ - 531 \\ \hline \end{array}$

c. $\begin{array}{r} 788 \\ - 615 \\ \hline \end{array}$

i. $\begin{array}{r} 874 \\ - 650 \\ \hline \end{array}$

o. $\begin{array}{r} 963 \\ - 810 \\ \hline \end{array}$

d. $\begin{array}{r} 987 \\ - 243 \\ \hline \end{array}$

j. $\begin{array}{r} 269 \\ - 159 \\ \hline \end{array}$

p. $\begin{array}{r} 957 \\ - 342 \\ \hline \end{array}$

e. $\begin{array}{r} 549 \\ - 131 \\ \hline \end{array}$

k. $\begin{array}{r} 485 \\ - 203 \\ \hline \end{array}$

q. $\begin{array}{r} 837 \\ - 410 \\ \hline \end{array}$

f. $\begin{array}{r} 806 \\ - 204 \\ \hline \end{array}$

l. $\begin{array}{r} 381 \\ - 270 \\ \hline \end{array}$

r. $\begin{array}{r} 528 \\ - 208 \\ \hline \end{array}$

$$\begin{array}{r} 549 \\ s. - 120 \\ \hline \end{array}$$

$$\begin{array}{r} 849 \\ u. - 246 \\ \hline \end{array}$$

$$\begin{array}{r} 937 \\ w. - 224 \\ \hline \end{array}$$

$$\begin{array}{r} 627 \\ t. - 523 \\ \hline \end{array}$$

$$\begin{array}{r} 175 \\ v. - 163 \\ \hline \end{array}$$

$$\begin{array}{r} 875 \\ x. - 252 \\ \hline \end{array}$$

Answers to Exercise Three

a. 543

i. 224

q. 427

b. 535

j. 110

r. 320

c. 173

k. 282

s. 429

d. 744

l. 111

t. 104

e. 418

m. 624

u. 603

f. 602

n. 333

v. 12

g. 350

o. 153

w. 713

h. 166

p. 615

x. 623

Exercise Four

Find the differences. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 543 \\ a. - 132 \\ \hline \end{array}$$

$$\begin{array}{r} 587 \\ e. - 425 \\ \hline \end{array}$$

$$\begin{array}{r} 964 \\ i. - 231 \\ \hline \end{array}$$

$$\begin{array}{r} 752 \\ b. - 150 \\ \hline \end{array}$$

$$\begin{array}{r} 857 \\ f. - 143 \\ \hline \end{array}$$

$$\begin{array}{r} 679 \\ j. - 424 \\ \hline \end{array}$$

$$\begin{array}{r} 328 \\ c. - 115 \\ \hline \end{array}$$

$$\begin{array}{r} 545 \\ g. - 302 \\ \hline \end{array}$$

$$\begin{array}{r} 757 \\ k. - 136 \\ \hline \end{array}$$

$$\begin{array}{r} 758 \\ d. - 341 \\ \hline \end{array}$$

$$\begin{array}{r} 466 \\ h. - 115 \\ \hline \end{array}$$

$$\begin{array}{r} 467 \\ l. - 132 \\ \hline \end{array}$$

Answers to Exercise Four

a. 411

e. 162

i. 733

b. 602

f. 714

j. 255

c. 213

g. 243

k. 621

d. 417

h. 351

l. 335

Use these steps to complete each subtraction question:

Example D: $4\,628 - 2\,604 =$

Step 1: Subtract the ones from the ones. $8 \text{ ones} - 4 \text{ ones} = 4 \text{ ones}$

$$\begin{array}{r} 4\,628 \\ - 2\,604 \\ \hline 4 \end{array}$$

Step 2: Subtract the tens from the tens. $2 \text{ tens} - 0 \text{ tens} = 2 \text{ tens}$

$$\begin{array}{r} 4\,628 \\ - 2\,604 \\ \hline 24 \end{array}$$

Step 3: Subtract the hundreds from the hundreds.

$6 \text{ hundreds} - 6 \text{ hundreds} = 0 \text{ hundreds}$

$$\begin{array}{r} 4\,628 \\ - 2\,604 \\ \hline 024 \end{array}$$

The 0 must be placed in the answer to hold the hundreds place.

Step 4: Subtract the thousands from the thousands.

$4 \text{ thousands} - 2 \text{ thousands} = 2 \text{ thousands}$

$$\begin{array}{r} 4\,628 \\ - 2\,604 \\ \hline 2\,024 \end{array}$$

The difference between 4 628 and 2 604 is 2 024.

Example E: $79\,486 - 42\,104 =$

Step 1: Subtract the ones from the ones. $6 \text{ ones} - 4 \text{ ones} = 2 \text{ ones}$

$$\begin{array}{r} 79\,486 \\ - 42\,104 \\ \hline 2 \end{array}$$

Step 2: Subtract the tens from the tens. $8 \text{ tens} - 0 \text{ tens} = 8 \text{ tens}$

$$\begin{array}{r} 79\,486 \\ - 42\,104 \\ \hline 82 \end{array}$$

Step 3: Subtract the hundreds from the hundreds.

$4 \text{ hundreds} - 1 \text{ hundreds} = 3 \text{ hundreds}$

$$\begin{array}{r} 79\,486 \\ - 42\,104 \\ \hline 382 \end{array}$$

Step 4: Subtract the thousands from the thousands.

$9 \text{ thousands} - 2 \text{ thousands} = 7 \text{ thousands}$

$$\begin{array}{r} 79\,486 \\ - 42\,104 \\ \hline 7\,382 \end{array}$$

Step 5: Subtract the ten thousands from the ten thousands.

$7 \text{ ten thousands} - 4 \text{ ten thousands} = 3 \text{ ten thousands}$

$$\begin{array}{r} 79\,486 \\ - 42\,104 \\ \hline 37\,382 \end{array}$$

The difference between 79 486 and 42 104 is 37 382.

Exercise Five

$$\begin{array}{r} 8\,646 \\ a. - 542 \end{array}$$

$$\begin{array}{r} 7\,295 \\ b. - 231 \end{array}$$

$$\begin{array}{r} 9\,738 \\ c. - 215 \end{array}$$

$$\begin{array}{r} 6\,498 \\ d. - 253 \end{array}$$

$$\begin{array}{r} 3\,674 \\ e. - 2\,503 \end{array}$$

$$\begin{array}{r} 3\,219 \\ f. - 2\,116 \end{array}$$

$$\begin{array}{r} 6\,456 \\ g. - 5\,234 \end{array}$$

$$\begin{array}{r} 1\,758 \\ h. - 1\,431 \end{array}$$

$$\begin{array}{r} 8\,954 \\ i. - 2\,151 \end{array}$$

$$\begin{array}{r} 8\,975 \\ j. - 4\,732 \end{array}$$

$$\begin{array}{r} 7\,296 \\ k. - 5\,081 \end{array}$$

$$\begin{array}{r} 9\,678 \\ l. - 4\,316 \end{array}$$

$$\begin{array}{r} 9\,489 \\ m. - 2\,079 \end{array}$$

$$\begin{array}{r} 7\,638 \\ n. - 6\,218 \end{array}$$

$$\begin{array}{r} 4\,759 \\ o. - 1\,136 \end{array}$$

$$\begin{array}{r} 8\,275 \\ p. - 4\,073 \end{array}$$

Answers to Exercise Five

a. 8 104

b. 7 064

c. 9 523

d. 6 245

e. 1 171

f. 1 103

g. 1 222

h. 327

i. 6 803

j. 4 243

k. 2 215

l. 5 362

m. 7 410

n. 1 420

o. 3 623

p. 4 202

If a subtraction question is written with the numbers side by side, rewrite the question in columns. Put the ones under the ones, the tens under the tens, the hundreds under the hundreds, and so on. The first number is always the top number and the second number is always written below the first number.

Example F: $687 - 52 =$

$$\begin{array}{r} 687 \\ - 52 \\ \hline 635 \end{array}$$

Example G: $9\,756 - 420 =$

$$\begin{array}{r} 9\,756 \\ - 420 \\ \hline 9\,336 \end{array}$$

Exercise Six

Rewrite each question in columns and find the differences. Check your work using the answer key at the end of the exercise.

a. $43 - 21$

d. $779 - 54$

g. $965 - 152$

b. $84 - 30$

e. $695 - 173$

h. $849 - 212$

c. $975 - 21$

f. $863 - 701$

Answers to Exercise Six

a. 22

d. 725

g. 813

b. 54

e. 522

h. 637

c. 954

f. 162

Topic B: Self-Test

Mark /24 Aim 19/24

A. Find the differences. Be sure to check your answers. (6 marks.)

$\begin{array}{r} 39 \\ a. - 15 \\ \hline \end{array}$	$\begin{array}{r} 72 \\ c. - 60 \\ \hline \end{array}$	$\begin{array}{r} 64 \\ e. - 10 \\ \hline \end{array}$
$\begin{array}{r} 58 \\ b. - 24 \\ \hline \end{array}$	$\begin{array}{r} 49 \\ d. - 23 \\ \hline \end{array}$	$\begin{array}{r} 85 \\ f. - 71 \\ \hline \end{array}$

B. Find the differences. Be sure to check your answers. (6 marks)

$\begin{array}{r} 896 \\ a. - 385 \\ \hline \end{array}$	$\begin{array}{r} 399 \\ c. - 202 \\ \hline \end{array}$	$\begin{array}{r} 752 \\ e. - 231 \\ \hline \end{array}$
$\begin{array}{r} 698 \\ b. - 461 \\ \hline \end{array}$	$\begin{array}{r} 467 \\ d. - 124 \\ \hline \end{array}$	$\begin{array}{r} 497 \\ f. - 341 \\ \hline \end{array}$

C. Find the differences. Be sure to check your answers. (6 marks)

$\begin{array}{r} 8\ 627 \\ a. - 323 \\ \hline \end{array}$	$\begin{array}{r} 9\ 751 \\ c. - 7\ 340 \\ \hline \end{array}$	$\begin{array}{r} 37\ 698 \\ e. - 12\ 540 \\ \hline \end{array}$
$\begin{array}{r} 9\ 875 \\ b. - 9\ 251 \\ \hline \end{array}$	$\begin{array}{r} 34\ 859 \\ d. - 1\ 336 \\ \hline \end{array}$	$\begin{array}{r} 96\ 723 \\ f. - 51\ 403 \\ \hline \end{array}$

D. Subtract these numbers. (6 marks)

a. $85 - 61 =$	d. $4\ 957 - 821 =$
b. $724 - 13 =$	e. $94\ 658 - 12\ 307 =$
c. $879 - 152 =$	f. $89\ 653 - 27\ 450 =$

Answers to Topic B Self-Test

A. a. 24	c. 12	e. 54
b. 34	d. 26	f. 14
B. a. 511	c. 197	e. 521
b. 237	d. 343	f. 156

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- | | | | |
|----|----------|-----------|-----------|
| C. | a. 8 304 | c. 2 411 | e. 25 158 |
| | b. 624 | d. 33 523 | f. 45 320 |
| D. | a. 24 | c. 727 | e. 82 351 |
| | b. 711 | d. 4 136 | f. 62 203 |

Topic C: Renaming

When you subtract, you may need to rename. Renaming means changing from one place value to another.

For example:

- 1 ten can be renamed as 10 ones
- 1 hundred can be renamed as 10 tens
- 1 thousand can be renamed as 10 hundreds.

Renaming is an important part of subtracting. Sometimes the digit on top is smaller than the digit you are subtracting. This means that you will have to rename before you can subtract. This is also called borrowing.

Example A: 293

2 hundreds, 9 tens, 3 ones

renamed 2 hundreds, **8 tens, 13 ones**

You borrow 1 ten. The 1 ten is renamed as 10 ones.

$10 \text{ ones} + 3 \text{ ones} = 13 \text{ ones}$

Example B: 3782

3 thousands, 7 hundreds, 8 tens, 2 ones

Renamed 3 thousands, **6 hundreds, 18 tens**, 2 ones

You borrow 1 hundred. The 1 hundred is renamed as 10 tens.

$10 \text{ tens} + 8 \text{ tens} = 18 \text{ tens}$

Exercise One

Borrow from the number in the shaded box. Check your work using the answer key at the end of the exercise.

a.

	ten thousands	thousands	hundreds	tens	ones
423			4	2	3
			4	1	13

b.

	ten thousands	thousands	hundreds	tens	ones
642					

c.

	ten thousands	thousands	hundreds	tens	ones
1 456					

d.

	ten thousands	thousands	hundreds	tens	ones
5 423					

e.

	ten thousands	thousands	hundreds	tens	ones
6 384					

Answers to Exercise One

b.

	ten thousands	thousands	hundreds	tens	ones
642			6	4	2
			6	3	12

c.		ten thousands	thousands	hundreds	tens	ones
	1 456		1	4	5	6
			1	4	4	16

d.		ten thousands	thousands	hundreds	tens	ones
	5 423		5	4	2	3
			5	4	1	13

e.		ten thousands	thousands	hundreds	tens	ones
	6 384		6	3	8	4
			6	2	18	4

Sometimes there is a zero in the place where you want to borrow from. You will need to move one more place value to the left and borrow from there.

Example C: 203

2 hundreds, 0 tens, 3 ones

renamed **1 hundreds, 10 tens**, 3 ones

You borrow 1 hundred. The 1 hundred is renamed as 10 tens.

1 hundred, **9 tens, 13 ones**

Then, you borrow 1 ten. The 1 ten is renamed as 10 ones.

10 ones + 3 ones = 13 ones

Example D: 30 782

3 ten thousands, 0 thousands, 7 hundreds, 8 tens, 2 ones

renamed **2 ten thousands, 10 thousands**, 7 hundreds, 8 tens,

2 ones

You borrow 1 ten thousand. The 1 ten thousand is renamed as 10 thousands.

2 ten thousands, **9 thousands**, **17 hundreds**, 8 tens, 2 ones Then, you borrow 1 thousand. The 1 thousand is renamed as 10 hundreds.

$$10 \text{ hundreds} + 7 \text{ hundreds} = 17 \text{ hundreds}$$

Exercise Two

Borrow from the number in the shaded box. Check your work using the answer key at the end of the exercise.

a.

	ten thousands	thousands	hundreds	tens	ones
403			4	0	3
			3	10	3
			3	9	13

b.

	ten thousands	thousands	hundreds	tens	ones
501					

c.

	ten thousands	thousands	hundreds	tens	ones
904					

d.

	ten thousands	thousands	hundreds	tens	ones
307					

Answers to Exercise Two

a.		ten thousands	thousands	hundreds	tens	ones
	403			4	0	3
				3	10	3
				3	9	13

b.		ten thousands	thousands	hundreds	tens	ones
	501			5	0	1
				4	10	1
				4	9	11

c.		ten thousands	thousands	hundreds	tens	ones
	904			9	0	4
				8	10	4
				8	9	14

d.		ten thousands	thousands	hundreds	tens	ones
	307			3	0	7
				2	10	7
				8	9	14

Need more practice?

Ask your instructor for some play money. Using the one, ten, hundred, thousand, ten thousand and hundred thousand dollar bills, practice trading one of one type of bill for ten of the lesser place value.

Example:

Topic C: Self-Test

Mark /12 Aim 10/12

A. Borrow from the number in the shaded box. (6 marks)

a.

	ten thousands	thousands	hundreds	tens	ones
783					

b.

	ten thousands	thousands	hundreds	tens	ones
827					

c.

	ten thousands	thousands	hundreds	tens	ones
7 942					

d.

	ten thousands	thousands	hundreds	tens	ones
5 364					

e.

	ten thousands	thousands	hundreds	tens	ones
28 634					

f.

	ten thousands	thousands	hundreds	tens	ones
62 751					

B. Borrow from the number in the shaded box. 6 marks.

a.

	ten thousands	thousands	hundreds	tens	ones
602					

b.

	ten thousands	thousands	hundreds	tens	ones
805					

c.

	ten thousands	thousands	hundreds	tens	ones
3 075					

d.

	ten thousands	thousands	hundreds	tens	ones
7 048					

e.

	ten thousands	thousands	hundreds	tens	ones
30 478					

f.

	ten thousands	thousands	hundreds	tens	ones
80 946					

Answers to Topic C Self-Test

A.

	ten thousands	thousands	hundreds	tens	ones
a.	783		7	8	3
			7	7	13

	ten thousands	thousands	hundreds	tens	ones
b.	827		8	2	7
			8	1	17

	ten thousands	thousands	hundreds	tens	ones
c.	7 942	7	9	4	2
		7	8	14	2

	ten thousands	thousands	hundreds	tens	ones
d.	5 364	5	3	6	4
		5	2	16	4

	ten thousands	thousands	hundreds	tens	ones
e.	28 634	2	8	6	3
	2	7	16	3	4

	ten thousands	thousands	hundreds	tens	ones
f.	62 751	6	2	7	5
	6	1	17	5	1

B.

a.

	ten thousands	thousands	hundreds	tens	ones
602			6	0	2
			5	10	2
			5	9	12

b.

	ten thousands	thousands	hundreds	tens	ones
805			8	0	5
			7	10	5
			7	9	15

c.

	ten thousands	thousands	hundreds	tens	ones
3 075		3	0	7	5
		2	10	7	5
		2	9	17	5

d.

	ten thousands	thousands	hundreds	tens	ones
7 048		7	0	4	8
		6	10	4	8
		6	9	14	8

e.

	ten thousands	thousands	hundreds	tens	ones
30 478	3	0	4	7	8
	2	10	4	7	8
	2	9	14	7	8

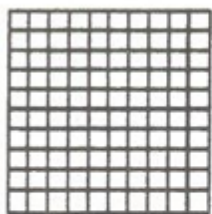
f.

	ten thousands	thousands	hundreds	tens	ones
80 946	8	0	9	4	6
	<i>7</i>	<i>10</i>	9	4	6
	7	<i>9</i>	<i>19</i>	4	6

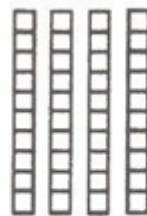
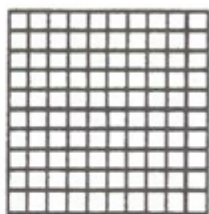
Topic D: Subtraction with Borrowing

When you subtract, the digit that you are taking away may be larger than the top digit in that same column. You must borrow from the column on the left. First, let's look at two examples using the place value shapes.

Example A: $243 - 128 =$



2 hundreds



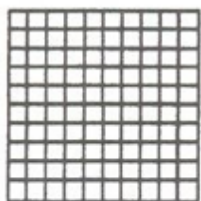
4 tens



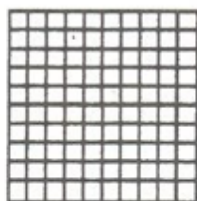
3 ones

Step 1: 3 ones – 8 ones cannot be done

Borrow one ten and rename it as ten ones. Add the ten ones to the three ones.



2 hundreds



3 tens 13 ones



Now you can subtract: 13 ones – 8 ones = 5 ones

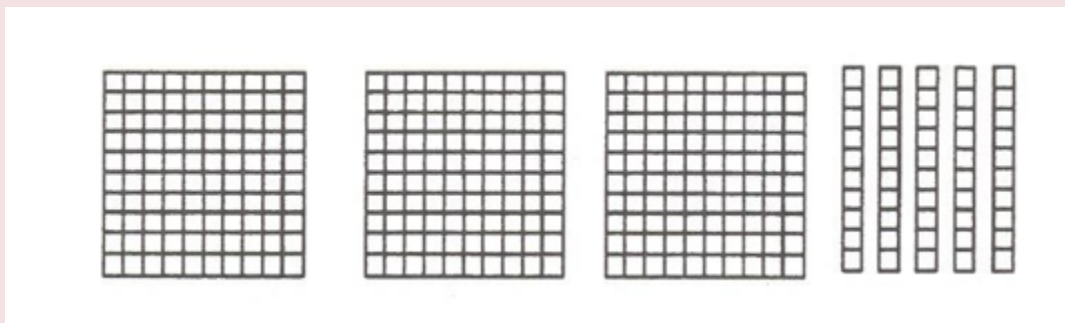
Step 2: Subtract the tens. 3 tens – 2 tens = 1 ten

Step 3: Subtract the hundreds. 2 hundreds – 1 hundred = 1 hundred

Here is the question using numerals.

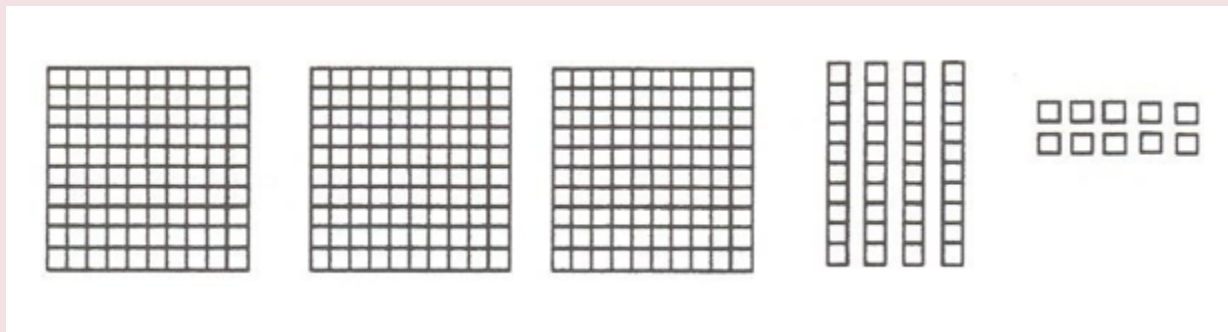
$$\begin{array}{r} 313 \\ 24\cancel{3} \\ - 128 \\ \hline 115 \end{array}$$

Example B: $350 - 124 =$



Step 1: 0 ones – 4 ones cannot be done

Borrow one ten and rename it as ten ones.



10 ones – 4 ones = 6 ones

Step 2: 4 tens – 2 tens = 2 tens

Step 3: 3 hundreds – 1 hundred = 2 hundreds

This is how the question looks using numerals.

$$\begin{array}{r}
 4 \text{ } 10 \\
 35\overline{)0} \\
 - 124 \\
 \hline
 226
 \end{array}$$

Exercise One

You may need to borrow 1 ten and rename it as 10 ones to do these subtractions. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r}
 53 \\
 \text{a. } - 16 \\
 \hline
 37
 \end{array}$$

$$\begin{array}{r}
 82 \\
 \text{b. } - 45 \\
 \hline
 37
 \end{array}$$

$$\begin{array}{r}
 37 \\
 \text{c. } - 9 \\
 \hline
 28
 \end{array}$$

$$\begin{array}{r}
 28 \\
 \text{d. } - 4 \\
 \hline
 24
 \end{array}$$

$$\begin{array}{r}
 63 \\
 \text{e. } - 7 \\
 \hline
 56
 \end{array}$$

$$\begin{array}{r}
 54 \\
 \text{f. } - 5 \\
 \hline
 49
 \end{array}$$

$$\begin{array}{r}
 25 \\
 \text{g. } - 7 \\
 \hline
 18
 \end{array}$$

$$\begin{array}{r}
 84 \\
 \text{h. } - 6 \\
 \hline
 78
 \end{array}$$

$$\begin{array}{r}
 45 \\
 \text{i. } - 15 \\
 \hline
 30
 \end{array}$$

$$\begin{array}{r}
 40 \\
 \text{j. } - 38 \\
 \hline
 2
 \end{array}$$

$$\begin{array}{r}
 45 \\
 \text{k. } - 20 \\
 \hline
 25
 \end{array}$$

$$\begin{array}{r}
 70 \\
 \text{l. } - 21 \\
 \hline
 49
 \end{array}$$

$$\begin{array}{r}
 645 \\
 \text{m. } - 26 \\
 \hline
 619
 \end{array}$$

$$\begin{array}{r}
 258 \\
 \text{n. } - 14 \\
 \hline
 244
 \end{array}$$

$$\begin{array}{r}
 786 \\
 \text{o. } - 47 \\
 \hline
 739
 \end{array}$$

$$\begin{array}{r}
 895 \\
 \text{p. } - 29 \\
 \hline
 866
 \end{array}$$

$$\begin{array}{r}
 747 \\
 \text{q. } - 109 \\
 \hline
 638
 \end{array}$$

$$\begin{array}{r}
 642 \\
 \text{r. } - 420 \\
 \hline
 222
 \end{array}$$

$$\begin{array}{r}
 438 \\
 \text{s. } - 215 \\
 \hline
 223
 \end{array}$$

$$\begin{array}{r}
 953 \\
 \text{t. } - 838 \\
 \hline
 115
 \end{array}$$

$$\begin{array}{r}
 532 \\
 \text{u. } - 314 \\
 \hline
 218
 \end{array}$$

$$\begin{array}{r} 795 \\ v. - 238 \\ \hline \end{array}$$

$$\begin{array}{r} 956 \\ w. - 348 \\ \hline \end{array}$$

$$\begin{array}{r} 574 \\ x. - 218 \\ \hline \end{array}$$

Answers to Exercise One

a. 37

b. 37

c. 28

d. 24

e. 56

f. 49

g. 18

h. 78

i. 30

j. 2

k. 25

l. 49

m. 619

n. 244

o. 739

p. 866

q. 638

r. 222

s. 223

t. 115

u. 218

v. 557

w. 608

x. 356

To check your subtraction, add the **answer** (the **difference**) to the number you took away. If your subtracting was correct, the result of the adding will equal the number you started with in the subtraction question.

Example C: $726 - 317$

$$\begin{array}{r} 726 \\ \text{Difference: } - 317 \\ \hline 409 \end{array}$$

To check, add 409 to 317

$$\begin{array}{r} 409 \\ + 317 \\ \hline 726 \end{array}$$

Exercise Two

You may need to borrow 1 ten and rename it as 10 ones to do these subtractions. Use the method for checking your answer beside each question. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 42 \\ - 37 \\ \hline \end{array}$$

$$\begin{array}{r} 42 \\ + 5 \\ \hline 47 \\ - 37 \\ \hline 10 \end{array}$$

83

$$\text{b. } - 6 \text{ check:}$$

91

$$\text{c. } - 7 \text{ check:}$$

70

$$\text{d. } - 4 \text{ check:}$$

64

$$\text{e. } - 37 \text{ check:}$$

32

$$\text{f. } - 16 \text{ check:}$$

65

$$\text{g. } - 16 \text{ check:}$$

98

$$\text{h. } - 39 \text{ check:}$$

775

$$\text{i. } - 49 \text{ check:}$$

974

$$\text{j. } - 26 \text{ check:}$$

483

$$\text{k. } - 75 \text{ check:}$$

896

$$\text{l. } - 57 \text{ check:}$$

785

$$\text{m. } - 627 \text{ check:}$$

961

$$\text{n. } - 543 \text{ check:}$$

941

$$\text{o. } - 319 \text{ check:}$$

850

$$\text{p. } - 434 \text{ check:}$$

Answers to Exercise Two

a. 37

g. 49

m. 158

b. 77

h. 59

n. 418

c. 84

i. 726

o. 622

d. 66

j. 948

p. 416

e. 27

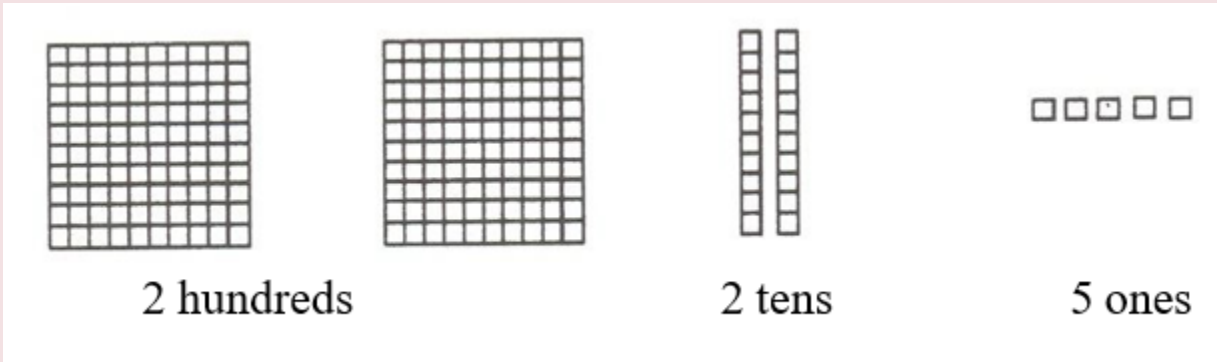
k. 408

f. 16

l. 839

Use this same method of borrowing when you subtract the hundreds, thousands, ten thousands, and so on. Look at the place value shapes as you work through these examples.

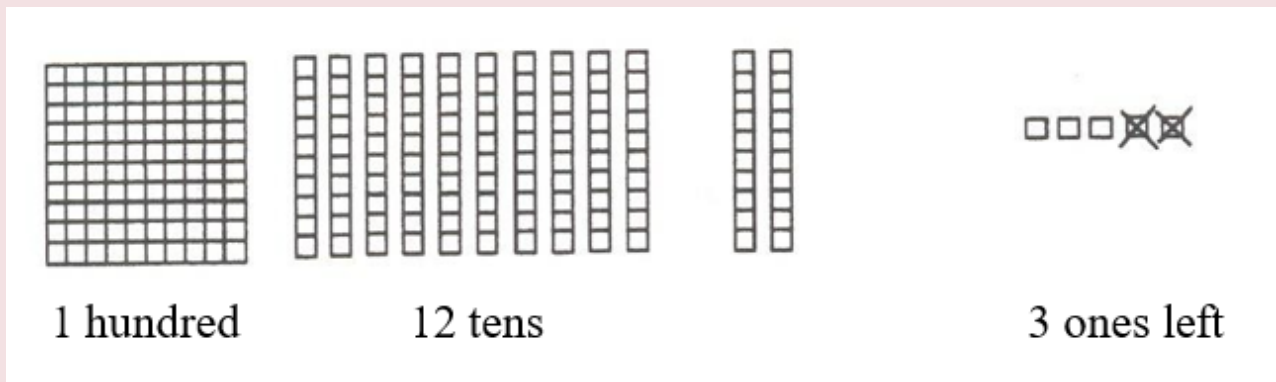
Example D: $225 - 162$



Step 1: $5 \text{ ones} - 2 \text{ ones} = 3 \text{ ones}$

Step 2: $2 \text{ tens} - 6 \text{ tens}$ (can't be done)

Borrow one hundred and rename it as 10 tens which you add onto the 2 tens.



