16

Congruency of Triangles

Q1. State True or False:

a. If $\overline{AB}$ = 5 cm then $\overline{PQ}$ = 50 mm, then $\overline{AB} \cong \overline{PQ}$. _____

b. Two squares ABCD and LMNO are congruent if AB = MN. _____

c. Two rectangles are congruent, if their diagonals are equal. _____

d. Two circles are congruent, if they have the same centre. _____

Q2. Tick the pair of images which is congruent:

a. 

b. 

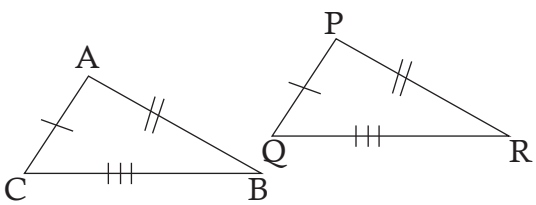
c. 

Q3. If $\Delta PQR \cong \Delta XYZ$, then find the correspondence between the sides and the angles and fill in the blanks:

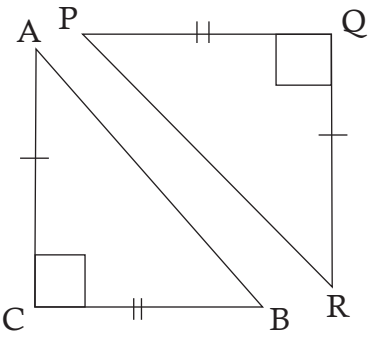
a. PQ = _____, QR = _____, PR = _____

b. $\angle P$ = _____, $\angle Q$ = _____, $\angle R$ = _____

Q4. Find the error in each of the following statements based on the figure given. Write the correct statement in the space provided, underlining the corrected error:

a. 

$\Delta ABC \cong \Delta$ PQR by SSS congruency. _____

b. 

$\Delta ABC \cong \Delta RPQ$ by RHS congruency.

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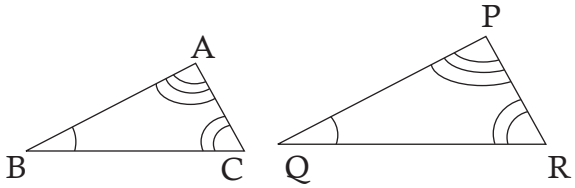
c. 

$\Delta ABC \cong \Delta PQR$ by AAA congruency.

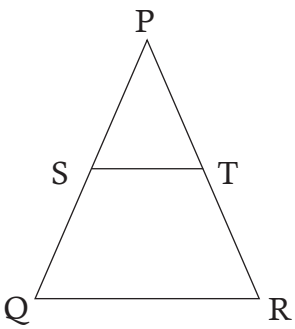
Q5. In an equilateral ΔABC, the median BD divides the triangle into two smaller triangles. Find whether the two smaller triangles are congruent to each other. If yes, state the triangles which are congruent, alongwith the congruency rule. Find the measure of $\angle ADB$ and $\angle DBC$.

Congruent triangles : Δ_____ $\cong \Delta$_____ by _____ congruency

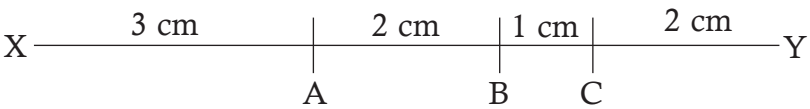
$\angle ADB$ = _____

$\angle DBC$ = _____

Q6. In the given figure ΔPQR is an isosceles triangle with PQ = PR. If ST || QR, prove that ΔPST is also an isosceles triangle. (Hint: Construct PU $\perp$ ST)



Q7. Observe the given figure carefully and fill in the blanks:



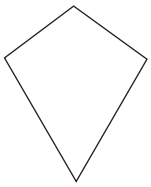
a. $\overline{XA}$ is congruent to $\overline{AC}$ _____

b. $\overline{BY}$ is congruent to $\overline{AC}$ _____

c. $\overline{AB}$ is congruent to $\overline{BC}$ _____

d. $\overline{AC}$ is congruent to $\overline{XB}$ _____

Q8. Join the diagonals of the kite given below such that it is divided into two congruent triangles. If the area of the kite is 52 square units, find the area of each triangle so formed.

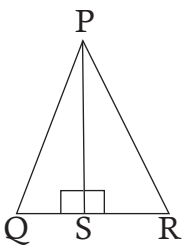


Area of each triangle = _____

Q9. Match the figure in group 1 to its congruent figure in group 2:

Group 1	Group 2
Circle of radius 2 cm	A right-angled triangle with hypotenuse 5 cm
Equilateral triangle with each side 5 cm long	Circle of diameter 4 cm
A right-angled triangle having base and height as 3 cm and 4 cm respectively	Circle of diameter 2 cm
Circle of radius 10 mm	A triangle having each angle 60° and one side 5 cm

Q10. In the figure given below ΔPQR is an isosceles triangle with PQ = PR. S is a point on QR such that $PS \perp QR$. Prove that PS is the median as well as the angle bisector of $\angle QPR$.



Answers

1. a. True; b. True; c. False; d. False

2. (c)

3. a. XY, YZ, XZ; b. ∠X, ∠Y, ∠Z

4.

a. $\underline{\Delta ACB} \cong \Delta$ PQR by SSS congruency.

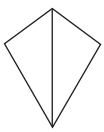
b. $\Delta ABC \cong \Delta$ RPQ by <u>SAS</u> congruency.

c. ΔABC and ΔPQR are <u>not</u> <u>congruent</u>.

5. $\Delta ABD \cong \Delta CBD$ by SSS/SAS congruency; $\angle ADB = 90°$; $\angle DBC = 30°$

6. $\Delta PUS \cong \Delta PUT$ by AAS congruency, so PS = PT

7. a. True; b. True; c. False; d. False

8.  ; 26 square units

9.

Group 1	Group 2
Circle of radius 2 cm	Circle of diameter 4 cm
Equilateral triangle with each side 5 cm long	A triangle having each angle 60° and one side 5 cm
A right angled triangle having base and height as 3 cm and 4 cm respectively	A right-angled triangle with hypotenuse 5 cm
Circle of radius 10 mm	Circle of diameter 2 cm

10. PQ = PR, PS = PS, ∠PSQ = ∠PSR = 90°. So $\Delta PQS \cong \Delta PRS$ (RHS congruency)

Therefore QS = SR, ∠QPS = ∠RPS (corresponding parts of congruent triangles)