## **General Topic: Integers and Rational Numbers**

#### **Lesson Overview:**

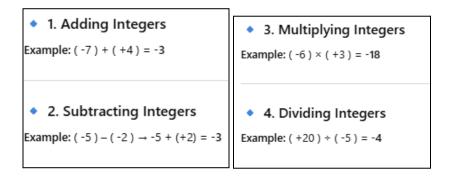
Students learn about **whole numbers**, **negative numbers**, and **rational numbers**, including how to perform operations with them.

## **Key Concepts and Subtopics:**

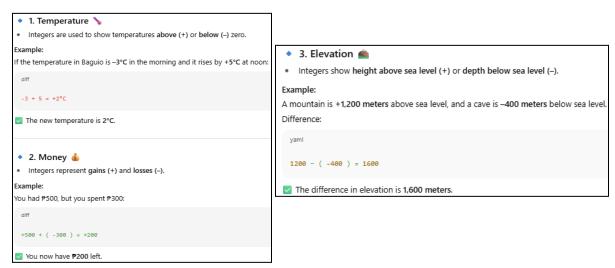
Understanding integers and rational numbers



· 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.

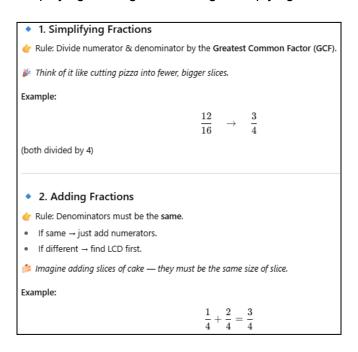
# General Topic: Fractions, Decimals, Ratio, Proportion, Percent

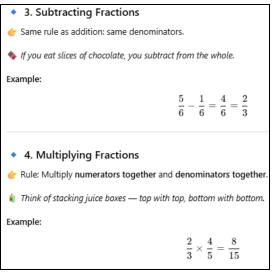
#### **Lesson Overview:**

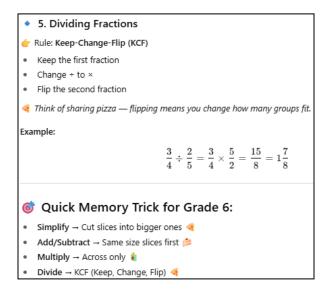
Students expand on **fractions** and **decimals**, learning **ratios**, **proportions**, and **percentages** in real-life applications.

## **Key Concepts and Subtopics:**

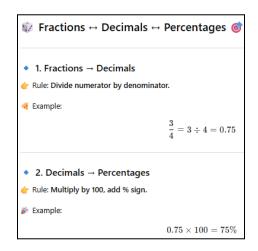
Simplifying, adding, subtracting, multiplying, and dividing fractions

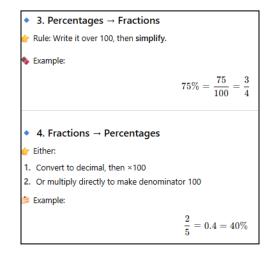




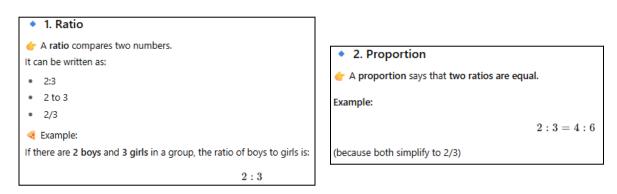


Converting between fractions, decimals, and percentages





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: >, <, ≥, ≤</li>
  - 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.

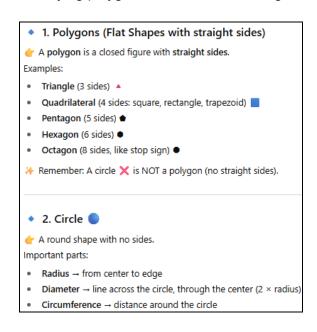
# General Topic: Geometry: Plane and Solid Figures

#### **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 \*\*\vec{w}\*) → 6 equal square faces
 Rectangular Prism (like a box \*\*\vec{o}\*) → faces are rectangles
 Cylinder (like a can \*\*\vec{o}\*) → 2 circles + curved surface
 Cone (like an ice cream cone \*\*\vec{o}\*) → circle base + point
 Sphere (like a ball \*\*\vec{o}\*) → perfectly round
 Pyramid (like in Egypt \*\*\vec{o}\*) → polygon base + triangular sides

- Calculating perimeter, area, and volume
  - 1. Perimeter (P)  $\rightarrow$  Distance around a shape (2D)  $\leftarrow$  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:

$$A = L \times W$$

- $\red{blue}$  Example:  $8 imes 5 = 40\,cm^2$
- 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:

- Acute → less than 90° (small, cute) \$\frac{1}{2}\$?
- Right → exactly 90° (L-shape) \
- 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.

