

Complete
Canadian 
Curriculum

*A handy book to guide you through
key terms and concepts!*



Smart Guide Book

Math | English | Social Studies | Science

Grade

6



Popular Book Company (Canada) Ltd.

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Grade

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Number Sense and Numeration

• 6-digit Numbers

e.g.

5 is in the hundred thousands place; it means 500 000.

Thousands			Hundreds	Tens	Ones
Hundred	Ten	One	Hundreds	Tens	Ones
5	3	2	6	4	8

Standard Form: 532 648 ← Starting from the right, add a space for every three digits.

Expanded Form: 500 000 + 30 000 + 2000 + 600 + 40 + 8

Written Form: five hundred thirty-two thousand six hundred forty-eight

• Multiples and Factors

Multiple – the product of a given whole number multiplied by any other whole number

Use addition or multiplication to find the multiples of a given number.

e.g. The multiples of 4

• by addition

$$4 \xrightarrow{+4} 8 \xrightarrow{+4} 12 \xrightarrow{+4} 16$$

• by multiplication

$$\frac{4}{4 \times 1} \quad \frac{8}{4 \times 2} \quad \frac{12}{4 \times 3} \quad \frac{16}{4 \times 4}$$

The first four multiples of 4: 4, 8, 12, 16

Factors – whole numbers that are multiplied to get a product

e.g. Find the factors of 15.

$$15 = \underline{1} \times \underline{15}$$

$$15 = \underline{3} \times \underline{5}$$

So, the factors of 15 are 1, 3, 5, and 15.

"1" is a factor of all numbers.

• Prime Numbers and Composite Numbers

Prime Number – any number with only 1 and itself as factors; e.g. 7

Composite Number – any number greater than 1 that has more than 2 factors; e.g. 9

* 1 is neither a composite nor a prime number.

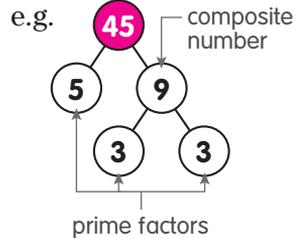
* 2 is the smallest prime number.

Steps to writing numbers as a product of prime factors:

1st Write the composite number as the product of two factors.

2nd Continue to factorize each composite number until all factors are prime numbers.

3rd Write the number as a product of prime factors.



$$45 = \underline{3 \times 3 \times 5}$$

• Order of Operations

Perform the operations (+/-) from left to right.

Without Brackets

$$\begin{aligned} 357 - 128 + 69 &\leftarrow \text{Do "-" first.} \\ = 229 + 69 \\ = \underline{298} \end{aligned}$$

With Brackets

$$\begin{aligned} 357 - (128 + 69) &\leftarrow \text{Do the part inside the brackets first.} \\ = 357 - 197 \\ = \underline{160} \end{aligned}$$

• Commutative Property and Distributive Property

Commutative Property

In multiplication, numbers can be multiplied in any order.

e.g.

$$\begin{aligned} 6 \times 17 \times 5 \\ = 6 \times 5 \times 17 &\leftarrow \text{Do "6 \times 5" first to make the multiplication easier.} \\ = 30 \times 17 \\ = \underline{510} \end{aligned}$$

Distributive Property

Use the distributive property to make division easier.

e.g.

$$\begin{aligned} (660 - 6) \div 6 \\ = 660 \div 6 - 6 \div 6 &\leftarrow \text{Remove brackets by dividing each term by 6.} \\ = 110 - 1 \\ = \underline{109} \end{aligned}$$

• **Fractions**

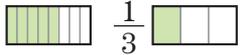
Steps to comparing mixed numbers with different denominators:

- 1st** Compare the whole number parts. The one with a greater number is greater. If they are the same, go to Step 2.
- 2nd** Compare the fraction parts by using diagrams. The one with a greater coloured part is greater.

e.g. $2\frac{5}{8}$ $2\frac{1}{3}$

the same

1st $2\frac{5}{8}$ $2\frac{1}{3}$

2nd 

So, $2\frac{5}{8}$ is greater.

When fractions with different denominators have the same numerators, the one with the smallest denominator is the greatest.

e.g. $\frac{2}{5}$ $\frac{2}{11}$ $\frac{2}{6}$ ← same numerators
 ← 5 is the smallest

So, $\frac{2}{5}$ is the greatest.

