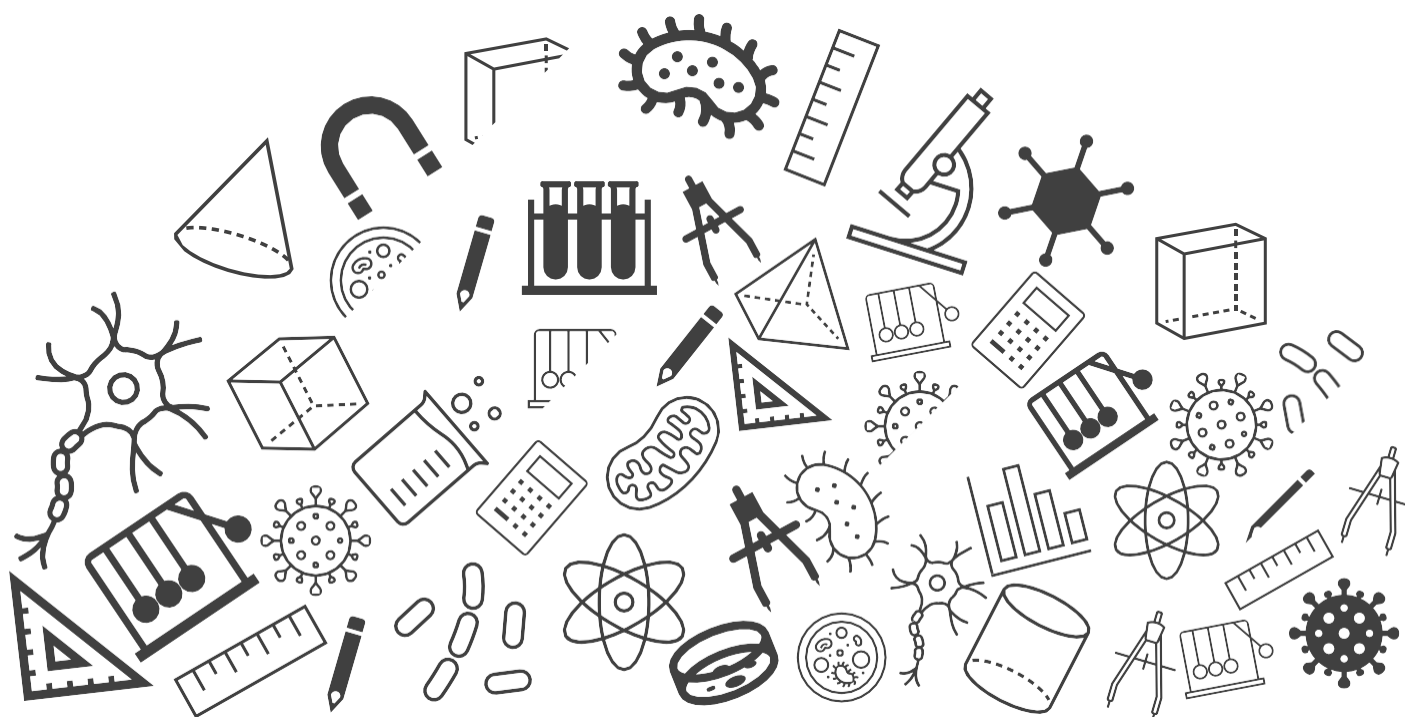




Grade 06

Maths Chapter Notes

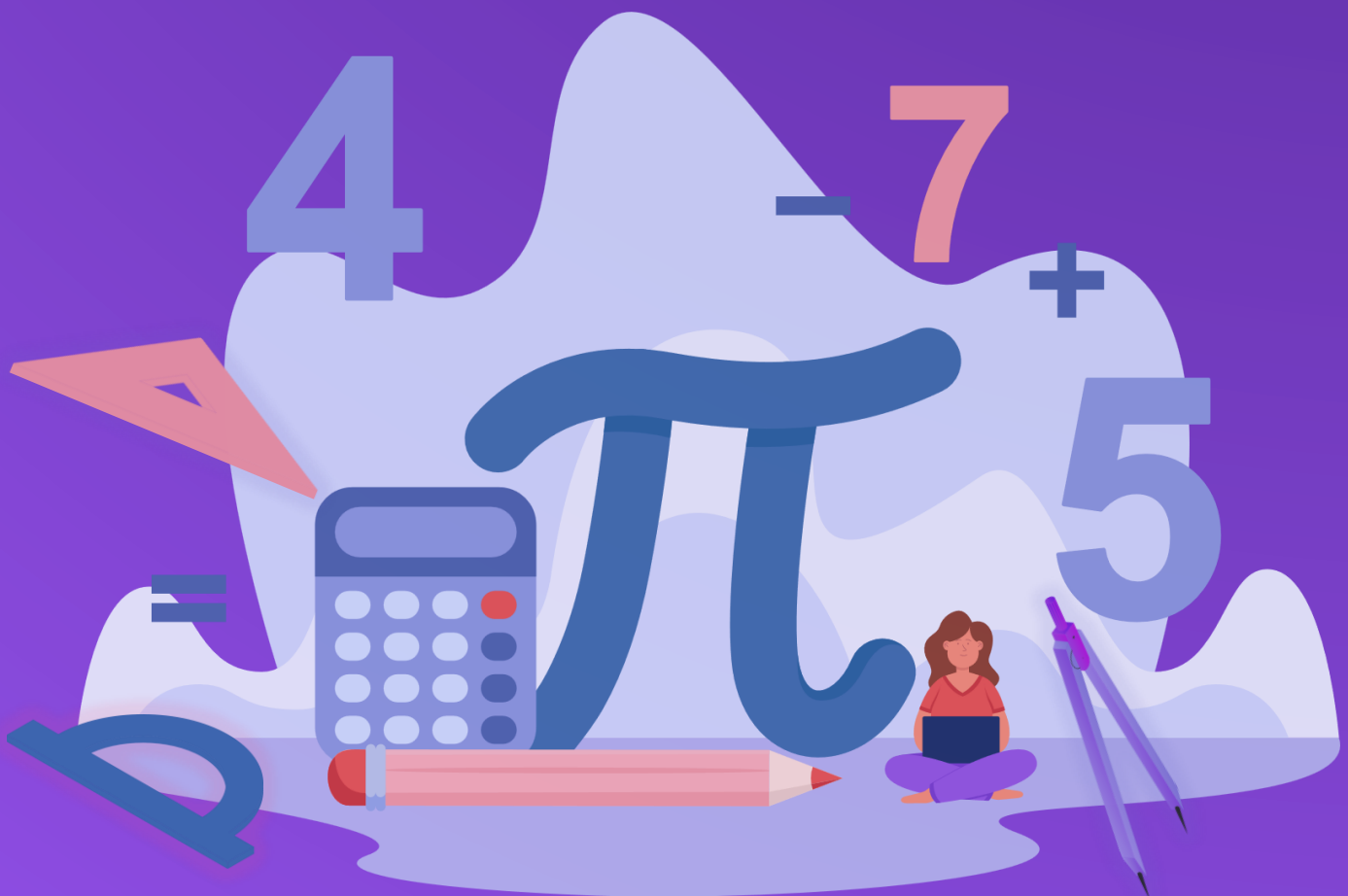


BYJU'S Classes

Chapter Notes

Understanding Elementary Shapes

Grade 06



Topics to be Covered

1. Basic Shapes

- 1.1. Measuring Line Segments
- 1.2. Angles
 - 1.2.1. Types of Angles
 - 1.2.2. Measuring Angles

2. Perpendicular Lines

- 2.1. Perpendicular Bisector

3. Triangles

- 3.1. Classification of Triangles Based on Sides
- 3.2. Classification of Triangles Based on Angles