$12 \text{ tens} - 6 \text{ tens} = 6 \text{ tens}$

Step 3: $1 \text{ hundred} - 1 \text{ hundred} = 0 \text{ hundreds}$

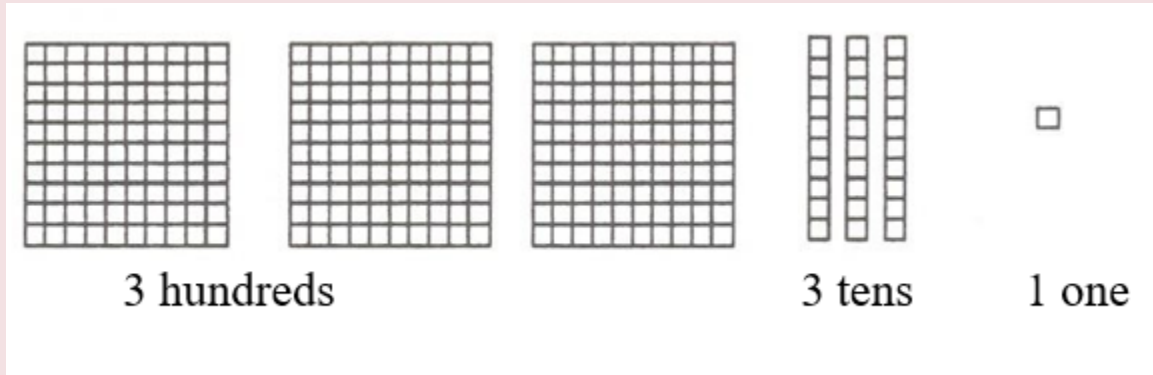
Note: The 0 in the hundreds is not needed in the answer (063) because it is the first digit and does not have to hold the place.

$$\begin{array}{r}
 112 \\
 \cancel{2}\cancel{2}5 \\
 - 162 \\
 \hline
 63
 \end{array}$$

Example E: $331 - 145$

Step 1: 1 one – 5 ones (can't be done)

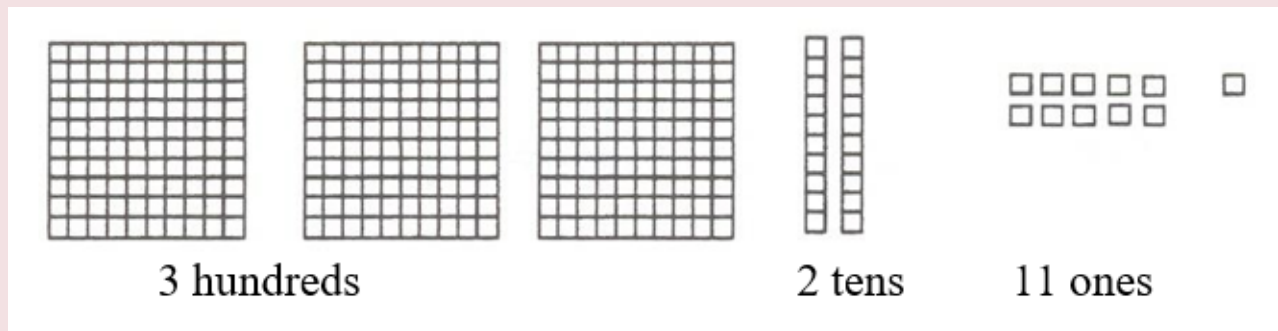
Borrow 1 ten and rename it as 10 ones which you add onto the 1 one.



$11 \text{ ones} - 5 \text{ ones} = 6 \text{ ones}$

Step 2: 2 tens – 4 tens (can't be done)

Borrow one hundred and rename it as 10 tens which you add onto the 2 tens.



Step 3: 2 hundreds – 1 hundred = 1 hundred

$ \begin{array}{r} 12 \\ 2 \cancel{3} \cancel{1} \\ 33 \cancel{1} \\ - 145 \\ \hline 186 \end{array} $	<p>check</p>	$ \begin{array}{r} 11 \\ 186 \\ + 145 \\ \hline 331 \quad \checkmark \end{array} $
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Exercise Three

Subtract the following. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 286 \\ \text{a. } - 138 \\ \hline 148 \end{array}$$

$$\begin{array}{r} 481 \\ \text{b. } - 225 \\ \hline 256 \end{array}$$

$$\begin{array}{r} 256 \\ 390 \\ \text{c. } - 135 \\ \hline 256 \end{array}$$

$$\begin{array}{r} 460 \\ \text{d. } - 353 \\ \hline 107 \end{array}$$

$$\begin{array}{r} 734 \\ \text{e. } - 582 \\ \hline 152 \end{array}$$

$$\begin{array}{r} 281 \\ \text{f. } - 175 \\ \hline 106 \end{array}$$

$$\begin{array}{r} 925 \\ \text{g. } - 68 \\ \hline 857 \end{array}$$

$$\begin{array}{r} 260 \\ \text{h. } - 154 \\ \hline 106 \end{array}$$

$$\begin{array}{r} 379 \\ \text{i. } - 235 \\ \hline 144 \end{array}$$

$$\begin{array}{r} 532 \\ \text{j. } - 290 \\ \hline 242 \end{array}$$

$$\begin{array}{r} 82 \\ \text{k. } - 79 \\ \hline 3 \end{array}$$

$$\begin{array}{r} 262 \\ \text{l. } - 39 \\ \hline 223 \end{array}$$

$$\begin{array}{r} 427 \\ \text{m. } - 183 \\ \hline 244 \end{array}$$

$$\begin{array}{r} 452 \\ \text{n. } - 173 \\ \hline 279 \end{array}$$

$$\begin{array}{r} 692 \\ \text{o. } - 473 \\ \hline 219 \end{array}$$

$$\begin{array}{r} 634 \\ \text{p. } - 273 \\ \hline 361 \end{array}$$

$$\begin{array}{r} 465 \\ \text{q. } - 374 \\ \hline 91 \end{array}$$

$$\begin{array}{r} 785 \\ \text{r. } - 147 \\ \hline 638 \end{array}$$

$$\begin{array}{r} 937 \\ \text{s. } - 258 \\ \hline 679 \end{array}$$

$$\begin{array}{r} 946 \\ \text{t. } - 463 \\ \hline 483 \end{array}$$

$$\begin{array}{r} 734 \\ \text{u. } - 208 \\ \hline 526 \end{array}$$

$$\begin{array}{r} 563 \\ \text{v. } - 154 \\ \hline 409 \end{array}$$

$$\begin{array}{r} 782 \\ \text{w. } - 254 \\ \hline 528 \end{array}$$

$$\begin{array}{r} 621 \\ \text{x. } - 442 \\ \hline 179 \end{array}$$

Answers to Exercise Three

a. 148

b. 256

c. 255

d. 107

e. 152

f. 106

g. 857

h. 106

i. 144

j. 242

k. 3

l. 223

m. 244

n. 279

o. 219

p. 361

q. 91

r. 638

s. 679

t. 483

u. 526

v. 409

w. 528

x. 179

Exercise Four

Subtract the following. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 776 \\ a. - 382 \\ \hline \end{array}$$

$$\begin{array}{r} 426 \\ b. - 327 \\ \hline \end{array}$$

$$\begin{array}{r} 957 \\ c. - 234 \\ \hline \end{array}$$

$$\begin{array}{r} 845 \\ d. - 416 \\ \hline \end{array}$$

$$\begin{array}{r} 967 \\ e. - 173 \\ \hline \end{array}$$

$$\begin{array}{r} 406 \\ f. - 257 \\ \hline \end{array}$$

$$\begin{array}{r} 857 \\ g. - 143 \\ \hline \end{array}$$

$$\begin{array}{r} 757 \\ h. - 129 \\ \hline \end{array}$$

$$\begin{array}{r} 567 \\ i. - 182 \\ \hline \end{array}$$

$$\begin{array}{r} 952 \\ j. - 278 \\ \hline \end{array}$$

$$\begin{array}{r} 863 \\ k. - 389 \\ \hline \end{array}$$

$$\begin{array}{r} 689 \\ l. - 434 \\ \hline \end{array}$$

$$\begin{array}{r} 754 \\ m. - 526 \\ \hline \end{array}$$

$$\begin{array}{r} 572 \\ n. - 493 \\ \hline \end{array}$$

$$\begin{array}{r} 714 \\ o. - 588 \\ \hline \end{array}$$

$$\begin{array}{r} 795 \\ p. - 497 \\ \hline \end{array}$$

$$\begin{array}{r} 390 \\ q. - 256 \\ \hline \end{array}$$

$$\begin{array}{r} 745 \\ r. - 649 \\ \hline \end{array}$$

$$\begin{array}{r} 639 \\ s. - 484 \\ \hline \end{array}$$

$$\begin{array}{r} 811 \\ t. - 173 \\ \hline \end{array}$$

$$\begin{array}{r} 678 \\ u. - 290 \\ \hline \end{array}$$

$$\begin{array}{r} 740 \\ v. - 272 \\ \hline \end{array}$$

$$\begin{array}{r} 983 \\ w. - 876 \\ \hline \end{array}$$

$$\begin{array}{r} 839 \\ x. - 653 \\ \hline \end{array}$$

Answers to Exercise Four

a. 394

b. 99

c. 723

d. 429

e. 794

f. 149

g. 714

h. 628

i. 385

j. 674

k. 474

l. 255

m. 228

n. 79

o. 126

p. 298

q. 134

r. 96

s. 155

t. 638

u. 388

v. 468

w. 107

x. 186

Now work through this example, where you must also rename one thousand as ten hundreds to do the subtraction.

Example F: $3\,245 - 1\,678$

Step 1: Subtract the ones.

$$\begin{array}{r} 3\ 15 \\ 3\ 24\overline{)5} \\ -1\ 678 \\ \hline 7 \end{array}$$

Step 2: Subtract the tens.

$$\begin{array}{r} 13 \\ 1\ \cancel{2}\ 15 \\ 3\ 2\overline{)4}5 \\ -1\ 678 \\ \hline 67 \end{array}$$

Step 3: Subtract the hundreds.

$$\begin{array}{r}
 \underline{11} \quad \underline{13} \\
 2 \ 1 \cancel{7} \ 15 \\
 3 \ 245 \\
 - \underline{1 \ 678} \\
 567
 \end{array}$$

Step 4: Subtract the thousands and check.

$$\begin{array}{r}
 11 \ 13 \\
 2 \ \cancel{1} \ \cancel{7} \ 15 \\
 3 \ 245 \\
 - \underline{1 \ 678} \\
 1 \ 567
 \end{array}$$

check

$$\begin{array}{r}
 \underline{1 \ 1 \ 1} \\
 1 \ 567 \\
 + \underline{1 \ 678} \\
 3 \ 245
 \end{array}$$

Exercise Five

Find the differences. Check your work using the answer key at the end of the exercise.

a. $\begin{array}{r} 4\ 295 \\ - \quad 724 \end{array}$

d. $\begin{array}{r} 6\ 382 \\ - \quad 882 \end{array}$

g. $\begin{array}{r} 3\ 154 \\ - \quad 205 \end{array}$

b. $\begin{array}{r} 8\ 281 \\ - \quad 470 \end{array}$

e. $\begin{array}{r} 8\ 513 \\ - \quad 829 \end{array}$

h. $\begin{array}{r} 2\ 640 \\ - \quad 834 \end{array}$

c. $\begin{array}{r} 5\ 564 \\ - \quad 644 \end{array}$

f. $\begin{array}{r} 3\ 527 \\ - \quad 758 \end{array}$

i. $\begin{array}{r} 7\ 355 \\ - \quad 4038 \end{array}$

	5 189		8 360		12 533
j. —	2 348	o. —	6 376	t. —	9 362
	4 289		9 418		72 209
k. —	2 534	p. —	4 739	u. —	9 786
	6 753		75 762		34 092
l. —	1 942	q. —	9 351	v. —	4 538
	8 684		72 641		42 126
m. —	2 916	r. —	8 736	w. —	24 762
	7 459		16 793		52 750
n. —	3 927	s. —	7 325	x. —	14 789

Answers to Exercise Five

a. 3 571	i. 3 317	q. 66 411
b. 7 811	j. 2 841	r. 63 905
c. 4 920	k. 1 755	s. 9 468
d. 5 500	l. 4 811	t. 3 171
e. 7 684	m. 5 768	u. 62 423
f. 2 769	n. 3 532	v. 29 554
g. 2 949	o. 1 984	w. 17 364
h. 1 806	p. 4 679	x. 37 961

Exercise Six

Find the differences. Check your work using the answer key at the end of the exercise.

	4 262		3 236		4 697
a. —	2 738	b. —	1 594	c. —	3 268
	1 524				

	8 321		29 285		5 214
d. —	4 543	k. —	18 357	r. —	1 783
	2 831		43 325		23 244
e. —	289	l. —	3 187	s. —	15 534
	5 623		81 328		16 121
f. —	3 352	m. —	22 595	t. —	12 768
	8 428		58 234		53 507
g. —	6 309	n. —	23 678	u. —	14 421
	9 629		28 243		31 582
h. —	7 258	o. —	9 578	v. —	14 413
	5 230		3 245		71 629
i. —	2 456	p. —	1 678	w. —	12 350
	3 682		6 254		44 610
j. —	963	q. —	1 733	x. —	13 071

Answers to Exercise Six

a. 1 524	i. 2 774	q. 4 521
b. 1 642	j. 2 719	r. 3 431
c. 1 429	k. 10 928	s. 7 710
d. 3 778	l. 40 138	t. 3 353
e. 2 542	m. 58 733	u. 39 086
f. 2 271	n. 34 556	v. 17 169
g. 2 119	o. 18 665	w. 59 279
h. 2 371	p. 1 567	x. 31 539

Zeroes in Subtracting

You will have subtraction questions with a zero in the place that you want to borrow from. You have to do a double borrowing. Look carefully at the example.

Example G: $2\,405 - 368 =$

Step 1: 5 ones – 8 ones (can't be done)

Borrow one ten – whoops – no tens!

Borrow one hundred and rename it as 10 tens...

$$\begin{array}{r} 3\ 10 \\ 2\ 4\cancel{0}\cancel{5} \\ - 368 \\ \hline \end{array}$$

Now, borrow a ten. 15 ones – 8 ones = 7 ones

$$\begin{array}{r} 9 \\ 3\ \cancel{4}\ 15 \\ 2\ 4\cancel{0}\cancel{5} \\ - 368 \\ \hline 7 \end{array}$$

Step 2: 9 tens – 6 tens = 3 tens

Step 3: 3 hundreds – 3 hundreds = 0 hundreds

Step 4: 2 thousands – no thousands = 2 thousands

$$\begin{array}{r} 9 \\ 3\ \cancel{4}\ 15 \\ 2\ 4\cancel{0}\cancel{5} \\ - 368 \\ \hline 2\ 037 \end{array}$$

Exercise Seven

Find the differences. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 102 \\ \text{a. } - 23 \\ \hline \end{array}$$

$$\begin{array}{r} 508 \\ \text{b. } - 39 \\ \hline \end{array}$$

$$\begin{array}{r} 804 \\ \text{c. } - 37 \\ \hline \end{array}$$

$$\begin{array}{r} 607 \\ \text{d. } - 48 \\ \hline \end{array}$$

$$\begin{array}{r} 406 \\ \text{e. } - 178 \\ \hline \end{array}$$

$$\begin{array}{r} 302 \\ \text{f. } - 218 \\ \hline \end{array}$$

$$\begin{array}{r} 203 \\ \text{g. } - 157 \\ \hline \end{array}$$

$$\begin{array}{r} 601 \\ \text{h. } - 296 \\ \hline \end{array}$$

$$\begin{array}{r} 2\ 075 \\ \text{i. } - 436 \\ \hline \end{array}$$

$$\begin{array}{r} 3\ 076 \\ \text{j. } - 594 \\ \hline \end{array}$$

$$\begin{array}{r} 4\ 037 \\ \text{k. } - 289 \\ \hline \end{array}$$

$$\begin{array}{r} 6\ 032 \\ \text{l. } - 764 \\ \hline \end{array}$$

$$\begin{array}{r} 4\ 057 \\ \text{m. } - 2\ 049 \\ \hline \end{array}$$

$$\begin{array}{r} 6\ 035 \\ \text{n. } - 2\ 634 \\ \hline \end{array}$$

$$\begin{array}{r} 9\ 025 \\ \text{o. } - 4\ 603 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 075 \\ \text{p. } - 2\ 364 \\ \hline \end{array}$$

$$\begin{array}{r} 50\ 398 \\ \text{q. } - 4\ 247 \\ \hline \end{array}$$

$$\begin{array}{r} 40\ 683 \\ \text{r. } - 3\ 162 \\ \hline \end{array}$$

$$\begin{array}{r} 50\ 216 \\ \text{s. } - 5\ 183 \\ \hline \end{array}$$

$$\begin{array}{r} 60\ 831 \\ \text{t. } - 7\ 081 \\ \hline \end{array}$$

$$\begin{array}{r} 40\ 465 \\ \text{u. } - 21\ 528 \\ \hline \end{array}$$

$$\begin{array}{r} 30\ 429 \\ \text{v. } - 14\ 953 \\ \hline \end{array}$$

$$\begin{array}{r} 70\ 543 \\ \text{w. } - 37\ 835 \\ \hline \end{array}$$

$$\begin{array}{r} 80\ 106 \\ \text{x. } - 47\ 297 \\ \hline \end{array}$$

Answers to Exercise Seven

a. 79

b. 469

c. 767

d. 559

e. 228

f. 84

g. 46

h. 305

i. 1 639

j. 2 482

k. 3 748

l. 5 268

m. $2\,008$

n. $3\,401$

o. $4\,422$

p. $2\,711$

q. $46\,151$

r. $37\,521$

s. $45\,033$

t. $53\,750$

u. $18\,937$

v. $15\,476$

w. $32\,708$

x. $32\,809$

Exercise Eight

Find the differences. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 400 \\ a. - 197 \\ \hline \end{array}$$

$$\begin{array}{r} 307 \\ b. - 138 \\ \hline \end{array}$$

$$\begin{array}{r} 800 \\ c. - 475 \\ \hline \end{array}$$

$$\begin{array}{r} 608 \\ d. - 439 \\ \hline \end{array}$$

$$\begin{array}{r} 307 \\ e. - 168 \\ \hline \end{array}$$

$$\begin{array}{r} 200 \\ f. - 99 \\ \hline \end{array}$$

$$\begin{array}{r} 400 \\ g. - 43 \\ \hline \end{array}$$

$$\begin{array}{r} 208 \\ h. - 126 \\ \hline \end{array}$$

$$\begin{array}{r} 3\,000 \\ i. - 2\,678 \\ \hline \end{array}$$

$$\begin{array}{r} 7\,205 \\ j. - 2\,306 \\ \hline \end{array}$$

$$\begin{array}{r} 2\,048 \\ k. - 281 \\ \hline \end{array}$$

$$\begin{array}{r} 6\,005 \\ l. - 2\,368 \\ \hline \end{array}$$

$$\begin{array}{r} 5\,000 \\ m. - 3\,468 \\ \hline \end{array}$$

$$\begin{array}{r} 4\,006 \\ n. - 2\,179 \\ \hline \end{array}$$

$$\begin{array}{r} 3\,007 \\ o. - 1\,930 \\ \hline \end{array}$$

$$\begin{array}{r} 2\,007 \\ p. - 237 \\ \hline \end{array}$$

$$\begin{array}{r} 43\,004 \\ q. - 2\,873 \\ \hline \end{array}$$

$$\begin{array}{r} 20\,038 \\ r. - 9\,156 \\ \hline \end{array}$$

$$\begin{array}{r} 60\,125 \\ s. - 8\,421 \\ \hline \end{array}$$

$$\begin{array}{r} 40\,063 \\ t. - 2\,734 \\ \hline \end{array}$$

$$\begin{array}{r} 70\,059 \\ u. - 38\,423 \\ \hline \end{array}$$

$$\begin{array}{r} 80\,062 \\ v. - 35\,087 \\ \hline \end{array}$$

$$\begin{array}{r} 90\,035 \\ w. - 68\,746 \\ \hline \end{array}$$

$$\begin{array}{r} 60\,063 \\ x. - 55\,895 \\ \hline \end{array}$$

Answers to Exercise Eight

- | | | |
|--------|----------|-----------|
| a. 203 | i. 322 | q. 40 131 |
| b. 169 | j. 4 899 | r. 10 882 |
| c. 325 | k. 1 767 | s. 51 704 |
| d. 169 | l. 3 637 | t. 37 329 |
| e. 139 | m. 1 532 | u. 31 636 |
| f. 101 | n. 1 827 | v. 44 975 |
| g. 357 | o. 1 077 | w. 21 289 |
| h. 82 | p. 1 770 | x. 4 168 |

If a subtraction question has the numbers side by side, rewrite the question in columns. Put the ones under the ones, the tens under the tens, the hundreds under the hundreds, etc.

Example H: $5\ 625 - 2\ 468$

$$\begin{array}{r}
 11 \\
 5\cancel{6}25 \\
 - 2\ 468 \\
 \hline
 3\ 157
 \end{array}$$

Exercise Nine

Rewrite each question in columns and find the difference. Check your work using the answer key at the end of the exercise.

- | | | |
|----------------------|------------------------|------------------------|
| a. $5\ 042 - 3\ 185$ | e. $34\ 582 - 6\ 121$ | i. $71\ 629 - 12\ 350$ |
| b. $8\ 042 - 6\ 368$ | f. $44\ 610 - 4\ 527$ | j. $64\ 182 - 28\ 934$ |
| c. $2\ 630 - 95$ | g. $54\ 507 - 13\ 421$ | |
| d. $1\ 201 - 159$ | h. $7\ 050 - 2\ 144$ | |

Answers to Exercise Nine

a. 1 857

b. 1 674

c. 2 535

d. 1 042

e. 28 461

f. 40 083

g. 41 086

h. 4 906

i. 59 279

j. 35 248

Topic D: Self-Test**Mark /15 Aim 11/15**

A. Find the differences. Be sure to check your answers using addition. (12 marks)

$$\begin{array}{r} 71 \\ a. - 32 \end{array}$$

$$\begin{array}{r} 5\,211 \\ e. - 4\,390 \end{array}$$

$$\begin{array}{r} 49\,053 \\ i. - 8\,954 \end{array}$$

$$\begin{array}{r} 704 \\ b. - 325 \end{array}$$

$$\begin{array}{r} 8\,204 \\ f. - 3\,461 \end{array}$$

$$\begin{array}{r} 86\,502 \\ j. - 6\,590 \end{array}$$

$$\begin{array}{r} 400 \\ c. - 208 \end{array}$$

$$\begin{array}{r} 9\,074 \\ g. - 5\,482 \end{array}$$

$$\begin{array}{r} 47\,293 \\ k. - 26\,349 \end{array}$$

$$\begin{array}{r} 8\,923 \\ d. - 3\,061 \end{array}$$

$$\begin{array}{r} 8\,092 \\ h. - 6\,578 \end{array}$$

$$\begin{array}{r} 73\,050 \\ l. - 27\,455 \end{array}$$

B. Subtract. (3 marks)

a. $5\,302 - 3\,981 =$

b. $7\,043 - 95 =$

c. $6\,000 - 989 =$

Answers to Topic D Self-Test

a. 39

e. 821

i. 40 099

b. 379

f. 4 743

j. 79 912

c. 192

g. 3 592

k. 20 944

d. 5 862

h. 1 514

l. 45 595

a. 1 321

b. 6 948

c. 5 011

Topic E: Estimating Answers in Subtraction

You have learned how to round numbers. Now you can use that skill in rounding numbers to find an approximate difference.

By estimating your answer first, you can tell if your answer is sensible.

In these examples, estimate the answer. Round each number **BEFORE** you subtract.

$$\begin{array}{r} 47 \text{ rounds to } 50 \\ \text{Example A: } - 26 \text{ rounds to } - 30 \\ \hline 20 \end{array}$$

$$\begin{array}{r} 870 \text{ rounds to } 900 \\ \text{Example B: } - 342 \text{ rounds to } - 300 \\ \hline 600 \end{array}$$

$$\begin{array}{r} 24\,397 \text{ rounds to } 24\,000 \\ \text{Example C: } - 6\,148 \text{ rounds to } - 6\,000 \\ \hline 18\,000 \end{array}$$

Usually you estimate to the largest place value that you can.

Exercise One

Estimate the differences. Round the numbers before you subtract. Check your work using the answer key at the end of the exercise.

	$9\,963 \approx 10\,000$		687
a.	$- 7\,099 \approx - 7\,000$	c.	$- 438$
	$3\,000$		
	$70\,534 \approx 71\,000$		754
b.	$- 7\,689 \approx - 8\,000$	d.	$- 236$
	$63\,000$		

$$\begin{array}{r} 8\ 442 \\ e. - 1\ 876 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 630 \\ f. - 1\ 752 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 342 \\ g. - 3\ 647 \\ \hline \end{array}$$

$$\begin{array}{r} 7\ 111 \\ h. - 5\ 982 \\ \hline \end{array}$$

$$\begin{array}{r} 6\ 031 \\ i. - 2\ 899 \\ \hline \end{array}$$

$$\begin{array}{r} 41\ 573 \\ j. - 4\ 846 \\ \hline \end{array}$$

$$\begin{array}{r} 36\ 154 \\ k. - 9\ 038 \\ \hline \end{array}$$

$$\begin{array}{r} 46\ 124 \\ l. - 9\ 762 \\ \hline \end{array}$$

$$\begin{array}{r} 54\ 751 \\ m. - 7\ 896 \\ \hline \end{array}$$

$$\begin{array}{r} 72\ 450 \\ n. - 31\ 924 \\ \hline \end{array}$$

$$\begin{array}{r} 81\ 692 \\ o. - 53\ 908 \\ \hline \end{array}$$

$$\begin{array}{r} 92\ 163 \\ p. - 45\ 517 \\ \hline \end{array}$$

$$\begin{array}{r} 171\ 234 \\ q. - 82\ 169 \\ \hline \end{array}$$

$$\begin{array}{r} 102\ 085 \\ r. - 36\ 526 \\ \hline \end{array}$$

Answers to Exercise One

a. $10\ 000 - 7\ 000 = 3\ 000$

b. $71\ 000 - 8\ 000 = 63\ 000$

c. $700 - 400 = 300$

d. $800 - 200 = 600$

e. $8\ 000 - 2\ 000 = 6\ 000$

f. $6\ 000 - 2\ 000 = 4\ 000$

g. $5\ 000 - 4\ 000 = 1\ 000$

h. $7\ 000 - 6\ 000 = 1\ 000$

i. $6\ 000 - 3\ 000 = 3\ 000$

j. $42\ 000 - 5\ 000 = 37\ 000$

k. $36\ 000 - 9\ 000 = 27\ 000$

l. $46\ 000 - 10\ 000 = 36\ 000$

m. $55\ 000 - 8\ 000 = 47\ 000$

n. $70\ 000 - 30\ 000 = 40\ 000$

o. $80\ 000 - 50\ 000 = 30\ 000$

p. $90\ 000 - 50\ 000 = 40\ 000$

q. $170\ 000 - 80\ 000 = 90\ 000$

r. $100\ 000 - 40\ 000 = 60\ 000$

Estimating Answers in Subtraction Word Problems

When you are solving word problems, an estimate tells you if your answer makes sense. You can use your estimate to help you check your answers. If your answer and the estimate are not close, then you know that you should subtract your numbers again.

Exercise Two

Estimate the following answers. Be sure to round to the largest place value possible before adding or subtracting. Remember to circle the information and underline what is being asked. Check your work using the answer key at the end of the exercise.

Example:

On a recent petition about sales tax, Mulan had 2 865 people sign. Arnav had 1 564 people sign the petition. Estimate how many more people Mulan had sign than Arnav.

On a recent petition about sales tax, Mulan had 2 865 people sign. Arnav had 1 564 people sign the petition. Estimate how many more people Mulan had sign than Arnav.

$$\begin{array}{r} 2\ 865 \\ - 1\ 564 \\ \hline \end{array} \quad \begin{array}{r} \text{Estimate:} \\ \\ \hline \end{array} \quad \begin{array}{r} 3\ 000 \\ - 2\ 000 \\ \hline 1\ 000 \end{array}$$

Mulan had 1 000 more people sign the petition.

- On Tuesday, a coffee shop had sales of \$8 523. On Wednesday, the same coffee shop had sales of \$6 914. Estimate the difference between Tuesday's sales and Wednesday's sales.
- Last week, 4 931 passengers used the ABE Taxi Company. This week, there were 3 491 passengers. Estimate how many more passengers used ABE Taxi Company last week.
- In Japan, people chew 52 700 tons of gum. In Russia, people chew 25 700 tons of gum. Estimate the how many more tons of gum the Japanese chew.
- In Colombia there are 1 897 bird species. In China, there are 1 319 bird species. Estimate how many more bird species there are in Colombia.
- The whale shark weighs 30 500 kilograms. The basking shark weighs 9 258 kilograms. Estimate how much more the whale shark weighs.
- In India there were 155 204 post offices in 2007. In China there were 59 886 post offices. Estimate the difference.
- By 2008, the Montreal Canadiens had played the most games 5 792. The Buffalo Sabres had played 2 952. Estimate how many more games the Montreal Canadiens had played.
- In 2006, the population of Kelowna was 162 276. The population of Prince George was 83 225. Estimate how many more people live in Kelowna in 2006.

Answers to Exercise Two

- a. $\$9\ 000 - \$7\ 000 = \$2\ 000$
- b. $5\ 000 - 3\ 000 = 2\ 000$ passengers
- c. $50\ 000 - 30\ 000 = 20\ 000$ tons
- d. $2\ 000 - 1\ 000 = 1\ 000$ species
- e. $31\ 000 - 9\ 000 = 22\ 000$ kilograms
- f. $160\ 000 - 60\ 000 = 100\ 000$ post offices
- g. $6\ 000 - 3\ 000 = 3\ 000$ games
- h. $160\ 000 - 80\ 000 = 80\ 000$ people

Topic E: Self-Test

Mark /18 Aim 14/18

A. Estimate the differences. Show your work. (12 marks)

$$\begin{array}{r} 73 \\ a. - 34 \\ \hline \end{array}$$

$$\begin{array}{r} 4\ 071 \\ e. - 2\ 986 \\ \hline \end{array}$$

$$\begin{array}{r} 49\ 053 \\ i. - 28\ 954 \\ \hline \end{array}$$

$$\begin{array}{r} 67 \\ b. - 18 \\ \hline \end{array}$$

$$\begin{array}{r} 5\ 946 \\ f. - 4\ 281 \\ \hline \end{array}$$

$$\begin{array}{r} 36\ 174 \\ j. - 16\ 925 \\ \hline \end{array}$$

$$\begin{array}{r} 896 \\ c. - 385 \\ \hline \end{array}$$

$$\begin{array}{r} 57\ 201 \\ g. - 5\ 892 \\ \hline \end{array}$$

$$\begin{array}{r} 86\ 502 \\ k. - 26\ 590 \\ \hline \end{array}$$

$$\begin{array}{r} 467 \\ d. - 214 \\ \hline \end{array}$$

$$\begin{array}{r} 23\ 006 \\ h. - 4\ 999 \\ \hline \end{array}$$

$$\begin{array}{r} 943\ 982 \\ l. - 721\ 354 \\ \hline \end{array}$$

- B. Estimate each of the following word problems. (6 marks) Be sure to include the unit of measure in your answer. (2 marks each) Be sure to circle information and underline what is being asked.
- A magazine has 54 823 readers. Last year the magazine had 26 876 readers. By how much did number of readers increase?
 - In 2009, the number of marriages per year in Japan was 964 702. The number of marriages per year in Egypt was 525 412. How many more marriages were there in Japan than Egypt?
 - In 2010, in France there were 235 846 people with the last name Martin. There were 78 177 people with the last name Moreau. How many more Martins were there?

Answers to Topic E Self-Test

- A.
- | | | |
|--------|-----------|------------|
| a. 40 | e. 1 000 | i. 20 000 |
| b. 50 | f. 2 000 | j. 20 000 |
| c. 500 | g. 51 000 | k. 60 000 |
| d. 300 | h. 18 000 | l. 200 000 |
- B.
- 20 000 readers
 - 500 000 marriages
 - 160 000 Martins

Topic F: Problem Solving

Why are you studying mathematics?

Some of you are taking math because you have to, but we hope you all want to have math skills to help you in your jobs, in job training, and in your everyday life. Numbers are an important part of our lives – we are surrounded by numbers.

Numbers are not often by themselves or set up neatly on a page for us to add or subtract. Numbers are usually in the middle of sentences and mixed in with other numbers. Sorting out the numbers you want and deciding what to do with those numbers is called problem-solving.

You are going to learn five problem-solving steps that will be useful in all your math work in courses, in jobs, and in your everyday life.

Problem Solving Steps

Step 1: Read or listen to the problem carefully. **Understand** the problem. Are there words that help you imagine what is happening? Can you draw a picture or diagram to show what is happening? Can you say the problem in your own words? What is the **question**? Underline it.

Step 2: What does the problem tell you? What do you know? Write down or circle the **information** you have. Often you have more information than you need. Think about the question you need to answer, and use only the information that will help you answer that question. What do you want to find out?

