

General Topic: Large Numbers and Place Value

Lesson Overview:

Understanding **large numbers** helps us read, write, and compare big quantities accurately.

Key Concepts and Subtopics:

- 1. Place Value** – The value of a digit based on its position (ones, tens, hundreds, thousands, etc.)

Place Value								
Hundred Millions	Ten Millions	Millions	Hundred Thousands	Ten Thousands	Thousands	Hundreds	Tens	Ones
					6			4
				8	6		7	4
			5	8	6	3	7	4
			5	8	6	3	7	4
			5	8	6	3	7	4
			5	8	6	3	7	4
4	1	9	5	8	6	3	7	4

- 2. Reading Large Numbers** – Group digits into periods (thousands, millions, billions)

- 3. Comparing Numbers** – Use $>$, $<$, and $=$ to compare values

2	Is less than	3	3	=	3	4	is more than	3
2	$<$	3				4	is greater than	3
2	Is fewer than	3	III	=	III	4	$>$	3

Real-Life Example:

Population of countries, prices in millions, distance between planets.

Remember This!

- *Each place is **10 times** the value of the place to its right.*

General Topic: Advanced Addition, Subtraction, Multiplication, Division

Lesson Overview:

Mastering **operations** with large numbers is important for solving complex problems in daily life.

Key Concepts and Subtopics:

1. **Addition & Subtraction** – Line up digits according to place value

Advanced Addition	Advanced Subtraction
1. $6,457 + 9,832 = 16,289$	1. $15,000 - 8,765 = 6,235$
2. $78,654 + 125,987 = 204,641$	2. $92,568 - 47,389 = 45,179$
3. $1,248,573 + 984,926 = 2,233,499$	3. $1,000,000 - 987,654 = 12,346$
4. $53.47 + 298.56 = 352.03$	4. $725.45 - 398.78 = 326.67$
5. $8,765 + 2,498 + 9,872 + 5,234 = 26,369$	5. $10,000 - 3,456 - 2,789 = 3,755$

2. **Multiplication** – Use long multiplication for multi-digit numbers

A diagram illustrating long multiplication for the problem 29×65 . The numbers are arranged in a grid:

	2	9		
x	6	5		
—————	1	4	5	
1	7	4	0	
—————	1	8	8	5

Annotations explain the partial products:
The bottom row $1\ 7\ 4\ 0$ is labeled "This is 29×60 ".
The bottom right digit 5 is labeled "This is 29×65 ".
The bottom left digit 1 is labeled "This is 29×5 ".

Reference: <https://doodlelearning.com/us/math/skills/multiplication/long-multiplication>

3. Division – Use long division with or without remainders



$$\begin{array}{r} \text{0} \ 8 \ 1 \longrightarrow \text{Quotient} \\ \hline 9) \quad 7 \ 3 \ 5 \\ - 0 \\ \hline 7 \ 3 \\ - 7 \ 2 \\ \hline 0 \ 1 \ 5 \\ - 0 \ 0 \ 9 \\ \hline 0 \ 0 \ 6 \longrightarrow \text{Remainder} \end{array}$$

Real-Life Example:

Adding total expenses, dividing candies equally, multiplying prices for bulk buying.

Remember This!

- Check answers by performing the inverse operation.

General Topic: Fractions and Decimals

Lesson Overview:

Fractions and decimals represent parts of a whole and can be converted into each other.

Key Concepts and Subtopics:

1. Equivalent Fractions – Different fractions with the same value

Equivalent Fractions (A) Example [cazoommaths.com](https://www.cazoommaths.com)

The following fractions are equivalent to each other

$\frac{1}{2}$ $\frac{4}{8}$	$\frac{1}{3}$ $\frac{2}{6}$	$\frac{1}{4}$ $\frac{3}{12}$
$\frac{1}{2}$ $\frac{3}{6}$	$\frac{1}{3}$ $\frac{5}{15}$	$\frac{1}{4}$ $\frac{10}{40}$
$\frac{1}{2} = \frac{4}{8} = \frac{3}{6}$	$\frac{1}{3} = \frac{2}{6} = \frac{5}{15}$	$\frac{1}{4} = \frac{3}{12} = \frac{10}{40}$