• **Decimals**

e.g.

Ones	Tenths	Hundredths	Thousandths
4	.	2	8
5			

 ← "5" is in the thousandths place; it means 0.005.

Multiplication/Division of Decimals

A Decimal × A Whole Number

Multiply the same way as whole numbers.

e.g.
$$\begin{array}{r} 3.9 \\ \times \quad 6 \\ \hline 23.4 \end{array}$$

1 decimal place

* Remember to place the decimal point in the product.

A Decimal ÷ A Whole Number

Divide the same way as whole numbers.

e.g.
$$\begin{array}{r} 6.9 \\ 4 \overline{) 27.6} \\ \underline{24} \\ 36 \\ \underline{36} \\ 0 \end{array}$$

align

Put the decimal point in the quotient directly above the one in the dividend.

A Whole Number \times 0.1/0.01/0.001

Move the decimal point 1/2/3 places to the left.

e.g. $34 \times 0.1 = \underline{3.4}$ (1 place to the left)

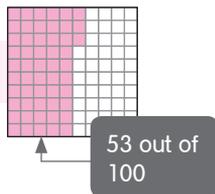
$34 \times 0.01 = \underline{0.34}$ (2 places to the left)

$34 \times 0.001 = \underline{0.034}$ (3 places to the left)

Fractions, Decimals, and Percents

Percent means “per hundred”.

Fifty-three percent (53%) is coloured.



A percent can also be expressed as a fraction or a decimal. So, $53\% = \frac{53}{100} = 0.53$.

Unit Rates and Ratios

Rate – a comparison of two quantities with different units; for example, number of apples and cost (6 apples for \$5)

Unit Rate – a comparison of two quantities with different units in which the second quantity is 1; for example, 100 km/h

Ratio – a comparison of quantities with the same unit; can be expressed in ratio form or in fraction form; for example,

$$3:4 \text{ or } \frac{3}{4}$$

To find equivalent ratios, multiply or divide each term by the same number other than 0.

e.g. $\frac{6}{10} = \frac{6 \times 3}{10 \times 3} = \frac{18}{30}$; $\frac{6}{10} = \frac{6 \div 2}{10 \div 2} = \frac{3}{5}$

Equivalent Ratios

$$6 : 10 = 18 : 30$$

$$6 : 10 = 3 : 5$$

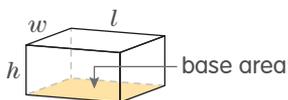
Measurement

Perimeter and Area

Area of a Parallelogram
= base \times height

Area of a Triangle
= base \times height \div 2

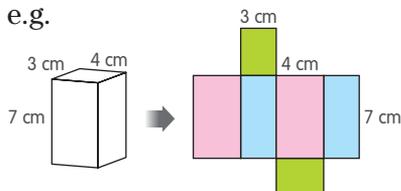
• Volume and Surface Area



Volume of a Prism
 = **base area** \times height
 = $l \times w \times h$

Surface Area of a Prism
 = the sum of the areas of its faces

e.g.



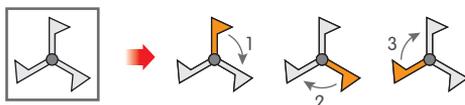
Volume
 = $3 \times 4 \times 7 = \underline{84 \text{ (cm}^3\text{)}}$

Surface Area
 = $4 \times 7 \times 2 + 3 \times 7 \times 2 + 3 \times 4 \times 2$
 = $56 + 42 + 24$
 = $\underline{122 \text{ (cm}^2\text{)}}$

Geometry

• 2-D Shapes

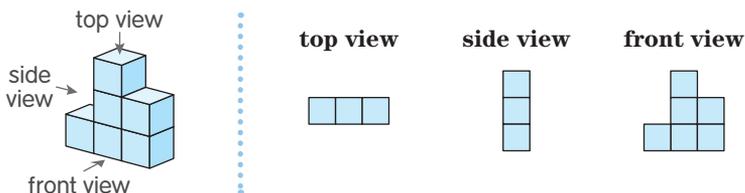
A figure has rotational symmetry if it fits on itself within a complete rotation. The order of rotational symmetry is the number of times the figure fits on itself in one complete rotation.