Step 3: What must you do with the information to answer the question? What **arithmetic operation** should you use addition, subtraction, multiplication or division? You will be learning **keywords** and **patterns** that will help you choose the correct operation. Write an equation for the problem, An equation is a number sentence such as

$$12 + 5 = \underline{\quad}$$

Step 4: Estimate the answer.

- Round the numbers so you can work with them quickly.
- Use the operation you chose in Step 3 and come to a quick answer.
- Does this estimated answer make sense? Does it answer the question in the problem? **THINK** about this before you do Step 5.

Step 5: Solve the problem using the **actual** numbers.

- Check your arithmetic calculations.

- Compare your result to your estimated answer.
- Reread the problem. Does your answer make sense?
- Write a sentence answer to the problem.

You must always say what the numbers are counting. He has 4, means nothing. We need to know 4 what... 4 children? 4 dogs? 4 dollars? These are called the units.

Some abbreviations used with numerals:

kilometre km
 metre m
 centimetre cm
 kilogram kg
 gram g
 litre L
 hour h
 minute min

Now study the three example problems that show the five steps.

Example A

Jorge earned \$165 last week and \$142 this week in his job pumping gas at the service station. He spent \$15 on his girlfriend's gift. How much did he earn pumping gas?

Step 1: Read. Understand the problem. Find the question. Underline it.

How much did Jorge earn pumping gas?

Step 2: Find the Needed information. circle it.

Jorge earned \$165 and \$142.

The information about his girlfriend's gift has nothing to do with finding out how much he earned.

Step 3: What Arithmetic operation to use?

We are putting together two amounts. That is addition.

The equation: $\$165 + \$142 =$ what he earned.

Step 4: Estimate

$\$165 + \142

$\$170 + \$140 = \$310$

$\$200 + \$100 = \$300$

Is about \$300 a reasonable answer to the question? Is it sensible to earn \$300 for two weeks of pumping gas? Probably. \$3 000 would not be sensible, and \$30 would not be sensible.

Step 5: Solve, check, write a sentence answer.

$$\$165 + \$142 = \$307$$

check by adding again

is \$307 close to the estimate?

make sense?

Jorge earned \$307 pumping gas.

Example B

The town of Gloryville had a population of 4 206 people before the mill had a big lay-off in May 2007. Since then 858 people have moved away. Find the population of Gloryville now.

Step 1: Read, understand the problem, find the question underline it.

Find the population of Gloryville now.

Step 2: Circle needed information.

4 206 people before

858 people moved away

The date of the lay-off is not needed to answer the question.

Step 3: Operation

One amount is being taken away. That is subtraction.

Equation: $4\,206 - 858 =$ people in Gloryville now.

Step 4: estimate

$$4\,206 - 858$$

$$4\,000 - 1\,000 = 3\,000$$

$$4\,200 - 900 = 3\,300$$

Step 5: solve, check, write sentence answer

$$\begin{array}{r} 119 \\ 31\cancel{16} \\ - 858 \\ \hline 3348 \end{array}$$

$$\begin{array}{r} \text{check: } 111 \\ 3348 \\ + 858 \\ \hline 4206 \checkmark \end{array}$$

Close to estimate? ✓

Makes sense? ✓

Gloryville has a population now of 3 348 people.

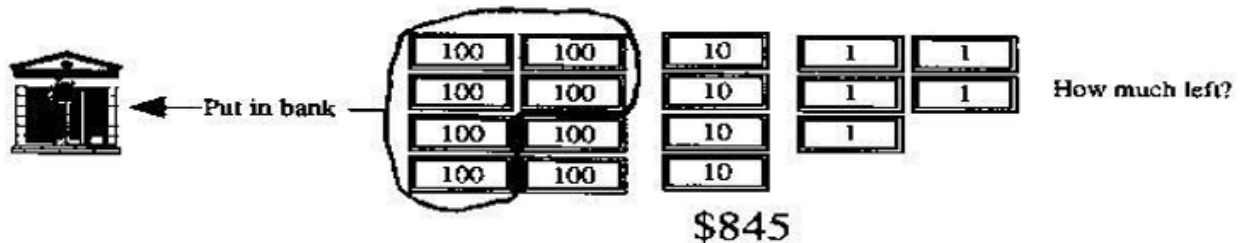
Example C

Paul works at a lumber mill and is paid every two weeks. He has an account at the bank. Today he got a cheque for \$845. He and his wife decided to deposit \$600 in the account and keep the rest of the money out for a weekend trip. How much money did Paul and his wife keep out for the weekend trip?

Step 1: Question

how many did Paul and his wife keep for the weekend trip?

Can I draw a picture or diagram?



Step 2: needed information

Paul got a cheque for \$845 for two weeks work.

He and his wife decided to put \$600 in their account.

Step 3: Operation

One amount is being taken away. That is subtraction. Equation: $\$845 - \$600 =$ money left over for weekend trip

Step 4: Estimate

$$\$845 - \$600 = \$245$$

Step 5: check.

$$\$250 + \$600 = \$845$$

close to estimate?

makes sense?

Paul and his wife have \$245 for the weekend trip.

Addition Problems

The problems in this section all use the addition operation to find the solution (the answer to the problem). Addition problems give two or more amounts that must be put together (added). When you read the problems, pay special attention to key words and patterns that will help you to recognize other addition problems.

Key words that point to Addition

- sum
- combine
- total
- entire
- in all
- altogether
- complete

Exercise One

Do these problems by following the five problem solving steps. It is good practice to write down each step while you are learning this method. Check your work using the answer key at the end of the exercise.

- a. It was raining so Gita decided to bake several batches of cookies and freeze them. She made 75 chocolate chip cookies, 96 of her son's favourite ginger snaps, and 42 fancy —Birds' nest! cookies for when she had company. How many cookies did Gita bake altogether?
 - i. Step 1: What is the question? Underline it.
 - ii. Step 2: What information are you given that you need to solve the problem? **Circle** it.
 - iii. Step 3: What arithmetic operation should you use? addition Why?
 - iv. Step 4: Estimate the answer using rounded numbers.
 - v. Step 5: Solve, check, and write a sentence answer.

- b. Levi wanted to paint his apartment and needed to buy some supplies. Brushes cost \$10, sandpaper cost \$4, a paint roller and tray cost \$9 and the paint was \$55. How much did it cost for all the paint supplies?
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? addition Why?
 - Step 4: Estimate the answer using rounded numbers.
 - Step 5: Solve, check, and write a sentence answer.
- c. Altogether, the college has 475 students in the Adult Basic Education department, 320 University Transfer students, 64 students in the Early Childhood Education program, 232 students in the Forestry department, and 125 students in trades courses. How many students are at the college?
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? addition Why?
 - Step 4: Estimate the answer using rounded numbers.
 - Step 5: Solve, check, and write a sentence answer.
- d. Zhou works part-time at the daycare centre. Last month she worked every week. The first week she worked 24 hours, 36 hours the second week, 29 hours the third week, and only 17 hours in the fourth week. Give the total number of hours that Zhou worked last month.
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? addition Why?
 - Step 4: Estimate the answer using rounded numbers.
 - Step 5: Solve, check, and write a sentence answer.
 - The rest of the problems in this exercise just ask you for the estimate and the actual solution. You must still follow all five steps but you do not have to write everything down. Remember that the solution to problems must include the units (what is being counted) and should be written in a sentence answer.
- e. September is hard on the family budget! Amul figured they spent \$275 for clothes and shoes for their two little daughters, \$43 for school supplies, \$24 for haircuts, and \$130 to enroll them in the Figure Skating Club. How much has Amul spent getting his children ready for school and skating?
- Estimation:
 - Actual Solution:

- f. The sign in the elevator says —1200 kg maximum weight. Can the elevator hold all these large football players safely? Sean weighs 91 kg, Raja is 114 kg, Eyota is a heavyweight at 159 kg. Kiefer is even heavier at 168 kg, the two fullbacks weigh 135 kg and 148 kg, and the quarterback Juan is a muscular 87 kg. Find their combined weight to see if they are all safe in the elevator.
- Estimation:
 - Actual Solution:
- g. On their holidays, the Matthews family drove to Saskatchewan from their home in Langley. They drove 620 km the first day, 810 km the second day, and only drove 350 km the next day because they went to Head Smashed-in Buffalo Jump Museum. On the fourth day, they drove a long 1 208 km. How many kilometres did they drive on their trip to Saskatchewan?
- Estimation:
 - Actual Solution:

Answers to Exercise One

(The wording in the sentences will vary, but this is the idea)

- a. How many cookies altogether?
- she made 75, 96, and 42 cookies
 - All the amounts have to be put together to find a total.
 - $80+100+40= 220$ cookies
 - $75+96+42=213$ cookies
 - Gita baked 213 cookies altogether
- b. How much did it cost for all the paint supplies?
- He paid \$ 10, \$4, \$9, and \$55
 - All the amounts have to be put together to find a total
 - Rounding one digit numbers isn't too helpful, but $\$10+\$0+\$10+\$60=\$80$
 - $\$10+\$4+\$9+\$55=\$78$ Levi paid \$78
- c. how many students at the college?
- There are 475, 320, 232, and 125 students.
 - You must find a total.
 - $500 + 300 + 100 + 200 + 100 = 1\ 200$ students
 - $475 + 320 + 64 + 232 + 125 = 1\ 216$ students
 - The college has 1 216 students

- d. How many hours did Zhou work last month?
- She worked 24, 36, 29, and 17 hours.
 - You are looking for an amount altogether.
 - $20 + 40 + 30 + 20 = 110$ hours
 - $24 + 36 + 29 + 17 = 106$ hours
 - Zhou worked 106 hours last month
- e. \$472 altogether
- f. 902 kg altogether; safe
- g. 2 988 km

Subtraction Problems

These problems will give you a change to get the feel of subtraction problems.

Subtraction problems tell you an amount and then take something away from that amount. Money might be spent, saved, or deducted (taken off), people might move away, items might be sold or lost. These types of subtraction problems are quite easy to recognize.

A more difficult type of subtraction problem compares two amounts. You will be asked to find the difference between the amounts. Subtract to find the difference. These problems might ask you, how much more?, how much less?, how many fewer?, how much farther?, how much did it increase (go up)?, what is the decrease (amount it went down)? You might also have to find the age of something by comparing the dates.

Key Words that point to SUBTRACTION

- difference
- balance
- amount left
- the saving
- how much more (or greater, or farther)
- how much less (or fewer, or smaller)
- how old, find the age

Exercise Two

Use the five problem steps to solve these problems. Write down each step for the first three problems. Check your work using the answer key at the end of the exercise.

- a. Only 368 people went to the movie theatre on Friday night, but on Saturday 756 went to see the new comedy movie they were showing. How many more people went to the theatre on Saturday than on Friday?
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? subtraction Why?
 - Step 4: Estimate the answer using rounded numbers.
 - Step 5: Solve, check, and write a sentence answer.
- b. The highway construction started in 2004 and it was finished in 2010. How long did the construction take?
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? subtraction Why?
 - Step 4: Estimate the answer using rounded numbers. In a question like this, an estimation using rounded numbers is not useful because the numbers are too similar and would round to the same number. Instead, think about the question carefully and figure out an approximate answer in your head.
 - Step 5: Solve, check, and write a sentence answer.
- c. Aimee's gross pay was \$1 656, but she had \$331 of deductions. What is her net pay? (Gross pay is the amount we earn before anything is taken off. Net pay is the amount we take home after taxes, pension, employment insurance, etc. have been deducted.)
- Step 1: What is the question? Underline it.
 - Step 2: What information are you given that you need to solve the problem? (Circle) it.
 - Step 3: What arithmetic operation should you use? subtraction Why?
 - Step 4: Estimate the answer using rounded numbers.
 - Step 5: Solve, check, and write a sentence answer.

- d. Mike and Ann want to can 240 jars of fruit this year. They have already canned 165 jars. How many more jars do they need to do?
- Estimation:
 - Actual Solution:
- e. Jian has purchased a used car for \$3 599. He has paid \$450 so far. How much more money does he owe?
- Estimation:
 - Actual Solution:
- f. In 1956 the population of the town was 10 874. Many people left after the dam construction was finished. The population in 1989 was only 7 892 people. How much less was the population in 1989 than in 1956?
- Estimation:
 - Actual Solution:

Answers to Exercise Two

- a. How many more people at the theatre on Saturday than on Friday?
- 368 people on Friday; 756 on Saturday
 - You must find the difference between two amounts.
 - $800 - 400 = 400$ more people on Saturday
 - $756 - 368 = 388$ more people on Saturday
- b. How long did the construction take?
- Started in 2004; ended in 2010.
 - Find the difference between the two dates.
 - Think —from 2004 to 2010 – about 5 years!
 - $2010 - 2004 = 6$ years for the road construction
- c. What is Aimee's net pay?
- Her gross pay was \$1 656 and she had \$331 taken off (deducted).
 - Subtract to find how much is left.
 - $\$1\,700 - \$300 = \$1\,400$
 - $\$1\,656 - \$331 = \$1\,325$ net pay
- d. 75 jars
- e. \$3 149 still owed
- f. 2 982 people less

Mixed Addition and Subtraction Problems

Exercise Three

Use the 5 problem solving steps. Look for key words and patterns to help you choose the correct operation. Estimate the answer using rounded numbers if the numbers have 2 digits or more. Check your work using the answer key at the end of the exercise.

- a. Enrico worked 37 hours one week and 26 hours the next week. How many hours did he work?
 - Estimation:
 - Actual Solution:
- b. Myung-Hee had \$85. She spent \$37 for groceries. How much did she have left?
 - Estimation:
 - Actual Solution:
- c. Ann bought 25 kg of potatoes. She used 13 kg the first week. How much did she have left?
 - Estimation:
 - Actual Solution:
- d. The sign in a furniture store read, \$35 off all chairs. How much will a chair cost that was \$125 before the sale?
 - Estimation:
 - Actual Solution:
- e. Guillaume bought a pair of jeans for \$29 at a sale. When he got home, he found the price tag on the jeans had been \$48. How much did Guillaume save?
 - Estimation:
 - Actual Solution:
- f. British Columbia has an area of 947 800 square kilometres. The area of Alberta is 666 190 square kilometres. BC is how much larger than Alberta?
 - Estimation:
 - Actual Solution:
- g. Maxine paid \$26 for an electric iron and \$39 for an ironing board. How much did she pay for both?
 - Estimation:
 - Actual Solution:

- h. Ang bought a used TV set for \$125. She made a down payment of \$40. How much does she still owe on the set?
- Estimation:
 - Actual Solution:
- i. Paulo had \$325 in the bank. He wrote a cheque for \$76. How much money did he have left in the bank?
- Estimation:
 - Actual Solution:
- j. Mizu weighs 99 kg. Akula weighs 81 kg. How much heavier is Mizu than Akula?
- Estimation:
 - Actual Solution:
- k. Kenji has three children. One weighs 25 kg, another weighs 20 kg, and the last weighs 17 kg. How much do they weigh together?
- Estimation:
 - Actual Solution:
- l. Rafael bought a boat priced at \$8 400. He was given \$1 250 as a trade-in on his old boat. How much does he owe on the new boat?
- Estimation:
 - Actual Solution:
- m. Last week Luis earned \$212. The week before he earned \$198. This week he earned \$133. How much did he earn in all?
- Estimation:
 - Actual Solution:
- n. Jakob went on a trip of 739 km. The first day he drove 561 km. How many kilometres did he have left to drive?
- Estimation:
 - Actual Solution:
- o. In 2005 Jacques' net income was \$29 675. In 2006 his net income was \$30 207. How much more did he earn in 2006?
- Estimation:
 - Actual Solution:

Answers to Exercise Three

- | | |
|--------------|---------------------------|
| a. 63 hours | c. 12 kg of potatoes left |
| b. \$48 left | d. \$90 for the chair |

- | | |
|------------------------------|-------------------------|
| e. \$19 saved | k. 62 kg altogether |
| f. 281 610 square kilometres | l. \$7 150 still owed |
| g. \$65 in all | m. \$543 in all |
| h. \$85 still owed | n. 178 km left to drive |
| i. \$249 left in the bank | o. \$532 more |
| j. 18 kg heavier | |

Two-Operation Questions

Sometimes you may need to use two operations to solve a question. We work from left to right when solving questions that involve two operations. If addition is first, you must do the addition first then the subtraction. If subtraction is first, you must do the subtraction first and then do the addition.

Example D: $342 + 325 - 146 =$

Step 1: $342 + 325 = 667$

Step 2: Use your answer and subtract 146

$$\begin{array}{r} 667 \\ - 146 \\ \hline 521 \end{array}$$

$$342 + 325 - 146 = 521$$

Example E: $475 - 284 + 362 =$

$$\begin{array}{r} 475 \\ \text{Step 1: } - 284 \\ \hline 191 \end{array}$$

Step 2: use your answer and add 362

$$\begin{array}{r} 191 \\ + 362 \\ \hline 553 \end{array}$$

$$475 - 284 + 362 = 553$$

Exercise Four

Find the sum or difference for each question. Check your work using the answer key at the end of the exercise.

a. $312 + 541 - 135 =$

b. $427 + 231 - 384 =$

c. $687 - 434 + 256 =$

d. $754 - 576 + 393 =$

e. $1\,456 + 218 - 295 =$

f. $2\,461 + 723 - 349 =$

g. $3\,857 - 665 + 1\,234 =$

h. $4\,367 - 843 + 5\,679 =$

i. $5\,247 + 2\,216 - 4\,673 =$

j. $1\,285 + 4\,672 - 1\,401 =$

k. $7\,354 - 4\,038 + 2\,348 =$

l. $4\,187 - 2\,574 + 1\,846 =$

m. $5\,314 + 7\,053 - 597 =$

n. $4\,315 + 3\,197 - 2\,106 =$

o. $46\,124 - 9\,762 + 2\,534 =$

p. $70\,534 - 7\,689 + 1\,824 =$

Answers to Exercise Four

a. 718

b. 274

c. 509

d. 571

e. 1 379

f. 2 835

g. 4 426

h. 9 203

i. 2 790

j. 4 556

k. 5 664

l. 3 459

m. 11 770

n. 5 406

o. 38 896

p. 64 669

Two-Operation Problems

Sometimes you may need to use more than one operation to solve a word problem or a real-life problem.

Example F

Janet bought a submarine sandwich for \$5, a soft drink for \$1, and some carrot cake for \$3. She gave the cashier a twenty dollar bill. How much money did she get back as change?

Step 1: Question: How much change from \$20?

Step 2: Information: Spent \$5 and \$1 and \$3. Gave cashier \$20.

Step 3: Operations

1. Add the amounts she spent to find the total: $\$5 + \$1 + \$3 =$
2. Subtract the amount she spent from \$20: $\$20 - \text{total of what she spent} = \text{change}$

Step 4: Estimate

Numbers are only one digit so do not round them. But a quick add tells you that her change will be about \$10.

Step 5: Solve

1. $\$5 + \$1 + \$3 = \9 total spent
2. $\$20 - \$9 = \$11$

Janet will get \$11 in change.

Exercise Five

Use the 5 problem solving steps. Look for key words and patterns to help you choose the correct operation. Estimate the answer using rounded numbers if the numbers have 2 digits or more. Show all your work. Check your work using the answer key at the end of the exercise.

- a. Maureen weighed 72 kg and decided to go on a diet for her New Year's Resolution. She lost 3 kg in January, 2 kg in February, and 4 kg in March. How much did she weigh after her three month diet?
 - Estimation:
 - Actual Solution:
- b. The local Girl Guides and Brownies had a goal to sell 2 850 boxes of Girl Guide cookies. In the first week the Brownies sold 975 boxes and the Guides sold 1 138 boxes. How many more boxes do they need to sell to reach their goal?
 - Estimation:
 - Actual Solution:

- c. Pat is ready to start first year college; she received a Passport to Education award from the provincial government which was \$625. She got a Rotary Club Scholarship of \$250 and a science scholarship of \$400. Her first year's tuition and books are going to cost \$2 000. Pat will use all her awards and scholarships. How much more money will she need to pay?
- Estimation:
 - Actual Solution:
- d. The elementary school had 83 girls and 95 boys enrolled in September. Five of the girls and three of the boys moved away in September. How many children were still enrolled in the school at the end of September?
- Estimation:
 - Actual Solution:
- e. Franco is on a 1 200 calorie-a-day diet. He had 320 calories at breakfast and 468 calories at lunch. How many calories does he have left for dinner?
- f. Lilo had a total of 150 hats in four boxes. In box one there were 72 hats. In box two, there were 28 hats. In box three, there were 47 hats. How many hats were in box four?
- g. Miguel wanted to buy a Blue ray player for \$225. He got \$65 for his birthday. He won \$75. How much more money does Miguel need?
- h. Kehara and Omar decided to visit their grandmother who lives 160 kilometres away. They travelled 50 kilometres and stopped for gas. They travelled another 30 kilometres and stopped for lunch. How much farther is it to their grandmother's house?
- i. Kuen had \$7 342 in his bank account. He decided to buy a new television for \$1 139. Kuen was able to save another \$697. How much does Kuen have in his bank account?
- j. Giles wishes to buy three gifts that cost \$15, \$9 and \$12. He has \$11 of the money he needs. How much more money does he need to earn in order to buy the gifts?
- k. Colette bought items costing \$34, \$19, \$65 and \$129. She used a coupon worth \$75. How much money does she still owe?
- l. Sahale had 25 metres of fencing. He wanted to fence his garden that was 53 metres long and 38 metres wide. How much more fencing does Sahale need to buy? (Hint: To put a fence around means the perimeter. Draw a picture before you begin.)

Answers to Exercise Five

- | | |
|--------------------------------|------------------|
| a. 63 kg | g. \$85 more |
| b. 737 boxes of cookies more | h. 80 kilometres |
| c. \$725 more | i. \$6 900 |
| d. 170 children still enrolled | j. \$25 more |
| e. 412 calories | k. \$172 |
| f. 3 hats | l. 157 metres |

Topic F: Self-Test

Mark /14 Aim 12/14

Solve these problems. Show all your work. Give yourself one mark for the correct method and one mark for the correct answer. (14 marks)

- A. Alice weighed 86 kg. She went on a diet. Now she weighs 69 kg. How much did she lose?
- Estimation:
 - Actual Solution:
- B. Jacques spent \$49 on a pair of jeans, \$18 for a shirt, \$12 for a belt, and \$3 for socks. How much did he spend altogether?
- Estimation:
 - Actual Solution:
- C. Bookshelf had 94 books on the top shelf, 86 on the middle shelf, and 79 on the bottom shelf. How many books are there on the three shelves?
- Estimation:
 - Actual Solution:
- D. Mahad bought a new car for \$9 989. He traded in his old car for \$1 785. How much more was the new one than the value of his trade-in?
- Estimation:
 - Actual Solution:
- E. Kian and Toran picked apples for their uncle. Kian picked 509 kg and Toran picked 436 kg. (4 marks)
- a. How many more kilograms of apples did Kian pick than Toran?
 - Estimation:
 - Actual Solution:
 - b. How many kilograms of apples did they pick together?
 - Estimation:
 - Actual Solution:
- F. During an election, Dominique counted 4 721 votes and 8 956 votes. The number of spoiled ballots was 1 639. How many were good votes? (This question is worth 4 marks).

Answers to Topic F Self-Test

A. $86 \text{ kg} - 69 \text{ kg} = 17 \text{ kg}$

B. $\$49 + \$18 + \$12 + \$3 = \$82$

C. $94 + 86 + 79 = 259$ books

D. $\$9\,989 - \$1\,785 = \$8\,204$

E. a. $509 \text{ kg} - 436 \text{ kg} = 73 \text{ kg more}$

 b. $509 \text{ kg} + 436 \text{ kg} = 945 \text{ kg altogether}$

F. 12038 votes

Unit 3 Review: Subtraction

You will now practice all of the skills you learned in Unit 3. Check your work using the answer key at the end of the review.

A. Find the differences.

$$\begin{array}{r} 58 \\ a. - 24 \end{array}$$

$$\begin{array}{r} 98 \\ c. - 75 \end{array}$$

$$\begin{array}{r} 45 \\ e. - 21 \end{array}$$

$$\begin{array}{r} 99 \\ b. - 65 \end{array}$$

$$\begin{array}{r} 87 \\ d. - 34 \end{array}$$

$$\begin{array}{r} 76 \\ f. - 35 \end{array}$$

B. Find the differences.

$$\begin{array}{r} 995 \\ a. - 423 \end{array}$$

$$\begin{array}{r} 579 \\ c. - 458 \end{array}$$

$$\begin{array}{r} 468 \\ e. - 432 \end{array}$$

$$\begin{array}{r} 987 \\ b. - 316 \end{array}$$

$$\begin{array}{r} 877 \\ d. - 602 \end{array}$$

$$\begin{array}{r} 686 \\ f. - 271 \end{array}$$

C. Find the differences.

$$\begin{array}{r} 1\,265 \\ a. - 541 \end{array}$$

$$\begin{array}{r} 7\,936 \\ d. - 5\,104 \end{array}$$

$$\begin{array}{r} 44\,293 \\ g. - 13\,701 \end{array}$$

$$\begin{array}{r} 4\,587 \\ b. - 534 \end{array}$$

$$\begin{array}{r} 62\,589 \\ e. - 1\,375 \end{array}$$

$$\begin{array}{r} 86\,477 \\ h. - 16\,216 \end{array}$$

$$\begin{array}{r} 6\,889 \\ c. - 2\,506 \end{array}$$

$$\begin{array}{r} 54\,567 \\ f. - 3\,253 \end{array}$$

$$\begin{array}{r} 37\,516 \\ i. - 21\,413 \end{array}$$

D. Rewrite each question in columns and find the differences.

a. $968 - 343 =$

d. $11\,589 - 5\,326 =$

b. $865 - 432 =$

e. $97\,383 - 42\,362 =$

c. $7\,482 - 5\,061 =$

f. $109\,861 - 58\,240 =$

E. Borrow from the number in the shaded box.

a.

	ten thousands	thousands	hundreds	tens	ones
392					

b.

	ten thousands	thousands	hundreds	tens	ones
821					

c.

	ten thousands	thousands	hundreds	tens	ones
6 739					

d.

	ten thousands	thousands	hundreds	tens	ones
4 528					

e.

	ten thousands	thousands	hundreds	tens	ones
24 986					

f.

	ten thousands	thousands	hundreds	tens	ones
47 182					

F. Borrow from the number in the shaded box.

a.

	ten thousands	thousands	hundreds	tens	ones
302					

b.

	ten thousands	thousands	hundreds	tens	ones
706					

c.

	ten thousands	thousands	hundreds	tens	ones
7 019					

d.

	ten thousands	thousands	hundreds	tens	ones
5 034					

e.

	ten thousands	thousands	hundreds	tens	ones
40 154					

f.

	ten thousands	thousands	hundreds	tens	ones
20 428					

g.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
904 539						

h.

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
406 217						

G. Find the differences.

$$\begin{array}{r} 54 \\ a. - 5 \\ \hline \end{array}$$

$$\begin{array}{r} 82 \\ c. - 9 \\ \hline \end{array}$$

$$\begin{array}{r} 92 \\ e. - 53 \\ \hline \end{array}$$

$$\begin{array}{r} 63 \\ b. - 6 \\ \hline \end{array}$$

$$\begin{array}{r} 25 \\ d. - 17 \\ \hline \end{array}$$

$$\begin{array}{r} 58 \\ f. - 39 \\ \hline \end{array}$$

H. Find the differences.

$$\begin{array}{r} 172 \\ a. - 16 \\ \hline \end{array}$$

$$\begin{array}{r} 974 \\ c. - 65 \\ \hline \end{array}$$

$$\begin{array}{r} 956 \\ e. - 392 \\ \hline \end{array}$$

$$\begin{array}{r} 263 \\ b. - 59 \\ \hline \end{array}$$

$$\begin{array}{r} 629 \\ d. - 349 \\ \hline \end{array}$$

$$\begin{array}{r} 754 \\ f. - 636 \\ \hline \end{array}$$

I. Find the differences. Check your answers using addition.

$$\begin{array}{r} 83 \\ a. - 15 \text{ check:} \end{array}$$

$$\begin{array}{r} 7\,317 \\ d. - 5\,293 \text{ check:} \end{array}$$

$$\begin{array}{r} 639 \\ b. - 484 \text{ check:} \end{array}$$

$$\begin{array}{r} 45\,398 \\ e. - 2\,737 \text{ check:} \end{array}$$

$$\begin{array}{r} 1\,041 \\ c. - 436 \text{ check:} \end{array}$$

$$\begin{array}{r} 84\,902 \\ f. - 24\,290 \text{ check:} \end{array}$$

J. Find the differences.

$$\begin{array}{r} 251 \\ a. - 84 \end{array}$$

$$\begin{array}{r} 256 \\ c. - 79 \end{array}$$

$$\begin{array}{r} 970 \\ e. - 476 \end{array}$$

$$\begin{array}{r} 286 \\ b. - 98 \end{array}$$

$$\begin{array}{r} 427 \\ d. - 328 \end{array}$$

$$\begin{array}{r} 534 \\ f. - 296 \end{array}$$

K. Find the differences.

$$\begin{array}{r} 3\,614 \\ a. - 923 \end{array}$$

$$\begin{array}{r} 6\,311 \\ e. - 3\,784 \end{array}$$

$$\begin{array}{r} 57\,389 \\ i. - 3\,894 \end{array}$$

$$\begin{array}{r} 5\,132 \\ b. - 747 \end{array}$$

$$\begin{array}{r} 7\,234 \\ f. - 2\,659 \end{array}$$

$$\begin{array}{r} 91\,821 \\ j. - 76\,953 \end{array}$$

$$\begin{array}{r} 1\,263 \\ c. - 486 \end{array}$$

$$\begin{array}{r} 71\,236 \\ g. - 7\,852 \end{array}$$

$$\begin{array}{r} 81\,153 \\ k. - 43\,569 \end{array}$$

$$\begin{array}{r} 6\,163 \\ d. - 2\,178 \end{array}$$

$$\begin{array}{r} 34\,529 \\ h. - 4\,868 \end{array}$$

$$\begin{array}{r} 92\,763 \\ l. - 34\,387 \end{array}$$

L. Find the differences.

$$\begin{array}{r} 403 \\ a. - 16 \\ \hline \end{array}$$

$$\begin{array}{r} 901 \\ e. - 258 \\ \hline \end{array}$$

$$\begin{array}{r} 40\,862 \\ i. - 3\,978 \\ \hline \end{array}$$

$$\begin{array}{r} 800 \\ b. - 75 \\ \hline \end{array}$$

$$\begin{array}{r} 8\,035 \\ f. - 652 \\ \hline \end{array}$$

$$\begin{array}{r} 50\,126 \\ j. - 9\,238 \\ \hline \end{array}$$

$$\begin{array}{r} 600 \\ c. - 124 \\ \hline \end{array}$$

$$\begin{array}{r} 3\,600 \\ g. - 1\,135 \\ \hline \end{array}$$

$$\begin{array}{r} 80\,965 \\ k. - 67\,836 \\ \hline \end{array}$$

$$\begin{array}{r} 804 \\ d. - 326 \\ \hline \end{array}$$

$$\begin{array}{r} 7\,065 \\ h. - 6\,130 \\ \hline \end{array}$$

$$\begin{array}{r} 30\,642 \\ l. - 19\,637 \\ \hline \end{array}$$

M. Rewrite each question in columns and find the difference.

a. $845 - 659 =$

b. $1\,920 - 731 =$

c. $6\,927 - 2\,765 =$

d. $19\,053 - 8\,954 =$

e. $73\,050 - 36\,174 =$

f. $86\,295 - 46\,049 =$

N. Estimate the differences. Round the numbers before you subtract.

$$\begin{array}{r} 357 \\ a. - 129 \\ \hline \end{array}$$

$$\begin{array}{r} 2765 \\ c. - 249 \\ \hline \end{array}$$

$$\begin{array}{r} 63947 \\ e. - 5689 \\ \hline \end{array}$$

$$\begin{array}{r} 3546 \\ b. - 866 \\ \hline \end{array}$$

$$\begin{array}{r} 6263 \\ d. - 2118 \\ \hline \end{array}$$

$$\begin{array}{r} 47296 \\ f. - 21592 \\ \hline \end{array}$$

- O. Use the 5 problem solving steps. Look for key words and patterns to help you choose the correct operation. Estimate the answer using rounded numbers if the numbers have 2 digits or more.
- Last Friday, 1 259 students and 339 parents went to the hockey game. How many students and parents were at the game?
 - The Laerdal Tunnel in Norway is the longest road tunnel in the world. It is 24 510 metres long. The Zhongnanshan Tunnel in China is the second longest road tunnel in the world. It is 18 040 metres long. How much longer is the Laerdal Tunnel?
 - Li Chiu bought school clothes for her children. She spent \$46 at the department store, \$40 at the shoe store and \$78 at the discount store. How much did Li spend altogether?
 - A truck weighed 4 267 kilograms when loaded with dirt. When the truck is empty it weighs 2 189 kilograms. How much did the dirt weigh?
- P. Find the sum or difference for each question.
- $776 + 634 - 478 =$
 - $3\,714 - 819 + 496 =$
 - $7\,413 - 249 + 382 =$
 - $6\,415 + 5\,829 - 1\,756 =$
- Q. Use the 5 problem solving steps. Look for key words and patterns to help you choose the correct operation. Estimate the answer using rounded numbers if the numbers have 2 digits or more. Show all your work.
- Two weeks ago, Van opened a new bank account and deposited \$295. He paid \$146 for his gas bill. Van then deposited \$1 632 in his account. How much money is in his account?
 - Michel has 1 532 metres of fencing. He needs to fence his garden which measures 253 metres long and 187 metres wide. Does he have enough fencing? How much fencing will be left over?

