ALLEN IntelliBrain®

Experiential Experimental Edutaining

MATHS

SAMPLE BOOK

GRADE 7

MATHS

I'm the

Intelli Kid

.....

and

I'm becoming the

Best Version

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GRADE-7

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I AM PROGRESSING

(Tick mark the columns after achieving the Learning Milestones)

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The Triangle & Its Properties				
Congruence of Triangles				
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SAMPLE THEORY

CHAPTER 1

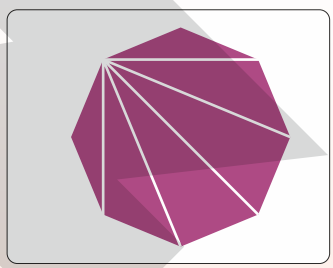
THE TRIANGLE & ITS PROPERTIES

INTRODUCTION

A Triangle is a closed 2-dimensional figure and a three-sided polygon. Studies about triangles play an important role because polygons with 4, 5, 6, etc. sides, can be divided into triangles.

SQUARE

PENTAGON



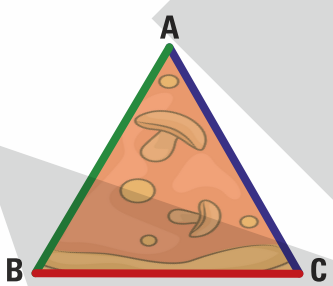
OCTAGON

Circle is made up of infinite triangles.

PARTS OF A TRIANGLE

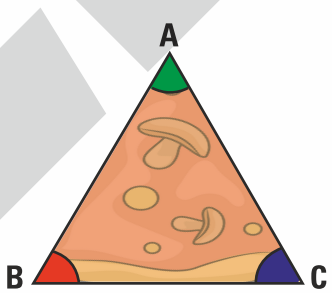
As the name suggests, Triangle is made up of two different words: Tri (three) and Angles.

Sides



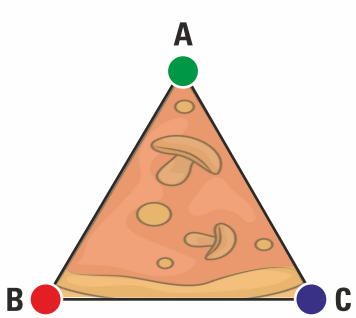
The line segments that make the boundaries of a triangle are known as its sides.
Sides: AB, BC, CA

Angles



Three angles are formed between any two sides of a triangle.
Angles: ∠ABC, ∠BCA, ∠CAB

Vertices



The meeting points of any two sides of a triangle are known as its vertices (corners).
Vertices: A, B, C

So, a triangle has 3 sides, 3 angles, and 3 vertices.

CLASSIFICATION OF TRIANGLES

Based On Sides

Equilateral Triangle

- All the sides are of equal measure.
- All the angles are

Isosceles Triangle

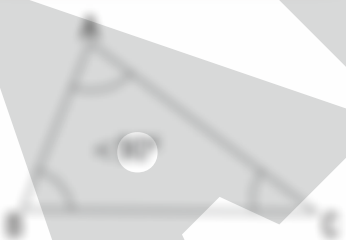
- Any two sides are of equal measure, i.e., AB = AC.
- The angles opposite to the equal sides are equal in measure, i.e., ∠B = ∠C.
- The angle formed where two equal sides are meeting is known as vertex angle, i.e., ∠A.
- The two equal angles are known as base angles, i.e., ∠B & ∠C.
- The unequal side is known as the base, i.e., BC.

Scalene Triangle

- All the sides are of unequal measure.
- All the angles are different.

Based On Angles

Acute Angle Triangle



- All three angles are acute, i.e., less than 90°.

Right Angle Triangle

- Only one angle is a right angle, i.e., equal to 90°, and the other two angles are acute.

Obtuse Angle Triangle

- Only one angle is obtuse, i.e., greater than 90° and the other two angles are acute.

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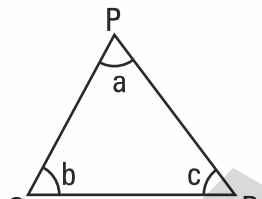
SAMPLE EXERCISE

Directions: Solve the following multiple choice questions by choosing the most appropriate option.

1. Name the triangle whose one angle is a right angle, and the other two angles are in the ratio 1 : 2 ?

(1) Scalene (2) Isosceles (3) Equilateral (4) None of these

2. Find the measure of $\angle a$, if the ratio of a : b : c = 5 : 3 : 4.

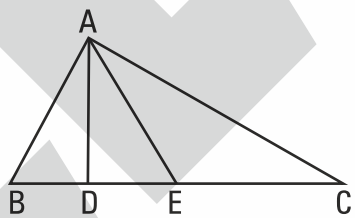


(1) 45° (2) 60° (3) 75° (4) None of these

3. If the angle between the two equal sides of an isosceles triangle is 30°, then which of the following represents the measure of the other two angles ?

(1) 30°,90° (2) 60°,90° (3) 75°,75° (4) None of these

4. Which of the following line segments represents the median in the given triangle ?



(1) AD (2) AE (3) Can't be determined (4) None of these

5. If each exterior angle of a triangle is twice any of the interior angles of the same triangle, then name the triangle.

(1) Isosceles (2) Right angle (3) Scalene (4) Equilateral

6. The measure of all the altitude of an equilateral triangle is _____ to each other.

(1) equal (2) unequal (3) Can't be determined (4) None of these

7. All the exterior angles of an obtuse angle triangle are always greater than 80°.

(1) True (2) False (3) Data Inadequate (4) None of these

8. Which of the following line segments represents the angle bisector in the given triangle ?

(1) AD (2) BE (3) CF (4) None of these

9. If the measure of two exterior angles of a triangle is 135° each, then name the triangle.

(1) Acute (2) Obtuse (3) Right (4) None of these

10. If the difference between the two exterior angles of a triangle is 1° and the third is half of 126°. Find the measure of the other two exterior angles.

(1) 58°,59° (2) 148°,149° (3) 125°,123° (4) None of these

11. If one of the exterior angles of a triangle is 1° less than a right angle, then name the triangle.

(1) Acute (2) Obtuse (3) Scalene (4) None of these

12. In a right angle triangle ABC right angled at B, if AC is 8 cm more than AB, and BC is 12 cm, then which of the following represent AC ?

(1) 5 cm (2) 20 cm (3) 4 cm (4) 13 cm

13. In the given isosceles triangle, find the measure of $\angle ACB$.

(1) 120° (2) 60° (3) 40° (4) None of these

14. Select the correct sign for the given relation between the three sides of a given triangle.

$|LJ - JK|$ ☐ $|K$

(1) > (2) < (3) = (4) None of these