

* Choose The Right Answer From The Given Options.[1 Marks Each]

[4]

1. A triangle is not possible if the measures of the angles are-

(A) $40^\circ, 65^\circ, 75^\circ$

(B) $56^\circ, 50^\circ, 74^\circ$

(C) $72^\circ, 63^\circ, 45^\circ$

(D) $67^\circ, 42^\circ, 81^\circ$

Ans. : (D) $67^\circ, 42^\circ, 81^\circ$

2. Which of the following represents the altitude of the triangle ABC?

(A) AM

(B) AL

(C) AP

(D) AN

Ans. : (B) AL

3. The value of the unknown exterior angle x in the given triangle is :

(A) 70°

(B) 110°

(C) 40°

(D) 90°

Ans.: (A) 70°

4. If a, b and c are the three sides of a triangle, then-

(A) $a + b = c$

(B) $a + b < c$

(C) $a + b > c$

(D) $a - b > c$

Ans. : (C) $a + b > c$

* a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option. [1]

5. **Assertion (A):** If two internal opposite angles of a triangle are equal and the external angle is 110° , then each internal angle is 50° .

Reason (R): A triangle with one of its angles as 110° is called an obtuse-angled triangle.

(A) Both assertion and reason are true and the reason is the correct explanation of assertion.

(B) Both assertion and reason are true but the reason is not the correct explanation of the assertion.

(C) Assertion is true and the reason is false.

(D) Assertion is false and the reason is true.

Ans. : (D) Assertion is false and the reason is true.

* State Whether The Following Sentences Are True Or False.[1 Marks Each]

[5]

6. An equilateral triangle can be a right triangle.

Ans. : False

7. The sum of the two sides of a triangle is greater than or equal to the third side.

Ans. : False



8. A triangle can have all three angles with measures less than 60° .

Ans. : False

9. The altitude of a triangle always lies outside the triangle.

Ans. : False

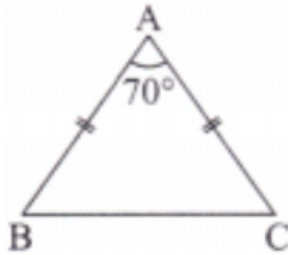
10. A triangle can have two obtuse and one acute angle.

Ans. : False

* Fill In The Blanks With Correct Alternative.[1 Marks Each]

[3]

11. In the given figure,



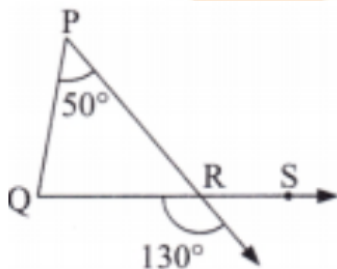
(i) $\angle B = \underline{\hspace{1cm}}$

(ii) $\angle C = \underline{\hspace{1cm}}$

Ans. : (i) $\angle B = 55^\circ$

(ii) $\angle C = 55^\circ$

12. In the given figure,



(i) $\angle PQR = \underline{\hspace{1cm}}$

(ii) $\angle PRS = \underline{\hspace{1cm}}$

(iii) $\angle PRQ = \underline{\hspace{1cm}}$

Ans. : (i) $\angle PQR = 80^\circ$

(ii) $\angle PRS = 130^\circ$

(iii) $\angle PRQ = 50^\circ$

13. The length of the third side of a triangle whose two sides are 5 cm and 6 cm must be less than (i) $\underline{\hspace{1cm}}$ and greater than (ii) $\underline{\hspace{1cm}}$.

Ans. : (i) 11 cm

(ii) 1 cm

* Questions With Calculation.[2 Marks Each]

[2]

14. For each of the following, give at least 5 possible values for the third length so there exists a triangle having these as sidelengths (decimal values could also be chosen):

(a) 2 and 8

(b) 7 and 12

Ans. : (a) 6.5, 7, 8, 9, 9.5 ,

(b) 6, 10, 13.5, 15, 18 .

* **Questions With Calculation.[3 Marks Each]**

[18]

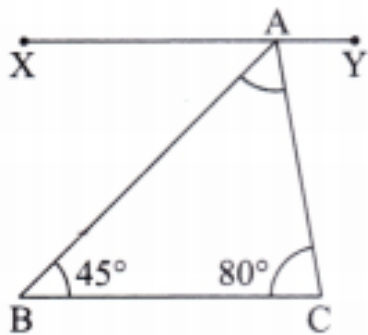
15. Can a triangle have sidelengths 6 cm, 8 cm, and 10 cm?

Ans. : To form a triangle, the sum of the lengths of any two sides should be greater than the length of the third side.

So, $6\text{ cm} + 8\text{ cm} = 14\text{ cm} > 10\text{ cm}$
 $8\text{ cm} + 10\text{ cm} = 18\text{ cm} > 6\text{ cm}$
 $6\text{ cm} + 10\text{ cm} = 16\text{ cm} > 8\text{ cm}$

Thus, a triangle is possible with side lengths 6 cm, 8 cm, and 10 cm.