Answers to Unit 3 Review

- | | | | |
|----|----------|-----------|-----------|
| A. | a. 34 | c. 23 | e. 24 |
| | b. 34 | d. 53 | f. 41 |
| B. | a. 572 | c. 121 | e. 36 |
| | b. 671 | d. 275 | f. 415 |
| C. | a. 724 | d. 2 832 | g. 30 592 |
| | b. 4 053 | e. 61 214 | h. 70 261 |
| | c. 4 383 | f. 51 314 | i. 16 103 |

- D. a. 625 c. 2 421 e. 55 021
 b. 433 d. 6 263 f. 51 621

E.

a.

	ten thousands	thousands	hundreds	tens	ones
392			3	9	2
			3	8	12

b.

	ten thousands	thousands	hundreds	tens	ones
821			8	2	1
			8	1	11

c.

	ten thousands	thousands	hundreds	tens	ones
6 739		6	7	3	9
		6	6	13	9

d.

	ten thousands	thousands	hundreds	tens	ones
4 528		4	5	2	8
		4	4	12	8

e.

	ten thousands	thousands	hundreds	tens	ones
24 986	2	4	9	8	6
	2	3	19	8	6

f.

	ten thousands	thousands	hundreds	tens	ones
47 182	4	7	1	8	2
	4	6	11	8	2

F.

a.

	ten thousands	thousands	hundreds	tens	ones
302			3	0	2
			2	10	2
			2	9	12

b.

	ten thousands	thousands	hundreds	tens	ones
706			7	0	6
			6	10	16
			6	9	16

c.

	ten thousands	thousands	hundreds	tens	ones
7 019		7	0	1	9
		6	10	1	9
		6	9	11	9

d.

	ten thousands	thousands	hundreds	tens	ones
5 034		5	0	3	4
		4	10	3	4
		4	9	13	4

e.

	ten thousands	thousands	hundreds	tens	ones
40 154	4	0	1	5	4
	3	10	1	5	4
	3	9	11	5	4

	ten thousands	thousands	hundreds	tens	ones
f. 20 428	2	0	4	2	8
	1	10	4	2	8
	1	9	14	2	8

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
g. 904 539	9	0	4	5	3	9
	8	10	4	5	3	9
	8	9	14	5	3	9

	hundred thousands	ten thousands	thousands	hundreds	tens	ones
h. 406 217	4	0	6	2	1	7
	3	10	6	2	1	7
	3	9	16	2	1	7

- G. a. 49 c. 73 e. 39
 b. 57 d. 8 f. 19
- H. a. 156 c. 909 e. 564
 b. 204 d. 280 f. 118
- I. a. 68 c. 605 e. 42 661
 b. 155 d. 2 024 f. 60 612
- J. a. 167 c. 177 e. 494
 b. 188 d. 99 f. 238
- K. a. 2 691 e. 2 527 i. 53 495
 b. 4 385 f. 4 575 j. 14 868
 c. 777 g. 63 384 k. 37 584
 d. 3 985 h. 29 661 l. 58 376

Unit 4: Multiplication

Topic A: Introduction and Multiplication Facts

Multiplication is a fast way to add. Multiplication is used when the amounts to be added are the same.



$$\begin{array}{cccccccccccc} \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge & & \blacklozenge & \blacklozenge & \blacklozenge \\ 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & + & 3 & = & 21 \end{array}$$

How many groups are there? 7

7 groups of 3 = 21

This can be written as a multiplication equation.

$$7 \times 3 = 21$$

X is the sign that means to multiply. We often say times for this multiplication sign.



$$\begin{array}{cccccccc} \star & \star & & \star & \star & & \star & \star & & \star & \star \\ 2 & + & 2 & + & 2 & + & 2 & = & 8 \end{array}$$

4 groups of 2 = 8

$4 \times 2 = 8$ says: 4 times 2 equals 8 or 4 multiplied by 2 equals 8

The result of a multiplication is called the product.



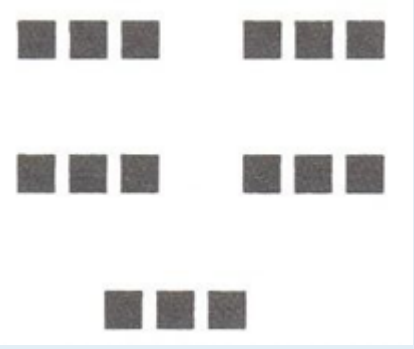


The numbers that are multiplied together are called factors.

$7 \times 3 = 21$ The factors are 7 and 3.

The product is 21.

Exercise One

For each drawing, write the addition equation and find the total. Then write the multiplication equation that describes the same drawing and find the product. Check your work using the answer key at the end of the exercise.

#	Drawing	Addition equation	Multiplication equation
a.		$4 + 4 + 4 = 12$	$3 \times 4 = 12$
b.			
c.			
d.			
e.			


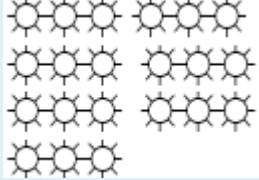


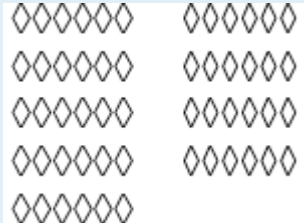
f.			
g.			

Answers to Exercise One

- a. $4 + 4 + 4 = 12$, $3 \times 4 = 12$
- b. $6 + 6 = 12$, $2 \times 6 = 12$
- c. $3 + 3 + 3 + 3 + 3 = 15$, $5 \times 3 = 15$
- d. $5 + 5 + 5 + 5 = 20$, $4 \times 5 = 20$
- e. $8 + 8 + 8 + 8 = 32$, $4 \times 8 = 32$
- f. $3 + 3 + 3 = 9$, $3 \times 3 = 9$
- g. $2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 + 2 = 22$, $11 \times 2 = 22$

Exercise Two

For each drawing, write the addition equation and find the total. Then write the multiplication equation that describes the same drawing and find the product. Check your work using the answer key at the end of the exercise.

#	Drawing	Addition Equation	Multiplication Equation
a.			
b.			
c.			
d.			
e.			

Answers to Exercise Two

- a. $4 + 4 + 4 + 4 + 4 + 4 = 24$, $4 \times 6 = 24$
- b. $3 + 3 + 3 + 3 + 3 + 3 + 3 = 21$, $3 \times 7 = 21$
- c. $5 + 5 + 5 + 5 + 5 + 5 + 5 + 5 = 40$, $5 \times 8 = 40$
- d. $7 + 7 + 7 + 7 + 7 = 35$, $7 \times 5 = 35$
- e. $6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 + 6 = 54$, $6 \times 9 = 54$

Exercise Three

Look at the examples. Complete the chart. Check your work using the answer key at the end of the exercise.

Example A: 2×3 is read as “two times three” and means $3 + 3$

3×2 is read as “three times two” and means $2 + 2 + 2$

Equation	“is read as”	means
5×7	five times seven	$7 + 7 + 7 + 7 + 7$
2×5		
3×4		
5×2		
4×8		
2×7		
3×5		
2×8		
3×9		
6×4		
7×3		

Answers to Exercise Three

Equation	“is read as”	means
5×7	five times seven	$7 + 7 + 7 + 7 + 7$
2×5	two times five	$5 + 5$
3×4	three times four	$4 + 4 + 4$
5×2	five times two	$2 + 2 + 2 + 2 + 2$
4×8	four times eight	$8 + 8 + 8 + 8$
2×7	two times seven	$7 + 7$
3×5	three times five	$5 + 5 + 5$
2×8	two times eight	$8 + 8$
3×9	three times nine	$9 + 9 + 9$
6×4	six times four	$4 + 4 + 4 + 4 + 4 + 4$
7×3	seven times three	$3 + 3 + 3 + 3 + 3 + 3 + 3$

Adding will give the answer to multiplication questions but it is very slow, especially if the numbers are large. The times tables are the multiplication facts. You may need to memorize the times tables. You will use the times tables for multiplying, dividing, and working with fractions.

$$0 \times \text{any number} = 0$$

$$\text{any number} \times 0 = 0$$

$0 \times 0 = 0$	$0 \times 0 = 0$
$0 \times 1 = 0$	$1 \times 0 = 0$
$0 \times 2 = 0$	$2 \times 0 = 0$
$0 \times 3 = 0$	$3 \times 0 = 0$
$0 \times 4 = 0$	$4 \times 0 = 0$
$0 \times 5 = 0$	$5 \times 0 = 0$
$0 \times 6 = 0$	$6 \times 0 = 0$
$0 \times 7 = 0$	$7 \times 0 = 0$
$0 \times 8 = 0$	$8 \times 0 = 0$
$0 \times 9 = 0$	$9 \times 0 = 0$
$0 \times 10 = 0$	$10 \times 0 = 0$

$1 \times \text{any number} = \text{that number}$

$1 \times 0 = 0$
$1 \times 1 = 1$
$1 \times 2 = 2$
$1 \times 3 = 3$
$1 \times 4 = 4$
$1 \times 5 = 5$
$1 \times 6 = 6$
$1 \times 7 = 7$
$1 \times 8 = 8$
$1 \times 9 = 9$
$1 \times 10 = 10$

$0 + 0 = 0$	$2 \times 0 = 0$
$1 + 1 = 2$	$2 \times 1 = 2$
$2 + 2 = 4$	$2 \times 2 = 4$
$3 + 3 = 6$	$2 \times 3 = 6$
$4 + 4 = 8$	$2 \times 4 = 8$
$5 + 5 = 10$	$2 \times 5 = 10$
$6 + 6 = 12$	$2 \times 6 = 12$
$7 + 7 = 14$	$2 \times 7 = 14$
$8 + 8 = 16$	$2 \times 8 = 16$
$9 + 9 = 18$	$2 \times 9 = 18$
$10 + 10 = 20$	$2 \times 10 = 20$

Can you see a pattern? If you forget a multiplication fact with 2, you can just add.

Example: $2 \times 4 = 4 + 4 = 8$

$2 \times 7 = 7 + 7 = 14$

The three times table is special. The digits of each product adds up to 3, 6 or 9. You will know your answer is right if you add the digits of the product (the answer for a multiplication question) and the answer is 3, 6 or 9.

$3 \times 0 = 0$	
$3 \times 1 = 3$	3 » $0 + 3 = 3$
$3 \times 2 = 6$	6 » $0 + 6 = 6$
$3 \times 3 = 9$	9 » $0 + 9 = 9$
$3 \times 4 = 12$	12 » $1 + 2 = 3$
$3 \times 5 = 15$	15 » $1 + 5 = 6$
$3 \times 6 = 18$	18 » $1 + 8 = 9$
$3 \times 7 = 21$	21 » $2 + 1 = 3$
$3 \times 8 = 24$	24 » $2 + 4 = 6$
$3 \times 9 = 27$	27 » $2 + 7 = 9$
$3 \times 10 = 30$	30 » $3 + 0 = 3$

Exercise Four

Check out your multiplication facts by doing this exercise as quickly as possible. Find the product. This exercise includes the zero to three times tables. Check your work using the answer key at the end of the exercise. Then, make a list of any multiplication facts you do not know or which are slow – practice them.

$$\begin{array}{r} 2 \\ \text{a. } \times 2 \end{array}$$

$$\begin{array}{r} 1 \\ \text{j. } \times 8 \end{array}$$

$$\begin{array}{r} 0 \\ \text{s. } \times 3 \end{array}$$

$$\begin{array}{r} 3 \\ \text{b. } \times 3 \end{array}$$

$$\begin{array}{r} 3 \\ \text{k. } \times 4 \end{array}$$

$$\begin{array}{r} 3 \\ \text{t. } \times 2 \end{array}$$

$$\begin{array}{r} 1 \\ \text{c. } \times 4 \end{array}$$

$$\begin{array}{r} 2 \\ \text{l. } \times 5 \end{array}$$

$$\begin{array}{r} 3 \\ \text{u. } \times 9 \end{array}$$

$$\begin{array}{r} 0 \\ \text{d. } \times 1 \end{array}$$

$$\begin{array}{r} 3 \\ \text{m. } \times 5 \end{array}$$

$$\begin{array}{r} 1 \\ \text{v. } \times 10 \end{array}$$

$$\begin{array}{r} 1 \\ \text{e. } \times 7 \end{array}$$

$$\begin{array}{r} 0 \\ \text{n. } \times 7 \end{array}$$

$$\begin{array}{r} 2 \\ \text{w. } \times 8 \end{array}$$

$$\begin{array}{r} 2 \\ \text{f. } \times 3 \end{array}$$

$$\begin{array}{r} 2 \\ \text{o. } \times 4 \end{array}$$

$$\begin{array}{r} 0 \\ \text{x. } \times 5 \end{array}$$

$$\begin{array}{r} 0 \\ \text{g. } \times 4 \end{array}$$

$$\begin{array}{r} 1 \\ \text{p. } \times 9 \end{array}$$

$$\begin{array}{r} 2 \\ \text{y. } \times 9 \end{array}$$

$$\begin{array}{r} 3 \\ \text{h. } \times 1 \end{array}$$

$$\begin{array}{r} 1 \\ \text{q. } \times 1 \end{array}$$

$$\begin{array}{r} 0 \\ \text{z. } \times 9 \end{array}$$

$$\begin{array}{r} 0 \\ \text{i. } \times 1 \end{array}$$

$$\begin{array}{r} 2 \\ \text{r. } \times 1 \end{array}$$

$$\begin{array}{r} 3 \\ \text{aa. } \times 10 \end{array}$$

$$\begin{array}{r} 1 \\ ab. \times 2 \end{array}$$

Answers to Exercise Four

a. 4

b. 9

c. 4

d. 0

e. 7

f. 6

g. 0

h. 3

i. 0

j. 8

k. 12

l. 10

m. 15

n. 0

o. 8

p. 9

q. 1

r. 2

s. 0

t. 6

u. 27

v. 10

w. 16

x. 0

y. 18

z. 0

aa. 30

ab. 2

Need Extra Practice?

Domino Practice – Find a partner and ask your instructor for double twelve dominoes.

Use only the following dominoes: 0-0 to 0-10

1-1 to 1-10

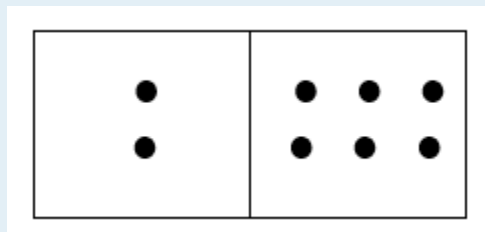
2-2 to 2-10

3-3 to 3-10

Turn over the dominoes.

Flip a domino and multiply the two numbers.

Example:



This would be 2×6

If you answer correctly, keep the domino.

If you answer incorrectly, flip the domino over.

Study the four times tables below.

$4 \times 0 = 0$
$4 \times 1 = 4$
$4 \times 2 = 8$
$4 \times 3 = 12$
$4 \times 4 = 16$
$4 \times 5 = 20$
$4 \times 6 = 24$
$4 \times 7 = 28$
$4 \times 8 = 32$
$4 \times 9 = 36$
$4 \times 10 = 40$

The fives times table is special. If you are multiplying by an even number, the product ends in zero. If you are multiplying by an odd number, the product ends in five.

$5 \times 0 = 0$
$5 \times 1 = 5$
$5 \times 2 = 10$
$5 \times 3 = 15$
$5 \times 4 = 20$
$5 \times 5 = 25$
$5 \times 6 = 30$
$5 \times 7 = 35$
$5 \times 8 = 40$
$5 \times 9 = 45$
$5 \times 10 = 50$

The products for the odd numbers 1, 3, 5, 7 and 9 end in five.

The products for the even numbers 2, 4, 6, 8 and 10 end in zero.

Study the six times tables below.

$6 \times 0 = 0$
$6 \times 1 = 6$
$6 \times 2 = 12$
$6 \times 3 = 18$
$6 \times 4 = 24$
$6 \times 5 = 30$
$6 \times 6 = 36$
$6 \times 7 = 42$
$6 \times 8 = 48$
$6 \times 9 = 54$
$6 \times 10 = 60$

Exercise Five

Check out your multiplication facts by doing this exercise as quickly as possible. Find the product. This exercise includes the four to six times tables. Check your work using the answer key at the end of the exercise. Then, make a list of any multiplication facts you do not know or which are slow – practice them.

$$\begin{array}{r} 5 \\ \text{a. } \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \text{d. } \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \text{g. } \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \text{b. } \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \text{e. } \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \text{h. } \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \text{c. } \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \text{f. } \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \text{i. } \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ j. \times 6 \end{array}$$

$$\begin{array}{r} 6 \\ k. \times 4 \end{array}$$

$$\begin{array}{r} 4 \\ l. \times 7 \end{array}$$

$$\begin{array}{r} 6 \\ m. \times 9 \end{array}$$

$$\begin{array}{r} 4 \\ n. \times 5 \end{array}$$

$$\begin{array}{r} 5 \\ o. \times 2 \end{array}$$

$$\begin{array}{r} 6 \\ p. \times 0 \end{array}$$

$$\begin{array}{r} 5 \\ q. \times 7 \end{array}$$

$$\begin{array}{r} 6 \\ r. \times 6 \end{array}$$

$$\begin{array}{r} 4 \\ s. \times 0 \end{array}$$

$$\begin{array}{r} 5 \\ t. \times 10 \end{array}$$

$$\begin{array}{r} 4 \\ u. \times 9 \end{array}$$

$$\begin{array}{r} 5 \\ v. \times 1 \end{array}$$

$$\begin{array}{r} 6 \\ w. \times 5 \end{array}$$

$$\begin{array}{r} 4 \\ x. \times 3 \end{array}$$

$$\begin{array}{r} 5 \\ y. \times 9 \end{array}$$

$$\begin{array}{r} 6 \\ z. \times 2 \end{array}$$

$$\begin{array}{r} 4 \\ aa. \times 1 \end{array}$$

$$\begin{array}{r} 5 \\ ab. \times 0 \end{array}$$

Answers to Exercise Five

$a. 30$

$b. 6$

$c. 28$

$d. 35$

$e. 60$

$f. 8$

$g. 20$

$h. 18$

$i. 16$

$j. 30$

$k. 24$

$l. 28$

$m. 54$

$n. 20$

$o. 10$

$p. 0$

$q. 35$

$r. 36$

$s. 0$

$t. 50$

$u. 36$

$v. 5$

$w. 30$

$x. 12$

$y. 45$

$z. 12$

$aa. 4$

$ab. 0$

Need Extra Practice?

Card Practice – Find a partner and ask your instructor for a deck of cards.

Take out all the jacks, queens and kings. You will only need the aces to tens.

Choose a times table to practice.

Example: to practice the 5 times table

- Choose a single 5 card and place it face up.
- Shuffle the remainder of the cards.
- From the shuffled cards, place one card face up next to the five.
- Multiply. Have your partner check your answer.
- If the answer is correct, leave it on the pile.
- If the answer is incorrect, place the card in front of you.
- Keep turning cards over until there are no cards left.
- Reshuffle any cards in front of you.
- Place a card on the pile and multiply.
- When all the cards are in the pile, you are done.
- Choose a different times table to practice and start again.

Exercise Six

Check out your multiplication facts by doing this exercise as quickly as possible. Find the product. This exercise includes the zero to six times tables. Check your work using the answer key at the end of the exercise. Then, make a list of any multiplication facts you do not know or which are slow – practice them.

$$\begin{array}{r} 6 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 1 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 0 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ j. \times 7 \end{array}$$

$$\begin{array}{r} 5 \\ k. \times 8 \end{array}$$

$$\begin{array}{r} 4 \\ l. \times 9 \end{array}$$

$$\begin{array}{r} 5 \\ m. \times 1 \end{array}$$

$$\begin{array}{r} 2 \\ n. \times 4 \end{array}$$

$$\begin{array}{r} 3 \\ o. \times 10 \end{array}$$

$$\begin{array}{r} 2 \\ p. \times 5 \end{array}$$

$$\begin{array}{r} 1 \\ q. \times 3 \end{array}$$

$$\begin{array}{r} 3 \\ r. \times 5 \end{array}$$

$$\begin{array}{r} 4 \\ s. \times 6 \end{array}$$

$$\begin{array}{r} 6 \\ t. \times 7 \end{array}$$

$$\begin{array}{r} 6 \\ u. \times 5 \end{array}$$

$$\begin{array}{r} 3 \\ v. \times 4 \end{array}$$

$$\begin{array}{r} 5 \\ w. \times 0 \end{array}$$

$$\begin{array}{r} 4 \\ x. \times 10 \end{array}$$

$$\begin{array}{r} 1 \\ y. \times 9 \end{array}$$

$$\begin{array}{r} 3 \\ z. \times 2 \end{array}$$

$$\begin{array}{r} 4 \\ aa. \times 0 \end{array}$$

$$\begin{array}{r} 6 \\ ab. \times 9 \end{array}$$

$$\begin{array}{r} 6 \\ ac. \times 6 \end{array}$$

$$\begin{array}{r} 1 \\ ad. \times 0 \end{array}$$

$$\begin{array}{r} 3 \\ ae. \times 7 \end{array}$$

$$\begin{array}{r} 2 \\ af. \times 9 \end{array}$$

Answers to Exercise Six

$a. 18$

$b. 35$

$c. 0$

$d. 24$

$e. 5$

$f. 6$

$g. 9$

$h. 8$

$i. 4$

$j. 42$

$k. 40$

$l. 36$

$m. 5$

$n. 8$

$o. 30$

$p. 10$

$q. 3$

$r. 15$

$s. 24$

$t. 42$

$u. 30$

$v. 12$

$w. 0$

$x. 40$

$y. 9$

$z. 6$

$aa. 0$

ab. 54

ad. 0

af. 18

ac. 36

ae. 21

Exercise Seven

$$\begin{array}{r} 1 \\ \text{a. } \times 1 \end{array}$$

$$\begin{array}{r} 6 \\ \text{b. } \times 10 \end{array}$$

$$\begin{array}{r} 4 \\ \text{c. } \times 1 \end{array}$$

$$\begin{array}{r} 3 \\ \text{d. } \times 0 \end{array}$$

$$\begin{array}{r} 5 \\ \text{e. } \times 7 \end{array}$$

$$\begin{array}{r} 4 \\ \text{f. } \times 10 \end{array}$$

$$\begin{array}{r} 2 \\ \text{g. } \times 1 \end{array}$$

$$\begin{array}{r} 1 \\ \text{h. } \times 7 \end{array}$$

$$\begin{array}{r} 0 \\ \text{i. } \times 6 \end{array}$$

$$\begin{array}{r} 6 \\ \text{j. } \times 4 \end{array}$$

$$\begin{array}{r} 1 \\ \text{k. } \times 2 \end{array}$$

$$\begin{array}{r} 0 \\ \text{l. } \times 10 \end{array}$$

$$\begin{array}{r} 1 \\ \text{m. } \times 3 \end{array}$$

$$\begin{array}{r} 5 \\ \text{n. } \times 8 \end{array}$$

$$\begin{array}{r} 6 \\ \text{o. } \times 7 \end{array}$$

$$\begin{array}{r} 4 \\ \text{p. } \times 5 \end{array}$$

$$\begin{array}{r} 6 \\ \text{q. } \times 5 \end{array}$$

$$\begin{array}{r} 3 \\ \text{r. } \times 10 \end{array}$$

$$\begin{array}{r} 5 \\ \text{s. } \times 0 \end{array}$$

$$\begin{array}{r} 1 \\ \text{t. } \times 10 \end{array}$$

$$\begin{array}{r} 5 \\ \text{u. } \times 6 \end{array}$$

$$\begin{array}{r} 6 \\ \text{v. } \times 3 \end{array}$$

$$\begin{array}{r} 4 \\ \text{w. } \times 7 \end{array}$$

$$\begin{array}{r} 4 \\ \text{x. } \times 8 \end{array}$$

$$\begin{array}{r} 6 \\ \text{y. } \times 6 \end{array}$$

$$\begin{array}{r} 5 \\ \text{z. } \times 5 \end{array}$$

$$\begin{array}{r} 3 \\ \text{aa. } \times 9 \end{array}$$

$$\begin{array}{r} 6 \\ \text{ab. } \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \text{ad. } \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \text{af. } \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \text{ac. } \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \text{ae. } \times 7 \\ \hline \end{array}$$

Answers to Exercise Seven

a. 1

b. 60

c. 4

d. 0

e. 35

f. 40

g. 2

h. 7

i. 0

j. 24

k. 2

l. 0

m. 3

n. 40

o. 42

p. 20

q. 30

r. 30

s. 0

t. 10

u. 30

v. 18

w. 28

x. 32

y. 36

z. 25

aa. 27

ab. 48

ac. 12

ad. 24

ae. 21

af. 18

Study the seven times table below.

$7 \times 0 = 0$
$7 \times 1 = 7$
$7 \times 2 = 14$
$7 \times 3 = 21$
$7 \times 4 = 28$
$7 \times 5 = 35$
$7 \times 6 = 42$
$7 \times 7 = 49$
$7 \times 8 = 56$
$7 \times 9 = 63$
$7 \times 10 = 70$

Study the eight times table below.

$8 \times 0 = 0$
$8 \times 1 = 8$
$8 \times 2 = 16$
$8 \times 3 = 24$
$8 \times 4 = 32$
$8 \times 5 = 40$
$8 \times 6 = 48$
$8 \times 7 = 56$
$8 \times 8 = 64$
$8 \times 9 = 72$
$8 \times 10 = 80$

The nines times table is special. The digits of every product add up to nine. Also the first digit in the product is one less than the number you are multiplying.

$9 \times 0 = 0$	
$9 \times 1 = 9$	9 » $0 + 9 = 9$
$9 \times 2 = 18$	18 » $1 + 8 = 9$
$9 \times 3 = 27$	27 » $2 + 7 = 9$
$9 \times 4 = 36$	36 » $3 + 6 = 9$
$9 \times 5 = 45$	45 » $4 + 5 = 9$
$9 \times 6 = 54$	54 » $5 + 4 = 9$
$9 \times 7 = 63$	63 » $6 + 3 = 9$
$9 \times 8 = 72$	72 » $7 + 2 = 9$
$9 \times 9 = 81$	81 » $8 + 1 = 9$
$9 \times 10 = 90$	90 » $9 + 0 = 9$

Exercise Eight

Check out your multiplication facts by doing this exercise as quickly as possible. Find the product. This exercise includes the seven to nine times tables.

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 0 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 10 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 2 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ ab. \times 8 \end{array}$$

Answers to Exercise Eight

a. 28

b. 24

c. 0

d. 14

e. 54

f. 0

g. 64

h. 9

i. 48

j. 18

k. 63

l. 0

m. 36

n. 49

o. 8

p. 90

q. 35

r. 32

s. 27

t. 70

u. 64

v. 45

w. 7

x. 16

y. 21

z. 40

aa. 81

ab. 56

Exercise Nine

Check out your multiplication facts by doing this exercise as quickly as possible. Find the product. This exercise includes the seven to nine times tables. Check your work using the answer key at the end of the exercise. Then, make a list of any multiplication facts you do not know or which are slow – practice them.

$$\begin{array}{r} 9 \\ a. \times 0 \end{array}$$

$$\begin{array}{r} 8 \\ b. \times 7 \end{array}$$

$$\begin{array}{r} 7 \\ c. \times 5 \end{array}$$

$$\begin{array}{r} 9 \\ d. \times 5 \end{array}$$

$$\begin{array}{r} 7 \\ e. \times 6 \end{array}$$

$$\begin{array}{r} 9 \\ f. \times 8 \end{array}$$

$$\begin{array}{r} 8 \\ g. \times 5 \end{array}$$

$$\begin{array}{r} 7 \\ h. \times 8 \end{array}$$

$$\begin{array}{r} 9 \\ i. \times 8 \end{array}$$

$$\begin{array}{r} 8 \\ j. \times 10 \end{array}$$

$$\begin{array}{r} 7 \\ k. \times 4 \end{array}$$

$$\begin{array}{r} 9 \\ l. \times 10 \end{array}$$

$$\begin{array}{r} 8 \\ m. \times 6 \end{array}$$

$$\begin{array}{r} 7 \\ s. \times 3 \end{array}$$

$$\begin{array}{r} 7 \\ y. \times 9 \end{array}$$

$$\begin{array}{r} 7 \\ n. \times 7 \end{array}$$

$$\begin{array}{r} 9 \\ t. \times 8 \end{array}$$

$$\begin{array}{r} 8 \\ z. \times 1 \end{array}$$

$$\begin{array}{r} 9 \\ o. \times 3 \end{array}$$

$$\begin{array}{r} 8 \\ u. \times 8 \end{array}$$

$$\begin{array}{r} 9 \\ aa. \times 6 \end{array}$$

$$\begin{array}{r} 8 \\ p. \times 9 \end{array}$$

$$\begin{array}{r} 9 \\ v. \times 9 \end{array}$$

$$\begin{array}{r} 7 \\ ab. \times 0 \end{array}$$

$$\begin{array}{r} 9 \\ q. \times 4 \end{array}$$

$$\begin{array}{r} 7 \\ w. \times 2 \end{array}$$

$$\begin{array}{r} 8 \\ r. \times 3 \end{array}$$

$$\begin{array}{r} 8 \\ x. \times 2 \end{array}$$

Answers to Exercise Nine

a. 0

k. 28

u. 64

b. 56

l. 90

v. 81

c. 35

m. 48

w. 14

d. 45

n. 49

x. 16

e. 42

o. 27

y. 63

f. 72

p. 72

z. 8

g. 40

q. 36

aa. 54

h. 56

r. 24

ab. 0

i. 72

s. 21

j. 80

t. 72

Need Extra Practice?

Domino Practice – Find a partner and ask your instructor for double twelves dominoes.

