15 PROPERTIES OF QUADRILATERALS

Q1. In a quadrilateral ABCD, $\angle B = 100°$, $\angle C = 80°$, $\angle D = 70°$. The angle bisector of $\angle A$ meets DC at O. Find the measure of $\angle AOC$.

$\angle AOC =$ _____

Q2. In an isosceles ΔABC, sides AB and AC are equal. Points P and Q on AB and AC respectively are joined and extended to point R, such that $\angle BPQ$ and $\angle PQC$ are in the ratio 6 : 7 respectively. If $\angle A = 80°$, find the measure of the exterior angle $\angle RQC$.

$\angle RQC =$ _____

Q3. In a square ABCD, find the ratio of $\angle ABC$ to reflex angle, $\angle BCD$.

Ratio of $\angle ABC$ to reflex angle, $\angle BCD$: _____ : _____

Q4. A quadrilateral ABCD is formed by joining the midpoints of the sides PQ, QR, RS and SP of a parallelogram PQRS. If AB || CD, prove that ABCD is a parallelogram.

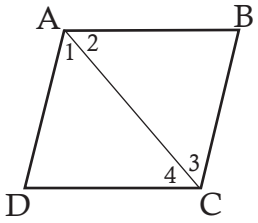
Q5. In a parallelogram PQRS, the sides PQ and RS are in the ratio 5 : 7. If the perimeter of the parallelogram is 7.2 cm, find the measure of each side of the parallelogram.

Answer: _____

Q6. The length of a rectangle is 4 cm. If the length of one diagonal is 5 cm, find the perimeter of the rectangle.

Perimeter of the rectangle = ____

Q7. In the given parallelogram ABCD, diagonal AC bisects ∠A. Prove that AC bisects ∠C also.



Q8. In a rectangle ABCD, X is the mid-point of side AB. DX and CX are joined to form a ΔXDC. Prove that XDC is an isosceles triangle.

Q9. The diagonals AC and BD of a rectangle ABCD are (2x + 1) cm and (x + 7) cm respectively. If length of the rectangle is 12 cm, find its breadth.

Breadth of the rectangle = _____

Q10. Two adjacent angles of a parallelogram are (2x + 5) and (3x – 10). Find the measure of the adjacent angles.

Answer: _____

Answers

1. 125°

2. 40°

3. 1 : 3

4. Δ AQB ≅ CSD (SAS congruency rule)
So, AB = CD (cpct)
AB || CD (given)
So, ABCD is a parallelogram.

5. PQ = 1.5 cm; QR = 2.1 cm; RS = 1.5 cm; SP = 2.1 cm

6. 14 cm

7. ∠1 = ∠3 (alternate interior angles)
∠2 = ∠4 (alternate interior angles)
∠1 = ∠2 (given)
So, ∠3 = ∠4

8. ∠A = ∠B = 90°
AX = BX (Given)
AD = BC (opposite sides of a rectangle)
ΔAXD ≅ ΔBXC (SAS congruency rule)
So, XD = XC.
Hence, ΔXDC is an isosceles triangle.

9. 5 cm

10. 79°, 101°