

Mathematics

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(Chapter - 3) (Understanding Quadrilaterals)

(Class - VIII)

Exercise 3.4

Question 1:

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 1:

- (a) False. Since, squares have all sides are equal.
- (b) True. Since, in rhombus, opposite angles are equal and diagonals intersect at mid-point.
- (c) True. Since, squares have the same property of rhombus but not a rectangle.
- (d) False. Since, all squares have the same property of parallelogram.
- (e) False. Since, all kites do not have equal sides.
- (f) True. Since, all rhombuses have equal sides and diagonals bisect each other.
- (g) True. Since, trapezium has only two parallel sides.
- (h) True. Since, all squares have also two parallel lines.

Question 2:

Identify all the quadrilaterals that have:

- (a) four sides of equal lengths.
- (b) four right angles.



Answer 2:

- (a) Rhombus and square have sides of equal length.
- (b) Square and rectangle have four right angles.

Question 3:

Explain how a square is:

- (i) a quadrilateral
- (ii) a parallelogram
- (iii) a rhombus
- (iv) a rectangle



Answer 3:

- (i) A square is a quadrilateral, if it has four unequal lengths of sides.
- (ii) A square is a parallelogram, since it contains both pairs of opposite sides equal.
- (iii) A square is already a rhombus. Since, it has four equal sides and diagonals bisect at 90° to each other.
- (iv) A square is a parallelogram, since having each adjacent angle a right angle and opposite sides are equal.

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Question 4:

Name the quadrilateral whose diagonals:

- (i) bisect each other.
- (ii) are perpendicular bisectors of each other.
- (iii) are equal.

Answer 4:

- (i) If diagonals of a quadrilateral bisect each other then it is a rhombus, parallelogram, rectangle or square.
- (ii) If diagonals of a quadrilateral are perpendicular bisector of each other, then it is a rhombus or square.
- (iii) If diagonals are equal, then it is a square or rectangle.

Question 5:

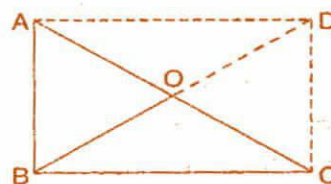
Explain why a rectangle is a convex quadrilateral.

Answer 5:

A rectangle is a convex quadrilateral since its vertex are raised and both of its diagonals lie in its interior.

Question 6:

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.)



Answer 6:

Since, two right triangles make a rectangle where O is equidistant point from A, B, C and D because O is the mid-point of the two diagonals of a rectangle.

Since AC and BD are equal diagonals and intersect at mid-point.

So, O is the equidistant from A, B, C and D.