

Congruency of Triangles

Q1. Write Congruent or Not Congruent in the blanks provided:

- $\overline{XY} = 2.5$ cm; $\overline{OP} = 2$ cm, so \overline{XY} is _____ to \overline{OP} .
- If $\angle ABC = 20\%$ of a right angle and $\angle PQR = 10\%$ of straight angle, then $\angle ABC$ _____ to $\angle PQR$.
- In square PQRS, $PQ = 3.4$ cm; in square WXYZ, $XY = 34$ mm. So, square PQRS _____ to square WXYZ.
- Radius of a circle is 1 mm less than the radius of the other circle. The two circles are _____.

Q2. Circle the images which are congruent to each other:



Q3. In $\triangle ABC$ and $\triangle XYZ$,

$$AB = YZ;$$

$$BC = XZ;$$

$$AC = XY.$$

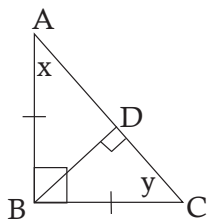
Based on the given information tick the correct answer from the following options:

- $\triangle ABC \cong \triangle XYZ$
- $\triangle ACB \cong \triangle XYZ$
- $\triangle ACB \cong \triangle YXZ$
- $\triangle ABC \cong \triangle XZY$

Q4. Find whether the following triangles are congruent or not. Also state the congruency condition symbolically in case of congruent triangles.

Figure	Congruent? (Yes/No)	Congruency condition

Q5. Identify the congruent triangles in the following figure and state the congruency rule. Also, find the values of x and y .

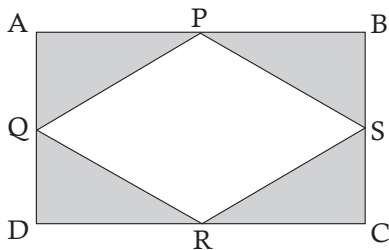


Congruent triangles: Δ _____ \cong Δ _____ by _____ congruency

$x =$ _____

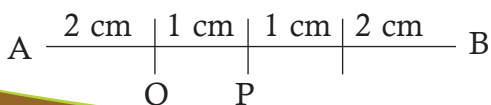
$y =$ _____

Q6. In the figure given below, P, Q, R and S are midpoints of the sides AB, AD, DC and BC of the rectangle ABCD respectively. If the area of ΔAPQ is 24 square units, find the area of the shaded region. (Hint: congruent triangles have equal area)



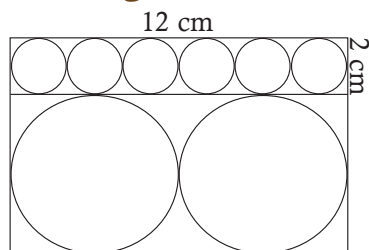
Area of shaded region = _____

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



- \overline{AP} is congruent to _____.
- \overline{AO} is congruent to _____ and _____.
- \overline{OP} is congruent to _____.
- \overline{AQ} is congruent to _____.

Q8. Six circles are drawn inside the given rectangle WXYZ. If the diameter of the bigger circles is thrice the diameter of the smaller circles, find the radii of the circles and fill in the blanks given below. Identify the groups of congruent circles and colour each group with the same colour.

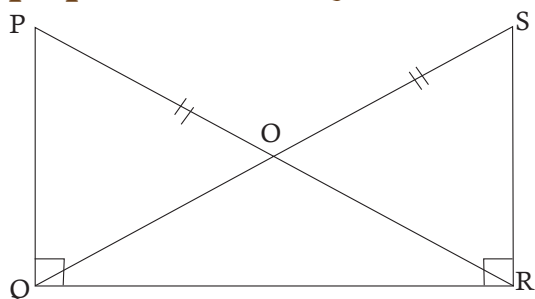


- Radius of each smaller circle = _____
- Radius of each larger circle = _____
- The given rectangle will be congruent to a rectangle having length = _____ and breadth = _____.

Q9. Put a tick in the blank column if the figure in group 1 is congruent to the figure in group 2. Cross out (\times) if not congruent.

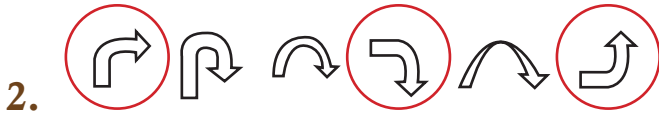
Group 1	Group 2	Congruent
A line segment \overline{BD} 5 cm long	A line segment \overline{PQ} 500 mm long	
A circle with radius 4 cm	A circle whose longest chord is 8 cm long	
$\angle PQR$ measuring 70°	$\angle ABC$ measuring 10° more than one-third of a straight angle	
$\angle ABC$ measuring 90°	$\angle ABC$ measuring 80°	

Q10. In the figure given below $PR = QS$. Line segments PQ and SR are perpendicular to QR . Prove that $\triangle POQ \cong \triangle SOR$.



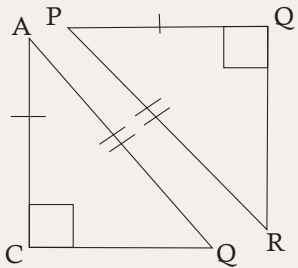
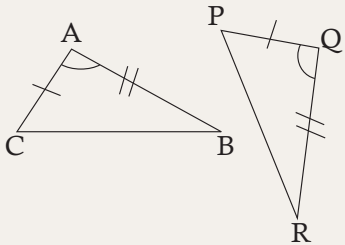
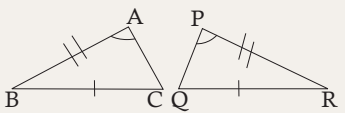
Answers

1. a. not congruent ; b. congruent; c. congruent; d. not congruent



3. (c) $ACB = YXZ$

4.

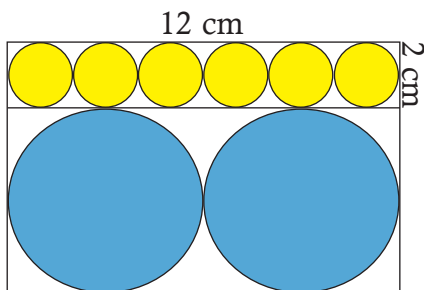
Figure	Congruent? (Yes/No)	Congruency condition
	Yes	RHS
	Yes	SAS
	No	—

5. $\triangle ABD \cong \triangle CBD$ by RHS congruency; $x = 45^\circ$; $y = 45^\circ$

6. $\triangle APQ \cong \triangle BPS \cong \triangle CRS \cong \triangle DRQ$ by SAS congruency ; Area = 96 square units

7. a. \overline{BP} ; b. \overline{BQ} and \overline{OQ} ; c. \overline{PQ} ; d. \overline{BO}

8.



a. 1 cm

b. 3 cm

c. 12 cm, 8 cm

9.

Group 1	Group 2	Congruent
A line segment \overline{BD} , 5 cm long	A line segment \overline{PQ} 500 mm long	✗
A circle with radius 4 cm	A circle whose longest chord is 8 cm long	✓
$\angle PQR$ measuring 70°	$\angle ABC$ measuring 10° more than one third of a straight angle	✓
$\angle ABC$ measuring 90°	$\angle ABC$ measuring 80°	✗

10. $\triangle PRQ \cong \triangle SQR$ (RHS congruency)

$$\angle QPR = \angle RSQ \text{ (cpct)}$$

$$QP = RS \text{ (cpct)}$$

$$\angle QOP = \angle ROS \text{ (vertically opposite angles)}$$

So, $\triangle POQ \cong \triangle SOR$ (AAS congruency)