

Complete
Canadian 
Curriculum

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



Smart Guide Book

Math | English | Social Studies | Science

Grade

4



Popular Book Company (Canada) Ltd.

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Grade

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Number Sense and Numeration

- **Place Value** – the position of a digit in a number that tells its value

e.g.

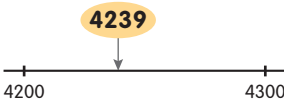
Thousands	Hundreds	Tens	Ones
4	2	3	9

4 is in the thousands place and means 4000.

= 4000 + 200 + 30 + 9 ← expanded form

- **Rounding** – changing a number to a simpler number

e.g. Round **4239** to the nearest hundred.



4239 is rounded to 4200.

Steps

- 1st** Find the two multiples of 100 that 4239 falls between.
- 2nd** Mark 4239. 4239 is closer to 4200.

If the number is in the middle of the number line, round the number to the right end.

- **Addition/Subtraction of 4-digit Numbers**

e.g. $2995 + 1688 = \underline{\hspace{2cm}}$

Vertical Addition

$$\begin{array}{r}
 \textcircled{1} \textcircled{1} \textcircled{1} \\
 2995 \\
 + 1688 \\
 \hline
 4683
 \end{array}$$

You can use addition to check the answer of a subtraction problem.

Add digits in each place separately.

$2995 + 1688$

- $3000 + 1500 + 170 + 13$ ← Add.
- $4000 + 600 + 80 + 3 = \underline{4683}$ ← Regroup.

Rewrite the number.

$$\begin{aligned}
 &2995 + 5 + 1683 \quad \leftarrow \text{Rewrite.} \\
 &= 3000 + 1683 \quad \leftarrow 1688 = 5 + 1683 \\
 &= 4683
 \end{aligned}$$

• **Multiplication** – 2-digit numbers by 1-digit numbers

e.g. Multiply the ones.

$$\begin{array}{r} 23 \\ \times 6 \\ \hline 8 \end{array}$$

$6 \times 3 = 18$; write down 8 and carry the 1 to the tens column.

Multiply the tens.

$$\begin{array}{r} 23 \\ \times 6 \\ \hline 138 \end{array}$$

$6 \times 2 = 12$; add the carried over 1 to get 13 ($12 + 1$).

So, $23 \times 6 = 138$.

• **Division** – 2-digit numbers by 1-digit numbers

e.g. Divide the tens.

$$\begin{array}{r} 24 \\ 3 \overline{)73} \\ \underline{6} \\ 1 \end{array}$$

$73 \div 3 = 24R1$

Divide the ones.

$$\begin{array}{r} 24R1 \\ 3 \overline{)73} \\ \underline{6} \\ 13 \\ \underline{12} \\ 1 \end{array}$$

Division Terms

$$\begin{array}{r} 7R3 \\ 6 \overline{)45} \\ \underline{42} \\ 3 \end{array}$$

$45 \div 6 = 7R3$

↑dividend
 ↑divisor
 ↑quotient
 ↑remainder

e.g.

$$\begin{array}{r} 20R1 \\ 3 \overline{)61} \\ \underline{6} \\ 1 \end{array}$$



Sometimes we need to add "0" in the quotient.

• **Mental Strategies for Multiplying/Dividing by 10, 100, or 1000**

$\times 10, 100, \text{ or } 1000$

Add 1, 2, or 3 zeros to the number.

$5 \times 10 = 50$

$5 \times 100 = 500$

$5 \times 1000 = 5000$

$\div 10, 100, \text{ or } 1000$

Remove 1, 2, or 3 zeros from the number.

$9000 \div 10 = 900$

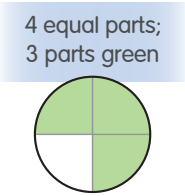
$9000 \div 100 = 90$

$9000 \div 1000 = 9$

• **Fractions**

using standard fractional notation to describe the equal parts of a whole object or a set of objects

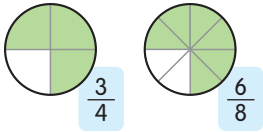
e.g.



numerator (no. of green parts)
 $\frac{3}{4}$ of the circle is green.
 denominator (no. of equal parts)

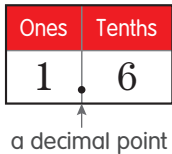
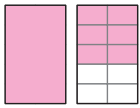
Equivalent Fractions – fractions that represent the same parts of a whole object or a set of objects

e.g.