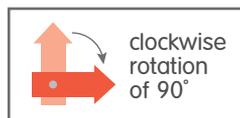
This shape has rotational symmetry of order **3**.

• 3-D Figures

Different views of a structure built by cubes:



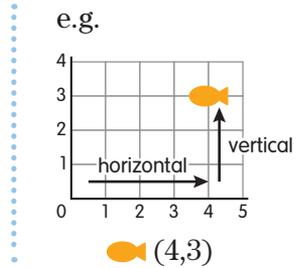
A rotation is a transformation that turns a shape about a fixed point to form a congruent shape.



• Coordinate System

To locate a point in a coordinate system, the first coordinate is the horizontal position and the second coordinate is the vertical position.

(horizontal position, vertical position)



Patterning

Solving Equations Using Substitution:

e.g. Given $a - 3 = 5$

$$a + b - 3 = 11$$
$$a - 3 + b = 11 \quad \leftarrow \text{Rearrange.}$$
$$5 + b = 11 \quad \leftarrow \text{Substitute.}$$
$$b = \underline{6} \quad \leftarrow \text{Think: What number plus 5 is 11?}$$

Graphs

Use the appropriate type of graphs to show data:

Circle Graph – for showing data that are parts of a whole

Bar Graph – for making comparisons among data

Double Bar Graph – for comparing two sets of data

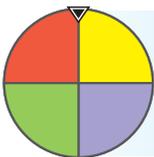
Line Graph – for showing changes over time

Double Line Graph – for comparing two sets of data over time

Probability

Theoretical Probability – a mathematical calculation of the chance that an event will happen in theory

e.g. $\text{Theoretical Probability} = \frac{\text{no. of favourable outcomes}}{\text{total no. of possible outcomes}}$



The theoretical probability of landing on each section is $\frac{1}{4}$.
If the spinner is spun 100 times, it is predicted that it will land on each section 25 times.

Grammar

Nouns

A noun names a person, a place, a thing, an animal, or an idea.

Concrete Noun

- can be recognized by our five senses

Abstract Noun

- names an idea, a concept, a quality, or an ideal



Adjectives

An adjective describes a noun.

- Sometimes, a noun can function as an adjective.
e.g. We bought a **birthday** cake for Mom.
- A **possessive adjective** shows ownership:
my, your, his, her, its, our, their
e.g. Rocco plays **his** guitar.

Helping Verbs

A helping verb is used along with a main verb to express an emphasis, an ability, a probability, or a necessity.



- do (emphasis)
- may (probability)
- can (ability)
- have to (necessity)

e.g. Peter can fix his bicycle.
helping main
verb verb

Adverbs

An adverb describes a verb, an adjective, or another adverb.

describes the adjective "huge" describes the adverb "fast"

e.g. The incredibly huge robot runs pretty fast.

describes the verb "runs"

Pronouns

Pronouns are used to refer to nouns.

Subject Pronoun

- refers to the subject in a sentence
e.g. **She** is riding a horse.

Object Pronoun

- refers to the object in a sentence
- can be direct or indirect
e.g. Harris baked her a cake.
indirect object

He baked it.
direct object

Reflexive Pronoun

- shows that the subject does something that turns back upon the subject
e.g. The elephant bathed **itself** in the water.



Relative Pronoun

- connects a clause or phrase to a noun or pronoun mentioned earlier in a sentence
e.g. This is the woman **who** gave me directions.

Reciprocal Pronoun

- shows that two or more subjects are doing the same thing
e.g. The puppies played with **each other**.

Possessive Pronoun

- shows possession
e.g. This bike is **his**.

Interrogative Pronoun

- asks a question

Whose is this?
interrogative pronoun



Tenses

Present

Simple Present Tense

- talks about a habit or a simple truth

Present Progressive Tense

- talks about something that is going on
- talks about something that is planned for the future

Past

Simple Past Tense

- talks about something that happened habitually or at a particular time in the past

Past Progressive Tense

- talks about something that continued to happen before and after a particular time in the past

Future

Simple Future Tense

- talks about something that will happen, or about cause and effect

Future Progressive Tense

- talks about something that will happen over a period of time

Perfect

Present Perfect Tense

- talks about a recent action that started and ended in the past but affects the present
- talks about a recent action with no definite time

Present Perfect Progressive Tense

- talks about an action that started in the past but is still going on



e.g. The cat has finished the milk. (present perfect)
It has been feeding on milk since its birth.
(present perfect progressive)

Communities in Canada

Canada is a very diverse country. Apart from the First Peoples, people from across the globe have chosen to make Canada their new home. All these communities help shape Canada's identity.