Examples by Cazoom Maths

2. Adding/Subtracting Fractions – Common denominator needed

mashupmath How to Add Fractions **mashupmath** How to Subtract Fractions

Same Denominators $\frac{1}{5} + \frac{3}{5}$ \downarrow $\frac{1+3}{5} = \frac{4}{5}$	Different Denominators $\frac{7 \times 1}{7 \times 2} + \frac{3 \times 2}{7 \times 2}$ \downarrow $\frac{7+6}{14} = \frac{13}{14}$	Same Denominators $\frac{3}{5} - \frac{1}{5}$ \downarrow $\frac{3-1}{5} = \frac{2}{5}$	Different Denominators $\frac{7 \times 1}{7 \times 2} - \frac{3 \times 2}{7 \times 2}$ \downarrow $\frac{7-6}{14} = \frac{1}{14}$
---	---	---	--

Reference:<https://www.mashupmath.com/blog/how-to-add-fractions>

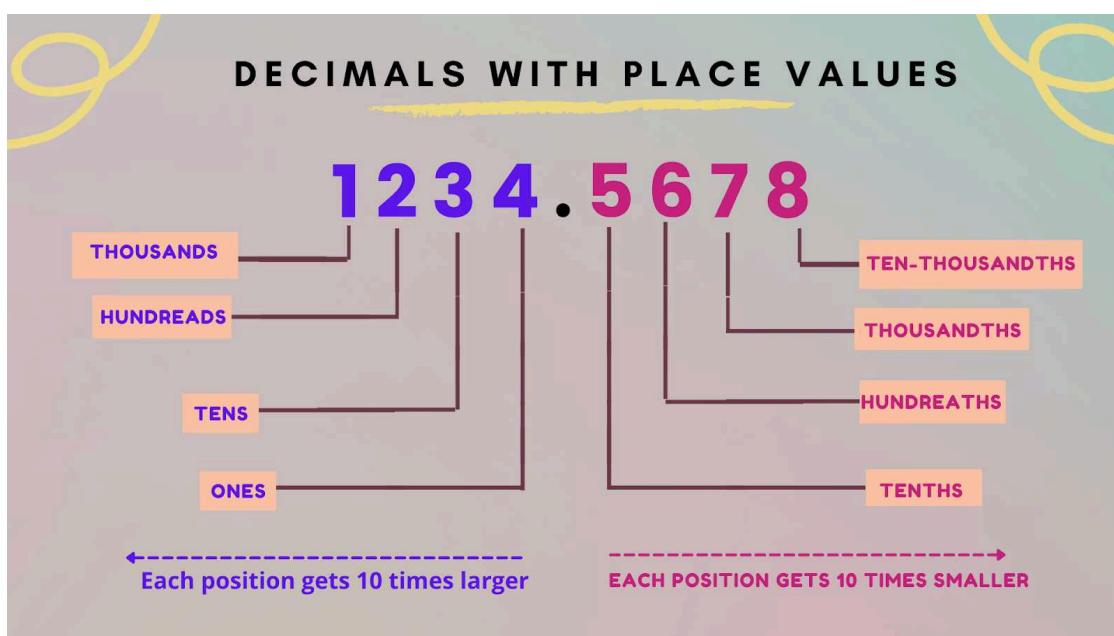
3. Multiplying/Dividing Fractions – Multiply numerators and denominators, flip the second fraction when dividing

The diagram illustrates two examples of fraction operations:

- Multiplication:** $\frac{1}{2} \times \frac{4}{1} = \frac{1 \times 4}{2 \times 1}$. Below this, a note says: "Then multiply the numerators and the denominators together and simplify if necessary."
- Division:** $\frac{4}{15} \div \frac{2}{3}$. This is shown as $\frac{4}{15} \times \frac{3}{2}$. The process involves "Keep"ing the first fraction, "Flip"ing the second fraction, "Multiply", and then "Simplify"ing the result to $\frac{2}{5}$.

Reference: <https://www.mathswithmum.com/dividing-fractions/>; <https://www.mashupmath.com/blog/multiplying-fractions-by-whole-numbers-examples>

4. Decimals – Tenths, hundredths, thousandths



Reference: <https://www.vedantu.com/mathematics/understanding-decimal-number-system>

Real-Life Example:

Measuring ingredients in cooking, reading money amounts in pesos and centavos.

