Types of Quadrilaterals
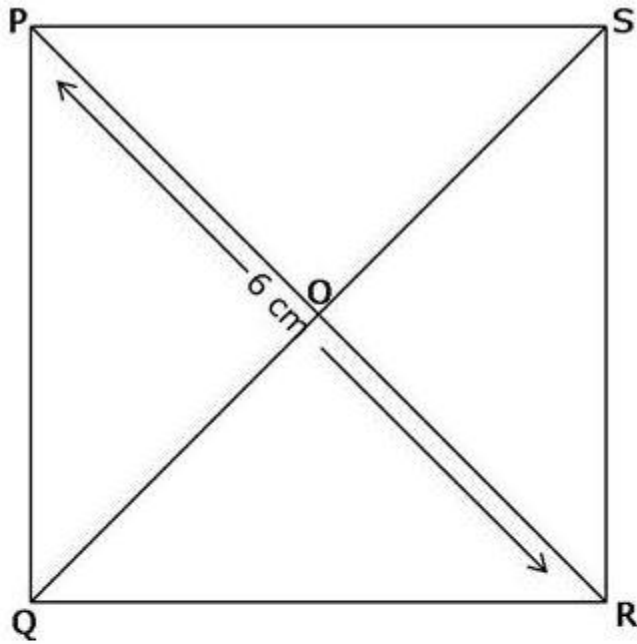
Exercise 65:

Solution 1:

1. The diagonals of a square are congruent.
   ∴ l(QS) = l(PR)
   l(PR) = 6 cm ....(given)
   ∴ l(QS) = 6 cm

2. The diagonals of a square bisect each other.
   $\therefore l(QO) = \frac{1}{2} \times l(QS) = \frac{1}{2} \times 6 = 3$ cm

3. The diagonals of a square bisect each other.
   $\therefore l(PO) = \frac{1}{2} \times l(PR) = \frac{1}{2} \times 6 = 3$ cm

4. Each diagonal of a square is the perpendicular bisector of the other.
   ∴ m∠POS = 90°

Solution 2:

1. The diagonals of a rectangle are congruent.
   $\therefore l(QS) = l(PR) = 5$ cm

2. The diagonals of a rectangle bisect each other.
   $\therefore l(OQ) = \dfrac{1}{2} \times l(QS) = \dfrac{1}{2} \times 5 = 2.5$ cm
   $\therefore l(OR) = \dfrac{1}{2} \times l(PR) = \dfrac{1}{2} \times 5 = 2.5$ cm

Solution 3:

1. All the sides of a rhombus are congruent
   $\therefore l(AB) = l(BC) = l(CD) = l(AD)$
   But $l(AD) = 4$ cm
   $\therefore l(AB) = l(BC) = l(CD) = 4$ cm

2. Each diagonal of a rhombus is the perpendicular bisector of the other.
   $\therefore m\angle AOD = 90°$

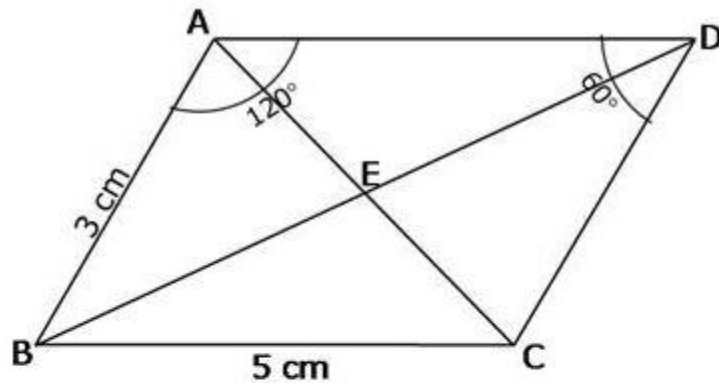3. The diagonals of a rhombus bisect each other.
   $l(BO) = 2.5$ cm (given)
   $\therefore l(BD) = 2 \times 2.5 = 5$ cm

4. The diagonals of a rhombus bisect each other.
   $l(AO) = 2$ cm (given)
   $\therefore l(AC) = 2 \times 2 = 4$ cm

Solution 4:

1. The opposite sides of a parallelogram are congruent.
   ∴ l(DC) = l(AB) = 3 cm

2. The opposite sides of a parallelogram are congruent.
   ∴ l(AD) = l(BC) = 5 cm

3. The opposite angles of a parallelogram are congruent
   ∴ m∠BCD = m∠BAD = 120°

4. The opposite angles of a parallelogram are congruent
   ∴ m∠ABC = m∠ADC = 60°