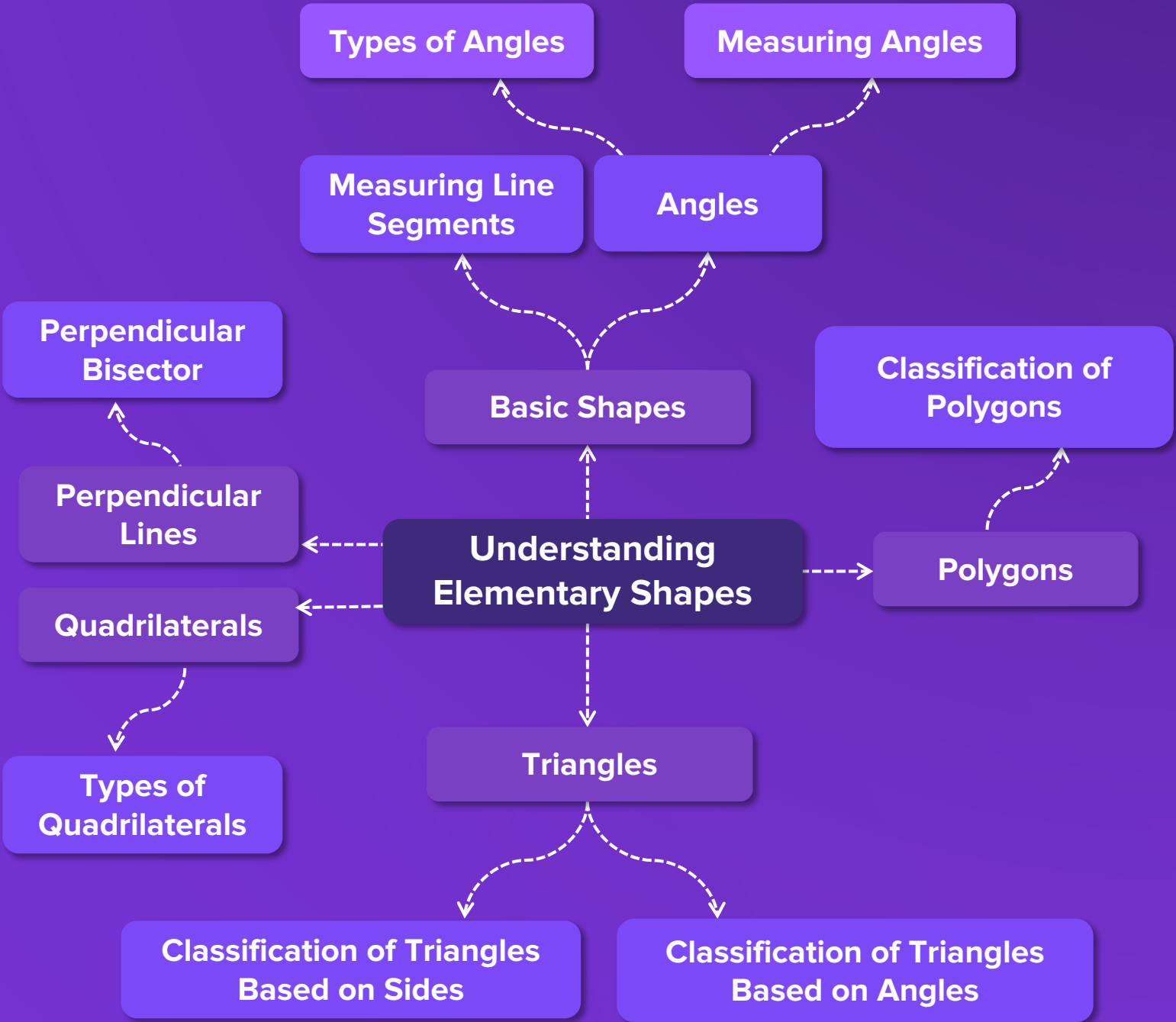
4. Quadrilaterals

- 4.1 Types of Quadrilaterals

5. Polygons

- 5.1 Classification of Polygons

Mind Map

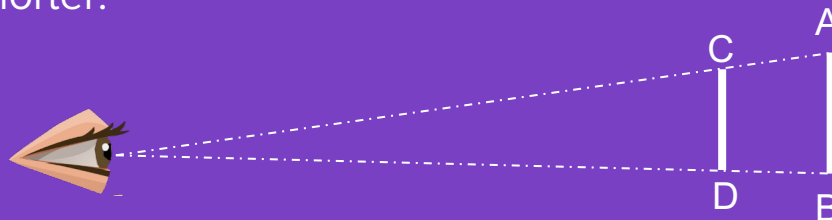


1. Basic Shapes

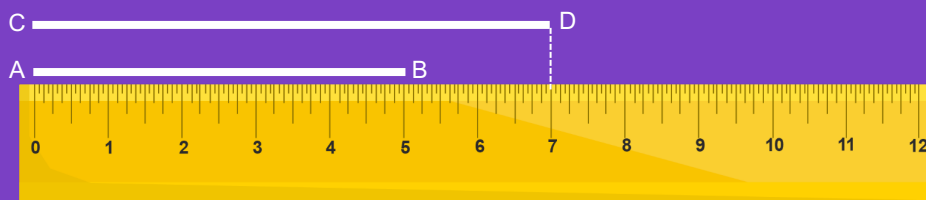
All the shapes we see around us are formed using curves and lines. We classify them into line segments, angles, triangles, polygons and circles having different sizes and measures.

1.1. Measuring Line Segments

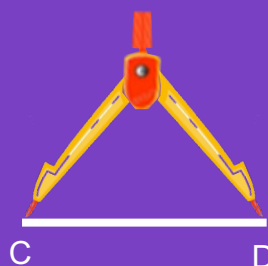
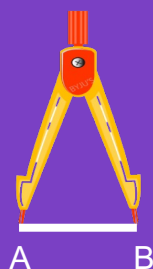
- **Comparison by observation:** Just by observation, we can say which line segment is longer and which is shorter.



- **Comparison using a ruler:** A ruler can be used to measure the length of a line segment by placing 0 at one end point and reading the value at the other end point.



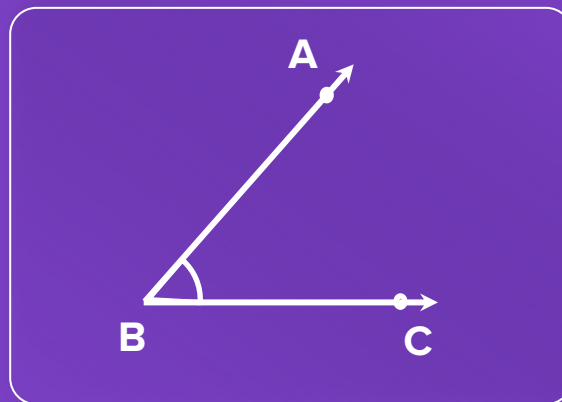
- **Comparison using a divider:** Place the arms of divider at two end points of line segment and without changing the angle, measure the length by placing divider's one arm at 0 of the ruler and read the value against the other arm.



1. Basic Shapes

