

General Topic: Integers and Rational Numbers

Lesson Overview:

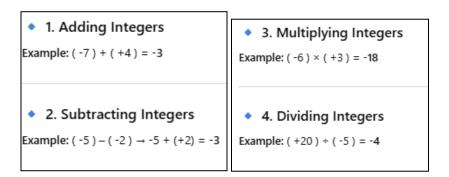
Students learn about **whole numbers**, **negative numbers**, and **rational numbers**, including how to perform operations with them.

Key Concepts and Subtopics:

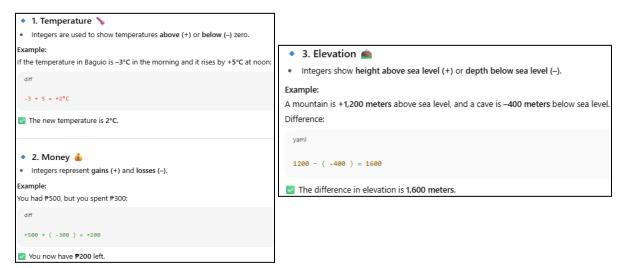
Understanding integers and rational numbers

➢ Difference between Integers & Rational Numbers	
Integers	Rational Numbers
Whole numbers only	Can be written as fractions
Examples: -3, 0, 5	Examples: ½, -2.5, 0.75, -3
No decimals/fractions	Includes decimals & fractions

• Adding, subtracting, multiplying, and dividing integers



Applying integers in real-life situations (temperature, money, elevation)





- Comparing and ordering rational numbers
 - Step 1: Remember what rational numbers are
 - Numbers that can be written as a fraction p/q (q ≠ 0).
 - Examples: ½, −3/4, 0.25 (since 0.25 = 1/4), 5 (since 5 = 5/1).
 - Step 2: How to Compare Rational Numbers

To compare, we usually:

- 1. Same Denominator Rule
 - · If denominators are the same, just compare the numerators.
 - Example: 3/8 vs 5/8 → 5/8 is bigger.
- 2. Different Denominators
 - · Find the Least Common Denominator (LCD), then compare.
 - Example: 2/3 vs 3/5
 - LCD of 3 and 5 is 15
 - 2/3 = 10/15, 3/5 = 9/15 → 10/15 > 9/15 → 2/3 is bigger.
- 3. Convert to Decimals (optional quick method)
 - Example: 7/8 = 0.875, 4/5 = 0.8 → 7/8 is bigger.

Step 3: Ordering Rational Numbers

Arrange numbers from least to greatest (or vice versa).

Example: Order 1/2, 2/3, 3/4

- Convert to decimals:
 - 1/2 = 0.5
 - 2/3 ≈ 0.67
 - 3/4 = 0.75
- Order: 1/2 < 2/3 < 3/4
- Quick Real-Life Example

Situation: Which is the better deal?

- A chocolate bar: 3/4 of ₱100
- A cake slice: 2/3 of ₱100

Compare 3/4 and 2/3:

- LCD = 12 → 3/4 = 9/12, 2/3 = 8/12
 - 3/4 is bigger → the chocolate bar is worth more.

Real-Life Example:

Calculating temperature changes: from -5°C to 3°C is an increase of 8°C.

Remember This!

Rational numbers include all fractions, decimals, and integers.



General Topic: Fractions, Decimals, Ratio, Proportion, Percent

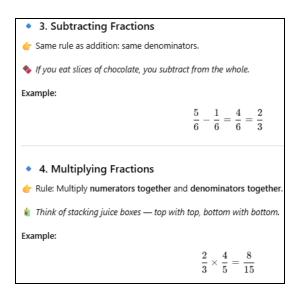
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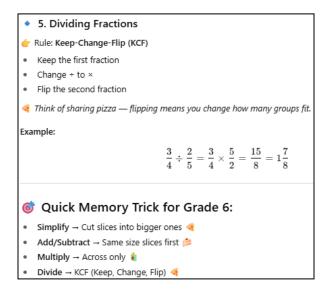
Students expand on **fractions** and **decimals**, learning **ratios**, **proportions**, and **percentages** in real-life applications.