$\frac{3}{4}$ and $\frac{6}{8}$ are equivalent fractions.

• **Decimals**



1 and 6 tenths
1 means 1; 6 means 0.6.

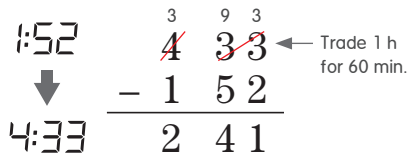
When you add or subtract decimal numbers, remember to align the decimal points. Then add or subtract as you would do with whole numbers.

Measurement

• **Time**

- 1 hour = 60 minutes
- 1 decade = 10 years
- 1 century = 10 decades

Finding Time Intervals by Using Subtraction



The time interval is 2 h 41 min.

- **Length**

measuring the length, height, and distance using millimetres (mm), centimetres (cm), decimetres (dm), metres (m), and kilometres (km)

mm cm dm m km

smallest unit

biggest unit

**Relationships
Between Units**

$$1 \text{ km} = 1000 \text{ m}$$

$$1 \text{ m} = 10 \text{ dm} = 100 \text{ cm}$$

$$1 \text{ dm} = 10 \text{ cm}$$

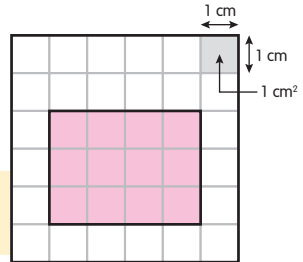
$$1 \text{ cm} = 10 \text{ mm}$$

- **Perimeter and Area**

measuring the perimeters and areas of polygons using standard units

The Rectangle

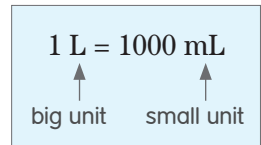
Perimeter: 14 cm Area: 12 cm²



- **Capacity**

measuring the capacity using millilitres (mL) and litres (L)

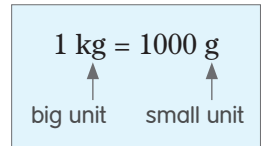
$$2 \text{ L } 50 \text{ mL} = 2000 \text{ mL} + 50 \text{ mL} = \underline{2050} \text{ mL}$$



- **Mass**

measuring the mass using grams (g) and kilograms (kg)

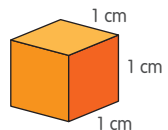
$$3 \text{ kg } 600 \text{ g} = 3000 \text{ g} + 600 \text{ g} = \underline{3600} \text{ g}$$



- **Volume** – the amount of space an object occupies

A centimetre cube with length, width, and height of 1 cm has a volume of 1 cm³.

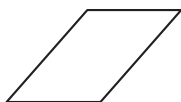
Volume = 1 cm³



Geometry

• 2-D Shapes

Quadrilaterals – a polygon with 4 sides, such as a parallelogram

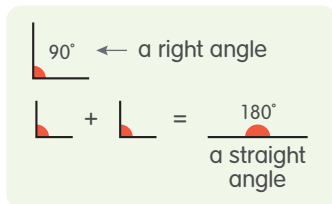


parallelogram

- 2 pairs of equal sides
- 2 pairs of parallel sides
- no lines of symmetry
- no right angles

Right Angle – an angle of 90°

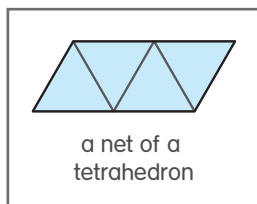
Straight Angle – can be formed by two right angles; an angle of 180°



• 3-D Figures

Tetrahedron – a 3-D figure with 4 faces; each face is an equilateral triangle

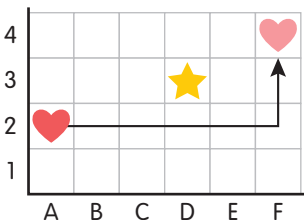
Net – a pattern that can be cut and folded to make a model of a 3-D figure



Grids

Grid System – a system consisting of small identical squares with labelled columns and rows

e.g.



Columns: labelled from A to F
Rows: labelled from 1 to 4

♥: A2 ★: D3

Move ♥ to F4: 5 squares to the right and 2 squares up

Patterning

recording a pattern in a table of values that shows the term numbers and the terms

e.g. Number Pattern: 8, 11, 14, 17, 20

The 3rd term in this pattern is 14 and the 6th term is 23.

