Grade 6
Learning Advantage

100% Canadian content...
aligned with school curriculum

Learning Advantage
Preparing for success

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Parent-friendly... List of curriculum expectations

Parent Pages
Curriculum Expectations for Grade 6

Overall expectations covered in this book include the following:

Students will...

Language

* summarize and explain the main ideas in information materials and cite details that support the main ideas;

* make judgments and draw conclusions about ideas in written materials on the basis of evidence;

* make predictions while reading a story, using various clues;

* identify some stylistic devices in literary works and explain their use;

* produce pieces of writing using a variety of forms;

* select words and expressions to create specific effects;

* communicate ideas and information for a variety of purposes and to specific audiences;

* use adjectives and adverbs correctly;

Mathematics:

* explore the relationships between fractions, decimals, and simple percents, using a calculator, concrete materials and drawings;

* classify two-dimensional shapes according to angle and side properties;

* demonstrate an understanding of congruent figures;

* demonstrate the congruence of figures by measuring sides and matching corresponding parts;

* mentally multiply decimals by 10, 100, 1000;

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100% Canadian content... Canadian measurements

Here are the commodities that you **exported** and the value per kg of each commodity:

a) **Fish:**
500 kg @ $1/kg

b) **Cattle:**
925 kg @ $2/kg

c) **Lumber:**
2200 kg @ $10/kg

d) **Gold:**
2350 kg @$5000/kg

Here are the commodities that you **imported** from other countries:

a) **Diamonds:**
700 kg @ $10 000/kg

b) **Coffee:**
1550 kg @ $2/kg

c) **Cotton:**
650 kg @ $3/kg

d) **Bananas:**
800 kg @$1/kg

e) **Rice:**
1025 kg @ $1/kg

1. On a separate piece of paper, use the above data to construct four bar graphs
   * one to show the weight of goods exported; * one to show the weight of imports;
   * one to show to total value of goods exported; * one to show the total value of goods imported.

Remember to put a title on each axis.
Show your increments (in kg and $) carefully.

2. "Balance of payments" is a term for the difference between the total money earned by a country for all the goods it exports, and the total money spent by a country for all the goods it imports.
   Canada always hopes to earn more than it spends --
   to have a positive "balance of payments.
   What was the balance of payments in the year you have just completed?

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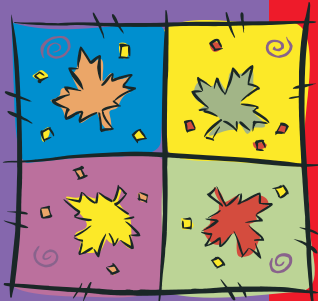
100% Canadian content...
Canadian Social Studies

Canadian Capitals Word Search

N	C	W	I	X	J	A	V	D	T	W	E	E	B	K
S	O	A	I	C	A	I	T	I	N	S	F	D	O	Z
X	U	T	M	N	C	F	U	F	R	R	I	M	M	V
C	K	M	C	T	N	L	I	O	V	R	N	O	H	D
Z	X	T	O	I	A	I	H	L	I	R	K	N	D	D
H	A	R	V	Q	R	E	P	I	A	B	W	T	O	Q
L	I	I	A	T	E	F	E	R	H	O	O	T	G
A	R	E	G	I	N	A	D	U	G	S	L	N	N	Y
D	S	N	H	O	J	T	S	E	E	M	L	B	O	X
R	X	W	F	I	X	Y	O	D	R	O	E	M	R	P
Q	U	E	B	E	C	C	I	T	Y	F	Y	N	O	T
B	N	V	W	V	E	E	X	V	T	E	N	G	T	Z
N	W	O	T	E	T	T	O	L	R	A	H	C	O	E
H	C	S	L	K	E	K	Q	Z	B	B	W	G	Y	E
C	J	G	Q	W	L	U	R	S	G	T	C	A	A	Z

CHARLOTTETOWN   EDMONTON   FREDERICTON
HALIFAX   IQALUIT   OTTAWA
QUEBEC CITY   REGINA   ST JOHNS
TORONTO   VICTORIA   WHITEHORSE
WINNIPEG   YELLOWKNIFE

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Uses current educational theory...
integrated learning (Science/ math skills)

It's a long way from Mars to Jupiter, but way out there in space, Jupiter is more than ten times the size of Earth.

Farther away yet, the beautiful planet Saturn, surrounded by its rings, is almost ten times as big as Earth. With a pair of binoculars, you can actually see Saturn and its rings on a clear dark night -- but you will need someone to tell you which way to point the binoculars!