Key Concepts and Subtopics:

· Simplifying, adding, subtracting, multiplying, and dividing fractions

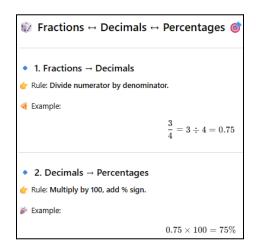
 1. Simplifying Fractions 		
Think of it like cutting pizza into fewer, bigger slices.		
Example:		
$\frac{12}{16}$	$ ightarrow rac{3}{4}$	
(both divided by 4)		
2. Adding Fractions		
← Rule: Denominators must be the same.		
If same → just add numerators.		
If different → find LCD first.		
Imagine adding slices of cake — they must be the same size of slice.		
Example:		
$\frac{1}{4}$ +	$-\frac{2}{4} = \frac{3}{4}$	

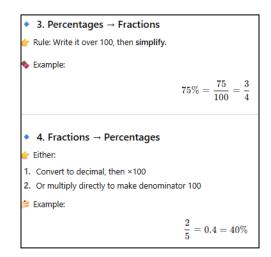




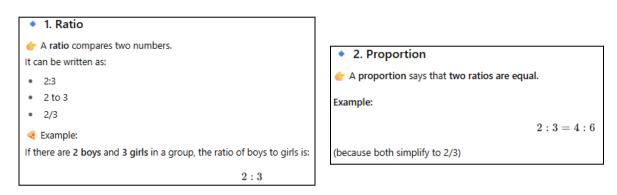


Converting between fractions, decimals, and percentages





Solving ratio and proportion problems



Applying percentages in real-life situations (discounts, tax, interest)

Real-Life Example:

A 20% discount on a ₱500 shirt means you pay only ₱400.

Remember This!

• Fractions, decimals, and percentages are different ways to represent parts of a whole.



General Topic: Expressions, Equations, and Inequalities

Lesson Overview:

Students use algebraic **expressions** and **equations** to solve problems, learning how to handle **inequalities** as well.

Key Concepts and Subtopics:

- Writing and simplifying expressions
 - Expression = combination of numbers, variables, and operations
 - Example:
 - Write: "5 more than a number x" → x + 5
 - Simplify: $3x + 4x \rightarrow 7x$
- Solving one-step and two-step equations
 - Do one operation to solve for the variable
 - Example:
 - $x + 7 = 12 \rightarrow x = 12 7 \rightarrow x = 5$
 - $3x = 15 \rightarrow x = 15 \div 3 \rightarrow x = 5$
- Requires two operations
- Example:
 - 2x + 3 = 11
 - 1. Subtract 3 $\rightarrow 2x = 8$
 - **2.** Divide by $2 \rightarrow x = 4$

- Understanding and solving inequalities
 - Inequality shows that one value is greater or smaller than another
 - Symbols: >, <, ≥, ≤
 - Example: $x + 5 < 10 \rightarrow x < 5$

Real-Life Example:

Solving for x in 2x + 5 = 15 gives x = 5, representing the number of items bought.

Remember This!

Algebra helps us solve problems systematically using symbols and numbers.



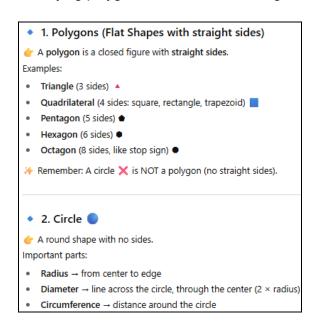
General Topic: Geometry: Plane and Solid Figures

Lesson Overview:

Students explore **2D** and **3D** shapes, their properties, and relationships.

Key Concepts and Subtopics:

• Identifying polygons, circles, and solid figures (cube, cylinder, prism)



3. Solid Figures (3D shapes)
 Shapes that have length, width, and height.
 Examples:
 Cube (like dice ŵ) → 6 equal square faces
 Rectangular Prism (like a box ø) → faces are rectangles
 Cylinder (like a can) → 2 circles + curved surface
 Cone (like an ice cream cone ∲) → circle base + point
 Sphere (like a ball ⑥) → perfectly round
 Pyramid (like in Egypt ⋒) → polygon base + triangular sides

- Calculating perimeter, area, and volume
 - 1. Perimeter (P) \rightarrow Distance around a shape (2D) • Add all the sides.

