CLASS NOTES-ANSWERS

EXERCISE 3.4

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:

	Shapes	True or False	Reason
A	All rectangles are Squares.	False	A rectangle did not have all sides equal, hence it is not square.
B	All rhombuses are parallelograms	True	Since the opposite sides of a rhombus are equal and parallel to each other, it is also a parallelogram
C	All squares are rhombuses and are also rectangles.	True	All squares are rhombuses as all sides of a square are of equal lengths. All squares are also rectangles as each internal angle is 90°.
D	All squares are not parallelograms.	False	The opposite sides of a parallelogram are of equal length hence squares with

			all sides equal are parallelograms.
E	All kites are Rhombuses.	False	Since rhombus have all sides of equal length.A kite does not have all sides of the same length.
F	All rhombuses are kites.	True	Since, all rhombuses have equal sides and diagonals bisect each other.
G	All parallelograms are trapeziums.	True	Since, all trapeziums have a pair of parallel sides.
H	All squares are Trapeziums.	True	All trapeziums have a pair of parallel sides; hence squares can be trapezium.

2. Identify all the quadrilaterals that have.

(a) four sides of equal length (b) four right angles

Answer:

(a) Four sides of equal length - Rhombus and Square are the quadrilaterals with 4 sides of equal length.

(b) Four right angles - Square and Rectangle are the quadrilaterals with 4 right angles.

3. Explain how a square is.

(i) a quadrilateral (ii) a parallelogram

(iii) a rhombus (iv) a rectangle

Answer:

(i)	Quadrilateral-	A square is a quadrilateral since it has four sides.

(ii)	Parallelogram- properties (i) Opposite sides are equal. (ii) Opposite angles are equal. (iii) Diagonals bisect one another.	A square is parallelogram, since it contains both pairs of opposite sides equal.
(iii)	Rhombus - properties i) A parallelogram with sides of equallength. ii) The diagonals of a rhombus are perpendicular bisectors of one another.	A square is a rhombus since i) its four sides are of same length. ii) the diagonals of a square are perpendicular bisectors of each other.
(iv)	Rectangle-properties Being a parallelogram, the rectangle has opposite sides of equal length and its diagonals bisect each other.	A square is rectangle since each interior angle measures 90 degree.

4. Name the quadrilaterals whose diagonals.

(i) bisect each other (ii) are perpendicular bisectors of each other

(iii) are equal

Answer:

(i) The diagonals of a parallelogram, rhombus, rectangle and square bisects each other.

(ii) The diagonals of a square and rhombus are perpendicular bisectors of each other.

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

5. Explain why a rectangle is a convex quadrilateral.

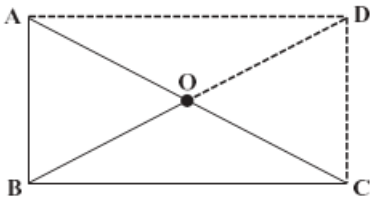
Answer:

Polygons that are convex have no portions of their diagonals in their

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

6. ABC is a right-angled triangle and O is the mid point of the sideopposite to the right angle. Explain why O is equidistant from A, B and C.

(The dotted lines are drawn additionally to help you).



Answer:

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

AD || BC and AB || DC

AD = BC and AB = DC

In a rectangle, diagonals are of equal length and also these bisect each other.Hence, AO = OC = BO = OD

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