



BK BIRLA CENTRE FOR EDUCATION
SARALA BIRLA GROUP OF SCHOOLS
SENIOR SECONDARY CO-ED DAY CUM BOYS' RESIDENTIAL SCHOOL
Post-Mid Term- 2024-25
MATHEMATICS (041) ANSWER KEYS



Class : VII
 Date : 06.01.2025
 Admission No.:

Duration: 1 Hrs.
 Max. Marks: 25
 Roll No.:

General Instructions:
 Questions 1 to 5 are 1 mark each.
 Questions 6 to 9 are of 2 marks each.
 Questions 10 and 13 are of 3 marks each.

SECTION-A

(5 × 1 = 5)

Choose the correct answer.

- How many altitudes can a triangle have?
 a) 1 b) 2 **c) 3** d)) None of these
- Which is the longest side in the triangle ABC right angled at B?
 a) AB **b) AC** c) BC d) None of these
- The sum of the lengths of any two sides of a triangle is _____ the third side of the triangle.
a) Greater than b) less than c) double d) half
- A triangle in which two sides are of equal lengths is called _____.
 a) scalene b) acute-angled c) equilateral **d) isosceles**
- In the Pythagoras property, the triangle must be _____.
 a) obtuse-angled b) acute-angled **c) right-angled** d) None of these

SECTION- B

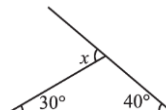
(4 × 2 = 8)

6) Solution: -We know that,

An exterior angle of a triangle is equal to the sum of its interior opposite angles.

$x = 30^\circ + 40^\circ$ _____ (1)

$x = 70^\circ$ _____ (1)

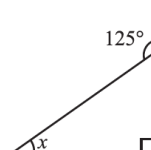


7) We know that,

An exterior angle of a triangle is equal to the sum of its interior opposite angles.

The given triangle is a right-angled triangle. So, the angle opposite to the x is 90° .

$= x + 90^\circ = 125^\circ$ _____ (1)



By transposing 90o from LHS to RHS, it becomes – 90^o

$$x = 125^{\circ} - 90^{\circ}$$

$$x = 35^{\circ} \text{ _____(1)}$$

8) The sum of all the interior angles of a triangle is 180^o. Then,

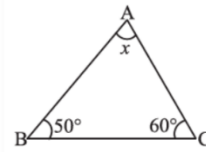
$$= \angle BAC + \angle ABC + \angle BCA = 180^{\circ}$$

$$= x + 50^{\circ} + 60^{\circ} = 180^{\circ} \text{ _____(1)}$$

$$= x + 110^{\circ} = 180^{\circ}$$

$$x = 180^{\circ} - 110^{\circ}$$

$$x = 70^{\circ} \text{ _____(1)}$$



9) Is it possible to have a triangle with the sides 6 cm, 3 cm, 2 cm

Clearly, we have

$$(3 + 2) = 5 < 6 \text{ _____(1)}$$

Thus, the sum of any two of these numbers is less than the third.

Hence, it is not possible to draw a triangle whose sides are 6 cm, 3 cm and 2 cm. _____(1)

SECTION- C

10) Find the values of the unknowns x and y in the following diagrams:

From the rule of vertically opposite angles,

$$y = 80^{\circ} \text{ _____(1)}$$

Then, We know that,

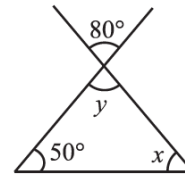
The sum of all the interior angles of a triangle is 180^o.

$$\text{Then, } 50^{\circ} + 80^{\circ} + x = 180^{\circ} \text{ _____(1)}$$

$$130^{\circ} + x = 180^{\circ}$$

$$x = 180^{\circ} - 130^{\circ}$$

$$x = 50^{\circ} \text{ _____(1)}$$



11) AM is a median of a triangle ABC.

Is $AB + BC + CA > 2 AM$

We know that,

The sum of the length of any two sides is always greater than the third side.

Now consider the ΔABM ,

$$\text{Here, } AB + BM > AM \text{ ... [equation i] _____(1)}$$

Then, consider the ΔACM

$$\text{Here, } AC + CM > AM \text{ ... [equation ii] _____(1)}$$

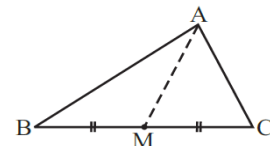
By adding equations [i] and [ii], we get,

$$AB + BM + AC + CM > AM + AM$$

From the figure we have, $BC = BM + CM$

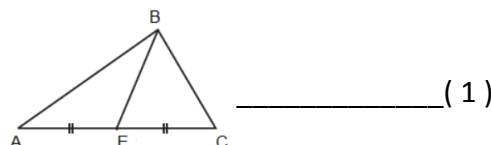
$$AB + BC + AC > 2 AM \text{ _____(1)}$$

Hence, the given expression is true.



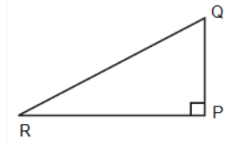
12) Draw rough sketches for the following:

(a) In ABC, BE is a median. A median connects a vertex of a triangle to the mid-point of the opposite side.



(b) In PQR, PQ and PR are altitudes of the triangle.

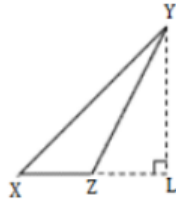
An altitude has one endpoint at a vertex of the triangle and another on the line containing the opposite side.



_____ (1)

(c) In DXYZ, YL is an altitude in the exterior of the triangle.

In the figure, we may observe that for ΔXYZ , YL is an altitude drawn exteriorly to side XZ which is extended up to point L.



_____ (1)

13) PQR is a triangle, right-angled at P. If PQ = 10cm and PR = 24 cm, find QR. In the above figure, RQ is the hypotenuse,

$$QR^2 = PQ^2 + PR^2 \text{ _____ (1)}$$

$$QR^2 = 10^2 + 24^2$$

$$QR^2 = 100 + 576$$

$$QR^2 = 676 \text{ _____ (1)}$$

$$QR = \sqrt{676}$$

$$QR = 26 \text{ cm} \text{ _____ (1)}$$

Hence, the length of the hypotenuse QR = 26 cm

OR

A 15 m long ladder reached a window 12 m high from the ground on placing it against a wall at a distance a. Find the distance of the foot of the ladder from the wall.

By the rule of Pythagoras' Theorem,

In the above figure, RQ is the hypotenuse,

$$15^2 = 12^2 + a^2 \text{ _____ (1)}$$

$$225 = 144 + a^2$$

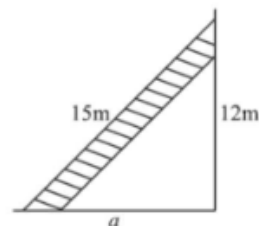
$$a^2 = 225 - 144$$

$$a^2 = 81 \text{ _____ (1)}$$

$$a = \sqrt{81}$$

$$a = 9 \text{ m} \text{ _____ (1)}$$

Hence, the length of a = 9 m



*****The End *****