 Example (Rectangle): Length = 8 cm, Width = 5 cm $P=2(L+W)=2(8+5)=26\,cm$



- 3. Volume (V) → Space inside a solid (3D)
- Cube:

$$V = s^3$$

👉 Example: side = 4 cm

$$V = 4^3 = 64 \, cm^3$$

Rectangular Prism (Box):

$$V = L \times W \times H$$

- Cylinder:

$$V = \pi r^2 h$$

$$V = 3.14 \times 9 \times 10 = 282.6 \, cm^3$$

- 2. Area (A) → Space inside a shape (2D)
- Rectangle:

$$A = L \times W$$

- $lap{black}{}$ Example: $8 \times 5 = 40\,cm^2$
- Triangle:

$$A = \frac{1}{2}(B \times H)$$

👉 Example: Base = 10 cm, Height = 6 cm

$$A = \frac{1}{2}(10 \times 6) = 30 \, cm^2$$

Circle:

$$A = \pi r^2$$

👉 Example: r = 7 cm

$$A = 3.14 \times 7^2 = 153.86 \, cm^2$$

• Understanding angles, symmetry, and congruence

- 1. Angles
- Angles are formed when two lines meet at a point (vertex).

Types of angles:

- Right → exactly 90° (L-shape) \u20ab
- Obtuse → more than 90° but less than 180°
- Straight → exactly 180° (straight line) —
- Example:

The corner of a square = Right Angle (90°).

- 2. Symmetry
- 👉 A shape has symmetry if you can fold it in half and both sides match.

Examples:

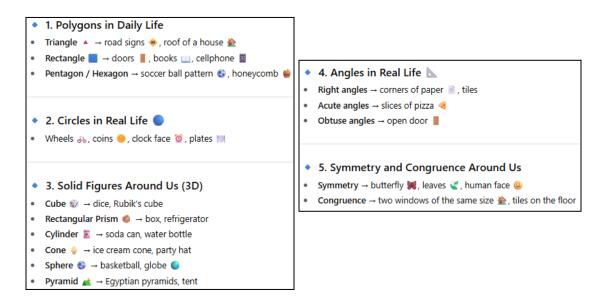
- Square
 → 4 lines of symmetry
- Circle → infinite lines of symmetry
- Heart ♥ → 1 line of symmetry
- Fun Test: Draw a line, fold the paper → if both halves match, it's symmetrical.
- 3. Congruence
- 👉 Two shapes are congruent if they are the same size and shape, even if flipped or rotated.

Examples:

- Two equal triangles ▲ ▲ → congruent
- Dice faces ŵ (all squares) → congruent
- ☼ Not congruent: A small square vs. a big square (same shape, different size).



Applying geometry to real-life objects



Real-Life Example:

Calculating the area of a rectangular garden to know how much grass seed to buy.

Remember This!

• Geometry is all around us—from buildings to everyday objects.



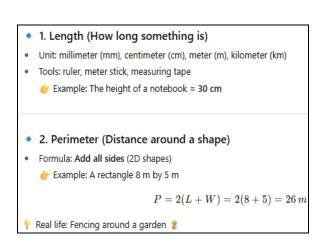
General Topic: Measurement: Area, Perimeter, Volume, Speed, Time

Lesson Overview:

Students learn to measure physical quantities accurately and solve related problems.

Key Concepts and Subtopics:

Measuring length, area, perimeter, and volume



3. Area (Space inside a shape)
 Formula depends on the shape:

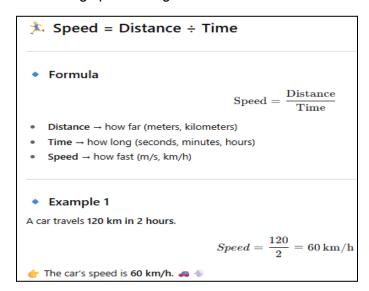
 Rectangle → A = L × W
 Triangle → A = ½(B × H)
 Circle → A = πr²
 Example: Floor of a classroom = 60 m²
 Real life: Buying tiles for the floor