We tried to show you how big Saturn is, compared to Earth -- but of course it wouldn't quite fit on this page.

Do you get the picture?? Saturn is **HUGE!**

Uranus and Neptune are about four times as large as Earth. And Pluto is just one-sixth the size of Earth. It is so small that it was only recently discovered (in 1930) by scientists using high-powered telescopes.

Saturn

Complete this chart to understand the sizes of the planets, as scaled to different measurements.
Say the actual size of each planet out loud. Work from the orange numbers to complete the chart.

	Actual Diameter/km	When Earth = 1 cm	When Earth = 1 mm (x 1/10)	When Earth = 5 cm (X 5)	When Earth = 10 cm (X 10)
Sun	1 391 900	110 cm	11 cm		
Mercury	4 866	4 mm		20 mm = 2 cm	
Venus	12 106	1 cm			
Earth	12 742	1 cm			
Mars	6 760	5 mm			
Jupiter	139 516	11.3 cm			113 cm = 1.13 m
Saturn	116 438	9.4 cm			
Uranus	46 940	4.1 cm			
Neptune	45 432	3.9 cm			
Pluto	2 274	2 mm			

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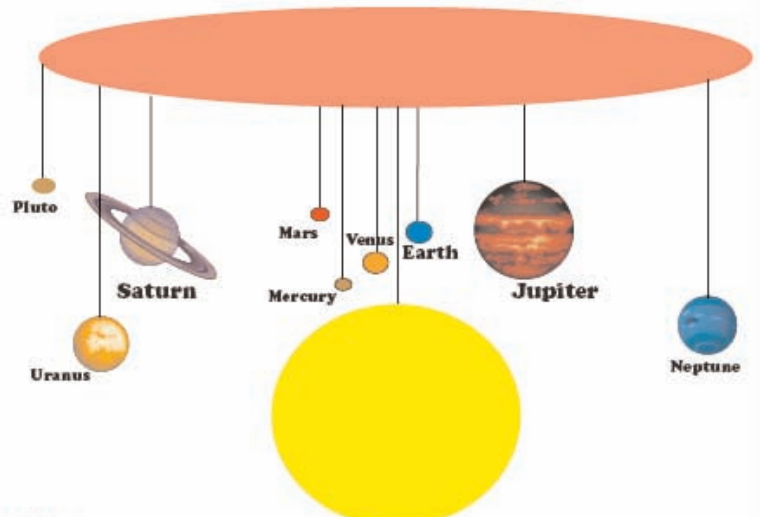
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Uses current educational theory...
tactile learning activities

Solar System **Mobile**

⭐ coloured construction paper, scissors,
⭐ tape or glue, pencil, pencil crayons, markers,
⭐ a circle maker (a compass or drinking glass or bowl etc.)
⭐ light cardboard or bristol board, heavy cardboard, thread or string

Here's what we are making:

Pluto

Saturn

Uranus

Mars

Mercury

Venus

Earth

Jupiter

Neptune

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Uses current educational theory...
information provided to engage pupil inquiry

In Orbit

1. Our Home in Space

The Earth, our home, is a small planet, spinning around a star that we call the sun. Earth makes a complete twirl on its axis every 24 hours. We call that twirl one day. Every 365 days, Earth completes an orbit around the sun. We call that one year.

We seem to be just exactly far enough from the sun. The sun is a raging hot furnace. If we were much closer to the sun, all the water on our planet would boil away, and we'd be cooked. If we were much farther away from the sun, our water would always be frozen, and life would be very uncomfortable. But here we are, having fun on this third rock from the sun.

2. The Solar System

Earth is part of a group of planets that circle around the sun. All the planets are more or less on the same level, so the solar system looks a bit like a wheel, spinning around a hub. The sun is at the centre of the wheel. The planets travel counterclockwise around the sun. Two of the planets are closer to the sun than we are -- that's why we're the third rock from the sun! (Ask your parents about that old TV show if you've never watched it.) Mercury and Venus are smaller than Earth, and a whole lot hotter. No earthling could survive for five seconds if it landed on Venus.

Mars is the fourth planet in the solar system. The surface of Mars is totally frozen. It looks like a vast icy desert. Scientists think that there might have been water on Mars once upon a time, and there may be ice down deep inside the planet. We'll never know for sure until an astronaut travels there.

Could that astronaut be YOU?

In 2008, scientists decided that Pluto is too small to be called a planet. Some people now call it a "dwarf planet." It's still there, riding in an orbit that goes around the sun about once every 250 Earth years. All the information about Pluto in this unit is still true.