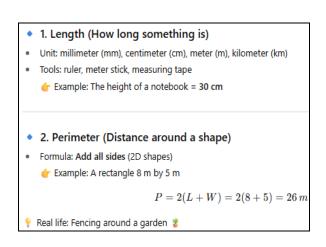
# General Topic: Measurement: Area, Perimeter, Volume, Speed, Time

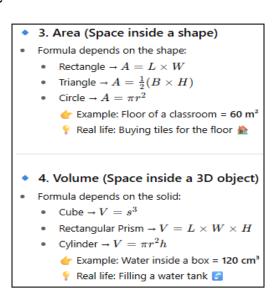
#### **Lesson Overview:**

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

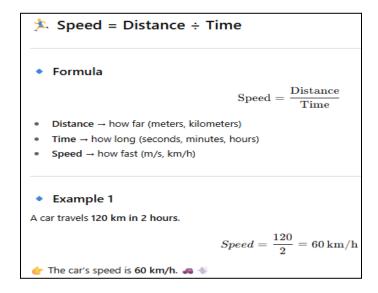
## **Key Concepts and Subtopics:**

Measuring length, area, perimeter, and volume

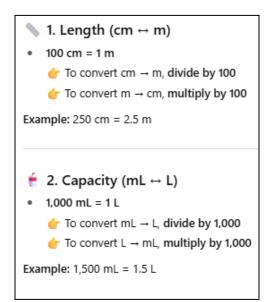


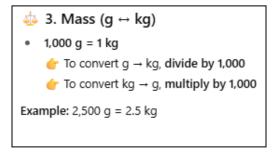


Calculating speed using distance ÷ time



Converting units (cm↔m, ml↔L, g↔kg)





### **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.

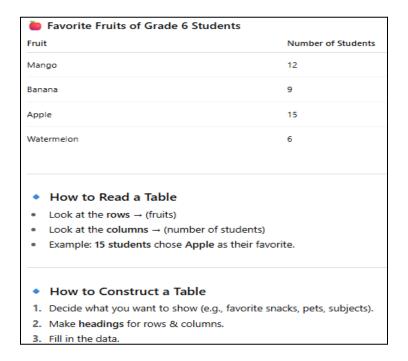
## General Topic: Data: Tables, Graphs, Probability

#### **Lesson Overview:**

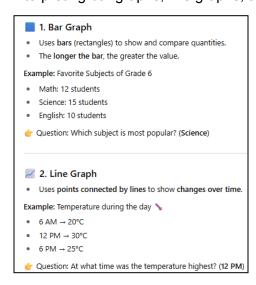
Students learn to collect, organize, and interpret data to make informed decisions.

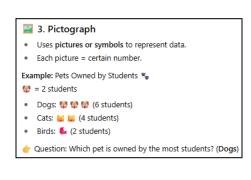
## **Key Concepts and Subtopics:**

Reading and constructing tables



Interpreting bar graphs, line graphs, and pictographs





• Understanding probability and chance

What is Probability?

**Probability** = 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.

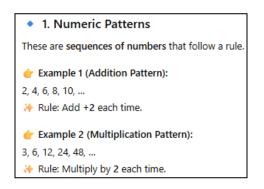
## General Topic: Patterns and Problem-Solving

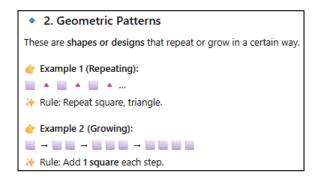
#### **Lesson Overview:**

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

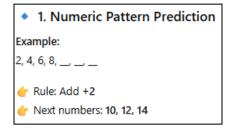
## **Key Concepts and Subtopics:**

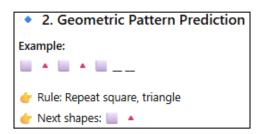
Identifying numeric and geometric patterns





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.