1.2. Angles

A figure which is formed by **two rays or lines** that share a common initial point is called an angle. An angle is represented by the symbol ' \angle '.



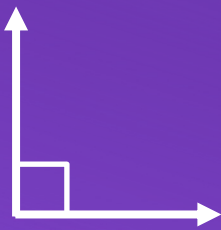
Parts of the angle	Name of the parts
Name of the angle	$\angle ABC$
Arms of the angle	AB and BC
Vertex	B

1. Basic Shapes

1.2. Angles

1.2.1. Types of Angles

Right angle



- Measure of a right angle is 90° .
- It is equal to $\frac{1}{4}$ of a revolution.

Straight angle



- Measure of a straight angle is 180° .
- It is equal to $\frac{1}{2}$ of a revolution.

Complete angle



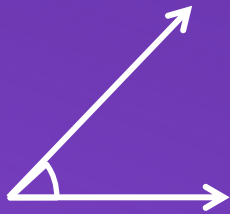
- Measure of a complete angle is 360° .
- It is equal to 1 complete revolution.

1. Basic Shapes

1.2. Angles

1.2.1. Types of Angles

Acute angle



- An angle **smaller than a right angle** is called an acute angle.
- Measure of an acute angle is between **$0^\circ - 90^\circ$** .

Obtuse angle



- An angle **larger than a right angle** but **smaller than a straight angle** is called an obtuse angle.
- Measure of an obtuse angle is between **$90^\circ - 180^\circ$** .