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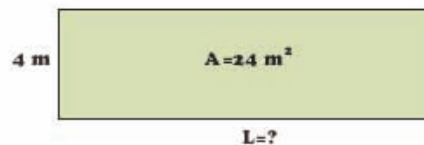
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Kid-friendly... Colourful graphics

Three stage problems

Now the problems become a little more complex. They're not really difficult; they just need you to take more steps before you get the answer. They are very practical, because all your life, you're going to be solving problems like these. You're being asked to take one more step – usually finding out how much something costs, if you're dealing with perimeter or area. Take them one step at a time, use the formulas, and think!

To begin, let's solve the first problem from page 157.

Farmer Leslie has a rectangular vegetable garden with an area of $24 \, m^2$. The width of the plot is 4 m. If fencing costs $7/metre, how much will it cost Farmer Leslie to build a fence around his vegetable plot?

4 m   A=24 m²

L=?

[Imagine the size of the field.]

Stage 1: What do we need to find first? Length
What do we know already? Area and width

Formula: $A = L \times W$

Assign values: $24 = L \times 4$

Isolate the unknown: $\dfrac{24}{4} = \dfrac{L \times 4}{4}$

Solve: $6 = L$

Answer in words: the length of the field is 6m

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Kid-friendly... Guided practice

### Here's how to measure an angle with a protractor:

Put the "bull's eye" (at the bottom centre of the protractor) on the point of the angle, and the base line of the protractor along the base line of the angle.

Then count the degrees on the protractor, always starting from 0 on the same side of the protractor as the base line of the angle, and counting up to where the other line of the angle crosses the protractor. It doesn't matter how long the sides of the angle are: it still has the same number of degrees.

Degrees is written as °. Examples: 85°, 180°

1. Measure these angles with a protractor:

angle A = _____ °

angle B = _____ °

angle B = _____ °

angle D = _____ °
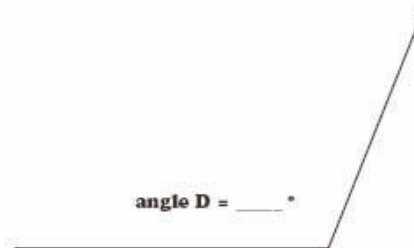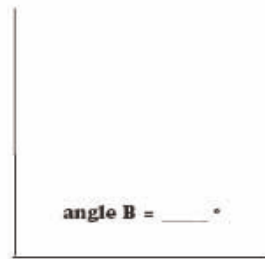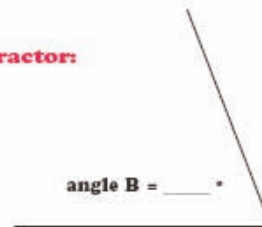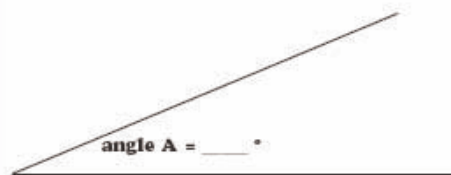
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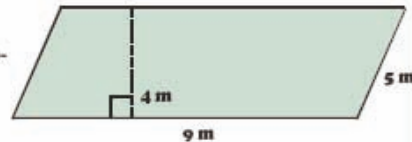## Kid-friendly... confidence-building activities

Easy practice

8. The sides of a parallelogram are 9 m and 5 m. Its height is 5 m. Find its area and perimeter.

Diagram: (Dr. Don has done this one for you.)

(Imagine the size of the parallelogram. The diagram may not show the proper proportion between the sides.)

4 m

5 m

9 m

Formula:

Assign values: Solve:

Answer in words:

9. A right-angled triangle has sides of 6 m, 8 m and 10 m. The 8 m side is also the height of the triangle. Find its area and perimeter.
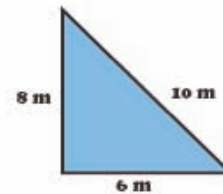
(Imagine the size of the triangle.)

Formula:

Assign values:

Solve:

Answer in words

8 m

10 m

6 m

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Kid-friendly...
Challenging activities for inquisitive minds

Measurement: Area, Perimeter and Volume: Solving Complex Problems

Here are two complex problems that Grade 6 students should learn how to solve.

A. Farmer Leslie has a rectangular vegetable plot that is 24 m^2. The width of the plot is 4 m. If fencing costs \$7/metre, how much will it cost Farmer Leslie to build a fence around his vegetable plot?

