RD SHARMA

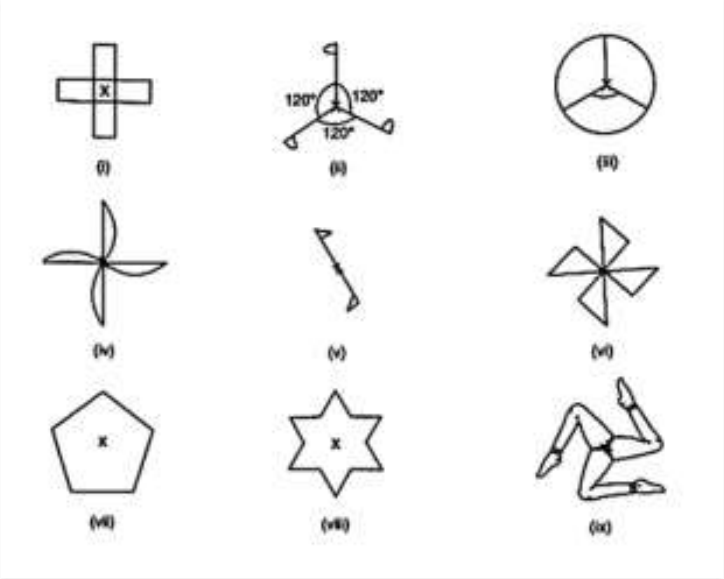
Solutions

Class 7 Maths

Chapter 18

Ex 18.3

Q1. Give the order of rotational symmetry for each of the following figures when rotated about the marked point (x):



Ans:

(i) The given figure has its rotational symmetry as 4.

(ii) The given figure has its rotational symmetry as 3.

(iii) The given figure has its rotational symmetry as 3.

(iv) The given figure has its rotational symmetry as 4.

(v) The given figure has its rotational symmetry as 2.

(vi) The given figure has its rotational symmetry as 4.

(vii) The given figure has its rotational symmetry as 5.

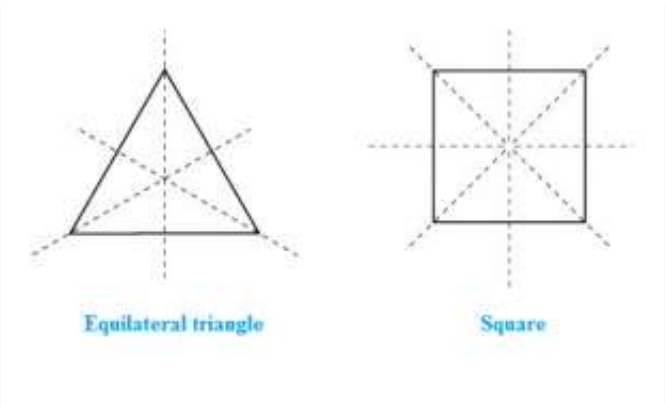
(viii) The given figure has its rotational symmetry as 6.

(ix) The given figure has its rotational symmetry as 3.

Q2. Name any two figures that have both line symmetry and rotational symmetry.

Ans:

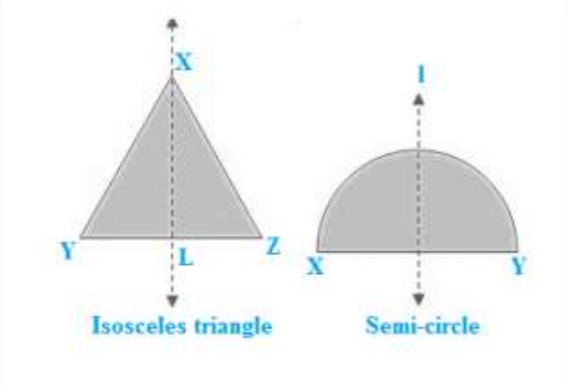
An equilateral triangle and a square have both lines of symmetry and rotational symmetry.



Q3. Give an example of a figure that has a line of symmetry but does not have rotational symmetry.

Ans:

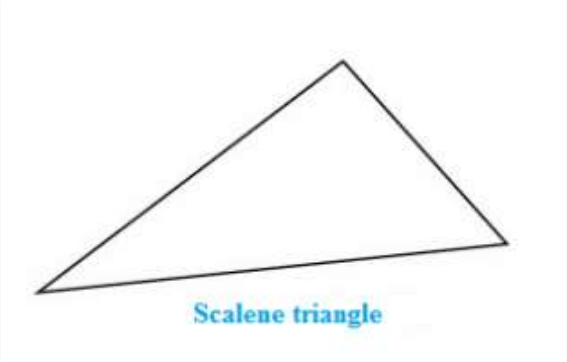
A semicircle and an isosceles triangle have a line of symmetry but do not have rotational symmetry.



Q4. Give an example of a geometrical figure which has neither a line of symmetry nor a rotational symmetry.

Ans:

A scalene triangle has neither a line of symmetry nor a rotational symmetry.



Q5. Give an example of a letter of the English alphabet which has

(i) No line of symmetry

(ii) Rotational symmetry of order 2.

Ans:

(i) The letter of the English alphabet which has no line of symmetry is Z.