Reflex angle



- An angle **larger than a straight angle** but **smaller than a complete angle** is called a reflex angle.
- Measure of a reflex angle is between **$180^\circ - 360^\circ$** .

1. Basic Shapes

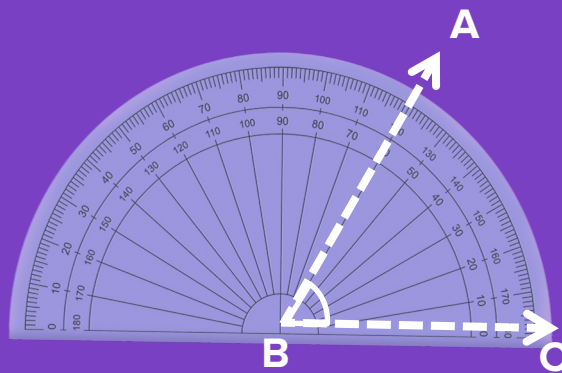
1.2. Angles

1.2.2. Measuring Angles

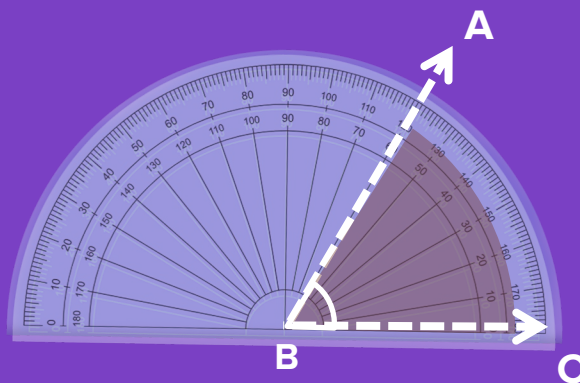
Measuring angles less than or equal to 180° using a protractor

Step 1: Place the protractor so that the midpoint of the straight edge lies on the vertex of the angle.

Step 2: Adjust the protractor so that one arm of the angle is along the straight edge of the protractor.



Step 3: The mark shown by the other arm on the curved edge gives the degree measure of the angle.



$$\angle ABC = 60^\circ$$

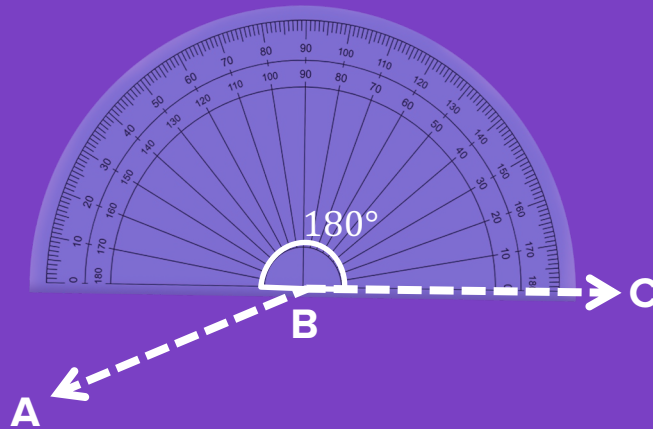
1. Basic Shapes

1.2. Angles

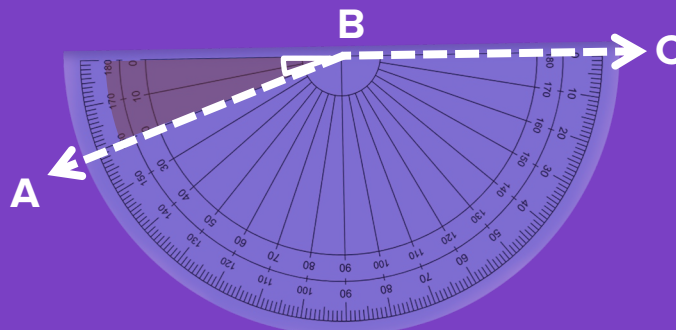
1.2.2. Measuring Angles

Measuring angles greater than 180° using a protractor

Step 1: Place the protractor on the angle.



Step 2: Coincide one of the arms on the base of the protractor and measure the way up to the other arm.

