Symmetry, Reflection and Rotation

Q1. Which letter(s) in the word SHAPE have no line of symmetry?

Answer: _____

Q2. Draw the line of symmetry in each of the following letters (if any):

W S

Q3. State True or False:
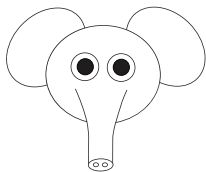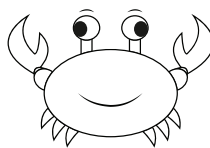
a. The letter J has no line of symmetry.   _____

b. All letters of English alphabet have at least one
line of symmetry.   _____

c. A circle has no line of symmetry.   _____

d. A semi-circle has only one line of symmetry.   _____

Q4. Draw the line of symmetry for the following figures:

a.   b.

Q5. Name the triangles having the following lines of symmetry:

a. 0   : _____

b. 1   : _____

c. 3   : _____

Q6. Find whether the following are lines of symmetry of the shapes in the question or not:

a. Angle bisector of an angle: _____

b. Diameter of a circle: _____

c. Shorter diagonal of a kite: _____

d. Perpendicular bisector of a line segment: _____

Q7. Find the coordinates of the following points when reflected in the X-axis, Y-axis and origin and fill in the table below:

Co-ordinates of the point	Co-ordinates when reflected in the X-axis	Co-ordinates when reflected in the Y-axis	Co-ordinates when reflected in the origin
(1, 7)			
(6, –5)			
(–3, 8)			
(–2,–7)			

Q8. Draw a △ABC with vertices A (3, 4), B (6, 4) and C (5, 2). Reflect the triangle in the X-axis to form △A′B′C′. Write the coordinates of A′, B′ and C′.

Co-ordinates of A′ : _____

Co-ordinates of B′ : _____

Co-ordinates of C′ : _____

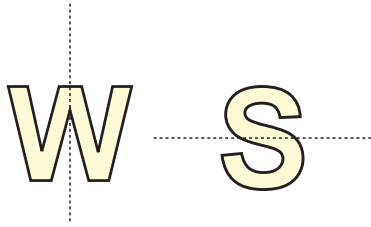**Q9.** Draw the images of the following figure when rotated about the point A.

A

a. 180° clockwise

b. 90° clockwise

Q10. Draw two points P (1, 1) and Q (3, 2). Join PQ. Rotate PQ (clockwise) about the origin through 180° to the position P′Q′. Find the coordinates of P′ and Q′ and state True or False for the following statements:

a.   PQ is shorter than P'Q'.   _____

b.   P and P' have same co-ordinates.   _____

c.   Co-ordinates of Q' are (–3, –2).   _____

d.   The co-ordinates of P' would be (–1, 1) if PQ was rotated clockwise about the origin through 270°.   _____

Answers
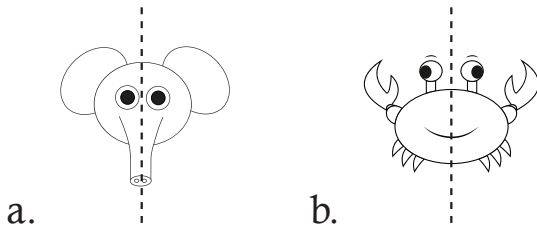
1. P

W S

2.

3. a. True;   b. False;   c. False;   d. True

4.

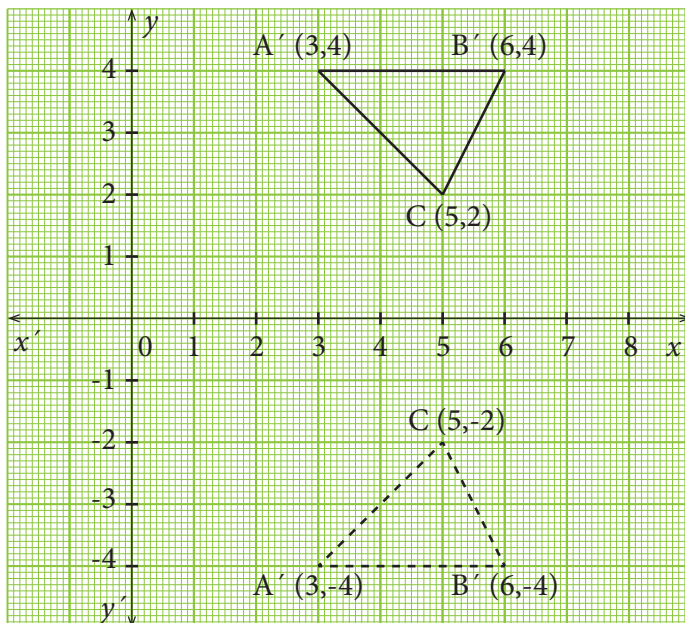a.   b.

5. a. scalene triangle; b. isosceles triangle; c. equilateral triangle

6. a. Yes; b. No; c. No; d. yes

7.

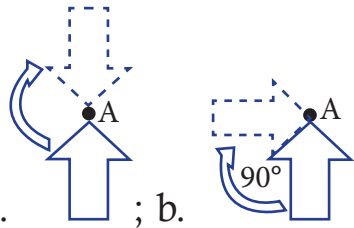| Co-ordinates of the point	Co-ordinates when reflected in the X-axis	Co-ordinates when reflected in the Y-axis	Co-ordinates when reflected in the origin
(1, 7)	(1, –7)	(–1, 7)	(–1, –7)
(6, –5)	(6, 5)	(–6, –5)	(–6, 5)
(–3, 8)	(–3, –8)	(3, 8)	(3, –8)
(–2,–7)	(–2, 7)	(2, –7)	(2, 7)

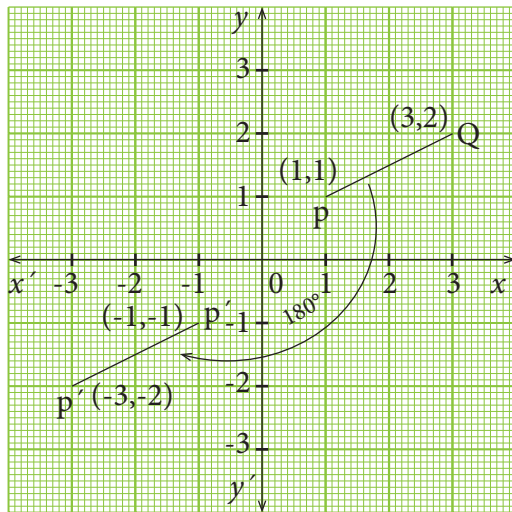**8.**

Co-ordinates of A′: (3, –4)

Co-ordinates of B′: (6, –4)

Co-ordinates of C′: (5, – 2)

9. a.   ; b.

10.

a. False; b. False; c. True; d. True