

## CHAPTER 14

# SYMMETRY

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### Points to Remember :

- A line that divides a figure into two identical shapes is called symmetrical line.
- There may be more than our symmetrical lines in a figure.
- The angle by which a figure is rotated to get same position is called angle of rotation.
- Complete rotation is  $360^\circ$ .
- Figure having no line of symmetry can still have rotational symmetry.
- The number of times the shape coincides with the original shape while rotating it till complete rotation.
- Every object has atleast a rotational symmetry of order 1 as it occupies the same position after our complete rotation. (be it clockwise or anti-clockwise).

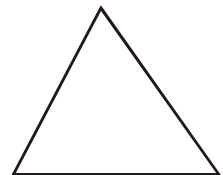
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### QUESTIONS

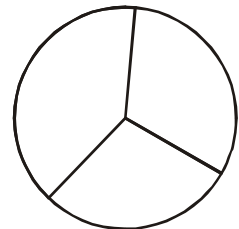
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1. In the given equilateral triangle

- (i) find the centre of rotation and
- (ii) the angle of rotation



2. Find the number of lines of symmetry in the given figure.

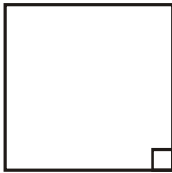


3. In the given rectangle—

- (i) State the number of lines of symmetry
- (ii) and the angle of rotation.



4.

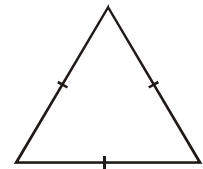


In the given figure

- (i) Find the number of lines of symmetry
- (ii) What is the order of rotational symmetry?

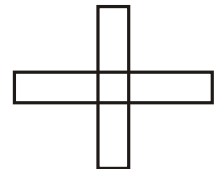
5. In the adjoining figure, find the

- (i) Number of line of symmetry
- (ii) Order of rotational symmetry.

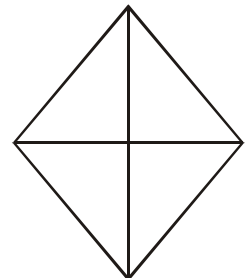


6. In the given figure, find the

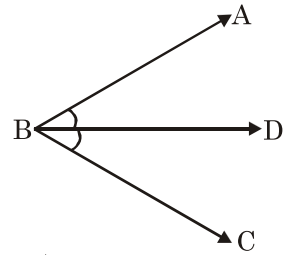
- (i) order of rotational symmetry, and
- (ii) degree measure of the angle of rotation.



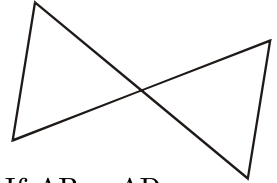
7. In the given figure, find the order of rotational symmetry.



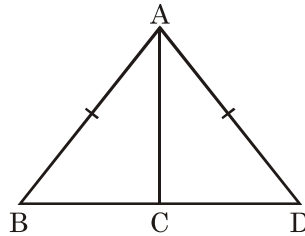
8. Which ray is the line of symmetry in the given figure?



9. Find the number of lines of symmetry in the given figure.



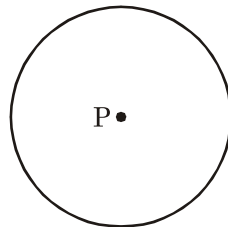
10. Which line-segment is the line of symmetry in the given figure. If  $AB = AD$



11. Find order of rotational symmetry in the given figure.



12. In the given circle, how many lines of symmetry are there and what is the centre of rotation?

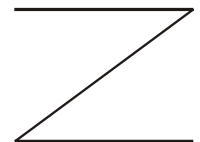


13. In a regular hexagon how many line of symmetry are there? What is the centre of rotation?

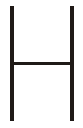
14. In a regular pentagon, how many lines of symmetry are there? Find the order of rotational symmetry.

15. How many lines of symmetry are there in the given figure? Also find the order of

rotational symmetry.



16. Find the number of lines of symmetry in the given figure and also find the order of rotational symmetry.



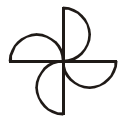
17. How many lines of symmetry does the given figure have and what is the order of rotational symmetry?



18. What is the order of rotational symmetry?



19. What is the order of rotational symmetry?



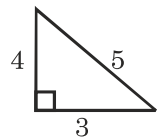
20. How many lines of symmetry are there in the given figure?



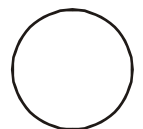
21. How many lines of symmetry does the given figure have?



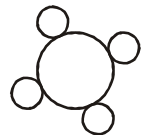
22. How many lines of symmetry are there in the given figure?



23. What name can you give to the line of symmetry in the given figure?



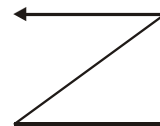
24. Find the order of rotational symmetry and angle of rotational symmetry.



25. Find the line of symmetry.



26. Find order of rotational symmetry.



27. Angle of rotation of a figure is  $40^\circ$ . What is the number of lines of symmetry?

28. Angle of rotation of a figure is  $120^\circ$ . What is the number of lines of symmetry?

29. Angle of rotation of a figure is  $25^\circ$ . What is the number of lines of symmetry?

30. What is the centre of rotation of an equilateral triangle?

31. Angle of rotation of a figure is  $35^\circ$ . What is the number of lines of symmetry?

32. If the angle of rotation of a figure is  $36^\circ$ , what is the number of lines of symmetry?

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### ANSWERS

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|--------------------------|------------------------|
| 1. Centroid, $120^\circ$ | 2. 3                   |
| 3. 2, $180^\circ$        | 4. 4, 4                |
| 5. 3, 3                  | 6. 4, $90^\circ$       |
| 7. One                   | 8. BD                  |
| 9. Two                   | 10. AC                 |
| 11. 2                    | 12. Infinite, Centre P |
| 13. 6, Centre of Hexagon | 14. 5, 5               |
| 15. Nil, Two             | 16. 2, 2               |
| 17. 4, 2                 | 18. One                |
| 19. 4                    | 20. One                |
| 21. One                  | 22. Nil                |
| 23. Diameter             | 24. 4, $90^\circ$      |
| 25. Nil                  | 26. One                |
| 27. Nine                 | 28. 3                  |
| 29. Nil                  | 30. Centroid           |
| 31. Nil                  | 32. 10                 |