The next one is even more complex:

B. If the circumference of this circle is 31.4 m, what is the total area of the part of the square that is coloured blue?
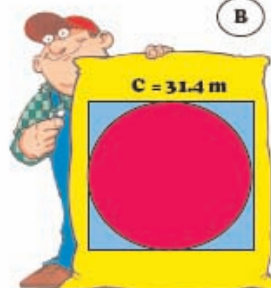
A

4 m

area
24 m²

These problems are complex because:

a) You have to take several steps to solve them;

b) they involve geometry.

Though some adults may not be able to solve problems like these, the ministry of education expects that Grade 6 students can solve them.

B

C = 31.4 m

Here's the good news!

Dr. Don's step-by-step problem-solving technique will help you sole these problems and others like them.

Go through all the following pages, and answer all the questions even if you find them very easy. Dr. Don will explain how to solve the two complex problems above in a few pages.

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Kid-friendly... reasonable drills

Draw a picture of yourself so that people can see how great you are.
Be sure that your picture shows what you have told us about yourself.

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Kid-friendly... Interesting activities

Happy Landings

⭐ pieces of paper such as construction paper, writing paper, copy paper, notebook paper
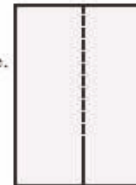
Design and Aerodynamics

1. Wild Wings: A Paper Airplane to Test Fly

When you follow the instructions on the next two pages, you will see another use of triangles in design.

a) Take a rectangular piece of paper and fold it in half lengthwise.

b) Fold each of the 2 top corners down toward the inside.
The edges of the fold-down flaps should meet the fold you made in the centre.

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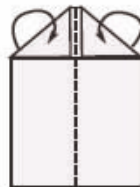
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Parent-friendly... Encourages parent involvement

Enjoy Learning!

Dear Parent:

Learning is a life-long process that knows no boundaries in time or place. Any time is a great time for learning, and anywhere can be an environment for learning activities.

This **Learning Advantage** activity book provides learners with support for their Grade 6 year, in keeping with curriculum expectations, some of which are listed on the previous pages.

Information about our icons:

indicates information that will be needed to understand and enjoy the activity. This information should be understandable for students, but if students don't know how to do an activity, help them to look for this icon to explain it.

indicates what materials are needed for the activity. Most of the materials are everyday household items, or can be purchased at bargain stores.

If you wish to evaluate how well your child has done on any of the activities in this book, you might wish to use the "four level" system according to which teachers evaluate student work. A sample evaluation format follows:

Category	Level 1	Level 2	Level 3	Level 4
Understanding of patterns	Student provides some incomplete and inappropriate explanations to identify and describe simple patterns.	Student explains appropriately, but uses incomplete explanations to identify and describe simple patterns.	Student explains appropriately and completely to identify and describe different patterns.	Student explains completely and appropriately to identify and describe patterns that are complex, and is able to apply concepts to different situations.

Learners are very astute in assessing their own learning. Learners can be encouraged to identify their strengths and needs and then make plans for new learning. Above all, learning should be seen as natural. It should be fun, exciting, experimental and progressive.

Enjoy learning!

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Kid-friendly... Activities for classroom sharing

Schoolyard Solar System

⭐ metre stick
⭐ 1 pizza box
⭐ 9 paper plates
⭐ 10 tent pegs or wooden stakes
⭐ hammer
⭐ markers, coloured construction paper

Dr. Don thinks that this project is so informative and enjoyable that you might want to tell your class about it when you begin to study the solar system in Grade 6.

It would probably be more fun to do this activity with the help of an adult and a couple of friends. You will need help from an adult to prepare the stakes, if you don't have tent pegs.

Preparation
To begin, gather all the materials.
Cut a large circle from the lid of the pizza box. This will be the Sun.
Make a mark in the centre of each paper plate, where the stake will be driven through to hold it down.
On each plate, print the name of one planet, its diameter (see next activity) and its actual distance from the sun (see previous page).
Colour each plate a different colour, using construction paper or markers. Page 92 gives you some idea of the colours of the planets.

Activity
This activity is intended to give you an idea of the distances from the sun to the planets.
(It will not help you to understand the different sizes of the planets, but see page 90-91 for that.)
Bring the pizza-box sun, the paper plates, the stakes, the hammer, and a metre stick to a schoolyard or park near your home. You will need a space about 50 m long.

Using one of the stakes, pin the Sun onto the ground near one end of the yard.

Measure 45 cm from the sun, and nail down the plate that represents the planet Mercury.

Then measure 85 cm from the sun, and put the plate that represents Venus.

Earth is 117 cm (1.17 m, 1 metre and 17 cm) from the sun.

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