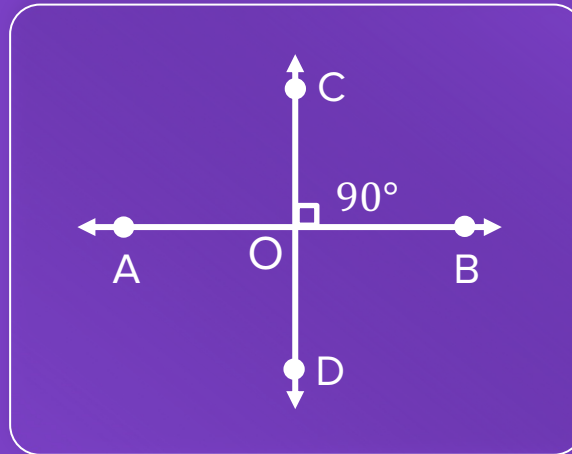


$$\angle ABC = 180^\circ + 20^\circ = 200^\circ$$

2. Perpendicular Lines

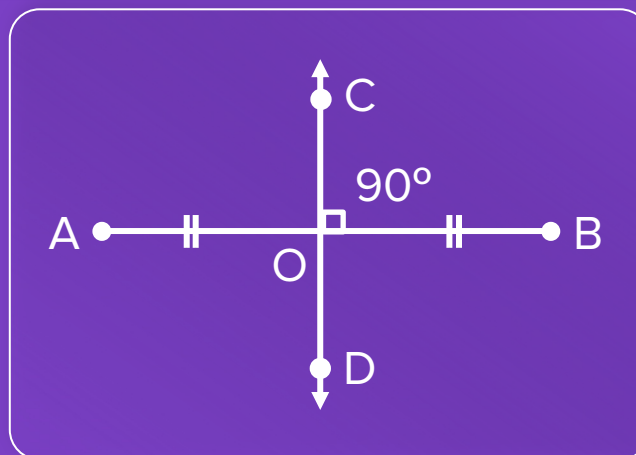
When **two lines intersect** and the **angle between them is a right angle**, then the lines are said to be perpendicular.

If a line AB is perpendicular to CD, we write $AB \perp CD$.



2.1. Perpendicular Bisector

A perpendicular bisector is a line that **bisects another line segment** at a **right angle**, through the intersection point.

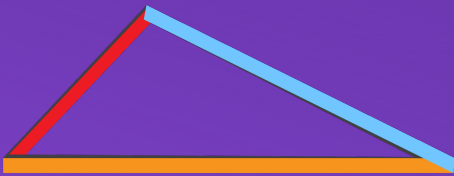


3. Triangles

A polygon with the least number of sides i.e. **three sides** is called a triangle.

3.1. Classification of Triangles Based on Sides

Scalene triangle



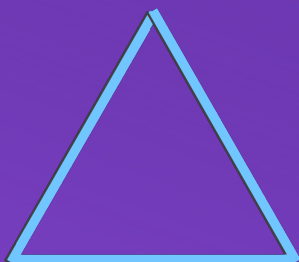
A triangle having all three **unequal sides** is called a scalene triangle.

Isosceles triangle



A triangle having **two equal sides** is called an isosceles triangle.

Equilateral triangle

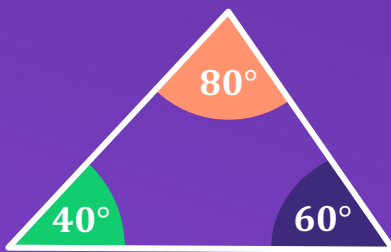


A triangle having **three equal sides** is called an equilateral triangle.

3. Triangles

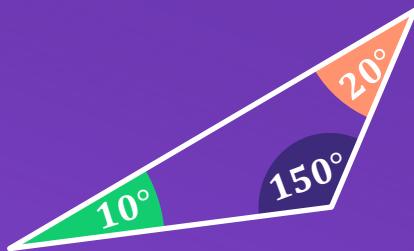
3.2. Classification of Triangles Based on Angles

Acute angled triangle



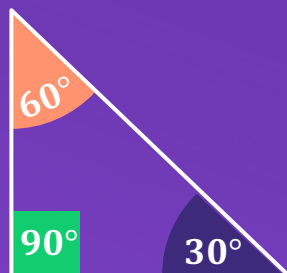
If **each angle is less than 90°** , then the triangle is called an acute angled triangle.

