



SpeedLabs

MATHS

CBSE 7th

TEEVRA EDUTECH PVT. LTD.

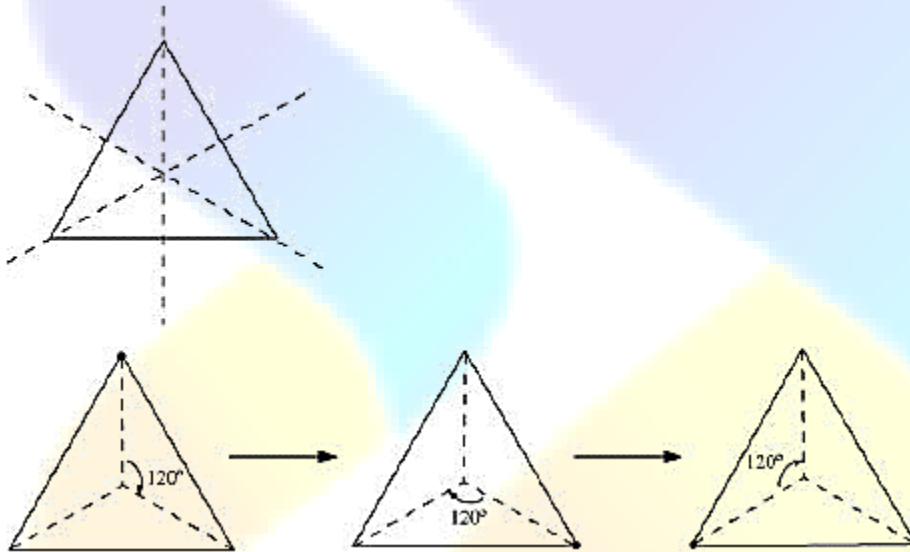
Q.1 Name any two figures that have both line symmetry and rotational symmetry.

Sol: Equilateral triangle and regular hexagon have both line of symmetry and rotational symmetry.

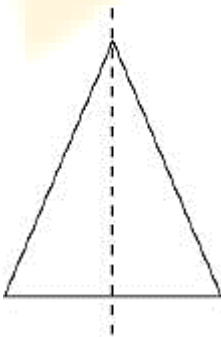
Q.2 Draw, wherever possible, a rough sketch of

- (i) A triangle with both line and rotational symmetries of order more than 1.
- (ii) A triangle with only line symmetry and no rotational symmetry of order more than 1.
- (iii) A quadrilateral with a rotational symmetry of order more than 1 but not a line symmetry.
- (iv) A quadrilateral with line symmetry but not a rotational symmetry of order more than 1.

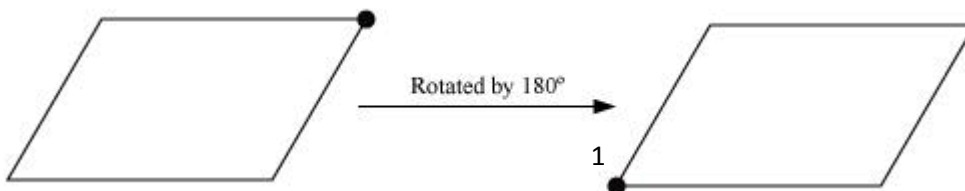
Sol: (i) Equilateral triangle has 3 lines of symmetry and rotational symmetry of order 3.



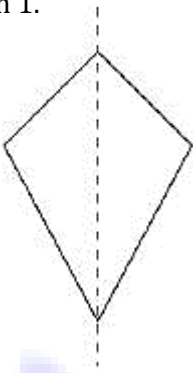
(ii) Isosceles triangle has only 1 line of symmetry and no rotational symmetry of order more than 1.



(iii) A parallelogram is a quadrilateral which has no line of symmetry but a rotational symmetry of order 2.



(iv) A kite is a quadrilateral which has only 1 line of symmetry and no rotational symmetry of order more than 1.



Q.3 If a figure has two or more lines of symmetry, should it have rotational symmetry of order more than 1?

Sol: Yes. If a figure has two or more lines of symmetry, then it will definitely have its rotational symmetry of order more than 1.

Q.4 Fill in the blanks:

Shape	Centre of Rotation	Order of Rotation	Angle of Rotation
Square	-	-	-
Rectangle	-	-	-
Rhombus	-	-	-
Equilateral Triangle	-	-	-
Regular Hexagon	-	-	-
Circle	-	-	-
Semi-circle	-	-	-

Sol:

Shape	Centre of Rotation	Order of Rotation	Angle of Rotation
Square	Intersection point of diagonals	4	90°
Rectangle	Intersection point of diagonals	2	180°
Rhombus	Intersection point of diagonals	2	180°
Equilateral Triangle	Intersection point of medians	3	120°
Regular Hexagon	Intersection point of diagonals	6	60°
Circle	Centre	Infinite	Any angle
Semi-circle	Centre	1	360°

Q.5 Name the quadrilaterals which have both line and rotational symmetry of order more than 1.

Sol: Square, rectangle, and rhombus are the quadrilaterals which have both line and rotational symmetry of order more than 1. A square has 4 lines of symmetry and rotational symmetry of order 4. A rectangle has 2 lines of symmetry and rotational symmetry of order 2. A rhombus has 2 lines of symmetry and rotational symmetry of order 2.

Q.6 After rotating by 60° about a centre, a figure looks exactly the same as its original position. At what other angles will this happen for the figure?

Sol: It can be observed that if a figure looks symmetrical on rotating by 60° , then it will also look symmetrical on rotating by 120° , 180° , 240° , 300° , and 360° i.e., further multiples of 60° .

Q.7 Can we have a rotational symmetry of order more than 1 whose angle of rotation is

(i) 45° ? (ii) 17° ?

Sol: It can be observed that if the angle of rotation of a figure is a factor of 360° , then it will have a rotational symmetry of order more than 1.

It can be checked that 45° is a factor of 360° but 17° is not. Therefore, the figure having its angle of rotation as 45° will have its rotational symmetry of order more than 1. However, the figure having its angle of rotation as 17° will not be having its rotational symmetry of order more than 1.