16. Find the third angle of a triangle when two of the angles are 45° and 80° .



Ans. :

Here $\angle B = 45^\circ$ and $\angle C = 80^\circ$.

Since the line BC is parallel to XY .

So, $\angle XAB = \angle B = 45^\circ$

[Alternate angles] ... (i)

and $\angle YAC = \angle C = 80^\circ$

[Alternate angles] ... (ii)

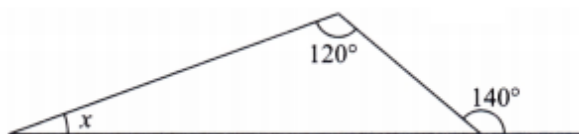
Also, $\angle XAB + \angle BAC + \angle YAC = 180^\circ$

$\Rightarrow 45^\circ + \angle BAC + 80^\circ = 180^\circ$ [Using (i) and (ii)]

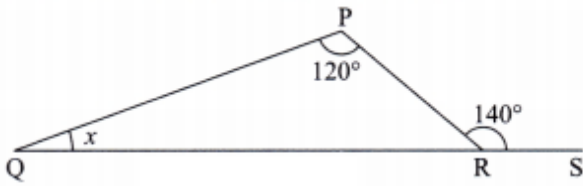
$\Rightarrow \angle BAC = 180^\circ - 125^\circ$

$= 55^\circ$.

17. Find the value of the unknown angle :



Ans. : We know that the exterior angle of a triangle is equal to the sum of the interior opposite angles.



In $\triangle PQR$, $\angle PRS = \angle PQR + \angle QPR$

$$\text{So, } 140^\circ = x + 120^\circ$$

$$x = 140^\circ - 120^\circ$$

$$x = 20^\circ$$

18. Construct a triangle having the side lengths 5, 5, and 8. (all units are in cm)

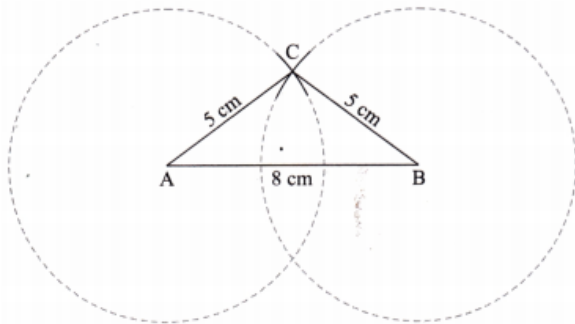
Ans. : Steps of Construction :

Step 1: Construct the base AB with one of the side lengths. Let us choose $AB = 8$ cm.

Step 2: From A, construct an arc of radius 5 cm.

Step 3: From B, construct an arc of radius 5 cm such that it intersects the first arc.

Step 4: The point where both the arcs meet is the required third vertex C. Join AC and BC to get $\triangle ABC$.



19. For each of the following, give at least 5 possible values for the third length so there exists a triangle having these as side lengths (decimal values could also be chosen) :

(a) 4 and 10

(b) 6 and 6

Ans. : (a) 5 possible values for the third length = 6.5, 7, 8, 9.5, 13.

Since $10 < 4 + 6.5$, $10 < 4 + 7$, $10 < 4 + 8$, $10 < 4 + 9.5$, $10 < 4 + 13$.

(b) 5 possible values for the third length = 3, 5, 7, 8.5, 11.

Since $6 < 6 + 3$, $6 < 6 + 5$, $6 < 6 + 7$, $6 < 6 + 8.5$, $6 < 6 + 11$.

20. Construct triangles for the following measurements :

(a) 5 cm, 40° , and 8 cm

(b) 45° , 5 cm, and 60°



Ans. : (a) Steps of Construction:

Step 1: Construct a side AB of length 8 cm.

Step 2: Construct $\angle A = 40^\circ$ by drawing the other arm of the angle.

Step 3: Mark the point C on the other arm such that AC = 5 cm.

Step 4: Join BC to get the required triangle.

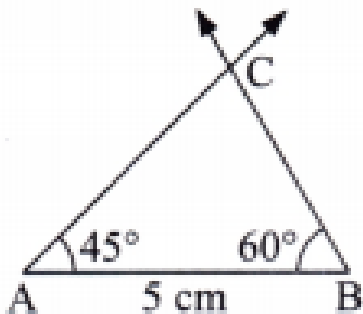


(b) Steps of Construction :

Step 1: Draw the base AB of length 5 cm .

Step 2: Draw $\angle A$ and $\angle B$ of measures 45° and 60° respectively.

Step 3: The point of intersection of the two new arms of $\angle A$ and $\angle B$ is the third vertex C.



Student Bro