 4. Volume (Space inside a 3D object)
 Formula depends on the solid:

 Cube → V = s³
 Rectangular Prism → V = L × W × H
 Cylinder → V = πr²h
 Example: Water inside a box = 120 cm³

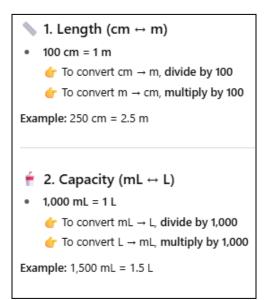
🦞 Real life: Filling a water tank 🚰

Calculating speed using distance ÷ time





Converting units (cm↔m, ml↔L, g↔kg)



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    3. Mass (g ↔ kg)
    1,000 g = 1 kg
    To convert g → kg, divide by 1,000
    To convert kg → g, multiply by 1,000
    Example: 2,500 g = 2.5 kg
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Real-Life Example:

Calculating travel time if a car moves 60 km at 30 km/h \rightarrow time = 2 hours.

Remember This!

• Accurate measurement is essential in everyday life, from cooking to building.



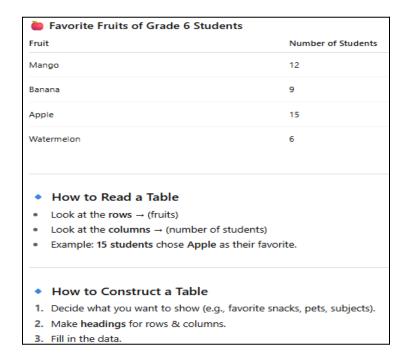
General Topic: Data: Tables, Graphs, Probability

Lesson Overview:

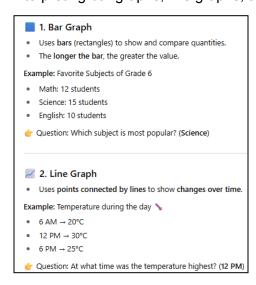
Students learn to collect, organize, and interpret data to make informed decisions.

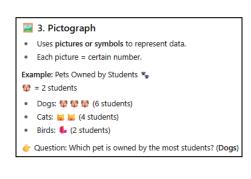
Key Concepts and Subtopics:

Reading and constructing tables



Interpreting bar graphs, line graphs, and pictographs







- Understanding probability and chance
 - What is Probability?

 $\label{eq:probability} \textbf{Probability} = \textbf{the chance that something will happen}.$

It is usually written as a fraction, decimal, or percent.

$$Probability = \frac{Number \ of \ Favorable \ Outcomes}{Total \ Number \ of \ Outcomes}$$

- Examples
- 🗱 1. Rolling a Die
- A die has 6 sides (1–6).
- Probability of rolling a 3:

 $\frac{1}{6}$

- 2. Drawing a Red Card
- A standard deck has 52 cards (26 red, 26 black).
- · Probability of red card:

$$\frac{26}{52} = \frac{1}{2} = 50\%$$

Real-Life Example:

Rolling a dice and predicting the likelihood of getting a 6.

Remember This!

• Data helps us understand trends, make predictions, and solve problems.



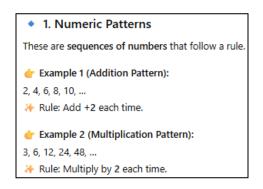
General Topic: Patterns and Problem-Solving

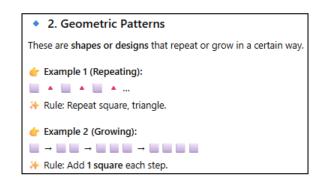
Lesson Overview:

Students develop **analytical and logical thinking** by recognizing **patterns and solving problems**.

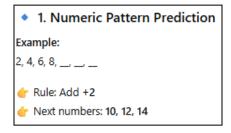
Key Concepts and Subtopics:

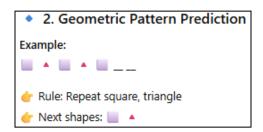
Identifying numeric and geometric patterns





Using patterns to predict outcomes





- Solving word problems using logical reasoning
- Applying problem-solving strategies step by step

Real-Life Example:

Noticing the pattern in a sequence: 2, 4, 8, $16... \rightarrow$ next number is 32.

Remember This!

Mathematics is about recognizing patterns and thinking logically to find solutions.