Use only the following dominoes: 1-0 to 0-10

1-2 to 1-10

2-2 to 2-10

3-3 to 3-10

4-4 to 4-10

5-5 to 5-10

6-6 to 6-10

7-7 to 7-10

8-8 to 8-10

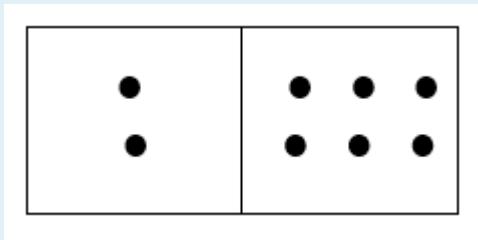
9-9 to 9-10

10-10

Turn over the dominoes

Flip a domino and multiply the two numbers

Example:



This would be 2×6

If you answer correctly, keep the domino.

Exercise Ten

Check out your multiplication facts by doing this exercise as quickly as possible.

a. 5×4

b. 7×3

c. 6×5

$$\begin{array}{r} 9 \\ d. \times 7 \end{array}$$

$$\begin{array}{r} 6 \\ e. \times 3 \end{array}$$

$$\begin{array}{r} 7 \\ f. \times 6 \end{array}$$

$$\begin{array}{r} 2 \\ g. \times 1 \end{array}$$

$$\begin{array}{r} 4 \\ h. \times 3 \end{array}$$

$$\begin{array}{r} 9 \\ i. \times 5 \end{array}$$

$$\begin{array}{r} 3 \\ j. \times 1 \end{array}$$

$$\begin{array}{r} 7 \\ k. \times 6 \end{array}$$

$$\begin{array}{r} 9 \\ l. \times 2 \end{array}$$

$$\begin{array}{r} 4 \\ m. \times 1 \end{array}$$

$$\begin{array}{r} 6 \\ n. \times 2 \end{array}$$

$$\begin{array}{r} 9 \\ o. \times 9 \end{array}$$

$$\begin{array}{r} 5 \\ p. \times 3 \end{array}$$

$$\begin{array}{r} 9 \\ q. \times 4 \end{array}$$

$$\begin{array}{r} 8 \\ r. \times 5 \end{array}$$

$$\begin{array}{r} 7 \\ s. \times 4 \end{array}$$

$$\begin{array}{r} 6 \\ t. \times 1 \end{array}$$

$$\begin{array}{r} 7 \\ u. \times 1 \end{array}$$

$$\begin{array}{r} 5 \\ v. \times 2 \end{array}$$

$$\begin{array}{r} 8 \\ w. \times 8 \end{array}$$

$$\begin{array}{r} 9 \\ x. \times 8 \end{array}$$

$$\begin{array}{r} 8 \\ y. \times 4 \end{array}$$

$$\begin{array}{r} 7 \\ z. \times 7 \end{array}$$

$$\begin{array}{r} 8 \\ aa. \times 1 \end{array}$$

$$\begin{array}{r} 2 \\ ab. \times 6 \end{array}$$

$$\begin{array}{r} 4 \\ ac. \times 8 \end{array}$$

$$\begin{array}{r} 5 \\ ad. \times 6 \end{array}$$

$$\begin{array}{r} 1 \\ ae. \times 7 \end{array}$$

$$\begin{array}{r} 0 \\ af. \times 9 \end{array}$$

Answers to Exercise Ten

a. 20

b. 21

c. 30

d. 63

e. 18

f. 42

g. 2

h. 12

i. 45

j. 3	r. 40	z. 49
k. 42	s. 28	aa. 8
l. 18	t. 6	ab. 12
m. 4	u. 7	ac. 32
n. 12	v. 10	ad. 30
o. 81	w. 64	ae. 7
p. 15	x. 72	af. 0
q. 36	y. 32	

Make a list of any errors that you have made and of the facts that you had to really think about.

As you know, it is very important to memorize the times tables. Use the times table chart on the next page until you have all the multiplication facts memorized. It is better to look up the right answer than use the wrong product. Finding the right product and saying the facts to yourself will help you learn.

Times Table Chart

Let's say you do not know the product of 8×9 .

- Find the first factor (8) in the column at the left. Find the second factor (9) in the top row.
- Go across the row from the 8 and straight down the column from the 9.
- The lines meet at the product which is 72 ... Try it! Now try finding the products of some other multiplication facts.

Times Table Chart

×	0	1	2	3	4	5	6	7	8	9	10
0	0	0	0	0	0	0	0	0	0	0	0
1	0	1	2	3	4	5	6	7	8	9	10
2	0	2	4	6	8	10	12	14	16	18	20
3	0	3	6	9	12	15	18	21	24	27	30
4	0	4	8	12	16	20	24	28	32	36	40
5	0	5	10	15	20	25	30	35	40	45	50
6	0	6	12	18	24	30	36	42	48	54	60
7	0	7	14	21	28	35	42	49	56	63	70
8	0	8	16	24	32	40	48	56	64	72	80
9	0	9	18	27	36	45	54	63	72	81	90
10	0	10	20	30	40	50	60	70	80	90	100

Times Tables are very difficult to memorize. Here's a technique that may help you to learn them.

An instructor used this technique to teach his students the times tables. It does require you to do some work and will take some time. But, if you are willing, you will learn them. Here's how it works.

Most people can only memorize three things; as soon as they try to memorize a fourth thing, they lose one of the first three. So, instead of trying to memorize the complete times table (which is 121 things), just do three.

- $9 \times 9 = 81$
- $8 \times 8 = 64$
- $8 \times 9 = 72$

If you know any of these already, for example, you automatically know that $9 \times 9 = 81$, choose another one, like $7 \times 7 = 49$.

Write these three on small cards or pieces of paper in three different ways:

$$9 \times 9 = 81 \quad 9 \times 9 = \underline{\quad} \quad 9 \times \underline{\quad} = 81$$

$$8 \times 8 = 64 \quad 8 \times 8 = \underline{\quad} \quad 8 \times \underline{\quad} = 64$$

$$8 \times 9 = 72 \quad 8 \times 9 = \underline{\quad} \quad 8 \times \underline{\quad} = 72$$

Note: $8 \times 9 = 72$ and $9 \times 8 = 72$. Both are the same, so when you learn 8×9 you will also know 9×8 . You will have learned part of the 8 times table and part of the 9 times table.

Do a number of these and stick them up around your house – over the kitchen sink, on your bathroom mirror, on your closet door, etc. Then, every time you see one of these, run through it in your mind. It only takes about 5 seconds each time. After about a week or two, you will have learned these three. If anyone were to ask you what 9×9 was, you would automatically know that it is 81. You wouldn't have to figure it out; you would know it.

And, once you know it, you will never forget it.

Once you have master these three, do three more, like $7 \times 7 = 49$, $7 \times 8 = 56$, $7 \times 9 = 63$. Again, make up small cards and put them all over your house. In another week or so, you will have learned these and can do another three.

If you are willing to do the work, you will learn your times tables. And, once you learn them, you will never forget them. That will make your work in mathematics much easier, and maybe even more fun. Try it! It does work.

Multiplying Across

So far you have only been multiplying numbers when they are up and down or vertical.

$$\begin{array}{r} 4 \\ \text{Example: } \times 5 \\ \hline 20 \end{array}$$

Another way to multiply numbers is across or horizontally.

$$\text{Example: } 4 \times 5 = 20$$

In math, sometimes you will need to work from left to right.

Exercise Eleven

Practice multiplying across or horizontally. Find the product. This exercise includes the zero to nine times tables.

a. $2 \times 6 =$

g. $9 \times 2 =$

b. $5 \times 4 =$

h. $6 \times 5 =$

c. $7 \times 3 =$

i. $5 \times 3 =$

d. $3 \times 6 =$

j. $3 \times 8 =$

e. $8 \times 5 =$

k. $7 \times 7 =$

f. $4 \times 7 =$

l. $2 \times 9 =$

m. $4 \times 6 =$

n. $6 \times 9 =$

o. $8 \times 8 =$

p. $9 \times 4 =$

q. $3 \times 9 =$

r. $4 \times 4 =$

s. $6 \times 7 =$

t. $9 \times 6 =$

Answers to Exercise Eleven

a. 12

b. 20

c. 21

d. 18

e. 40

f. 28

g. 18

h. 30

i. 15

j. 24

k. 49

l. 18

m. 24

n. 54

o. 64

p. 36

q. 27

r. 16

s. 42

t. 54

Topic A: Self-Test**Mark /20 Aim 17/20**

A. Find the products. Be sure to check your answers. (16 marks)

$$\begin{array}{r} 3 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 5 \\ \hline \end{array}$$

B. Find the products. Be sure to check your answers. (4 marks)

a. $7 \times 5 =$

c. $9 \times 8 =$

b. $8 \times 6 =$

d. $7 \times 4 =$

Answers to Topic A Self-Test

A. a. 9

g. 27

m. 21

b. 36

h. 54

n. 24

c. 24

i. 49

o. 45

d. 56

j. 32

p. 42

e. 24

k. 72

f. 45

l. 10

B. a. 35

c. 72

b. 48

d. 28

Topic B: Multiplying by 10, 100 and 1 000

When multiplying by 10, 100, 1 000, 10 000, etc., place as many zeros to the right of the number as there are zeros in the 10, 100, 1 000, etc..

To multiply by 10 put one zero after the number. To multiply by 100 put two zeros after the number.

To multiply by 1 000 put three zeros after the number.

Example: $4 \times 100 =$

100 has two zeroes. Put two zeroes after the number.

$$4 \times 100 = 400$$

Exercise One

a. $10 \times 2 =$

b. $9 \times 100 =$

c. $100 \times 3 =$

d. $1 \times 1\,000 =$

e. $6 \times 100 =$

f. $10 \times 7 =$

g. $100 \times 10 =$

h. $2 \times 10 =$

i. $5 \times 10 =$

j. $1\,000 \times 1 =$

k. $0 \times 10 =$

l. $1\,000 \times 9 =$

m. $4 \times 1\,000 =$

n. $10 \times 0 =$

o. $100 \times 8 =$

p. $3 \times 1\,000 =$

q. $10 \times 5 =$

r. $7 \times 1\,000 =$

s. $1\,000 \times 6 =$

t. $8 \times 10 =$

u. $100 \times 4 =$

v. $1 \times 100 =$

w. $1\,000 \times 3 =$

x. $10 \times 100 =$

Answers to Exercise One

a. 20

b. 900

c. 300

d. 1 000

e. 600

f. 70

g. 1 000

h. 20

i. 50

j. 1 000

- | | |
|----------|----------|
| k. 0 | r. 7 000 |
| l. 9 000 | s. 6 000 |
| m. 4 000 | t. 80 |
| n. 0 | u. 400 |
| o. 800 | v. 100 |
| p. 3 000 | w. 3 000 |
| q. 50 | x. 1 000 |

Exercise Two

Find the products. Check your work using the answer key at the end of the exercise.

- | | |
|-------------------------|------------------------|
| a. $100 \times 9 =$ | m. $9 \times 10 =$ |
| b. $10 \times 1\,000 =$ | n. $10 \times 100 =$ |
| c. $10 \times 9 =$ | o. $10 \times 6 =$ |
| d. $1\,000 \times 8 =$ | p. $5 \times 100 =$ |
| e. $6 \times 10 =$ | q. $1 \times 10 =$ |
| f. $100 \times 0 =$ | r. $9 \times 1\,000 =$ |
| g. $3 \times 100 =$ | s. $100 \times 6 =$ |
| h. $10 \times 1 =$ | t. $10 \times 8 =$ |
| i. $100 \times 1 =$ | u. $3 \times 10 =$ |
| j. $5 \times 1\,000 =$ | v. $1\,000 \times 0 =$ |
| k. $8 \times 100 =$ | w. $2 \times 1\,000 =$ |
| l. $1\,000 \times 4 =$ | x. $1\,000 \times 7 =$ |

Answers to Exercise Two

- | | |
|-----------|----------|
| a. 900 | j. 5 000 |
| b. 10 000 | k. 800 |
| c. 90 | l. 4 000 |
| d. 8 000 | m. 90 |
| e. 60 | n. 1 000 |
| f. 0 | o. 60 |
| g. 300 | p. 500 |
| h. 10 | q. 10 |
| i. 100 | r. 9 000 |

s. 600

v. 0

t. 80

w. 2 000

u. 30

x. 7 000

Topic B: Self-Test**Mark /18 Aim 15/18**

A. Find the products. Be sure to check your answers. (6 marks)

a. $3 \times 10 =$

d. $7 \times 1\,000 =$

b. $6 \times 100 =$

e. $4 \times 100 =$

c. $8 \times 1\,000 =$

f. $5 \times 10 =$

B. Find the products. Be sure to check your answers. (6 marks)

a. $10 \times 10 =$

d. $100 \times 2 =$

b. $1\,000 \times 9 =$

e. $10 \times 0 =$

c. $100 \times 10 =$

f. $1\,000 \times 4 =$

C. Find the products. Be sure to check your answers. (6 marks)

a. $10 \times 6 =$

d. $5 \times 1\,000 =$

b. $1\,000 \times 7 =$

e. $8 \times 10 =$

c. $100 \times 4 =$

f. $10 \times 100 =$

Answers to Topic B Self-Test

A. a. 30

d. 7 000

b. 600

e. 400

c. 8 000

f. 50

B. a. 100

d. 200

b. 9 000

e. 0

c. 1 000

f. 4 000

C. a. 60

d. 5 000

b. 7 000

e. 80

c. 400

f. 1 000

Topic C: Word Problems

Learning multiplication facts is very important. Once you know them all, you can use them to solve word problems.

Words such as product, altogether and in all tell you may need to multiply the numbers. Look for these words when reading and underline them before trying to solve a problem. Circle the information that is given.

Example: Mr. Wong rides his bicycle 6 kilometres every day. How far will he ride altogether in 9 days? Mr Wong rides his bicycle 6 kilometres every day. How far will he ride altogether in 9 days?

You have circled 6 kilometres and 9 days. This is the information you will use to find the answer.

You have underlined How far will he ride. These words tell you to multiply.

$$6 \text{ kilometres} \times 9 \text{ days} = 54$$

Mr. Wong will ride 54 kilometres in 9 days.

Exercise One

Solve each of the following word problems. Be sure to underline the words that tell you to multiply. Circle the information that is given. Have your instructor check your underlining and circling.

- There are 5 rows of mailboxes in an apartment building. There are 7 mailboxes in each row. How many mailboxes are there in all?
- At the grocery store, there are 8 cans of corn in each row. There are 6 rows of corn. How many cans of corn are there altogether?
- There are 7 days in a week. How many days are there in 4 weeks?

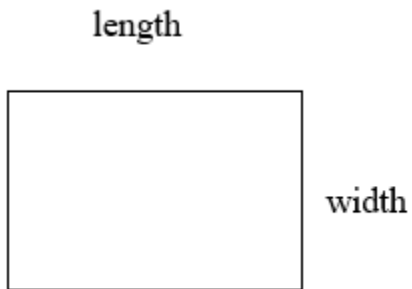
Answers to Exercise One

- 35 mailboxes
- 48 cans
- 28 days

Area

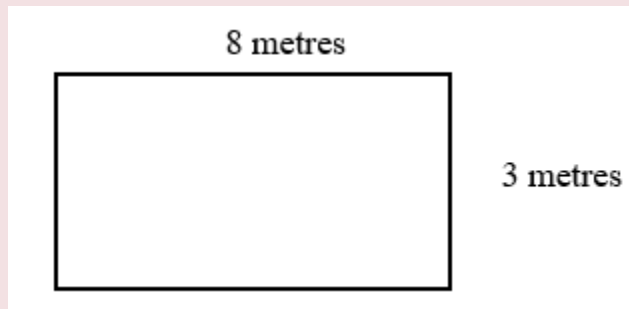
Area means the surface that is inside a shape. The units of measure of area are always square units (meaning having both length and width).

Rectangle



To find the area of a rectangle, multiply length \times width.

Example A



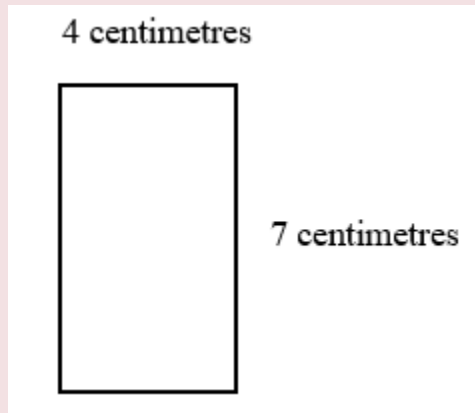
To find the area of the rectangle, multiply length \times width.

$$\text{Area} = \text{length} \times \text{width}$$

$$\text{Area} = 8 \text{ metres} \times 3 \text{ metres}$$

$$\text{Area} = 24 \text{ square metres}$$

Example B

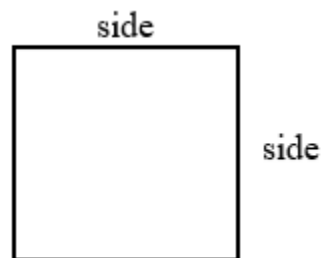


To find the area of the rectangle, multiply length \times width.

$$\text{Area} = \text{length} \times \text{width}$$

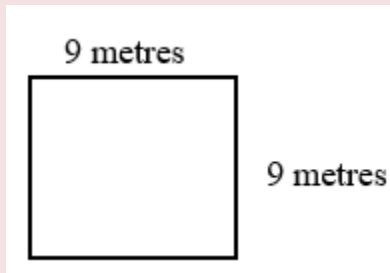
$$\text{Area} = 4 \text{ centimetres} \times 7 \text{ centimetres}$$

$$\text{Area} = 28 \text{ square centimetres}$$

Square

To find the area of a square, multiply side \times side.

Example C



To find the area of the square, multiply side \times side.

$$\text{Area} = \text{side} \times \text{side}$$

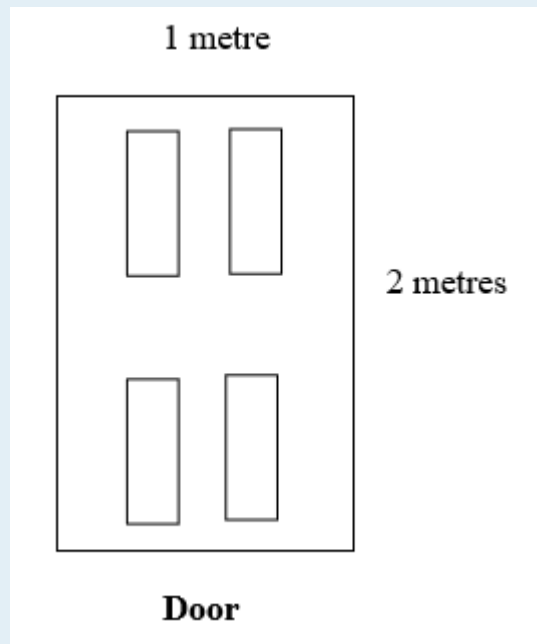
$$\text{Area} = 9 \text{ metres} \times 9 \text{ metres}$$

$$\text{Area} = 81 \text{ square metres}$$

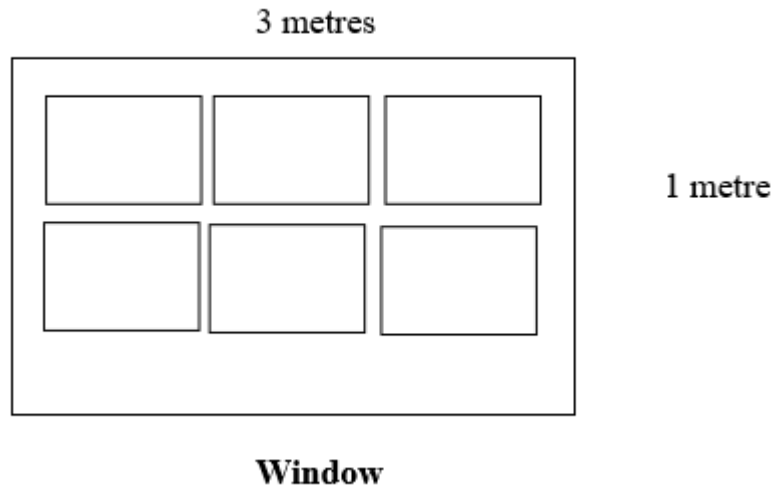
Exercise Two

Find the area of each shape. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

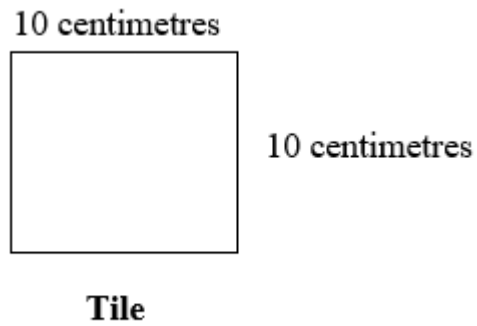
a.



b.



c.



d. A floor is 8 metres long and 4 metres wide. What is the area of the floor? (Hint: Draw a picture.)

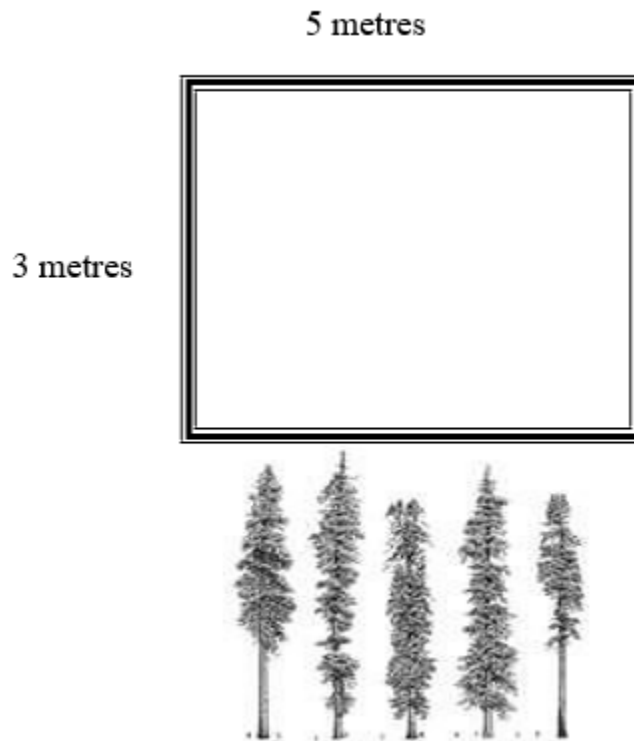
Answers to Exercise Two

- a. 2 square metres
- b. 3 square metres
- c. 100 square centimetres
- d. 32 square metres

Topic C: Self-Test

Mark /8 Aim 7/8

- A. Solve each of the following word problems. (8 marks) Be sure to include the unit of measure in your answer. (2 marks each). Be sure to circle information and underline what is being asked.
- Diego puts 6 apples into each bag. How many apples are there in 4 bags?
 - Alain wants to walk up 6 flights of stairs. There are 10 steps in each flight. How many steps will he have to walk up altogether?
 - In the metric system, 10 millimetres equals 1 centimetre. How many millimetres are there in 100 centimetres? (Hint: Multiply the number of centimeters by 10.)
 - Find the area of the picture.



Answers to Topic C Self-Test

- A.
- 24 apples
 - 60 steps
 - 1 000 millimetres
 - 15 square metres

Unit 4 Review: Multiplication

You will now practice all the skills you learned in Unit 4. Check your work using the answer key at the end of the review

A. Find the products.

$$\begin{array}{r} 0 \\ \times 7 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 4 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 4 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 8 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 2 \\ \times 3 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 5 \\ \hline \end{array}$$

$$\begin{array}{r} 7 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 3 \\ \times 8 \\ \hline \end{array}$$

$$\begin{array}{r} 5 \\ \times 9 \\ \hline \end{array}$$

$$\begin{array}{r} 6 \\ \times 6 \\ \hline \end{array}$$

$$\begin{array}{r} 9 \\ \times 9 \\ \hline \end{array}$$

B. Multiply across or horizontally.

$$a. 7 \times 7 =$$

$$e. 3 \times 4 =$$

$$b. 9 \times 7 =$$

$$f. 5 \times 7 =$$

$$c. 2 \times 9 =$$

$$g. 8 \times 5 =$$

$$d. 4 \times 4 =$$

$$h. 6 \times 4 =$$

C. Find the products.

a. $10 \times 4 =$

b. $7 \times 100 =$

c. $100 \times 5 =$

d. $1 \times 10 =$

e. $1\,000 \times 8 =$

f. $10 \times 9 =$

g. $100 \times 8 =$

h. $7 \times 1\,000 =$

i. $1\,000 \times 2 =$

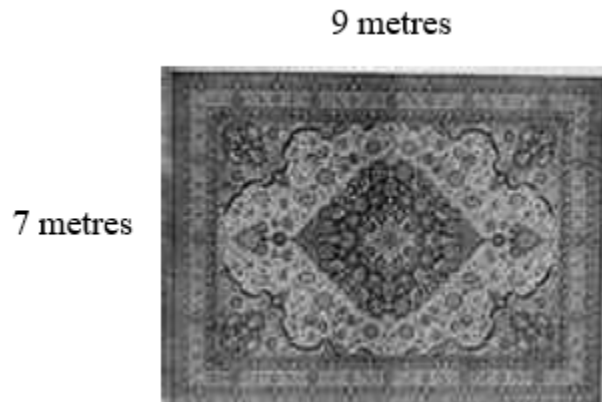
j. $6 \times 10 =$

k. $9 \times 100 =$

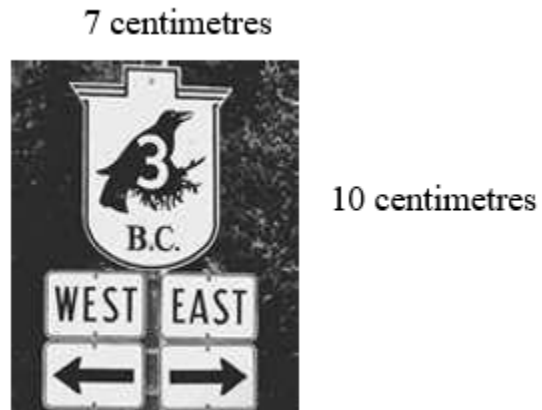
l. $4 \times 1\,000 =$

D. Word Problems.

- a. During a fishing derby, 8 people caught 7 fish each. How many fish were caught in all?
- b. Manuel was told to make 10 rows of 6 cans each. How many cans were there in all?
- c. For graduation, there were 10 rows of 100 chairs each. How many chairs were there altogether?
- d. In the cafeteria, there are 9 tables with 8 chairs at each table. How many chairs are there in all?
- e. Find the area of the rug. Remember to include the units of measure.



- f. Find the area of the photograph.



Answers to Unit 4 Review

- | | | | |
|----|--------------------------|----------|----------|
| A. | a. 0 | g. 28 | m. 18 |
| | b. 36 | h. 64 | n. 32 |
| | c. 15 | i. 54 | o. 48 |
| | d. 6 | j. 30 | p. 56 |
| | e. 24 | k. 45 | |
| | f. 36 | l. 81 | |
| B. | a. 49 | d. 16 | g. 40 |
| | b. 63 | e. 12 | h. 24 |
| | c. 18 | f. 35 | |
| C. | a. 40 | e. 8 000 | i. 2 000 |
| | b. 700 | f. 90 | j. 60 |
| | c. 500 | g. 800 | k. 900 |
| | d. 10 | h. 7 000 | l. 4 000 |
| D. | a. 56 fish | | |
| | b. 60 cans | | |
| | c. 1 000 chairs | | |
| | d. 72 chairs | | |
| | e. 63 square metres | | |
| | f. 70 square centimetres | | |

CONGRATULATIONS!!

Now you have finished Unit 4.

TEST TIME!

Ask your instructor for the Practice Test for this unit.

Once you've done the practice test, you need to do the unit 4 test.

Again, ask your instructor for this.

Good luck!

Unit 5: Making Change, Time & Perimeter

Topic A: Counting to Make Change

Practice your counting by filling in the counting chart. Have your instructor check your chart when you are done.

0	1	2	3	4	5	6	7	8	9
10									

Use your counting chart and start at 0. Count five and write down that number.

0	5	10							

If you had a pile of nickels or five dollar bills and wanted to know how much money you have, you would count by 5's.

Use your counting chart and starting at 0. Count ten and write down that number.

0	10	20							
----------	-----------	-----------	--	--	--	--	--	--	--

If you had a pile of dimes or ten dollar bills and wanted to know how much money you have, you would count by 10's.

Use your counting chart and starting at 0. Count twenty-five and write down that number.

0	25			
----------	-----------	--	--	--

If you had a pile of quarters and wanted to know how much money you have, you would count by 25's.

Exercise One

Write the missing numerals. Check your work using the answer key at the end of the exercise.

a. Count by 5's.

0		10		20		30		40	
50		60		70		80		90	

b. Count by 5's.

0	5		15		25		35		45
	55		65		75		85		95

c. Count by 5's.

0									

d. Count by 10's.

0	10		30		50		70		90
----------	-----------	--	-----------	--	-----------	--	-----------	--	-----------

e. Count by 10's.

0		20		40		60		80	
----------	--	-----------	--	-----------	--	-----------	--	-----------	--

f. Count by 10's.

0									
----------	--	--	--	--	--	--	--	--	--

g. Count by 25's.

0	25		75	
----------	-----------	--	-----------	--

h. Count by 25's.

0		50		100
---	--	----	--	-----

i. Count by 25's.

0				
---	--	--	--	--

Answers to Exercise One

a.

0	5	10	15	20	25	30	35	40	45
50	55	60	65	70	75	80	85	90	95

b.

0	5	10	15	20	25	30	35	40	45
50	55	60	65	70	75	80	85	90	95

c.

0	5	10	15	20	25	30	35	40	45
50	55	60	65	70	75	80	85	90	95

d.

0	10	20	30	40	50	60	70	80	90
---	----	----	----	----	----	----	----	----	----

e.

0	10	20	30	40	50	60	70	80	90
---	----	----	----	----	----	----	----	----	----

f.

0	10	20	30	40	50	60	70	80	90
---	----	----	----	----	----	----	----	----	----

g.

0	25	50	75	100
---	----	----	----	-----

h.

0	25	50	75	100
---	----	----	----	-----

i.

0	25	50	75	100
---	----	----	----	-----

Note: There is no self-test for this topic.

Topic B: Making Change

To make change, figure out the difference between the purchase price and the value of the currency presented to pay for the purchase. Then, count out the least number of coins and bills that adds up to that difference.

Example A: 60¢ to 70¢

To get from 60¢ to 70¢, you would need 1 dime.

Example B: 20¢ to 25¢

To get from 20¢ to 25¢, you would need 1 nickel.

Example C: 50¢ to 75¢

To get from 50¢ to 75¢, you would need 1 quarter.

Exercise One

Circle the number of coins you would need to get from the first number to the second number. Make sure to use the least number of coins you can. Check your work using the answer key at the end of the exercise.

- a. \$0.35 to \$0.40



b. \$0.60 to \$0.70



c. \$0.80 to \$0.90



d. \$0.30 to \$0.40



e. \$0.15 to \$0.25



f. \$0.25 to \$0.50



g. \$0.50 to \$0.75

**Answers to Exercise One**

- | | |
|-------------|--------------|
| a. 1 nickel | e. 1 dime |
| b. 1 dime | f. 1 quarter |
| c. 1 dime | g. 1 quarter |
| d. 1 dime | |

Exercise Two

State the number and kind of coins you would need to get from the first number to the second number. Make sure you use the least number of coins as possible. Check your work using the answer key at the end of the exercise.