Table of Values

Term	Term Number
1	8
2	11
3	14
4	17
5	20

Graphs

Stem-and-leaf Plot

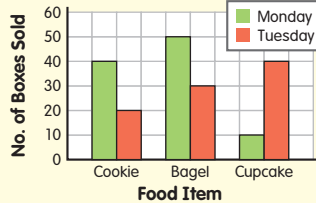
No. of Hot Dogs Sold in 10 Weeks

Stems	Leaves
3	6 6 8
4	2 2 5 5 5
5	0 1

42 hot dogs were sold each week for 2 of the weeks.

Double Bar Graph

The Sales of Smith's Bakery



Median – the middle value in a set of values arranged in order

If there is an even number of numbers, the median is the average of the two middle numbers.

Mode – the value that shows up most often

Refer to the stem-and-leaf plot above. The median is 43.5 hot dogs (average of 42 and 45) and the mode is 45 hot dogs.

Probability

The more probability experiments we do, the closer the results will be to the predicted ones.

e.g.

Probability Experiments

Toss 10 times.

H: 4 times
T: 6 times

Toss 100 times.

H: 47 times
T: 53 times

Toss 100 times.



Prediction

H: 50 times
T: 50 times

Grammar

Subjects and Objects

The subject of a verb is the person or thing that performs the action.

The object of a verb is the person or thing that receives the action.

Both subjects and objects can be nouns or pronouns.

Pronouns

A pronoun takes the place of a noun.

Subject Pronoun

- replaces a noun as the subject in a sentence
- I, you, he, she, it, we, they

Object Pronoun

- replaces a noun as the object in a sentence
- me, you, him, her, it, us, them

Possessives

A possessive tells who possesses a noun or is related to it.

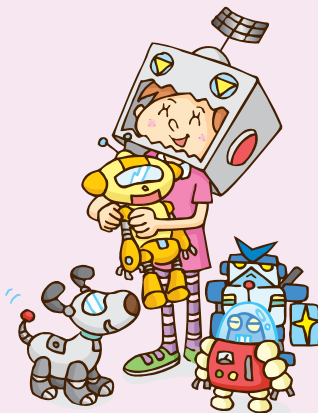
Possessive Pronoun

- tells who possesses something or is related to someone
- mine, yours, his, hers, ours, theirs

Possessive Adjective

- tells to whom the noun that it describes belongs or is related
- my, your, his, her, its, our, their

e.g. Emily loves robots.
 subject object



She loves them.
 subject object
 pronoun pronoun

Those robots are hers.
 possessive
 pronoun

Those are her robots.
 possessive
 adjective

Adjectives

An adjective describes a noun.

Comparative Adjective

- compares two things
- formed by adding “er” to the end of or “more” before the base form

e.g. The yellow star is **brighter** than the purple star.
The pink star is the **most beautiful**.



Superlative Adjective

- compares three or more things
- formed by adding “est” to the end of or “most” before the base form

Verbs

Most verbs are action words.

Transitive Verb

- requires an object
object – the receiver of the action of the verb

Intransitive Verb

- does not require an object

Adverbs

An adverb describes a verb.

e.g. Sue sang a song sweetly.
transitive object adverb
verb

The children danced happily.
intransitive adverb
verb



Prepositions

Some prepositions tell the place and some tell the time.

e.g. **Place** They are **at** a party.

Time The party was held **on** Saturday.

Certain prepositions are used after particular words or expressions.

e.g. They danced **to** the music.

Connecting Words

Connecting words join ideas together.

Some connecting words add, contrast, show sequence, and conclude ideas.

e.g. The show was over and everyone left.
adding an idea

Question Words

Question words are used to begin a question.

- what, when, where, who, whom, whose, why, how
e.g. **Where** are you going?

Abbreviations

An abbreviation is the shortened form of a word or words.

e.g. Dixon **Rd.** ← abbreviation of "Road"

Contractions

A contraction is a single word that is formed by combining and shortening two words. An apostrophe is used to replace letters.

e.g.

	contraction
I am	I'm
she will	she'll
did not	didn't

Commas

The comma is a punctuation mark with many different uses.

e.g. Jerry, the shy, little boy, asked
around words in apposition

↑ separates adjectives before a noun

eagerly, "May I have mango, strawberry,
↑ sets off a direct quotation

↑ separate words in a series

and vanilla ice cream?" Finally, Jerry got what he wanted.
↑ follows a transitional word



Sentences

Simple Sentence

A simple sentence is made up of one subject and one predicate. It is an independent clause.