Remember This!

- Fractions and decimals can represent the same value (e.g., $1/2 = 0.5$).

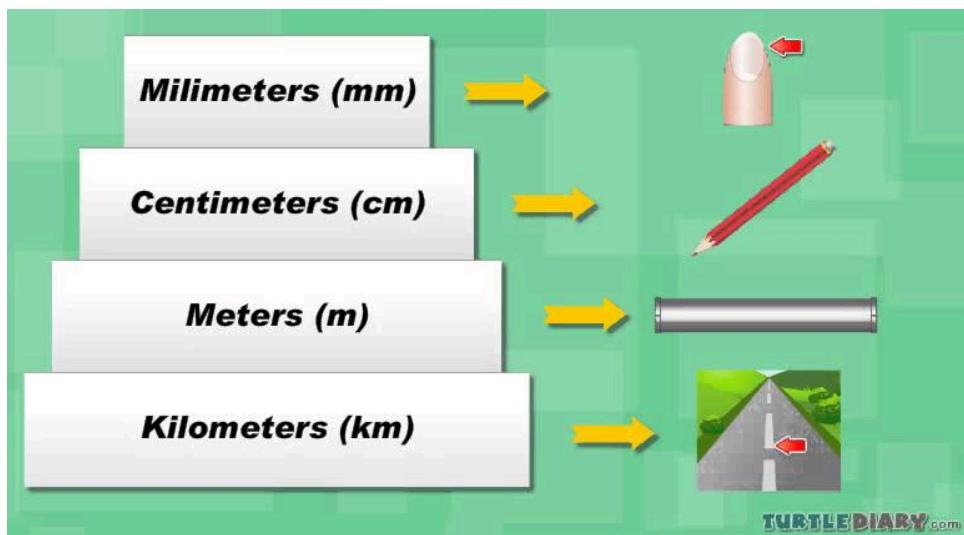
General Topic: Measurement and Conversions

Lesson Overview:

Measurement is used in daily activities, and **converting units** helps compare and compute values easily.

Key Concepts and Subtopics:

1. Length – meter, centimeter, kilometer



2. Mass – gram, kilogram



3. Capacity – liter, milliliter



Reference:<https://saynong.com/are-liters-or-milliliters-bigger/>

4. Time – seconds, minutes, hours



5. Conversions – Use multiplication/division to change units

Real-Life Example:

Converting meters to kilometers when measuring running distances.

Remember This!

- Always match units before adding or subtracting measurements.

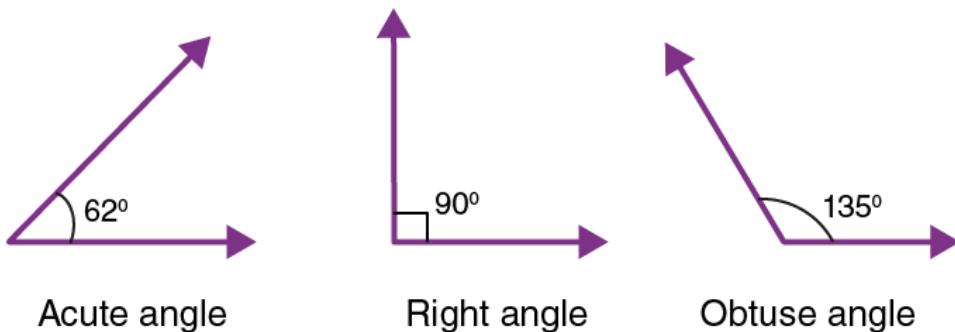
General Topic: Geometry: Angles, Triangles, Quadrilaterals

Lesson Overview:

Understanding **shapes** and angles is essential in construction, art, and design.