Example \$0.56 to \$0.60

4 pennies to get to \$0.60

- | | |
|------------------|------------------|
| a. 35¢ to 45¢ | i. 55¢ to 65¢ |
| b. 90¢ to 95¢ | j. 20¢ to 25¢ |
| c. 25¢ to 50¢ | k. 50¢ to 75¢ |
| d. 25¢ to 50¢ | l. 25¢ to 75¢ |
| e. 65¢ to 75¢ | m. 85¢ to 95¢ |
| f. 40¢ to 45¢ | n. 50¢ to \$1.00 |
| g. 75¢ to 1.00\$ | o. 95¢ to \$1.00 |
| h. 5¢ to 15¢ | p. 45¢ to 50¢ |

Answers to Exercise Two

- | | |
|--------------|--------------|
| a. 1 dime | e. 1 dime |
| b. 1 nickel | f. 1 nickel |
| c. 1 quarter | g. 1 quarter |
| d. 1 quarter | h. 1 dime |

- i. 1 dime
- j. 1 nickel
- k. 1 quarter
- l. 2 quarters

- m. 1 dime
- n. 2 quarters
- o. 1 nickel
- p. 1 nickel

Example D: 28¢ to 50¢

You would need 2 pennies to get to 30¢. Then you would need 2 dimes to get to 50¢.

Example E: 36¢ to 50¢

You would need 4 pennies to get to 40¢. Then you would need 1 dime to get to 50¢.

Example F: 60¢ to 75¢

You would need 1 nickel to get to 65¢. Then you would need 1 dime to get to 75¢.

OR

You could also begin with 1 dime to get to 70¢. Then you would need 1 nickel to get to 75¢.

Exercise Three

State the number and kind of coins you would need to get change after making each purchase below with a \$1.00 coin. Make sure you use the least number of coins as possible. Check your work using the answer key at the end of the exercise.

a. 2 oranges cost 70¢



1 quarter, 1 nickel

b. 2 pencils cost 75¢



c. 1 roll of toilet paper costs 30¢



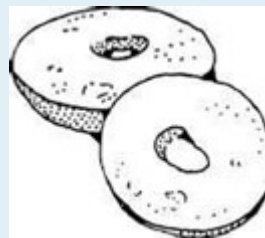
d. a can of sardines costs 80¢



e. 1 lemon costs 40¢



f. a bagel costs 55¢



g. a roll of paper towels costs 80¢



h. a jar of baby food costs 75¢



i. a box of Kleenex costs 80¢



j. a bag of candy costs 70¢



Answers to Exercise Three

- a. 1 quarter, 1 nickel
- b. 1 quarter
- c. 2 quarters, 2 dimes
- d. 2 dimes
- e. 2 quarters, 1 dime
- f. 1 quarter, 2 dimes
- g. 2 dimes
- h. 1 quarter
- i. 2 dimes
- j. 1 quarter, 1 nickel

Exercise Four

State the number and kind of coins you would need to get change after making each purchase below with a \$1.00 coin.. Make sure you use the least number of coins as possible. Check your work using the answer key at the end of the exercise.

- a. Mrs. Bakshi bought two flower pots that cost 85¢. What change will she get from \$1.00?
- b. Poloma bought a can of cat food for 70¢. What change will she get from \$1.00?
- c. Two apples cost 60¢. What change will you get from \$1.00?
- d. A pen costs 65¢. What change will you get from \$1.00?

Answers to Exercise Four

- a. 1 dime, 1 nickel
- b. 1 quarter, 1 nickel
- c. 1 quarter, 1 dime, 1 nickel
- d. 1 quarter, 1 dime

Topic B: Self-Test

Mark /21 **Aim** 17/21

A. Circle the number of coins needed to get from the first number to the second number. Use the least number of coins. (4 marks)

a. 75¢ to 80¢



b. 20¢ to 25¢



c. 40¢ to 50¢



d. 50¢ to 75¢



B. State the number and kind of coin needed to get from the first number to the second number. (4 marks)

a. 40¢ to 50¢

c. 90¢ to \$1.00

b. 70¢ to 75¢

d. 25¢ to 50¢

C. State the number and kind of coins you would need to get from the first number to the second number. Make sure you use the least number of coins as possible. (4 marks)

a. 35¢ to 50¢

c. 50¢ to 75¢

b. 15¢ to 50¢

d. 80¢ to \$1.00

D. State the number and kind of coins you would need to get change from \$1.00. Make sure you use the least number of coins as possible. (9 marks)

- | | |
|--------|-------------------------------------|
| a. 20¢ | e. a plastic beach shovel costs 90¢ |
| b. 40¢ | f. 2 plums cost 60¢ |
| c. 75¢ | g. a head of lettuce cost 55¢ |
| d. 70¢ | |

Answers to Topic B Self-Test

- | | | |
|----|-------------------------|--------------------------------|
| A. | a. 1 nickel | c. 1 dime |
| | b. 1 nickel | d. 1 quarter |
| B. | a. 1 dime | c. 1 dime |
| | b. 1 nickel | d. 1 quarter |
| C. | a. 1 dime, 1 nickel | c. 1 quarter |
| | b. 1 quarter, 1 dime | d. 2 dimes |
| D. | a. 3 quarters, 1 nickel | e. 1 dime |
| | b. 2 quarters, 1 dime | f. 1 quarter, 1 dime, 1 nickel |
| | c. 1 quarter | g. 1 quarter, 2 dimes |
| | d. 1 quarter, 1 nickel | |

Topic C: Telling Time

We have always been interested in keeping track of time. Sundials were the first way used to keep track of time. The sundial had limits. It needed the sun and could not keep track of time at night. Through the centuries, many things have been used to keep track of time. In our modern society, we have used clocks. There are two types of clocks; digital and analog. Digital clocks display the time as numbers.

Analog clocks are clocks with hands. The shorter hand tells the hour and the longer hand tells the minutes. An easy way to remember the hour hand and the minutes hand is that hour is a shorter word than minute, and the shorter hand tells the hour.

In an analog clock, the minute hand travels faster than the hour hand as it has to cover 60 minutes. The hour hand only needs to travel between the numerals in the same time it takes the minute hand to cover 60 minutes.

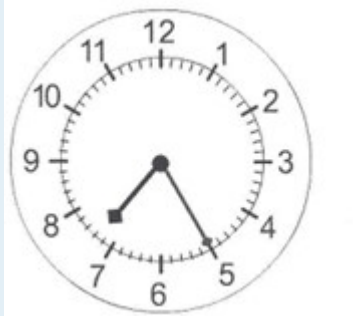
To tell what time it is, look at the shorter hand to figure out what hour it is. Next, look at the minute hand to figure out the minutes. Each numeral of the clock represents a certain number of minutes. Look at the chart.

Numeral	Minutes
1	5
2	10
3	15
4	20
5	25
6	30
7	35
8	40
9	45
10	50
11	55
12	o'clock

Exercise One

Write the time shown on each clock. Check your work using the answer key at the end of the exercise.

Example A:



The shorter hand is closer to the 7. The longer hand is before the six. This means that the hour is 7. The longer hand is pointing to the 5. This means 25 minutes (check the chart on the page before). The time would be written as 7:25.

Example B:



Look at the shorter hand. If the longer hand is past the six, then the hour is the numeral before the one the shorter hand is pointing at. This means that the hour is 12. The longer hand is pointing at the 10. This means 50 minutes (check the chart on the page before). The time would be written as 12:50.

a.



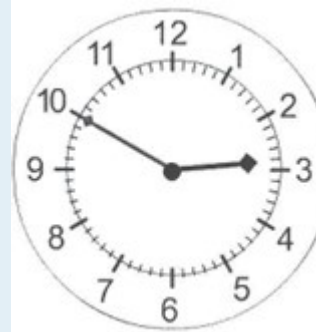
b.



c.



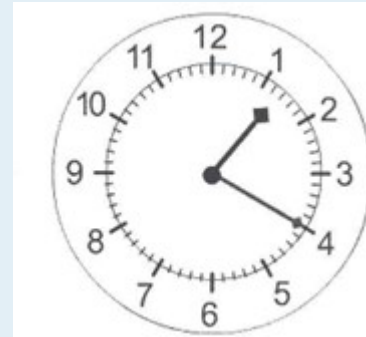
h.



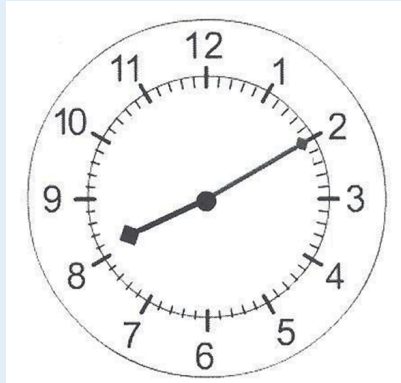
d.



i.



e.



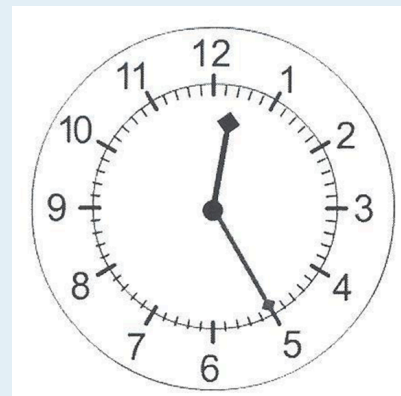
j.



f.



k.



g.



l.



n.



m.



Answers to Exercise One

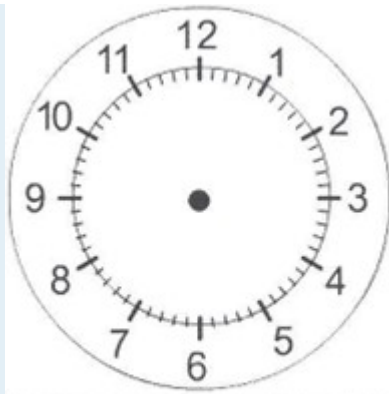
- a. 1:35
- b. 9:15
- c. 4:05
- d. 12:30
- e. 8:10
- f. 5:55
- g. 3:40

- h. 2:50
- i. 1:20
- j. 4:45
- k. 12:25
- l. 6:10
- m. 8:50
- n. 9:40

Exercise Two

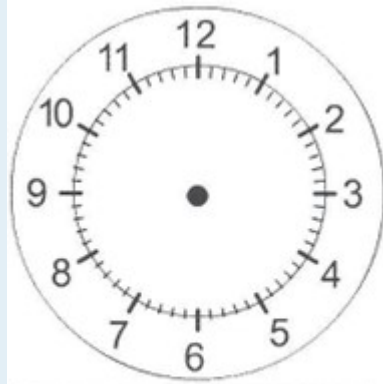
Under each clock is a time on a digital clock. Put the hands on the analog clock to show the digital time. Check your work using the answer key at the end of the exercise.

a.



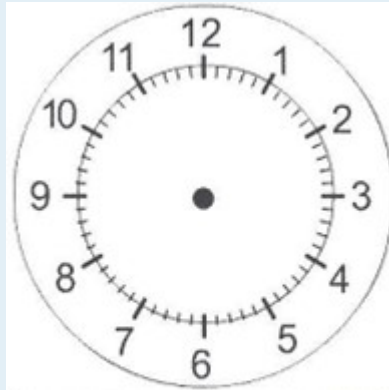
6:45

d.



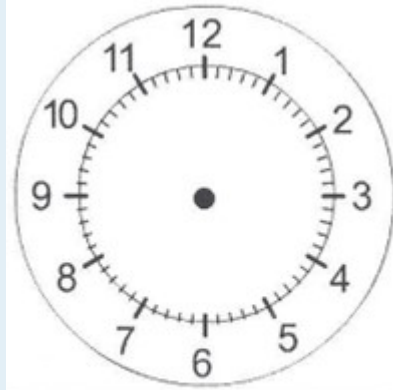
7:55

b.



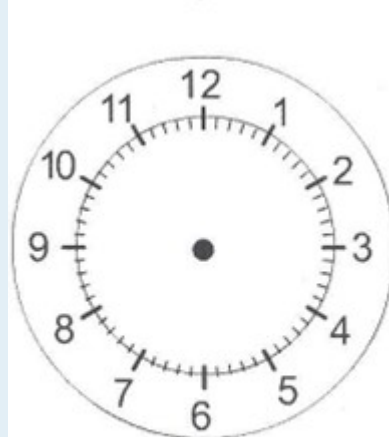
9:00

e.



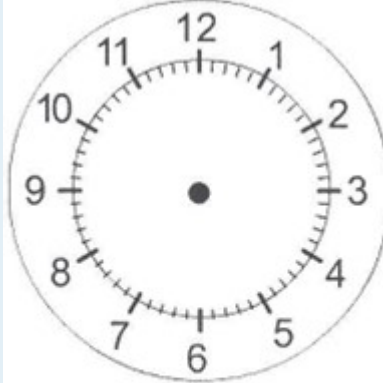
8:30

c.



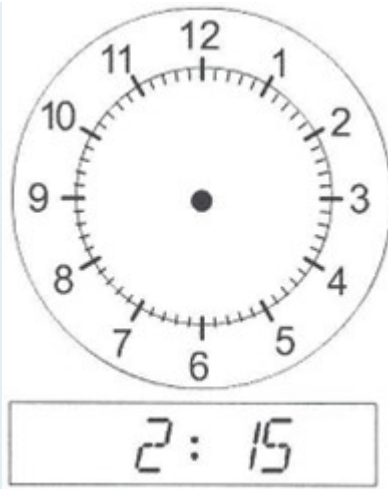
11:35

f.

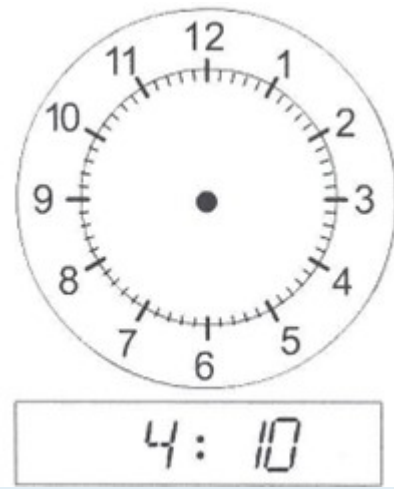


10:05

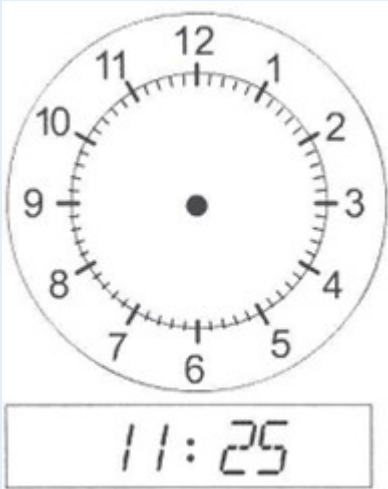
g.



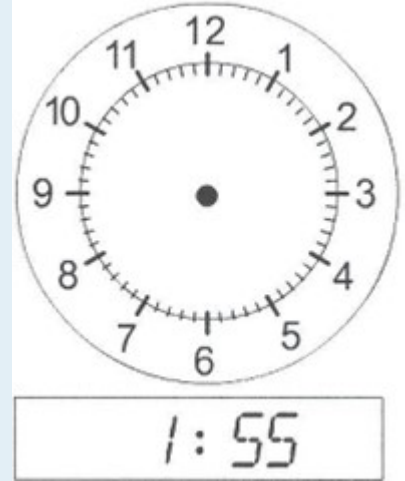
i.



h.



j.

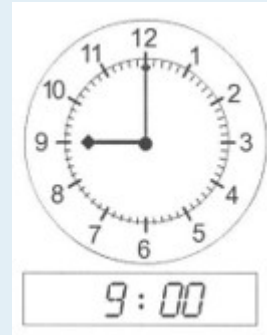


Answers to Exercise Two

a.



b.



c.



d.



e.



f.



g.



h.



i.



j.



24-hour Clock

Your friend said she would meet you at 8:00 o'clock. Does that mean in the morning or the evening? We use a.m. and p.m. to know whether it is morning or evening.

Another way to avoid confusion is by using the 24-hour clock. Airlines, military and health care are examples of places where the 24-hour clock is used.

With the 12-hour clock, each of the hours is repeated in a day. In the 24-hour clock, each hour in a day is counted giving us 24 hours. In the 24-hour clock, 12:00 a.m. can be written as 0000 or 2400. 0000 is the start of a new day, while 2400 is the end of the day.

We write times with 4 digits. The first two digits are the hours and the next two digits are the minutes.

12-hour clock	24-hour clock	12-hour clock	24-hour clock
12:00 a.m.	0000 or 2400	12:00 p.m.	1200
1:00 a.m.	0100	1:00 p.m.	1300
2:00 a.m.	0200	2:00 p.m.	1400
3:00 a.m.	0300	3:00 p.m.	1500
4:00 a.m.	0400	4:00 p.m.	1600
5:00 a.m.	0500	5:00 p.m.	1700
6:00 a.m.	0600	6:00 p.m.	1800
7:00 a.m.	0700	7:00 p.m.	1900
8:00 a.m.	0800	8:00 p.m.	2000
9:00 a.m.	0900	9:00 p.m.	2100
10:00 a.m.	1000	10:00 p.m.	2200
11:00 a.m.	1100	11:00 p.m.	2300

For example, 8:20 a.m. would be 0820, while 8:20 p.m. would be 2020.

To convert 12-hour clock to 24-hour clock, add 12 to the hour for any times after 1:00 p.m. to 11:59 p.m.

Example: 6:30 p.m.

$$6:30 + 12:00 = 1830$$

Example: 10:30 p.m.

$$10:30 + 12:00 = 2230$$

When writing times in 24-hour clock, we do not use a colon.

Exercise Three

Change each 12-hour clock time to 24-hour clock time. Watch carefully for a.m. and p.m. Remember: only times between 12:00 p.m. and 11:59 p.m. need to be changed. Check your work using the answer key at the end of the exercise.

- | | |
|---------------|---------------|
| a. 6:30 a.m. | g. 5:30 a.m. |
| b. 10:45 p.m. | h. 11:50 p.m. |
| c. 8:10 p.m. | i. 1:55 p.m. |
| d. 4:15 a.m. | j. 2:05 a.m. |
| e. 7:35 p.m. | k. 3:20 p.m. |
| f. 9:40 a.m. | l. 12:25 a.m. |

Answers to Exercise Three

- | | |
|---------|---------|
| a. 0630 | g. 0530 |
| b. 2245 | h. 2350 |
| c. 2010 | i. 1355 |
| d. 0415 | j. 0205 |
| e. 1935 | k. 1520 |
| f. 0940 | l. 0025 |

Exercise Four

Change each 24-hour clock time to 12-hour clock time. Watch carefully for a.m. and p.m. Check your work using the answer key at the end of the exercise.

- | | |
|---------|---------|
| a. 1204 | g. 1735 |
| b. 0822 | h. 1605 |
| c. 1842 | i. 0342 |
| d. 0425 | j. 2305 |
| e. 1440 | k. 0550 |
| f. 0910 | l. 1330 |

Answers to Exercise Four

- | | |
|---------------|---------------|
| a. 12:04 p.m. | g. 5:35 p.m. |
| b. 8:22 a.m. | h. 4:05 p.m. |
| c. 6:42 p.m. | i. 3:42 a.m. |
| d. 4:25 a.m. | j. 11:05 p.m. |
| e. 2:40 p.m. | k. 5:50 a.m. |
| f. 9:10 a.m. | l. 1:30 p.m. |

Exercise Five

Below are the ferry schedules from West Vancouver (Horseshoe Bay) to Nanaimo (Departure Bay) and Vancouver (Tsawwassen) to Nanaimo (Duke Point).. Change each 12- hour clock time to 24-hour clock time. Check your work using the answer key at the end of the exercise.

Leave West Vancouver (Horseshoe Bay), Departs	24-hour clock time	Leave Vancouver (Tsawwassen), Departs	24-hour clock time
6:30 a.m.		5:15 a.m.	
8:30 a.m.		7:45 a.m.	
10:30 a.m.		10:15 a.m.	
12:30 p.m.		12:45 p.m.	
3:00 p.m.		3:15 p.m.	
5:00 p.m.		5:45 p.m.	
7:00 p.m.		8:15 p.m.	
9:00 p.m.		10:45 p.m.	

Answers to Exercise Six

Leave West Vancouver (Horseshoe Bay), Departs	24-hour clock time	Leave Vancouver (Tsawwassen), Departs	24-hour clock time
6:30 a.m.	0630	5:15 a.m.	0515
8:30 a.m.	0830	7:45 a.m.	0745
10:30 a.m.	1030	10:15 a.m.	1015
12:30 p.m.	1230	12:45 p.m.	1245
3:00 p.m.	1500	3:15 p.m.	1515
5:00 p.m.	1700	5:45 p.m.	1745
7:00 p.m.	1900	8:15 p.m.	2015
9:00 p.m.	2100	10:45 p.m.	2245

Topic C: Self-Test

Mark /22 Aim 17/22

A. Write the time shown on each clock. (6 marks)

a.



d.



b.



e.



c.

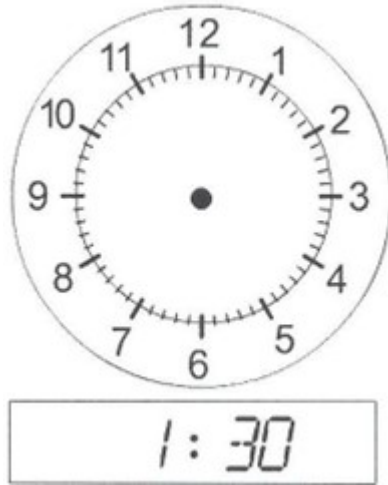


f.

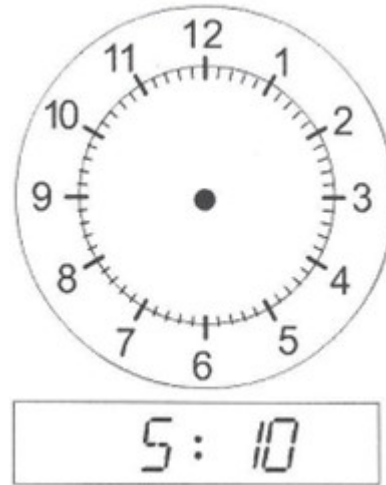


B. Under each clock is a time on a digital clock. Put the hands on the analog clock to show the digital time. (4 marks)

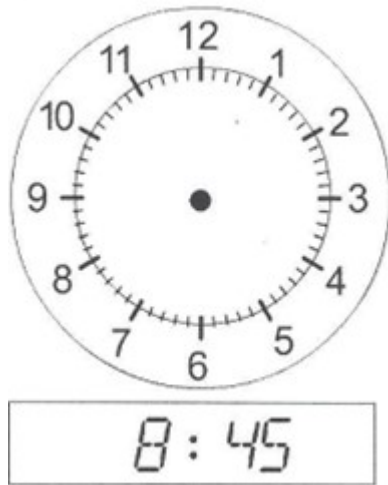
a.



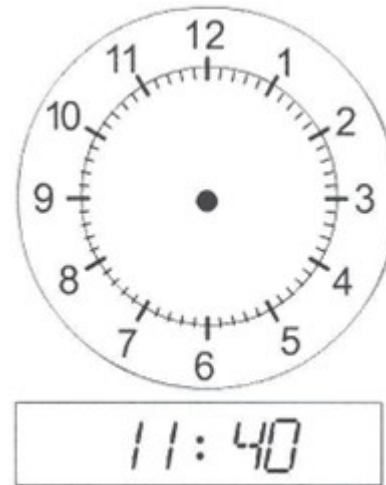
c.



b.



d.



C. Change each 12-hour clock time to 24-hour clock time. Watch carefully for a.m. and p.m. (6 marks)

a. 6:25 a.m.

d. 10:40 a.m.

b. 11:05 p.m.

e. 4:00 p.m.

c. 2:55 p.m.

f. 8:15 a.m.

D. Change each 24-hour clock time to 12-hour clock time. Watch carefully for a.m. and p.m. (6 marks)

a. 0155

d. 0545

b. 0020

e. 1530

c. 1935

f. 2110

Answers to Topic C Self-Test

- A. a. 12:35
b. 4:15
c. 2:05

- B. a.



- b.



- d. 10:53
e. 7:22
f. 9:44

- c.



- d.



- C. a. 0625
b. 2305
c. 1455

- d. 1040
e. 1600
f. 0815

- D. a. 1:55 a.m.
b. 12:20 a.m.
c. 7:35 p.m.

- d. 5:45 a.m.
e. 3:30 p.m.
f. 9:10 p.m.

Topic D: Adding Units of Time

Sometimes we need to add units of time to find out how much in total it will take to do some job or to travel to some other place.

To add units of time, do this:

Place the numbers to be added in columns – minutes with minutes, hours with hours, seconds with seconds

Add each column. Be sure to write the unit of time.

Example A

$$\begin{array}{r} 12 \text{ h, } 45 \text{ min} \\ + 10 \text{ h, } 05 \text{ min} \end{array}$$

Step 1: Add the minutes to the minutes

$$\begin{array}{r} 45 \text{ min} \\ + 05 \text{ min} \\ \hline 50 \text{ min} \end{array}$$

Step 2: Add the hours to the hours

$$12 \text{ h} + 10 \text{ h} = 22 \text{ h}$$

$$\begin{array}{r} 12 \text{ h, } 45 \text{ min} \\ \text{The sum of } + 10 \text{ h, } 05 \text{ min} \\ \hline 22 \text{ h, } 50 \text{ min} \end{array}$$

Example B

$$\begin{array}{r} 4 \text{ h, } 50 \text{ min, } 15 \text{ s} \\ + 21 \text{ h, } 05 \text{ min, } 40 \text{ s} \end{array}$$

Step 1: Add the seconds to the seconds.

$$15 \text{ s} + 40 \text{ s} = 55 \text{ s}$$

Step 2: Add the minutes to the minutes.

$$\begin{array}{r} 50 \text{ min} \\ + 05 \text{ min} \\ \hline 55 \text{ min} \end{array}$$

Step 3: Add the hours to the hours.

$$4 \text{ h} + 21 \text{ h} = 25 \text{ h}$$

$$\begin{array}{r} 4 \text{ h, } 50 \text{ min, } 15 \text{ s} \\ \text{The sum of } + 21 \text{ h, } 05 \text{ min, } 40 \text{ s} \\ \hline 24 \text{ h, } 55 \text{ min, } 55 \text{ s} \end{array}$$

Exercise One

Add the times. Check your work using the answer key at the end of the exercise.

$$\begin{array}{r} 3 \text{ h, } 20 \text{ min} \\ \text{a. } + 5 \text{ h, } 15 \text{ min} \end{array}$$

$$\begin{array}{r} 1 \text{ h, } 55 \text{ min, } 15 \text{ s} \\ \text{g. } + 28 \text{ h, } 0 \text{ min, } 40 \text{ s} \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 05 \text{ min} \\ \text{b. } + 4 \text{ h, } 40 \text{ min} \end{array}$$

$$\begin{array}{r} 4 \text{ h, } 45 \text{ min, } 05 \text{ s} \\ \text{h. } + 15 \text{ h, } 10 \text{ min, } 50 \text{ s} \end{array}$$

$$\begin{array}{r} 9 \text{ h, } 50 \text{ min} \\ \text{c. } + 14 \text{ h, } 05 \text{ min} \end{array}$$

$$\begin{array}{r} 7 \text{ h, } 35 \text{ min, } 20 \text{ s} \\ \text{i. } + 6 \text{ h, } 15 \text{ min, } 30 \text{ s} \end{array}$$

$$\begin{array}{r} 2 \text{ h, } 10 \text{ min} \\ \text{d. } + 6 \text{ h, } 25 \text{ min} \end{array}$$

$$\begin{array}{r} 3 \text{ h, } 25 \text{ min, } 45 \text{ s} \\ \text{j. } + 8 \text{ h, } 30 \text{ min, } 10 \text{ s} \end{array}$$

$$\begin{array}{r} 7 \text{ h, } 35 \text{ min} \\ \text{e. } + 1 \text{ h, } 10 \text{ min} \end{array}$$

$$\begin{array}{r} 3 \text{ h, } 45 \text{ min, } 15 \text{ s} \\ \text{k. } + 12 \text{ h, } 05 \text{ min, } 35 \text{ s} \end{array}$$

$$\begin{array}{r} 10 \text{ h, } 30 \text{ min} \\ \text{f. } + 8 \text{ h, } 20 \text{ min} \end{array}$$

$$\begin{array}{r} 4 \text{ h, } 50 \text{ min, } 30 \text{ s} \\ \text{l. } + 5 \text{ h, } 0 \text{ min, } 25 \text{ s} \end{array}$$

Answers to Exercise One

a. 8 h, 35 min

g. 29 h, 55 min, 55 s

b. 15 h, 45 min

h. 19 h, 55 min, 55 s

c. 23 h, 55 min

i. 13 h, 50 min, 50 s

d. 8 h, 35 min

j. 11 h, 55 min, 55 s

e. 8 h, 45 min

k. 15 h, 50 min, 50 s

f. 18 h, 50 min

l. 9 h, 50 min, 55 s

Exercise Two

Rewrite each question in columns. Be careful to write seconds under seconds, minutes under minutes and hours under hours. Check your work using the answer key at the end of the exercise.

- a. Fabio worked 8 h, 48 min on his homework. The following week, he worked 9 h, 10 min on his homework. How much time in total did he work on his homework?
- b. Day one of the holiday trip took 11 h, 32 min. Day two took 10 h, 26 min. How much time did we travel in two days?

Answers to Exercise Two

- a. 17h, 58mins
- b. 21h, 58mins

Subtracting Units of Time

We need to subtract units of time to find out how much time it took to do some job or to travel to some other place.

To subtract units of time, do this:

Place the numbers to be subtracted in columns – minutes with minutes, hours with hours, seconds with seconds

Subtract each column. Be sure to write the unit of time.