- The **subject** tells whom or what the sentence is about.
- The **predicate** describes what the subject is or what it does.

Compound Sentence

A compound sentence is made up of two or more independent clauses joined by a conjunction.



e.g. Cows only eat grass but they are strong.
subject predicate ↑ subject predicate
independent clause conjunction independent clause

Tenses

Simple Present Tense

- talks about facts, present actions, and habitual actions

e.g. Landon goes to that school.
singular subject ↑ singular verb

Most singular verbs are formed by adding “s/es” to the base form.

Subject-verb Agreement
In a sentence in the present tense, the verb must agree with the subject.

Subject	Verb
singular	singular
plural	plural

Simple Past Tense

- shows what happened in the past



Future Tense

- shows what will happen in the future
- e.g. Ellie will feed her fish tonight.



Early Societies and Today's Societies

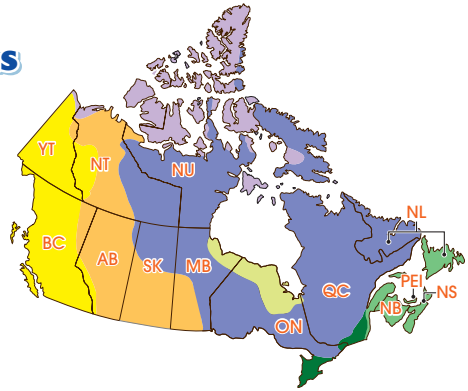
Due to advances in technology, many aspects of people's everyday lives in today's societies are very different from those in early societies. Yet, some of them have remained the same.

	Past	Present
Communication	<ul style="list-style-type: none"> papyrus, telegraph, typewriter 	<ul style="list-style-type: none"> television, computer, mobile phone
	Both paper, printing press	
Toys and Games	<ul style="list-style-type: none"> rag dolls, rocking horses, drawing in sand with a stick handmade, used materials from nature, required creativity 	<ul style="list-style-type: none"> princess dolls, spring rocking horses, drawing on paper with crayons electronic, run on batteries, automated, more durable
Things for Farming	<ul style="list-style-type: none"> ploughs, sickles, hoes, mattocks, harrows, flails  <p>scythe</p>	<ul style="list-style-type: none"> ploughs, sickles, mattocks, harrows, hoes, flails, scythes, tractors, fertilizer  <p>pesticide</p>
Education	<ul style="list-style-type: none"> wrote on slates with chalk, classroom dimly lit and poorly heated or ventilated, different age groups in the same classroom 	<ul style="list-style-type: none"> receive and submit school assignments online, use computers and tablets in class
	Both breaks between classes, learn from teachers, learn reading, writing, and arithmetic, use books, detention as a form of punishment	

Physical Regions of Canada

Canada can be divided into areas of land that share physical characteristics which favour the development of different industries.

Canada's Physical Regions and Industries



Cordillera

- lakes, rivers, deep valleys, coastal islands, high rugged mountains covered with forests
- fishing, hydroelectricity, mining, agriculture, forestry

Interior Plains

- rich deposits of oil, gas, and dinosaur fossils, lowlands and valleys, deep and fertile soil, many lakes
- mining, agriculture, hydroelectricity, tourism

Great Lakes-St. Lawrence Lowlands

- various water bodies, river valleys, very fertile soil, flat plains, rolling hills, abundant minerals
- hydroelectricity, agriculture, mining, manufacturing

Hudson Bay Lowlands

- habitat of polar bears, summer habitat of migratory birds, wide and slow moving rivers, poorly drained coastland
- tourism

Canadian Shield

- ancient bedrock, coarse soil, poor drainage, thick forests, various types of water bodies
- mining, forestry, hydroelectricity, tourism

Appalachians

- many rivers, coastal inlets and bays, fertile coastal land, forests, sedimentary rocks
- fishing, agriculture, forestry, mining

Arctic Lands

- habitat of polar bears, low-lying, barren islands, very high and steep mountains, permafrost
- tourism

The undesirable physical characteristics and harsh climate are not favourable for most industries but tourism.



Habitats

A habitat is a place where plants and animals live and grow. Plants and animals must have everything they need for health in their habitats. However, with various human activities, their habitats can be harmed or destroyed, and the plants and animals are put at risk of extinction.

Human Activities that Cause Habitat Loss

- oil spills
- oil extractions
- hydroelectric dams
- air pollution
- developments
- logging

Levels of Danger for Species at Risk

Least at Risk

species of special concern
threatened species
endangered species
extirpated species

Most at Risk

extinct species

Producers and Consumers

Living things are either producers or consumers.