Obtuse angled triangle



If any **one angle is greater than 90°** , then the triangle is called an obtuse angled triangle.

Right angled triangle



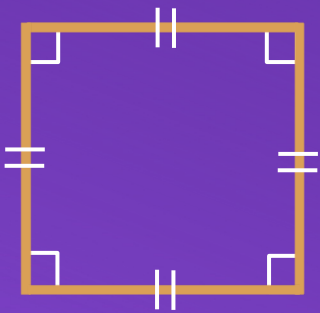
If any **one angle is equal to 90°** , then the triangle is called a right angled triangle.

4. Quadrilaterals

A polygon which has **four sides** is called a quadrilateral.

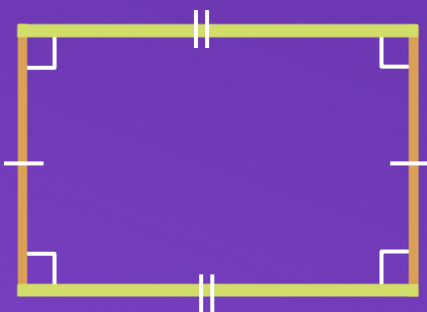
4.1. Types of Quadrilaterals

Square



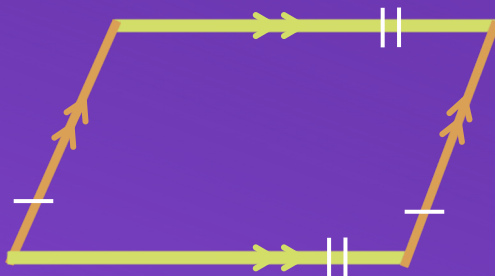
A square, having **all sides equal** and all the internal angles equal to 90° .

Rectangle



A rectangle, having **opposite sides equal** and all the internal angles equal to 90° .

Parallelogram

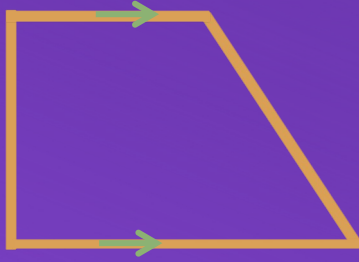


A parallelogram, having **opposite sides equal and parallel**.

4. Quadrilaterals

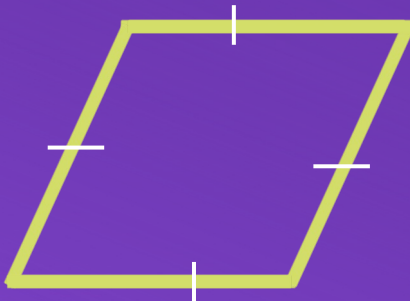
4.1. Types of Quadrilaterals

Trapezium



A trapezium, having **one pair of opposite sides parallel**.

4.5. Rhombus



A rhombus, having **all sides equal and opposite sides parallel**.

4. Quadrilaterals

4.1. Types of Quadrilaterals



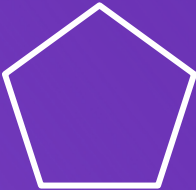



Here is an outline summary of the properties of quadrilaterals:

Quadrilateral	Opposite Sides		All Sides Equal	Opposite Angles Equal	Diagonals	
	Equal	Parallel			Equal	Perpendicular
Parallelogram	Yes	Yes	No	Yes	No	No
Rectangle	Yes	Yes	No	Yes	Yes	No
Square	Yes	Yes	Yes	Yes	Yes	Yes
Rhombus	Yes	Yes	Yes	Yes	No	Yes
Trapezium	No	No	No	No	No	No

5. Polygons

A polygon is a planar **closed figure** made up of **line segments**.
Parts of polygons are **sides, vertices and angles**.

5.1. Classification of Polygons

Shape	Number of sides	Name
	3 sides	Triangle
	4 sides	Quadrilateral
	5 sides	Pentagon
	6 sides	Hexagon
	7 sides	Heptagon
	8 sides	Octagon