- **The Founding Nations of Canada**

Long before the British and the French explorers came, the Indigenous Peoples had already lived on this land. They, together with the British and the French, have been referred to by the Canadian government as the founding nations of Canada.

- **The African Canadians**

The Black Loyalists came to Canada to escape the American Revolution, persecution, and slavery.

- **The British Home Children**

They were sent to Canada with the initial intention of helping them and providing cheap farm labour and domestic help for rural Canadian families.

- **The Chinese Canadians**

They came for job opportunities in gold mines and with the Canadian Pacific Railway project.

- **The Japanese Canadians**

Many Japanese immigrants came and settled in British Columbia. They made a living mainly by fishing and farming.

Many communities in the past faced hardships and injustice, but today, Canada is a country that accepts people of all races, languages, and religions. There are different ways new immigrants are made to feel welcome and safe. For example, some communities form ethnic neighbourhoods, such as Chinatowns, Greektowns, and Little Italy; there are also organizations that help immigrants settle and integrate into society.



Canada's Interactions with the Global Community

Canada has made significant contributions to the global community. Canada is a founding nation of the United Nations (UN) and has been involved in many UN-related issues.



United Nations

Millennium Development Goals (MDGs)

To achieve the MDGs, Canada

- has helped improve access to maternal health care.
- has provided \$36 million to the African Development Bank.
- contributed \$1.1 billion to sustainable economic growth in developing countries in 2012 – 2013.
- helps increase access to vaccines, immunization, and treatments in developing countries to reduce child deaths.
- contributed \$165 million to basic education in Africa in 2011.

Children's Rights

In Canada, all children have the right to

- life, a name, and a nationality.
- live with and be raised by their parents.
- be protected from harm, abuse, and exploitation.
- special care if they have special needs.
- have their basic needs fulfilled.
- good quality education, play, and rest.
- celebrate their culture, speak their language, and practise their religion.

World Health Organization (WHO)

With WHO, Canada works to reduce global diseases such as polio, malaria, HIV/AIDS, and tuberculosis.

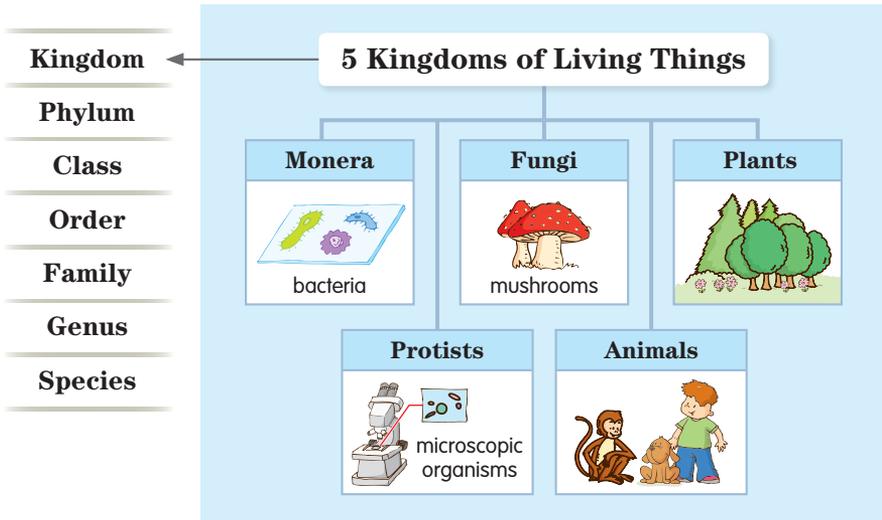
Canada is also involved in many non-governmental organizations, such as Médecins Sans Frontières and Free the Children (now known as WE).



Classification of Living Things

Scientists use a seven-level classification system to organize all living things into groups. Organisms with similar body structures are placed in the same group. There are five kingdoms in the first level of classification.

7 Levels of Classification



The two main groups of animals are vertebrates and invertebrates.

Vertebrates

All vertebrates have an internal skeleton that is usually made of bones. There are five groups of vertebrates.