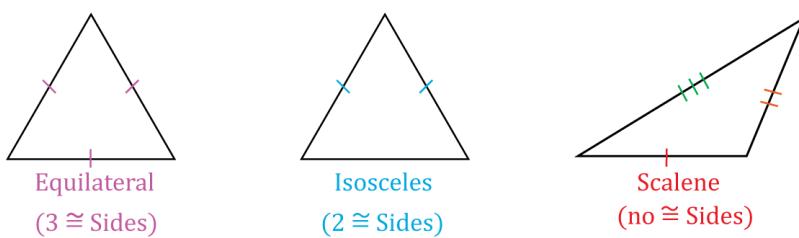
Key Concepts and Subtopics:

1. **Angles** – Acute ($<90^\circ$), Right (90°), Obtuse ($>90^\circ$)



© Byjus.com

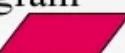
2. **Triangles** – Classified by sides (equilateral, isosceles, scalene) or angles (acute, right, obtuse)



Calcworkshop.com

3. Quadrilaterals – Square, rectangle, parallelogram, rhombus, trapezoid

Quadrilaterals

SHAPE	SIDES	ANGLES	PARALLEL LINES
Square		4 same length	4 right angles 2 sets
Rhombus		4 same length	2 acute 2 obtuse 2 sets
Trapezoid		different lengths	different angles 1 set
Rectangle		2 long, 2 short	4 right angles 2 sets
Parallelogram		2 long, 2 short	2 acute 2 obtuse 2 sets

Reference: <http://drivelerlayer.com/img/parallelogram%20compared%20to%20trapezoid/20/any>

Real-Life Example:

Measuring angles in carpentry, identifying road signs.

Remember This!

- *The sum of angles in a triangle is always 180° , in a quadrilateral 360° .*

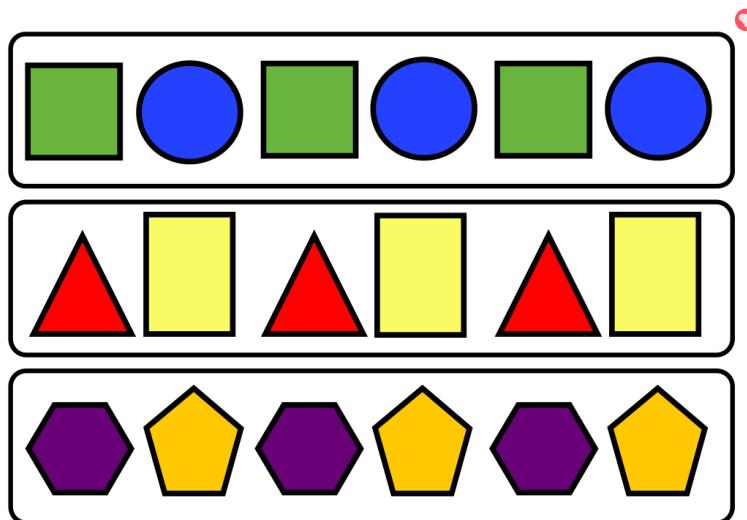
General Topic: Patterns and Sequences

Lesson Overview:

Patterns help predict future terms and understand mathematical relationships.

Key Concepts and Subtopics:

1. **Repeating Patterns** – Cycle repeats (shapes, colors)



Reference:<https://www.pinterest.com/pin/195977021260027458/>

2. **Number Patterns** – Add, subtract, multiply, or divide to find the next term

45, 41, 37, , , ...,



A pattern is to **subtract 4** from each number to get the next number.

$$37 - 4 = 33, \quad 33 - 4 = 29, \quad 29 - 4 = 25$$

The next numbers will be **33, 29, and 25**.

Reference: <https://slideplayer.com/slide/14557219/>

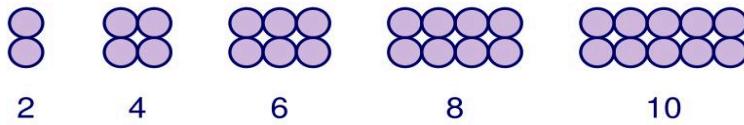
3. Geometric Patterns – Multiply by a fixed number to continue sequence

Sequences from geometrical patterns

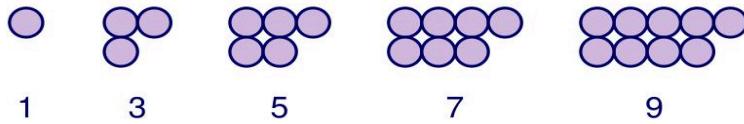


We can show many well-known sequences using geometrical patterns of counters.