- Plants are producers because they make their own food with energy from the sun.
- Animals are consumers because they get their energy by eating plants or other animals.

Types of Animals



- **Herbivores**
eat plants only



- **Carnivores**
eat animals only

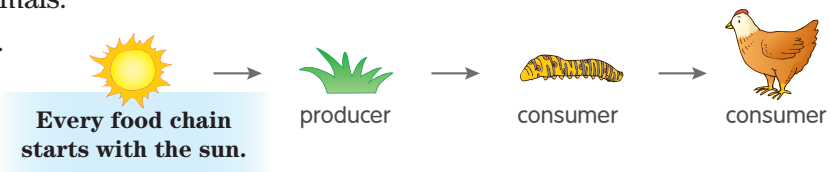


- **Omnivores**
eat both plants and animals

Food Chains

A food chain shows the order that animals eat plants and other animals.

e.g.

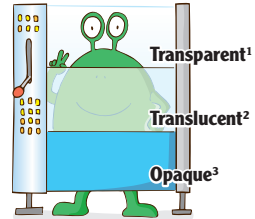


Light

Light is a form of energy that is found naturally or artificially in the universe. We can see something because light is bouncing or reflecting off that thing.

Properties of Light

- Light travels in straight lines.
- Reflection – Light can be reflected by shiny objects.
- Refraction – Light bends as it passes from one medium to another.
- Transparency – Light can pass through some materials but not others.

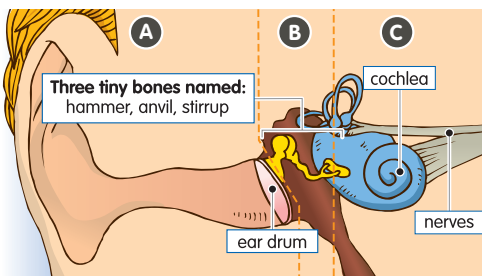


- 1: allows all light to pass through
- 2: allows some light to pass through
- 3: does not allow light to pass through it at all; absorbs light and results in a shadow

Sound

Sounds are caused by vibrations. The faster something vibrates, the higher the pitch is; the stronger it vibrates, the louder the sound is. The human ear detects vibrations, thus giving us information about our environment.

Cross-section of an Ear



- A Outer Ear**
collects sound
- B Middle Ear**
three tiny bones make vibrations larger
- C Inner Ear**
the cochlea changes the vibrations into signals which are carried by nerves to the brain

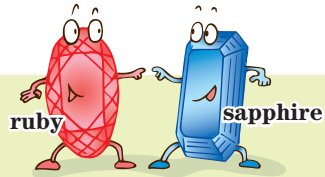
Sound travels in waves. When sound waves strike other things, they can be absorbed or reflected. Smooth and shiny surfaces reflect sound waves, while rough surfaces absorb them.

Minerals

Minerals are non-living, solid substances that occur naturally. They are what rocks are made of.

Properties of Minerals

- colour
- streak
- transparency
- specific gravity
- lustre
- hardness

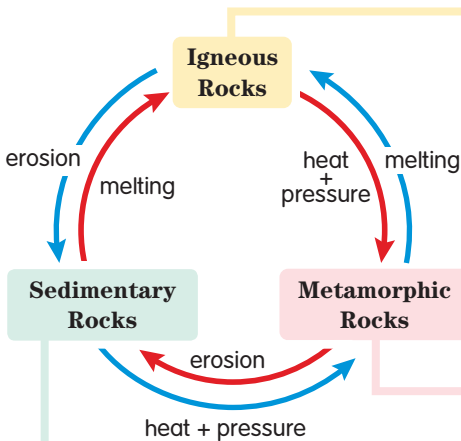


Diamonds are the hardest mineral according to the Mohs scale of hardness.

Rocks

Almost all rocks are solid and made from non-living substances. They are formed from minerals.

Rock Cycle



Igneous rocks form when hot molten lava cools.

- Intrusive Igneous Rocks: form beneath the Earth's surface; exposed by erosion
- Extrusive Igneous Rocks: form from volcanic eruptions






Metamorphic rocks are made from extreme heat or pressure in the Earth.

Formation of Sedimentary Rocks





1. Small pieces of rock break off from bigger rocks and become sand.
2. Rivers tumble the sand into the sea.
3. Chemicals in sea water cement the grains together.
4. Sandstone layers are revealed as the sea recedes.

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