



NCERT solutions for class 8 Maths Understanding Quadrilaterals Ex-3.4

**Q1.** State whether True or False.

- (a) All rectangles are squares.
- (b) All rhombuses are parallelograms.
- (c) All squares are rhombuses and also rectangles.
- (d) All squares are not parallelograms.
- (e) All kites are rhombuses.
- (f) All rhombuses are kites.
- (g) All parallelograms are trapeziums.
- (h) All squares are trapeziums.

**Answer:**

- (a) False. All squares are rectangles but all rectangles are not squares.
- (b) True. Opposite sides of a rhombus are equal and parallel to each other.
- (c) True. All squares are rhombuses as all sides of a square are of equal lengths. All squares are also rectangles as each internal angle measures  $90^\circ$ .
- (d) False. All squares are parallelograms as opposite sides are equal and parallel.
- (e) False. A kite does not have all sides of the same length.
- (f) True. A rhombus also has two distinct consecutive pairs of sides of equal length.
- (g) True. All parallelograms have a pair of parallel sides.
- (h) True. All squares have a pair of parallel sides.

**Q2.** Identify all the quadrilaterals that have

(a) four sides of equal length

(b) four right angles

**Ans:** (a) Rhombus and Square are the quadrilaterals that have 4 sides of equal length.

(b) Square and rectangle are the quadrilaterals that have 4 right angles.

**Q3.** Explain how a square is.

(i) a quadrilateral

(ii) a parallelogram

(iii) a rhombus

(iv) a rectangle

**Ans:** (i) A square is a quadrilateral since it has four sides.

(ii) A square is a parallelogram since its opposite sides are parallel to each other.

(iii) A square is a rhombus since its four sides are of the same length.

(iv) A square is a rectangle since each interior angle measures  $90^\circ$ .

**Q4.** Name the quadrilaterals whose diagonals.

(i) bisect each other

(ii) are perpendicular bisectors of each other

(iii) are equal

**Ans:** (i) The diagonals of a parallelogram, rhombus, square, and rectangle bisect each other.

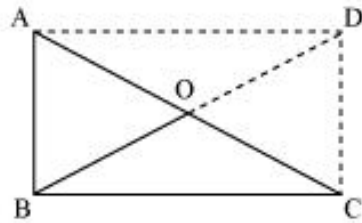
(ii) The diagonals of a rhombus and square act as perpendicular bisectors.

(iii) The diagonals of a rectangle and square are equal.

**Q5.** Explain why a rectangle is a convex quadrilateral.

**Ans:** In a rectangle, there are two diagonals, both lying in the interior of the rectangle. Hence, it is a convex quadrilateral.

**Q6.** ABC is a right-angled triangle and O is the mid point of the side opposite to the right angle. Explain why O is equidistant from A, B and C. (The dotted lines are drawn additionally to help you).



**Ans:** Draw lines AD and DC such that  $AD \parallel BC$ ,  $AB \parallel DC$

$AD = BC$ ,  $AB = DC$

ABCD is a rectangle as opposite sides are equal and parallel to each other and all the interior angles are of  $90^\circ$ .

In a rectangle, diagonals are of equal length and also these bisect each other.

Hence,  $AO = OC = BO = OD$

Thus, O is equidistant from A, B, and C.

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