Example C

$$\begin{array}{r} 2 \text{ h, } 45 \text{ min} \\ - 1 \text{ h, } 05 \text{ min} \end{array}$$

Step 1: Subtract the minutes from the minutes.

$$45 \text{ min} - 05 \text{ min} = 40 \text{ min}$$

Step 2: Subtract the hours from the hours.

$$2 \text{ h} - 1 \text{ h} = 1 \text{ h}$$

$$\begin{array}{r} \text{The difference of } \quad 2 \text{ h, } 45 \text{ min} \\ - \quad 1 \text{ h, } 05 \text{ min} \\ \hline \quad 1 \text{ h, } 40 \text{ min} \end{array}$$

Example D

$$\begin{array}{r} 5 \text{ h, } 45 \text{ min, } 10 \text{ s} \\ - 2 \text{ h, } 35 \text{ min, } 05 \text{ s} \end{array}$$

Step 1: Subtract the seconds from the seconds.

$$10 \text{ s} - 05 \text{ s} = 05 \text{ s}$$

Step 2: Subtract the minutes from the minutes

$$45 \text{ min} - 35 \text{ min} = 10 \text{ min}$$

Step 3: Subtract the hours from the hours

$$5 \text{ h} - 2 \text{ h} = 3 \text{ h}$$

$$\begin{array}{r} \text{The sum of } \quad 5 \text{ h, } 45 \text{ min, } 10 \text{ s} \\ - \quad 2 \text{ h, } 35 \text{ min, } 05 \text{ s} \\ \hline \quad 3 \text{ h, } 10 \text{ min, } 05 \text{ s} \end{array}$$

Exercise Three

$$\begin{array}{r} 12 \text{ h, } 55 \text{ min} \\ \text{a. } - \quad 3 \text{ h, } 5 \text{ min} \end{array}$$

$$\begin{array}{r} 9 \text{ h, } 45 \text{ min} \\ \text{b. } - \quad 6 \text{ h, } 10 \text{ min} \end{array}$$

$$\begin{array}{r} 24 \text{ h, } 50 \text{ min} \\ \text{c. } - \quad 8 \text{ h, } 35 \text{ min} \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 40 \text{ min} \\ \text{d. } - \quad 4 \text{ h, } 15 \text{ min} \end{array}$$

$$\begin{array}{r} 7 \text{ h, } 30 \text{ min} \\ \text{e. } - \quad 5 \text{ h, } 05 \text{ min} \end{array}$$

$$\begin{array}{r} 12 \text{ h, } 20 \text{ min} \\ \text{f. } - \quad 10 \text{ h, } 05 \text{ min} \end{array}$$

$$\begin{array}{r} 16 \text{ h, } 45 \text{ min, } 55 \text{ s} \\ \text{g. } - \quad 9 \text{ h, } 25 \text{ min, } 15 \text{ s} \end{array}$$

$$\begin{array}{r} 17 \text{ h, } 50 \text{ min, } 35 \text{ s} \\ \text{h. } - \quad 8 \text{ h, } 15 \text{ min, } 20 \text{ s} \end{array}$$

$$\begin{array}{r} 13 \text{ h, } 55 \text{ min, } 40 \text{ s} \\ \text{i. } - \quad 5 \text{ h, } 30 \text{ min, } 10 \text{ s} \end{array}$$

$$\begin{array}{r} 15 \text{ h, } 40 \text{ min, } 50 \text{ s} \\ \text{j. } - \quad 6 \text{ h, } 20 \text{ min, } 25 \text{ s} \end{array}$$

$$\begin{array}{r} 14 \text{ h, } 50 \text{ min, } 40 \text{ s} \\ \text{k. } - \quad 7 \text{ h, } 35 \text{ min, } 05 \text{ s} \end{array}$$

$$\begin{array}{r} 28 \text{ h, } 50 \text{ min, } 30 \text{ s} \\ \text{l. } - \quad 9 \text{ h, } 35 \text{ min, } 0 \text{ s} \end{array}$$

Answers to Exercise Three

a. 9 h, 50 min

b. 3 h, 35 min

c. 16 h, 15 min

d. 7 h, 25 min

e. 2 h, 25 min

f. 2 h, 15 min

g. 7 h, 20 min, 40 s

h. 9 h, 35 min, 15 s

i. 8 h, 25 min, 30 s

j. 9 h, 20 min, 25 s

k. 7 h, 15 min, 35 s

l. 19 h, 15 min, 30 s

Exercise Four

Rewrite each question in columns. Be careful to write seconds under seconds, minutes under minutes and hours under hours. Check your work using the answer key at the end of the exercise.

- Milan works 45 h, 30 min each week. He has worked 32 h, 15 min this week. How much more time can he work?
- The trip from Vancouver to Calgary takes 17 h, 40 min on the bus. The trip from Vancouver to Kamloops takes 5 h, 05 min. How much longer must you travel to get to Calgary?
- The flight from Vancouver to Toronto leaves at 12 h, 30 min. The flight arrives in Toronto at 15 h, 53 min. How long is the flight from Vancouver to Toronto?
- Over two months, Lola has used her cell phone for 43 h, 37 min, 58 s. In June, she used her cell phone for 21 h, 22 min, 25 s. How much time has she used her cell phone this month?

Answers to Exercise Four

- 13h, 15min
- 12h, 35min
- 3h, 23min
- 22h, 15min, 33s

Topic D: Self-Test

Mark /24 **Aim** 19/24

A. Find the sums. (4 marks)

$$\begin{array}{r} 12 \text{ h, } 15 \text{ min} \\ \text{a. } + \quad 4 \text{ h, } 35 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 7 \text{ h, } 50 \text{ min} \\ \text{b. } + \quad 10 \text{ h, } 05 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 40 \text{ min} \\ \text{c. } + \quad 2 \text{ h, } 10 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 1 \text{ h, } 25 \text{ min} \\ \text{d. } + \quad 15 \text{ h, } 20 \text{ min} \\ \hline \end{array}$$

B. Find the sums. (4 marks)

$$\begin{array}{r} 9 \text{ h, } 42 \text{ min} \\ + 3 \text{ h, } 16 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 6 \text{ h, } 38 \text{ min} \\ + 3 \text{ h, } 21 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 5 \text{ h, } 53 \text{ min} \\ + 8 \text{ h, } 02 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 22 \text{ h, } 33 \text{ min} \\ + 14 \text{ h, } 16 \text{ min} \\ \hline \end{array}$$

C. Rewrite each question in columns and find the sums. (4 marks)

- a. Ingrid walked the dogs for 3 h, 15 min on Monday. On Tuesday, she walked the dogs for 2 h, 40 min. Find the total time that Ingrid walked the dogs.
- b. Bianca rode the bus to college for 2 h, 36 min on Wednesday. On Thursdays, the same trip took 3 h, 21 min. How long was she on the bus altogether?

D. Find the differences. (4 marks)

$$\begin{array}{r} 12 \text{ h, } 55 \text{ min} \\ - 4 \text{ h, } 35 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 50 \text{ min} \\ - 7 \text{ h, } 15 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 9 \text{ h, } 45 \text{ min} \\ - 3 \text{ h, } 30 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 40 \text{ h, } 40 \text{ min} \\ - 15 \text{ h, } 05 \text{ min} \\ \hline \end{array}$$

E. Find the differences. 4 marks

$$\begin{array}{r} 8 \text{ h, } 58 \text{ min} \\ - 6 \text{ h, } 34 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 36 \text{ min} \\ - 2 \text{ h, } 18 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 14 \text{ h, } 47 \text{ min} \\ - 5 \text{ h, } 29 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 18 \text{ h, } 41 \text{ min} \\ - 9 \text{ h, } 26 \text{ min} \\ \hline \end{array}$$

F. Rewrite each question in columns and find the sums. (4 marks)

- a. During rush hour, it took Marco 2 h, 51 min to drive home. During non-rush hour, it took Marco 1 h, 48 min to drive home. Find the difference.
- b. Kade and Amia left from the Kelowna at the same time. Kade took 5 h, 37 min to drive home. Amia took 4 h, 29 min to drive home. Find the difference.

Answers to Topic D Self-Test

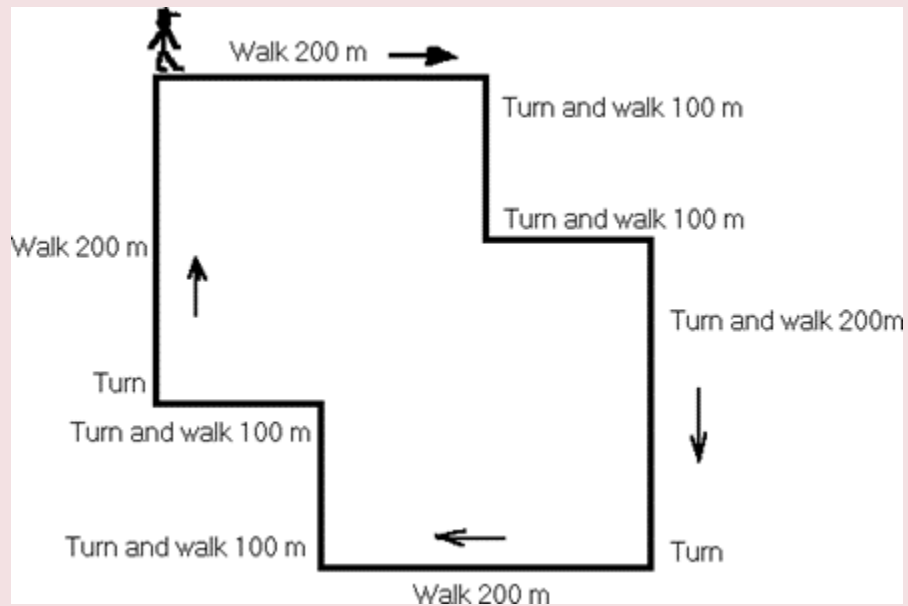
- | | | |
|----|-----------------|-----------------|
| A. | a. 16 h, 50 min | c. 13 h, 50 min |
| | b. 17 h, 55 min | d. 16 h, 45 min |
| B. | a. 12 h, 58 min | c. 9 h, 59 min |
| | b. 13 h, 55 min | d. 36 h, 49 min |
| C. | a. 5 h, 55 min | b. 5 h, 57 min |
| D. | a. 8 h, 20 min | c. 4 h, 35 min |
| | b. 6 h, 15 min | d. 25 h, 35 min |
| E. | a. 2 h, 24 min | c. 9 h, 18 min |
| | b. 9 h, 18 min | d. 9 h, 15 min |
| F. | a. 1 h, 03 min | b. 1 h, 08 min |

Topic E: Perimeter

Perimeter is from the Greek language. Peri means “around”. Perimeter is the distance around something. If you walked around the outside of your building, you would have walked close to the perimeter of the building. (The actual perimeter would be the outside wall which is a little tricky to walk on!) A fence around a field is at the perimeter of the field. In this sense, we are using perimeter to mean “the outside edge”. The length of the entire fence is the measure of the perimeter.

Example A

Picture yourself going for a walk, starting at the door of your building.



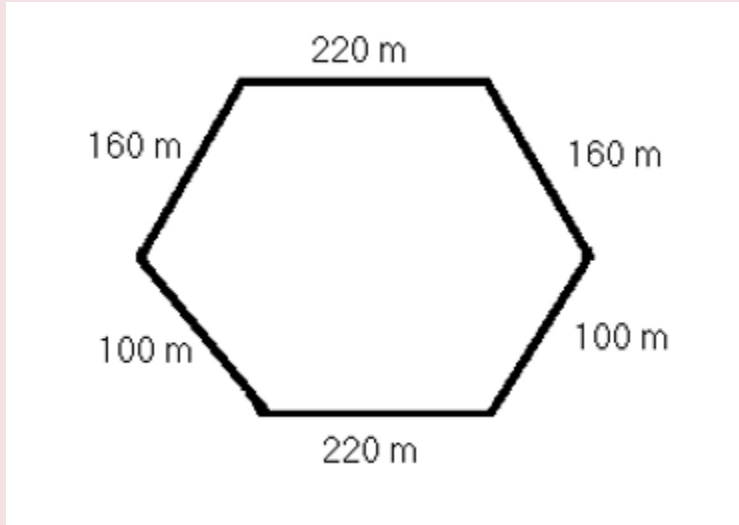
Your walk was in the shape of a polygon. How far did you walk? When you add together all the distances, you get 1 200 m.

You have just found the perimeter of a polygon.

Example B

The new memorial park was built in an interesting shape. The park is a hexagon. A walking path goes around the perimeter of the park.

How long is the path?



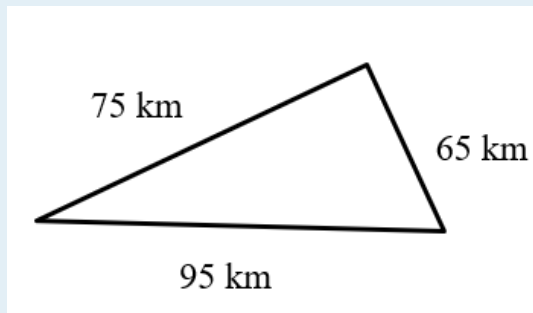
Add the measure of each side of the park. The perimeter of this hexagon is 960 m.

To find the perimeter of a polygon, add the lengths of all the sides together.

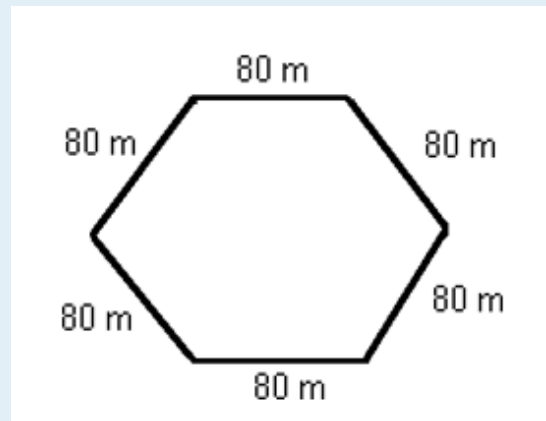
Exercise One

Find the perimeter of each figure. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

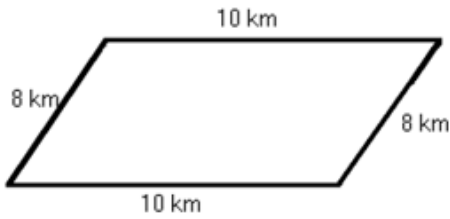
a.



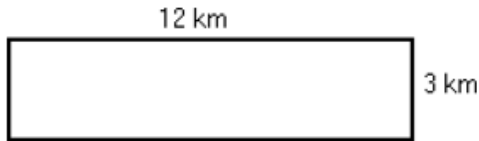
b.



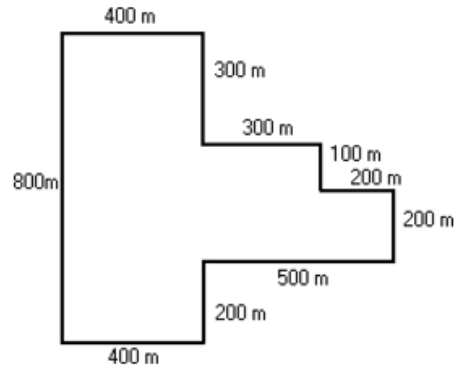
c.



d.



e.



Answers to Exercise One

- a. 235 metres
- b. 480 metres
- c. 36 kilometres
- d. 30 kilometres
- e. 3 400 kilometres

Finding the Perimeter of a Square

Write the definition of a square.

By definition then, a square has four sides that are all congruent (have the same measure). To find the perimeter you can add the four sides.



$$\text{Perimeter} = 8 \text{ cm} + 8 \text{ cm} + 8 \text{ cm} + 8 \text{ cm} = 32 \text{ cm}$$

Exercise Two

Find the perimeter of the squares described in each question. The measure of one side has been given. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

- | | |
|---|-------------------------------------|
| a. $s = 75 \text{ m}$
$p = 75 \text{ m} + 75 \text{ m} + 75 \text{ m} + 75 \text{ m}$
$p =$ | f. $s = 1\,000 \text{ km}$
$p =$ |
| b. $s = 12 \text{ m}$
$p =$ | g. $s = 165 \text{ m}$
$p =$ |
| c. $s = 100 \text{ km}$
$p =$ | h. $s = 325 \text{ m}$
$p =$ |
| d. $s = 50 \text{ cm}$
$p =$ | i. $s = 68 \text{ cm}$
$p =$ |
| e. $s = 130 \text{ m}$
$p =$ | j. $s = 85 \text{ mm}$
$p =$ |

Answers to Exercise Two

- | | |
|--------------------|---------------------|
| a. 300 metres | f. 4 000 kilometres |
| b. 48 metres | g. 660 metres |
| c. 400 kilometres | h. 1 300 metres |
| d. 200 centimetres | i. 272 centimetres |
| e. 520 metres | j. 340 millimetres |

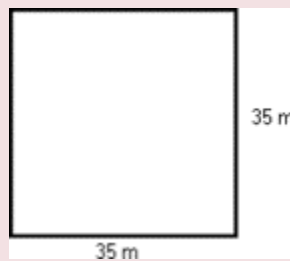
Problems using the Perimeters of Squares**Example C**

Ted needs to build a fence around his swimming pool. The swimming pool with its deck is a square shape that measures 35 m per side. How much fencing must Ted buy?

Step 1: Question.

How much fencing must Ted buy?

Step 2: Find the needed information—drawing a sketch is often helpful.



– fence around a square pool $s = 35\text{m}$

Step 3: Operations.

The fence is a perimeter, so find the perimeter of a square.

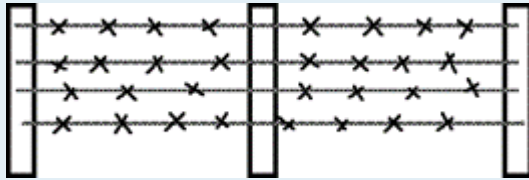
$$P = 35 \text{ m} + 35 \text{ m} + 35 \text{ m} + 35 \text{ m}$$

$P = 140 \text{ m}$ of fence Ted must buy 140 m of fencing.

Exercise Three

Solve these problems using perimeters of squares. The problems may need two operations. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

- The campground security officer walks around the outside of the campground four times every evening. The campground is 800 m square. How far does the officer walk in these patrols each night? Note: 800 m square is a common way of saying “a square with sides that measure 800 m.”
- Lee is going to install base boards in the recreation room he has built in his basement. The room is five metres square. The baseboard material is expensive, so he will be sure to deduct 1 m for each of the two doorways. How much baseboard material does he need to buy?
- Phil is going to fence his large 50 m square vegetable garden to keep the deer out. The fence will be made with four strands of barbed wire. How much barbed wire should Phil buy? The fence will look like this:



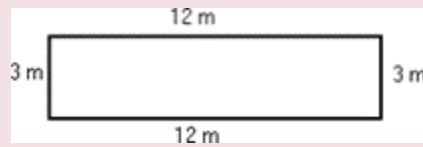
Answers to Exercise Three

- 12 800 metres
- 18 metres
- 800 metres

Finding the Perimeter of a Rectangle

Write the definition of a rectangle.

Example D



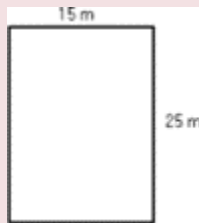
length (l) = 12 m

width (w) = 3 m

To find the perimeter you can find the sum of $12\text{ m} + 3\text{ m} + 12\text{ m} + 3\text{ m} = 30\text{ m}$

Example E

Find the perimeter of a rectangle 25 m long and 15 m wide.



$$P = 15\text{ m} + 25\text{ m} + 15\text{ m} + 25\text{ m} = 80\text{ m}$$

Exercise Four

Find the perimeter of the rectangles described below. Draw and label a sketch for each. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

a. $L = 10\text{ cm}$

$w = 6\text{ cm}$

$p =$

b. $L = 100\text{ km}$

$w = 70\text{ km}$

$p =$

c. $L = 15\text{ mm}$

$w = 10\text{ mm}$

$p =$

d. $L = 97\text{ cm}$

$w = 35\text{ cm}$

$p =$

e. $L = 400 \text{ km}$
 $w = 100 \text{ km}$
 $p =$

f. $L = 42 \text{ m}$
 $w = 67 \text{ m}$
 $p =$

g. $L = 132 \text{ m}$
 $w = 76 \text{ m}$
 $p =$

h. $L = 196 \text{ cm}$
 $w = 28 \text{ cm}$
 $p =$

Answers to Exercise Four

- a. 32 centimetres
 b. 340 kilometres
 c. 50 millimetres
 d. 264 centimetres

- e. 1 000 kilometres
 f. 218 metres
 g. 416 metres
 h. 448 centimetres

Problems using Perimeters of Rectangles

Exercise Five

Solve these problems. Draw and label a sketch for each. Be sure to include the units of measure in your answer. Check your work using the answer key at the end of the exercise.

- Janice plans to sew lace on the edge of a tablecloth that is 132 cm in width and 218 cm long. How much lace does she need?
- One physical education teacher starts each class by having everyone jog around the school 4 times. The school is rectangular (shaped like a rectangle) and 160 m long and 95 m wide. About how far do the students jog each class? Note: 160 m long and 95 m wide may be written as “160 m by 95 m”.
- How many metres of baseboard are needed for a rectangular room 4 m by 3 m? Deduct 1 m for each of the two doorways.
- Dennis likes to cycle 30 km daily around a cycle path at a local park. The park is rectangular and measures 3 km in width and 5 km in length. How far does Dennis cycle if he rides around the park twice?
- Calculate the total amount of weather-stripping needed to go around these windows in a house.
 - 3 windows each measuring 76 cm by 122 cm
 - 2 windows each measuring 152 cm by 135 cm
- The Nuoris are going to replace the fascia board (the trim at the edge of a roof) with new pressure-treated cedar board. Their flat roof is 14 m by 12 m. How much fascia board is needed?

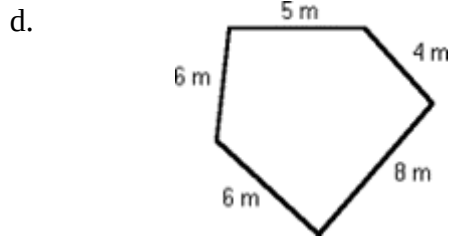
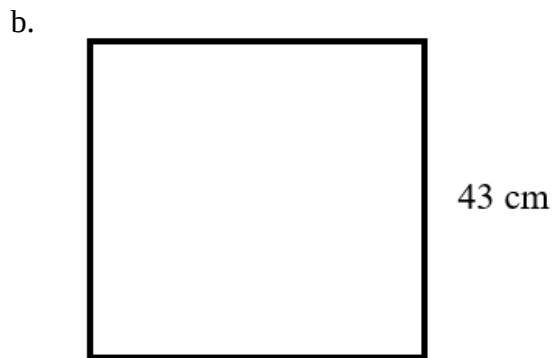
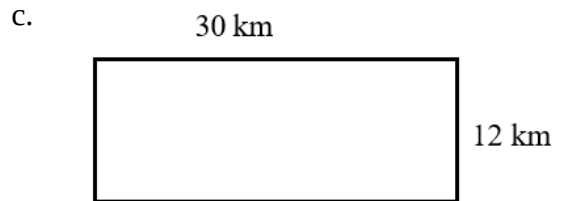
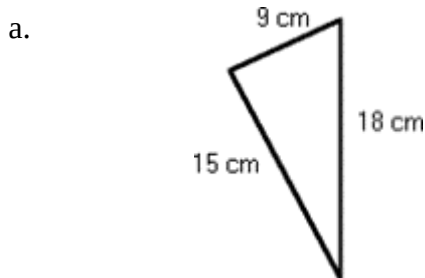
Answers to Exercise Five

- | | |
|--------------------|----------------------|
| a. 700 centimetres | d. 32 kilometres |
| b. 2 040 metres | e. 2 336 centimetres |
| c. 10 metres | f. 52 metres |

Topic E: Self-Test

Mark /6 Aim 5/6

A. Find the perimeter of each shape. (4 marks)



B. Word Problems. Draw and label a sketch for each. Be sure to include the units of measure in your answer. (2 mark)

- How much chrome edging will Juanita need for a kitchen table 121 cm square?
- Than is going to frame a fabulous poster that is 100 cm by 70 cm. How much framing material should he buy?

Answers to Topic E Self-Test

- | | | |
|----|--------------------|--------------------|
| A. | a. 42 centimetres | c. 84 kilometres |
| | b. 172 centimetres | d. 29 metres |
| B. | a. 484 centimetres | b. 340 centimetres |

Unit 5 Review: Making Change and Time

You will now practice all the skills you learned in Unit 5. Check your work using the answer key at the end of the review.

- A. Circle the number of coins you would need to get from the first number to the second number. Make sure to use the least number of coins you can.

- a. 35¢ to 40¢



- b. 85¢ to 90¢



- c. 60¢ to 70¢



- d. 25¢ to 50¢



- B. State the number and kind of coins you would need to get from the first number to the second number. Make sure you use the least number of coins as possible.
- a. 95¢ to \$1.00
 - b. 15¢ to 25¢
 - c. 75¢ to \$1.00
- C. State the number and kind of coins you would need to get from the first number to the second number. Make sure you use the least number of coins as possible.
- a. 65¢ to 75¢
 - b. 35¢ to 75¢
 - c. 20¢ to 50¢
- D. State the number and kind of coins you would need to get change after making a purchase for each indicated amount using a \$1.00 coin. Make sure you use the least number of coins as possible.
- a. 40¢
 - b. 55¢
 - c. 20¢
 - d. 80¢
 - e. 35¢
 - f. 65¢
 - g. 2 apples cost 75¢
 - h. a pen costs 95¢
 - i. a doughnut costs 75¢
 - j. a ruler costs 25¢
 - k. Mrs. Low bought 3 lemons for 90¢. How much change will she get back from \$1.00?
 - l. Mr. Garcia bought a can of peaches for 65¢. How much change will he get back from \$1.00?

E. Write the time shown on each clock.

a.



e.



b.



f.



c.



g.



d.

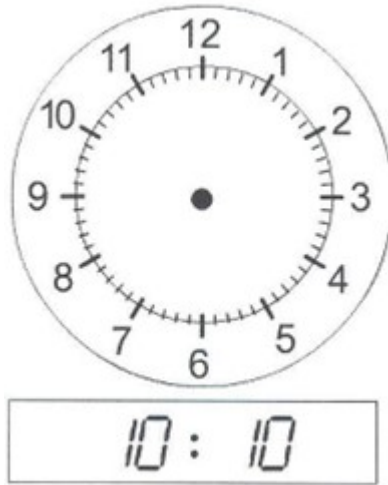


h.

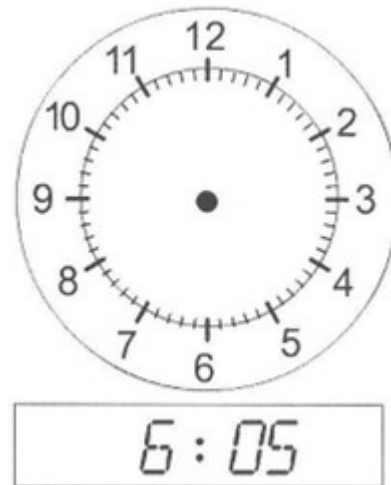


F. Under each clock is a time on a digital clock. Put the hands on the analog clock to show the digital time.

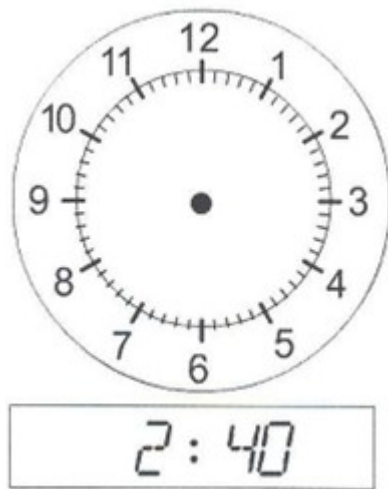
a.



c.



b.



d.



G. Change each 12-hour clock time to 24-hour clock time. Watch carefully for a.m. and p.m. Remember: only times between 1:00 p.m. and 11:59 p.m. need to be changed.

a. 6:48 a.m.

d. 5:30 a.m.

b. 9:56 p.m.

e. 11:17 p.m.

c. 7:45 p.m.

f. 10:08 a.m.

H. Change each 24-hour clock time to 12-hour clock time. You will need to use a.m. or p.m in your answer.

a. 2115

d. 1142

b. 0718

e. 1830

c. 1326

f. 0145

I. Add the times.

$$\begin{array}{r} 6 \text{ h, } 40 \text{ min} \\ \text{a. } + 3 \text{ h, } 10 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 4 \text{ h, } 20 \text{ mins} \\ \text{b. } + 8 \text{ h, } 15 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 8 \text{ h, } 42 \text{ min} \\ \text{c. } + 6 \text{ h, } 15 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 7 \text{ h, } 36 \text{ min} \\ \text{d. } + 9 \text{ h, } 22 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 4 \text{ h, } 15 \text{ min} \\ \text{e. } + 7 \text{ h, } 29 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 5 \text{ h, } 36 \text{ min} \\ \text{f. } + 9 \text{ h, } 17 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 2 \text{ h, } 43 \text{ min, } 35 \text{ s} \\ \text{g. } + 5 \text{ h, } 11 \text{ min, } 22 \text{ s} \\ \hline \end{array}$$

$$\begin{array}{r} 6 \text{ h, } 24 \text{ min, } 43 \text{ s} \\ \text{h. } + 9 \text{ h, } 28 \text{ min, } 08 \text{ s} \\ \hline \end{array}$$

- i. The first soccer game took 2 h, 32 min to complete. The second soccer game took 3 h, 19 min. How long did both games take?
- j. The first cross-country skier completed the race in 2 h, 05 min, 37 s. The second skier completed the race in 2 h, 06 min, 18 s. What is the total time?

J. Subtract the times.

$$\begin{array}{r} 6 \text{ h, } 45 \text{ min} \\ \text{a. } - 3 \text{ h, } 20 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 8 \text{ h, } 50 \text{ min} \\ \text{b. } - 4 \text{ h, } 15 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 16 \text{ h, } 58 \text{ min} \\ \text{c. } - 7 \text{ h, } 27 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 11 \text{ h, } 47 \text{ min} \\ \text{d. } - 2 \text{ h, } 13 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 17 \text{ h, } 42 \text{ min} \\ \text{e. } - 9 \text{ h, } 18 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 13 \text{ h, } 51 \text{ min} \\ \text{f. } - 8 \text{ h, } 37 \text{ min} \\ \hline \end{array}$$

$$\begin{array}{r} 14 \text{ h, } 32 \text{ min, } 41 \text{ s} \\ \text{g. } - 5 \text{ h, } 26 \text{ min, } 39 \text{ s} \\ \hline \end{array}$$

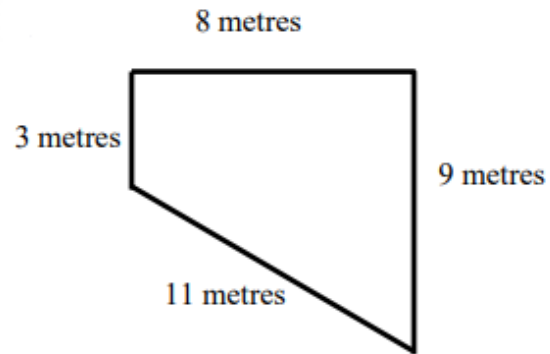
$$\begin{array}{r} 18 \text{ h, } 47 \text{ min, } 36 \text{ s} \\ \text{h. } - 9 \text{ h, } 19 \text{ min, } 19 \text{ s} \\ \hline \end{array}$$

i. The first cross country skier finished the race in 1 h, 34 min, 04 s. The next cross country skier finished the race in 1 h, 42 min, 33 s. What is the difference in their times?

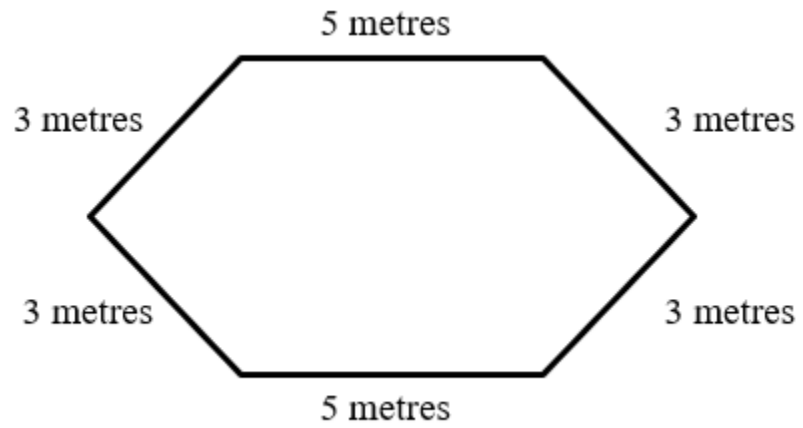
j. It takes 2 h, 20 min to travel from London to Paris on the train. It takes 8 h, 55 min to travel from London to Paris by both ferry and train. How much longer does it take by ferry and train?

K. Find the perimeter of the shape. Be sure to put the unit of measure in your answer.

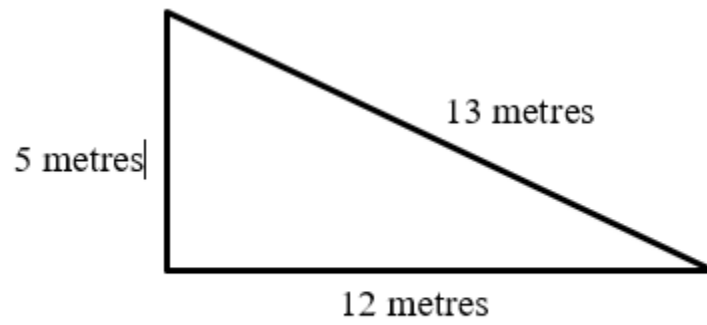
a.



b.



c.