Five Groups of Vertebrates

fish

bird

reptile

mammal

amphibian

Invertebrates

Invertebrates are animals that do not have a backbone. Arthropods are the most diverse of all the invertebrates.

Characteristics of Arthropods

- exoskeleton
- segmented body
- compound eyes
- adapted mouthparts
- jointed appendages



Air

Air is matter. It has the following properties.

Properties of Air

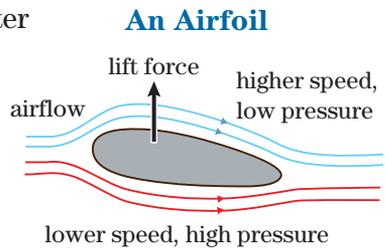
- has weight
- takes up space
- expands when heated



Bernoulli's Principle

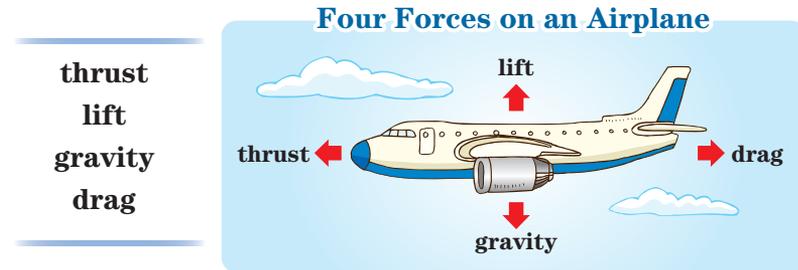
Bernoulli's Principle states that the faster air moves, the lower its pressure.

An airfoil is a shape that causes air pressure to be higher on one side than it is on another.



Flight

Four forces act on anything that flies.



Electricity



- **Static electricity** is the electrical charge produced when two things rub together.



- **Current electricity** can be transformed into light, heat, or motion energy.

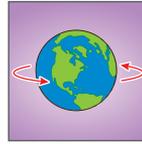
Motion

Motion can be classified as linear, rotational, reciprocating, or oscillating.



Linear Motion

motion in a straight line



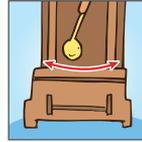
Rotational Motion

motion in a circle around an axis



Reciprocating Motion

straight back and forth motion

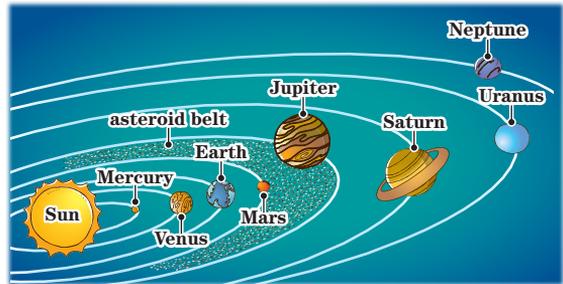


Oscillating Motion

an arching back and forth motion

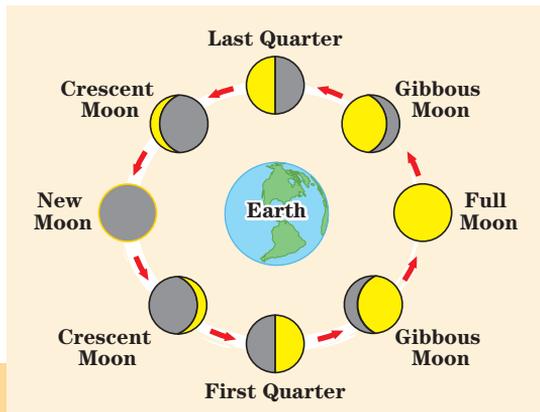
Solar System

The solar system is an orderly system. Each planet has a place and a predictable path of movement.



The Moon

The moon orbits the Earth, completing a revolution about once every month. There are eight moon phases.



The Moon Phases

I have learned concepts in these subject areas:

Math

-  Number Sense and Numeration
-  Measurement
-  Geometry and Spatial Sense
-  Patterning and Algebra
-  Data Management and Probability

English

-  Grammar
-  Oral Communication
-  Reading
-  Writing

Social Studies

-  Heritage and Identity
-  People and Environments

Science

-  Life Systems
-  Structures and Mechanisms
-  Matter and Energy
-  Earth and Space Systems