

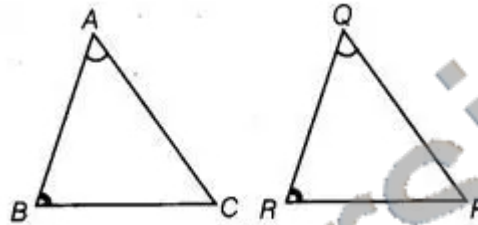
Exercise No. 7.2

Short Answer Questions with Reasoning:

1. In triangles ABC and PQR, $\angle A = \angle Q$ and $\angle B = \angle R$. Which side of $\triangle PQR$ should be equal to side AB of $\triangle ABC$ so that the two triangles are congruent? Give reason for your answer.

Solution:

Given: in $\triangle ABC$ and $\triangle PQR$, $\angle A = \angle Q$ and $\angle B = \angle R$

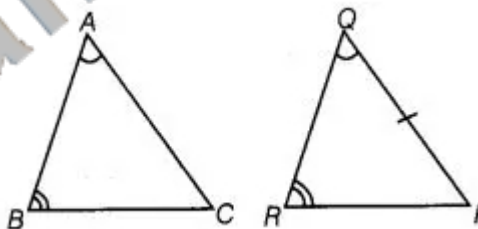


Now, the triangle ABC and PQR will be congruent if $AB = QR$ by ASA congruence rule.

2. In triangles ABC and PQR, $\angle A = \angle Q$ and $\angle B = \angle R$. Which side of $\triangle PQR$ should be equal to side BC of $\triangle ABC$ so that the two triangles are congruent? Give reason for your answer.

Solution:

Given: In triangle ABC and PQR,



$\angle A = \angle Q$ and $\angle B = \angle R$ [given]

$BC = RP$ [For the triangle to be congruent]

Hence, it will be congruent by AAS congruence rule.

3. "If two sides and an angle of one triangle are equal to two sides and an angle of another triangle, then the two triangles must be congruent." Is the statement true? Why?

Solution:

Angle must be the included angles. Hence, this statement is not true.

4. “If two angles and a side of one triangle are equal to two angles and a side of another triangle, then the two triangles must be congruent.” Is the statement true? Why?

Solution:

As we know that, the sum of any two sides of the triangle is always greater than the third side.

5. Is it possible to construct a triangle with lengths of its sides as 4 cm, 3 cm and 7 cm? Give reason for your answer.

Solution:

As we know that, the sum of any two sides of the triangle is always greater than the third side.
So,

4 cm and 3cm = 4 cm + 3 cm = 7cm that is equal to the length of third side that is 7 cm.

Therefore, this is not possible to construct a triangle with length of sides 4cm , 3 cm and 7 cm.

6. It is given that $\triangle ABC \cong \triangle RPQ$. Is it true to say that $BC = QR$? Why?

Solution:

It is false that $BC = QR$ because $BC = PQ$ as $\triangle ABC \cong \triangle RPQ$.

7. If $\triangle PQR \cong \triangle EDF$, then is it true to say that $PR = EF$? Give reason for your answer.

Solution:

It is true, $PR=EF$ because this is the corresponding sides of triangle PQR and triangle EDF.

8. In $\triangle PQR$, $\angle P = 70^\circ$ and $\angle R = 30^\circ$. Which side of this triangle is the longest? Give reason for your answer.

Solution:

In triangle PQR,

$$\angle Q = 180^\circ - (\angle P + \angle R)$$

$$= 180^\circ - (70^\circ + 30^\circ)$$

$$= 180^\circ - 100^\circ$$

$$= 80^\circ$$

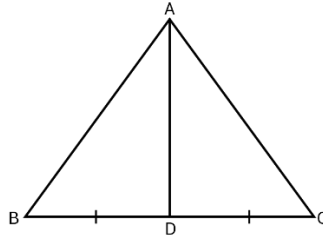
Now, in triangle PQR, angle Q is larger and side opposite to greater angle is longer.

Therefore, PR is the longer side.

9. AD is a median of the triangle ABC. Is it true that $AB + BC + CA > 2 AD$? Give reason for your answer.

Solution:

In triangle ABD,
 $AB + BD > AD \dots (I)$



$AC + CD > AD \dots (II)$ [Sum of the lengths of any two sides of a triangle must be greater than the third side]

Adding (I) and (II), get:

$$AB + BD + CD + AC > 2AD$$

$$AB + BC + CA > 2AD \quad [BD = CD \text{ as } AD \text{ is median of triangle } ABC]$$

10. M is a point on side BC of a triangle ABC such that AM is the bisector of $\angle BAC$. Is it true to say that perimeter of the triangle is greater than 2AM? Give reason for your answer.

Solution:

To prove: $AB + BC + AC > 2AM$

Proof: We know that sum of any two side of a triangle is greater than the third side,

Now, in triangle ABM,

$$AB + BM > AM \dots (I)$$

And, in triangle ACM,

$$AC + CM > AM \dots (II)$$

Adding (I) and (II), get:

$$AB + BM + AC + CM > 2AM$$

$$AB + (BM + CM) + AC > 2AM$$

$$AB + BC + AC > 2AM$$

Hence, it is true that the perimeter of the triangle is greater than 2AM.

11. Is it possible to construct a triangle with lengths of its sides as 9 cm, 7 cm and 17 cm? Give reason for your answer.

Solution:

We know that sum of any two side of a triangle is greater than the third side. So,

$$9 \text{ cm} + 7 \text{ cm} = 16 \text{ cm} < 17 \text{ cm}$$

Hence, it is not possible to construct a triangle.

12. Is it possible to construct a triangle with lengths of its sides as 8 cm, 7 cm and 4 cm? Give reason for your answer.

Solution:

Yes, that is possible to construct a triangle with lengths of its sides as 8 cm, 7 cm and 4 cm because the sum of any two side of a triangle is greater than the third side.