L. Find the perimeter of each square. Be sure to include the unit of measure in your answer.

a.

6 kilometres



b.

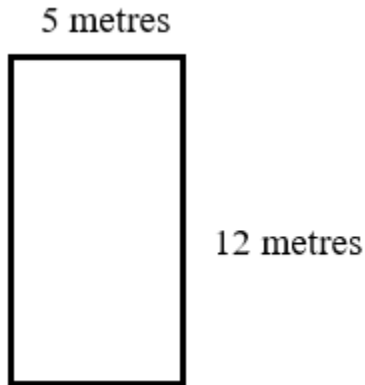
13 centimetres



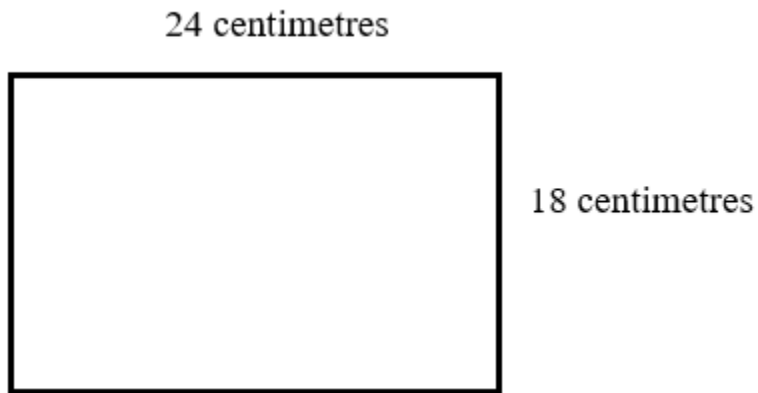
c. Chung is putting new fencing around his square swimming pool. The length of side is 30 metres. How much fencing will Chung need?

M. Find the perimeter of each rectangle. Be sure to include the unit of measure in your answer.

a.



b.



c. Say Han is decorating a rectangular birthday cake that measures 61 centimetres by 31 centimetres. He wants to put an icing decoration around the cake. What is the perimeter of the cake?

Answers to Unit 5 Review

- | | | | |
|----|-------------------------|---------------------------------|----------------------|
| A. | a. 1 nickel | c. 1 dime | |
| | b. 1 nickel | d. 1 quarter | |
| B. | a. 1 nickel | b. 1 dime | c. 1 quarter |
| C. | a. 1 dime | b. 1 quarter, 1 dime, 1 nickel. | 1 nickel, 1 quarter |
| D. | a. 1 dime, 2 quarters | e. 1 dime, 2 quarters, 1 nickel | li. 1 quarter |
| | b. 2 dimes, 1 quarter | f. 1 dime, 1 quarter | j. 3 quarters |
| | c. 3 quarters, 1 nickel | g. 1 quarter | k. 1 dime |
| | d. 2 dimes | h. 1 nickel | l. 1 dime, 1 quarter |

- E. a. 11:30 d. 10:25 g. 9:07
 b. 4:55 e. 7:13 h. 11:37
 c. 3:45 f. 12:48

F. a.



c.



b.



d.



- G. a. 0648 c. 1945 e. 2317
 b. 2156 d. 0530 f. 1008
- H. a. 9:15 p.m. c. 1:26 p.m. e. 6:30 p.m.
 b. 7:18 a.m. d. 11:42 a.m. f. 1:45 a.m.
- I. a. 9 h, 50 min e. 11 h, 44 min i. 5 h, 51 min
 b. 12 h, 35 min f. 14 h, 53 min j. 4 h, 11 min, 55 s
 c. 14 h, 57 min g. 7 h, 54 min, 57 s
 d. 16 h, 58 min h. 15 h, 52 min, 51 s
- J. a. 3 h, 25 min e. 8 h, 24 min i. 8 min, 29 s
 b. 4 h, 35 min f. 5h, 14 min j. 6 h, 35 min
 c. 9 h, 31 min g. 9h, 06 min, 02s
 d. 9 h, 34 min h. 9 h, 28 min, 17 s
- K. a. 31 metres b. 22 metres c. 30 metres
- L. a. 24 kilometres b. 52 centimetres c. 120 metres
- M. a. 34 metres b. 84 centimetres c. 184 centimetres

CONGRATULATIONS!!

Now you have finished Unit 5.

TEST TIME!

Ask your instructor for the Practice Test for this unit.

Once you've done the practice test, you need to do the unit 5 test.

Again, ask your instructor for this.

Good luck!

Book 2 Review

You will now practice all the skills you learned in Book 2. Check your work using the answer key at the end of the review.

If you can't remember how to do a question, go back to the lesson on this topic to refresh your memory. The unit and topic for where each question came from is listed next to the question.

Example: 1-B means Unit 1, Topic B

1-A

- A. Write the place value names (ones, tens, hundreds, thousands, ten thousands, hundred thousands, millions) for each underlined digit.
- | | |
|--|---|
| a. 1 <u>2</u> 30 – what is the place value of 2? | c. <u>6</u> 245 903 – what is the place value of 6? |
| b. <u>2</u> 34 965 – what is the place value of 3? | d. 62 1 <u>9</u> 8 – what is the place value of 8? |
- B. Using the number 452 781 039, write the digit that is in each of the following place values.
- | | |
|------------------|----------------------|
| a. tens | c. hundred thousands |
| b. ten thousands | d. millions |
- C. Underline the digit for the place value named.
- | | |
|----------------------|--------------------------------|
| a. thousands 182 374 | c. hundred thousands 3 142 650 |
| b. hundreds 1 051 | d. thousands 21 087 |
- D. Write the word names for the numbers.
- | | |
|-----------|----------|
| a. 63 374 | b. 7 248 |
|-----------|----------|
- E. Write numerals for these word names.
- | |
|---|
| a. three million, two hundred fourteen thousand, five hundred sixty-seven |
| b. fifty-one thousand, two hundred two |

1-B

F. Write each number in expanded form.

a. 3 479

b. 21 016

G. Write each number from expanded form.

a. $4\,000\,000 + 100\,000 + 10\,000 + 3\,000 + 200 + 40 + 8 =$

b. $100\,000 + 80\,000 + 2\,000 + 300 + 4 =$

1-C

H. Arrange these numbers in order from smallest to largest.

a. 312 23 2 154 2 514 633 43 5 412

b. 45 554 544 5 454 5 544 55 454 445

I. Write $<$, $>$ or $=$ in each blank as needed.

a. 76 125 ____ 71 625

c. 14 527 ____ 14 752

b. 4 325 ____ 3 425

d. 65 234 ____ 65 234

1-D

J. Round each number to the nearest 100.

a. 672

b. 3 473

K. Round each number to the nearest 1 000.

a. 41 370

b. 64 921

L. Round each number to the nearest 10 000.

a. 76 125

b. 582 412

M. Round each number to the nearest 100 000.

a. 351 257

b. 8 675 247

N. Round each number to the nearest 1 000 000.

a. 7 351 257

b. 4 165 268

O. Word Problems.

- a. The Bering Sea is 1 547 metres deep. The Caribbean Sea is 2 647 metres deep. The Indian Ocean is 3 963 metres deep. The Pacific Ocean is 4 028 metres deep. Round each number to the nearest 100.

Sea	Number	Rounded Number
Bering Sea		
Caribbean Sea		
Indian Ocean		
Pacific Ocean		

- b. The Yellow Sea has an area of 293 960 square metres. The Red Sea has an area of 452 990 square metres. The Black Sea has an area of 507 900 square metres. Round each number to the nearest 100 000.

Sea	Number	Rounded Number
Yellow Sea		
Red Sea		
Black Sea		

2-A

P. Find the sums

$$\begin{array}{r} 53 \\ a. + 24 \end{array}$$

$$\begin{array}{r} 60 \\ b. + 19 \end{array}$$

$$\begin{array}{r} 74 \\ c. + 22 \end{array}$$

$$\begin{array}{r} 21 \\ d. + 45 \\ + 32 \end{array}$$

$$\begin{array}{r} 41 \\ e. + 33 \\ + 24 \end{array}$$

$$\begin{array}{r} 50 \\ f. + 31 \\ + 28 \end{array}$$

Q. Find the sums

$$\begin{array}{r} 362 \\ 114 \\ \text{a. } + 523 \end{array}$$

$$\begin{array}{r} 425 \\ 241 \\ \text{b. } + 312 \end{array}$$

$$\begin{array}{r} 421 \\ 146 \\ \text{c. } + 332 \end{array}$$

$$\begin{array}{r} 4723 \\ \text{d. } + 4165 \end{array}$$

$$\begin{array}{r} 8102 \\ \text{e. } + 2562 \end{array}$$

$$\begin{array}{r} 9415 \\ \text{f. } + 3521 \end{array}$$

R. Find the sums.

$$\begin{array}{r} 65 \\ \text{a. } + 423 \end{array}$$

$$\begin{array}{r} 238 \\ \text{b. } + 5421 \end{array}$$

$$\begin{array}{r} 43 \\ 732 \\ \text{c. } + 124 \end{array}$$

$$\begin{array}{r} 8216 \\ \text{d. } + 7343 \end{array}$$

$$\begin{array}{r} 75236 \\ \text{e. } + 30533 \end{array}$$

$$\begin{array}{r} 543 \\ 2140 \\ \text{f. } + 67205 \end{array}$$

2-B

S. Find the sums.

$$\begin{array}{r} 47 \\ a. + 87 \end{array}$$

$$\begin{array}{r} 87 \\ b. + 59 \end{array}$$

$$\begin{array}{r} 26 \\ c. + 98 \end{array}$$

$$\begin{array}{r} 63 \\ d. + 79 \\ \quad + 51 \end{array}$$

$$\begin{array}{r} 72 \\ e. + 54 \\ \quad + 19 \end{array}$$

$$\begin{array}{r} 65 \\ f. + 26 \\ \quad + 87 \end{array}$$

T. Find the sums.

$$\begin{array}{r} 148 \\ a. + 996 \end{array}$$

$$\begin{array}{r} 9\,168 \\ b. + 5\,878 \end{array}$$

$$\begin{array}{r} 78\,945 \\ c. + 93\,165 \end{array}$$

$$\begin{array}{r} 592 \\ d. + 327 \\ \quad + 168 \end{array}$$

$$\begin{array}{r} 5\,534 \\ e. + 1\,684 \\ \quad + 3\,719 \end{array}$$

$$\begin{array}{r} 24\,163 \\ f. + 46\,272 \\ \quad + 61\,938 \end{array}$$

U. Find the sums.

a. $85 + 29 + 77 =$

b. $692 + 7\,834 + 8\,096 =$

c. $43\,124 + 9\,517 =$

d. $358\,726 + 81\,297 + 3\,216 =$

2-C

V. Estimate the sums.

$$\begin{array}{r} 582 \\ 690 \\ \text{a. } + 163 \end{array}$$

$$\begin{array}{r} 81\,904 \\ 54\,061 \\ \text{c. } + 15\,243 \end{array}$$

$$\begin{array}{r} 1\,637 \\ 6\,835 \\ \text{b. } + 3\,175 \end{array}$$

$$\begin{array}{r} 42\,563 \\ 4\,163 \\ \text{d. } + 6\,429 \end{array}$$

W. Word Problems. Estimate the following answer. Be sure to round to the largest place value before adding.

- a. Indonesia has 7 606 square kilometres of coral reef. Australia has 7 299 square kilometres of coral reef. The Philippines has 3 736 square kilometres of coral reef. Estimate how much coral reef there is in these three countries.

3-B

X. Find the differences.

$$\begin{array}{r} 76 \\ \text{a. } - 35 \end{array}$$

$$\begin{array}{r} 16\,789 \\ \text{f. } - 9\,205 \end{array}$$

$$\begin{array}{r} 98 \\ \text{b. } - 27 \end{array}$$

$$\begin{array}{r} 48\,296 \\ \text{g. } - 25\,134 \end{array}$$

$$\begin{array}{r} 863 \\ \text{c. } - 410 \end{array}$$

$$\begin{array}{r} 95\,627 \\ \text{h. } - 63\,025 \end{array}$$

$$\begin{array}{r} 1\,294 \\ \text{d. } - 681 \end{array}$$

$$\begin{array}{r} 145\,789 \\ \text{i. } - 61\,425 \end{array}$$

$$\begin{array}{r} 9\,758 \\ \text{e. } - 9\,421 \end{array}$$

Y. Rewrite each question in columns then find the differences.

a. $569 - 421 =$

d. $86\,579 - 23\,104 =$

b. $7\,854 - 1\,304 =$

e. $157\,849 - 86\,531 =$

c. $15\,939 - 6\,714 =$

f. $136\,975 - 72\,041 =$

3-D

Z. Find the Differences.

a.
$$\begin{array}{r} 22 \\ - 4 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 981 \\ - 52 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 43 \\ - 15 \\ \hline \end{array}$$

e.
$$\begin{array}{r} 894 \\ - 265 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 782 \\ - 43 \\ \hline \end{array}$$

f.
$$\begin{array}{r} 943 \\ - 492 \\ \hline \end{array}$$

AA. Find the differences. Check your answers using addition.

a.
$$\begin{array}{r} 91 \\ - 28 \\ \hline \end{array}$$
 Check:

c.
$$\begin{array}{r} 1\,751 \\ - 835 \\ \hline \end{array}$$
 Check:

b.
$$\begin{array}{r} 532 \\ - 240 \\ \hline \end{array}$$
 Check:

d.
$$\begin{array}{r} 76\,487 \\ - 5\,179 \\ \hline \end{array}$$
 Check:

AB. Find the differences.

$$\begin{array}{r} 468 \\ \text{a. } - 79 \\ \hline \end{array}$$

$$\begin{array}{r} 8\ 323 \\ \text{d. } - 4\ 798 \\ \hline \end{array}$$

$$\begin{array}{r} 752 \\ \text{b. } - 479 \\ \hline \end{array}$$

$$\begin{array}{r} 52\ 727 \\ \text{e. } - 3\ 748 \\ \hline \end{array}$$

$$\begin{array}{r} 9\ 364 \\ \text{c. } - 580 \\ \hline \end{array}$$

$$\begin{array}{r} 62\ 435 \\ \text{f. } - 17\ 689 \\ \hline \end{array}$$

AC. Find the differences.

$$\begin{array}{r} 420 \\ \text{a. } - 68 \\ \hline \end{array}$$

$$\begin{array}{r} 3\ 914 \\ \text{d. } - 1\ 765 \\ \hline \end{array}$$

$$\begin{array}{r} 900 \\ \text{b. } - 325 \\ \hline \end{array}$$

$$\begin{array}{r} 46\ 000 \\ \text{e. } - 7\ 143 \\ \hline \end{array}$$

$$\begin{array}{r} 3\ 403 \\ \text{c. } - 849 \\ \hline \end{array}$$

$$\begin{array}{r} 53\ 610 \\ \text{f. } - 46\ 929 \\ \hline \end{array}$$

AD. Rewrite each question in columns then find the difference.

$$\text{a. } 973 - 178 =$$

$$\text{c. } 3\ 730 - 2\ 896 =$$

$$\text{b. } 5\ 129 - 479 =$$

$$\text{d. } 91\ 220 - 78\ 357 =$$

3-E

AE. Estimate the differences.

$$\begin{array}{r} 872 \\ \text{a. } - 465 \\ \hline \end{array}$$

$$\begin{array}{r} 56\ 907 \\ \text{c. } - 9\ 014 \\ \hline \end{array}$$

$$\begin{array}{r} 6\ 324 \\ \text{b. } - 389 \\ \hline \end{array}$$

$$\begin{array}{r} 64\ 932 \\ \text{d. } - 6\ 755 \\ \hline \end{array}$$

- AF. Estimate the following answers. Be sure to round to the largest place value possible before adding or subtracting. Remember to circle the information and underline what is being asked. Check your work using the answer key at the end of the exercise.
- When Mrs. Wu traded in her old car, it had 72 468 kilometres on the odometer. The new used car she bought had 8 975 kilometres on the odometer. Estimate the difference in kilometres between her old car and her new car.
 - Mario's restaurant served 53 058 meals last year. This year to date, the restaurant has served 5 837 meals. Estimate how many more meals Mario's restaurant served last year.

3-F

- AG. Word Problems. Use the 5 problem solving steps. Look for key words and patterns to help you choose the correct operation. Estimate the answer using rounded numbers if the numbers have 2 digits or more.
- The WAC Bennett Dam near Revelstoke is 2 068 metres long. The Keenleyside Dam near Castlegar is 853 metres long. The Mica Dam near Revelstoke is 241 metres long. What is the total length of the three dams?
 - Raoul earned \$35 668 last year. This year he has earned \$42 791. How much more did Raoul earn this year?
 - During one month, Jasmine spends 12 645 minutes sleeping and 5 723 minutes eating. How much time does she spend sleeping and eating?
- AH. Find the sum or difference for each question.
- $273 + 538 - 54 =$
 - $2\,875 - 496 + 162 =$
 - $2\,998 + 579 - 673 =$
 - $4\,723 + 5\,806 - 3\,924 =$
 - Abigail earned \$383 and \$622 from her two jobs. She decided to keep \$265 for her Christmas shopping and put the rest of the money in the bank. Estimate how much money Abigail put in the bank

4-A

AI. Circle the number of coins you would need to get from the first number to the second number. Make sure to use the least number of coins you can.

a. 70¢ to 75¢



b. 80¢ to \$1.00



c. 50¢ to 75¢



4-B

AJ. State the number and kind of coins you would need to get from the first number to the second number. Make sure you use the least number of coins as possible.

a. 25¢ to 50¢

b. 70¢ to 75¢

c. 20¢ to 75¢

AK. State the number and kind of coins you would need to get change after making a purchase of the indicated amount using a \$1.00 coin. Make sure you use the least number of coins as possible. Check your work using the answer key at the end of the exercise.

- 40¢
- 50¢
- 70¢
- a litre of pop for 95¢
- an apple pastry for 60¢

4-C

AL. Write the time shown on each clock.

a.



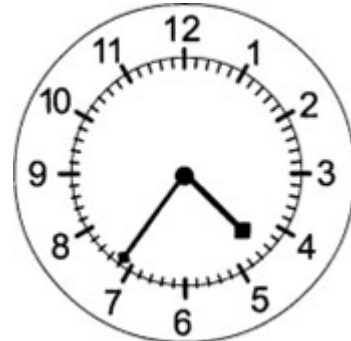
d.



b.



e.



c.

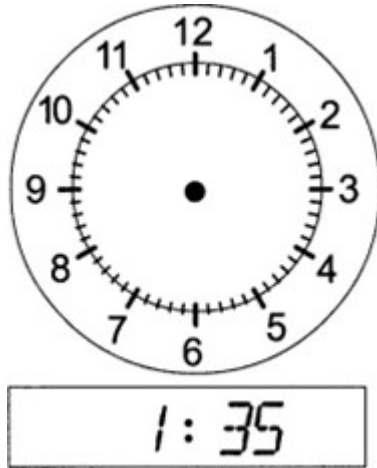


f.

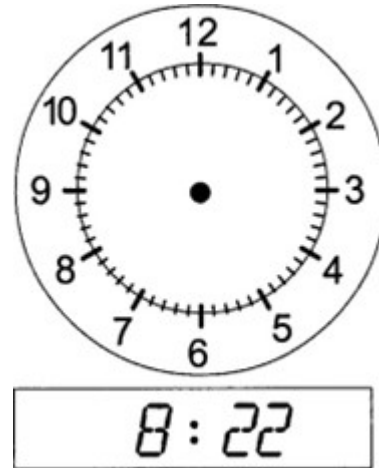


AM. Under each clock is a time on a digital clock. Put the hands on the analog clock to show the digital time.

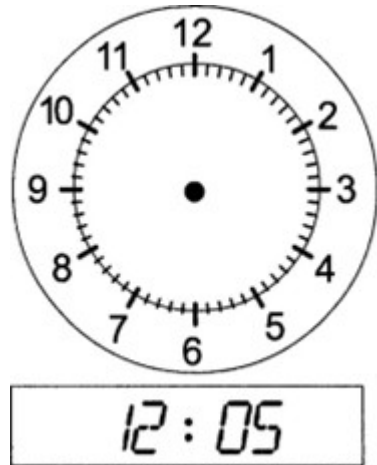
a.



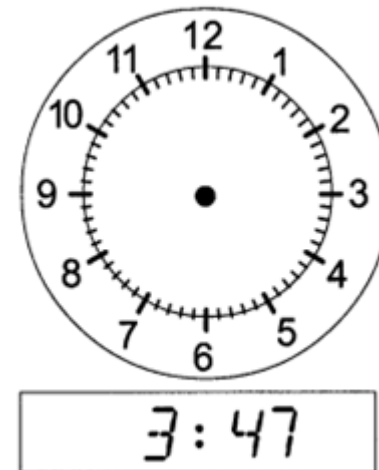
d.



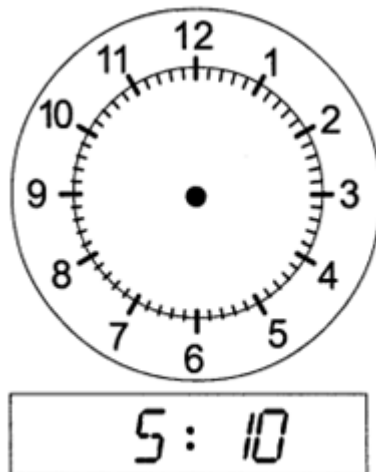
b.



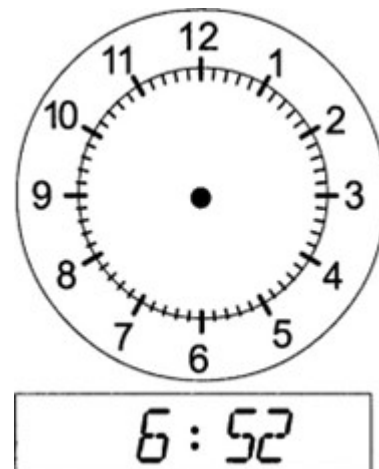
e.



c.



f.



AN. Change each 12-hour clock time to 24-hour clock time. Watch carefully for a.m. and p.m. Remember: only times between 1:00 p.m. and 11:59 p.m. need to be changed.

- | | |
|---------------|---------------|
| a. 7:32 a.m. | c. 2:43 p.m. |
| b. 11:06 p.m. | d. 10:18 a.m. |

AO. Change each 12-hour clock time to 24-hour clock time. Watch carefully for a.m. and p.m. Remember: only times between 1:00 p.m. and 11:59 p.m. need to be changed.

- | | |
|---------|---------|
| a. 0127 | c. 0612 |
| b. 1548 | d. 2053 |

4-D

AP. Add the times.

- | | |
|---|---|
| a. $5 \text{ h, } 32 \text{ min}$
+ $4 \text{ h, } 21 \text{ min}$ | d. $6 \text{ h, } 15 \text{ min, } 08 \text{ s}$
+ $8 \text{ h, } 28 \text{ min, } 17 \text{ s}$ |
| b. $3 \text{ h, } 27 \text{ min}$
+ $2 \text{ h, } 19 \text{ min}$ | e. Evian took 2 h, 43 min to bake some cookies and then another 3 h, 08 min to bake and decorate a cake. How long was Evian baking? |
| c. $7 \text{ h, } 41 \text{ min, } 23 \text{ s}$
+ $9 \text{ h, } 07 \text{ min, } 24 \text{ s}$ | |

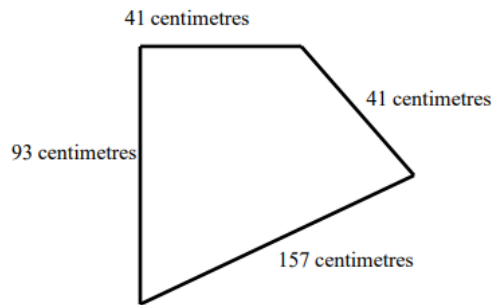
AQ. subtract the times.

- | | |
|--|--|
| a. $5 \text{ h, } 53 \text{ min}$
- $3 \text{ h, } 12 \text{ min}$ | d. $18 \text{ h, } 34 \text{ min, } 42 \text{ s}$
- $9 \text{ h, } 19 \text{ min, } 28 \text{ s}$ |
| b. $9 \text{ h, } 47 \text{ min}$
- $4 \text{ h, } 29 \text{ min}$ | e. Elan had 4 h, 31 min to do her errands. She took 2 h, 28 min to have her hair done. How much does Elan have left to finish her errands? |
| c. $15 \text{ h, } 59 \text{ min, } 39 \text{ s}$
- $7 \text{ h, } 38 \text{ min, } 14 \text{ s}$ | |

4-E

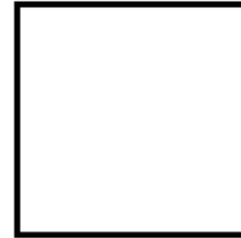
AR. Find the perimeter of the shape. Be sure to put the unit of measure in your answer.

a.

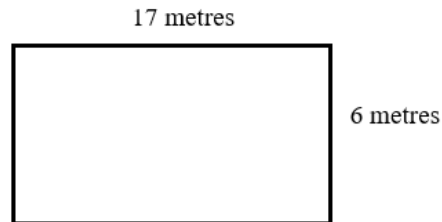


c.

55 millimetres



b.



d. Kono is going to put tape around a rectangular table. He has 2 500 cm of tape. The table measures 60 centimetres wide and 70 centimetres long. how much tape will he use?

e. Charla wants to put a ribbon around the edge of a square whose side measures 112 cm. How much ribbon does she need?

Answers to Book 2 Review

- | | | |
|----|--|--|
| A. | a. hundreds | c. millions |
| | b. ten thousands | d. ones |
| B. | a. 3 | c. 7 |
| | b. 8 | d. 2 |
| C. | a. 182 374 | c. 3 142 650 |
| | b. 1 051 | d. 21 087 |
| D. | a. sixty-three thousand, three hundred | b. seven thousand, two hundred forty-eight |
| | seventy-four | |
| E. | a. 3 214 567 | b. 51 202 |
| F. | a. 3 000 + 400 + 70 + 9 | b. 20 000 + 1 000 + 10 + 6 |
| G. | a. 4 133 248 | b. 182 304 |

- H. a. 23, 43, 312, 633, 2 154, 2 514, 5 412
b. 45, 55, 445, 454, 544, 554, 5 454, 5 544

- I. a. > c. <
b. > d. =

- J. a. 700 b. 3 500

- K. a. 41 000 b. 65 000

- L. a. 80 000 b. 580 000

- M. a. 400 000 b. 8 700 000

- N. a. 7 000 000 b. 4 000 000

O. a.

Sea	Number	Rounded Number
Bering Sea	1 547	1 500
Caribbean Sea	2 647	2 600
Indian Ocean	3 963	4 000
Pacific Ocean	4 028	4 000

b.

Sea	Number	Rounded Number
Yellow Sea	293 960	300 000
Red Sea	452 990	500 000
Black Sea	507 900	500 000

- P. a. 77 d. 98
b. 79 e. 98
c. 96 f. 109

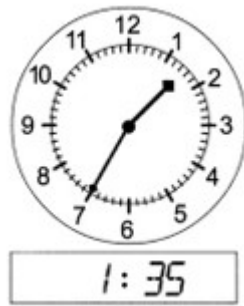
- Q. a. 999 d. 8 888
b. 978 e. 10 664
c. 899 f. 12 936

- R. a. 488 d. 15 559
b. 5 659 e. 105 769
c. 899 f. 69 888

- AD. a. 795 c. 834
b. 4 650 d. 12 863
- AE. a. $900 - 500 = 400$ c. $57\,000 - 9\,000 = 48\,000$
b. $6\,300 - 400 = 5\,900$ d. $65\,000 - 7\,000 = 58\,000$
- AF. a. $70\,000 - 9\,000 = 61\,000$ kilometres b. $50\,000 - 6\,000 = 44\,000$ meals
- AG. a. 3 162 metres c. 19 000 minutes
b. \$7 123
- AH. a. 757 d. 6 605
b. 2 541 e. \$740
c. 2 904
- AI. a. 1 nickel c. 1 quarter
b. 2 dimes
- AJ. a. 1 quarter c. 1 nickel, 2 quarters
b. 1 nickel
- AK. a. 1 dime, 2 quarters d. 1 nickel
b. 2 quarters e. 1 nickel, 1 dime, 1 quarter
c. 1 nickel, 1 quarter
- AL. a. 7:15 d. 10:03
b. 2:40 e. 4:36
c. 11:20 f. 9:57

AM.

a.



d.



b.



e.



c.



f.



AN.

a. 0732

c. 1443

b. 2306

d. 1018

AO.

a. 1:27 p.m.

c. 6:12 a.m.

b. 3:48 p.m.

d. 8:53 p.m.

AP.

a. 9 h, 53 min

d. 14 h, 43 min, 25s

b. 5 h, 46 min

e. 5 h, 51 min

c. 16 h, 48 min, 47 s

AQ.

a. 2 h, 41 min

d. 9 h, 15 min, 14 s

b. 5 h, 18 min

e. 2 h, 3 min

c. 8 h, 21 min, 25 s

- AR.
- a. 332 centimetres
 - b. 46 metres
 - c. 220 millimetres
 - d. 260 centimetres
 - e. 448 centimetres

CONGRATULATIONS!!

Now you have finished Book 2.

TEST TIME!

Ask your instructor for the Practice Test for this book.

Once you've done the practice test, you need to do the end test.

Again, ask your instructor for this.

Good luck!

Acknowledgments - 1st Edition

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Versioning History

This page provides a record of edits and changes made to this book since its initial publication. Whenever edits or updates are made in the text, we provide a record and description of those changes here. If the change is minor, the version number increases by 0.01. If the edits involve substantial updates, the version number increases to the next full number.

The files posted by this book always reflect the most recent version. If you find an error in this book, please fill out the Report an Error (<https://collection.bccampus.ca/report-error/>) form.

Version	Date	Change	Details
1.00	October 3, 2014	Book initially published in the BC Open Collection.	
2.00	November 1, 2022	Book updated and republished in Pressbooks as the second edition.	
2.01	January 25, 2023	Minor edits for consistency of ALF Math series.	<ul style="list-style-type: none"> • Created a “How to Deal with Math Anxiety” front matter section, which is now standardized across all ALF Math books. • Deleted “Topic A: Emotions and Learning” since that content is now covered in the “How to Deal with Math Anxiety” front matter. • Re-lettered the remaining topics in Unit 1.
2.02	May 31, 2024	Changed questions and answers.	In the Self-Test in Topic A: Place Value in Unit 1: Number Sense, questions B and C were identical, but their answers were different. Question B was altered to match its answers.
2.03	June 7, 2024	Corrected answer and fixed formatting.	In Exercise Four in Topic E: Perimeter in Unit 5: Making Change, Time & Perimeter, the answer was corrected for question h. Throughout the section, some formatting was adjusted.
2.04	March 5, 2025	Corrected errors and formatting.	Corrected content and formatting errors in all units, including incorrect answers, repeated questions, and ordered lists that were missing numbering.
2.05	May 16, 2025	Corrected errors and formatting.	Corrected errors throughout the book.

2.06	September 18, 2025	Corrected errors and formatting.	<p>Corrected errors and added content in the following sections:</p> <ul style="list-style-type: none">• Topic D: Rounding Numbers in Unit 1• Topic C: Estimating Answers in Addition in Unit 2• Unit 2 Review: Addition• Topic D: Subtraction with Borrowing in Unit 3• Topic E: Estimating Answers in Subtraction in Unit 3• Unit 3 Review: Subtraction• Topic A: Introduction and Multiplication Facts in Unit 4• Topic B: Making Change in Unit 5• Topic D: Adding Units of Time in Unit 5• Topic E: Perimeter in Unit 5• Unit 5 Review: Making Change and Time• Book 2 Review
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