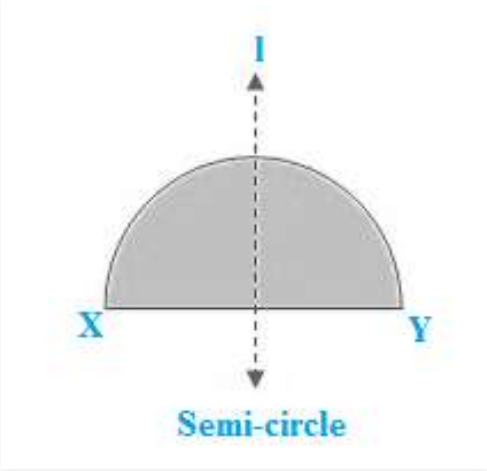
(ii) The letter of the English alphabet which has rotational symmetry of order 2 is N.

Q6. What is the line of symmetry of a semi-circle? Does it have rotational symmetry?

Ans:

A semicircle (half of a circle) has only one line of symmetry. In the figure, there is one line of symmetry. The figure is symmetric along the perpendicular bisector I of the diameter XY.

A semi-circle does not have any rotational symmetry.



Q7. Draw, whenever possible, a rough sketch of

(i) a triangle with both line and rotational symmetries.

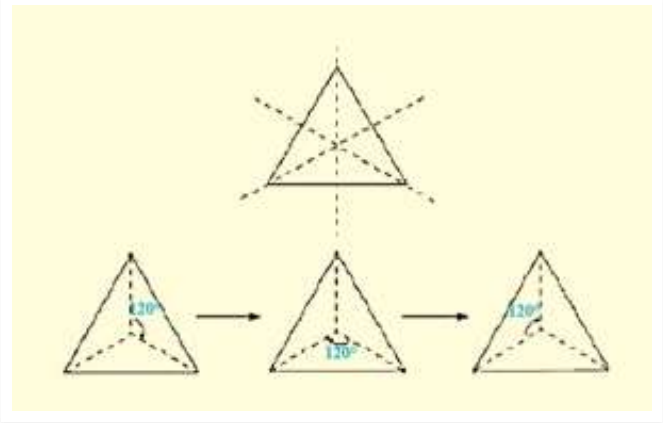
(ii) a triangle with only line symmetry and no rotational symmetry.

(iii) a quadrilateral with a rotational symmetry but not a line of symmetry.

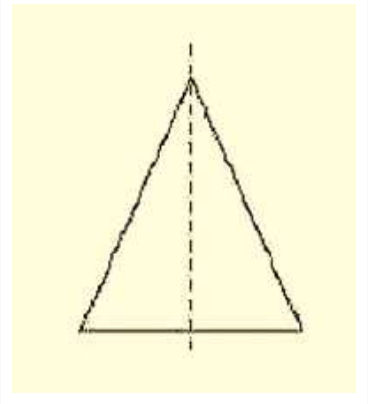
(iv) a quadrilateral with line symmetry but not a rotational symmetry.

Ans:

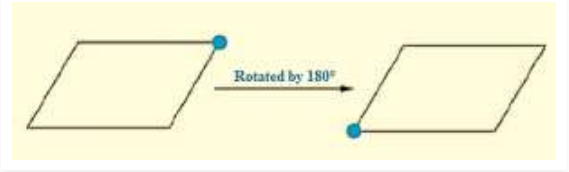
(i) An equilateral triangle has 3 lines of symmetry and a rotational symmetry of order 3.



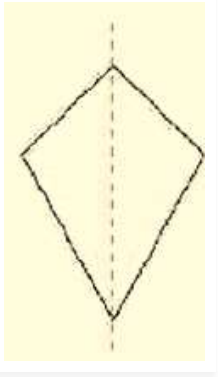
(ii) An isosceles triangle has only 1 line of symmetry and no rotational symmetry.



(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 one line of symmetry and no rotational symmetry.



Q8. Fill in the blanks:

Figures	***Centre of rotation***	***Order of rotation***	***Angle of rotation***
Square			
Rectangle			
Rhombus			
Equilateral triangle			
Regular hexagon			
Circle			
Semi-circle			

Ans:

Figures	***Centre of rotation***	***Order of rotation***	***Angle of rotation (°)***
Square	Point of intersection of the line segments joining the mid-points of opposite sides.	4	90
Rectangle	Point of intersection of the line segments	2	180

	joining the mid-points of opposite sides		
Rhombus	Point of intersection of diagonals	2	180
Equilateral triangle	Point of intersection of angle bisectors i.e, centroid	3	120
Regular hexagon	Centre of the hexagon	6	60
Circle	Centre of the circle	Unlimited	Any angle
Semi-circle	Nil	NIL	Nil

Q9. Fill in the blanks:

English alphabet Letter	***Line Symmetry***	***Number of Lines of symmetry***	***Rotational Symmetry***	***Order of rotational Symmetry***
Z	Nil	0	YES	2
S	–	–	–	–
H	YES	–	YES	–
O	YES	–	YES	–
E	YES	–	–	–
N	–	–	YES	–
C	–	–	–	–

Ans:

English alphabet Letter	***Line Symmetry***	***Number of Lines of symmetry***	***Rotational Symmetry***	***Order of rotational Symmetry***
Z	NO	0	YES	2
S	NO	0	YES	2

H	YES	2	YES	2
O	YES	4	YES	2
E	YES	1	NO	0
N	NO	0	YES	2
C	YES	1	NO	0