EXERCISE 5.7

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1. Say True or False:

(a) Each angle of a rectangle is a right angle.

(b) The opposite sides of a rectangle are equal in length.

(c) The diagonals of a square are perpendicular to one another.

(d) All the sides of a rhombus are of equal length.

(e) All the sides of a parallelogram are of equal length.

(f) The opposite sides of a trapezium are parallel.

Solutions:

(a) True, each angle of a rectangle is a right angle

(b) True, the opposite sides of a rectangle are equal in length.

(c) True, the diagonals of a square are perpendicular to one another

(d) True, all the sides of a rhombus are of equal length

(e) False, all the sides of a parallelogram are not equal

(f) False, the opposite sides of a trapezium are not parallel

2. Give reasons for the following:

(a) A square can be thought of as a special rectangle.

(b) A rectangle can be thought of as a special parallelogram.

(c) A square can be thought of as a special rhombus.

(d) Squares, rectangles, parallelograms are all quadrilaterals.

(e) Square is also a parallelogram.

Solutions:

(a) A rectangle in which all the interior angles are of same measure i.e 90^0 and only opposite sides of the rectangle are of same length whereas in square all the interior angles are of 90^0 and all the sides of the square are of same length. Hence, a rectangle with all sides equal becomes a square. Therefore square is a special rectangle.

(b) In a parallelogram opposite sides are parallel and equal. In a rectangle opposite sides are parallel and equal. The interior angles of the rectangle are of same measure i.e 90^0. Hence, a parallelogram with each angle as right angle becomes a square. Therefore a rectangle is a special parallelogram

(c) All sides of a rhombus and square are equal but in case of square all interior angles are of 90^0. A rhombus with each angle as right angle becomes a square. Therefore a square is a special rhombus

(d) Since, all are closed figures with 4 line segments. Hence all are quadrilaterals

(e) Opposite sides of a parallelogram are equal and parallel whereas in a square opposite sides are parallel and all 4 sides are of same length. Therefore a square is a special parallelogram.

3. A figure is said to be regular if its sides are equal in length and angles are equal in measure. Can you identify the regular quadrilateral?

Solutions:

Square is a regular quadrilateral because all the interior angles are of 90^0 and all sides are of same length.