Even Numbers



Odd Numbers



Real-Life Example:

Number of chairs in each row, color designs in tiles.

Remember This!

- Look for the rule before continuing a pattern.

General Topic: Data Representation and Interpretation

Lesson Overview:

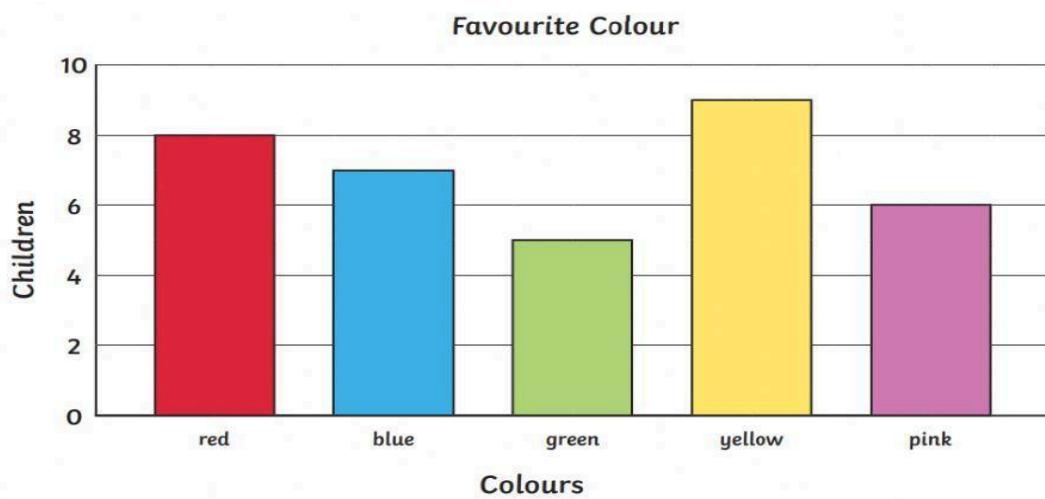
Data is easier to understand when shown in tables, charts, or graphs.

Key Concepts and Subtopics:

1. Tables – Organize data in rows and columns

Fruit	Monday	Tuesday	Wednesday	Thursday	Friday	Total
Mango	12	15	10	8	14	59
Banana	20	18	25	22	19	104
Apple	8	6	12	10	15	51
Total Sold	40	39	47	40	48	214

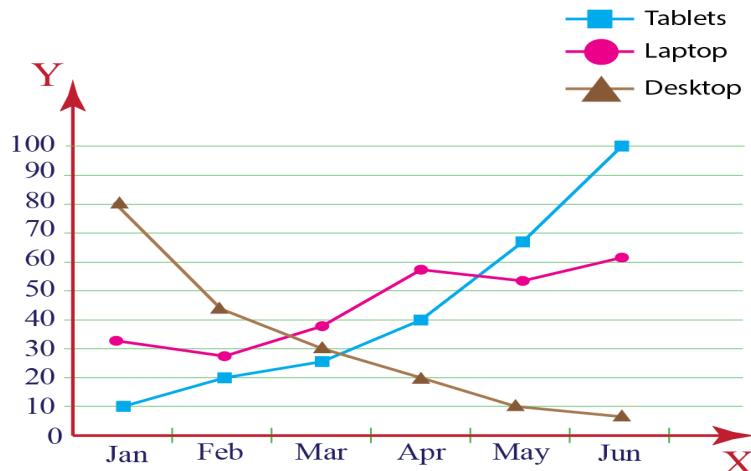
2. Bar Graphs – Compare quantities



Reference:<https://worksheets.clipart-library.com/worksheet/bar-graph-worksheet-4th-grade-26.html>

3. Line Graphs – Show trends over time

Product Trends by Month



Reference: <https://printableblappets.z21.web.core.windows.net/interpretation-of-line-graph.html>

4. Pictographs – Use pictures to represent data



Small Towns	Number of illiterate children
Melrose	
Marengo	
Midway	
Parral	
Rushville	

Real-Life Example:

Graphing the class's favorite fruits, recording daily temperature.

Remember This!

- Always check the title, labels, and scale before interpreting a graph.