Chapter Symmetry

Learning Objectives

- Introduction
- Line of Symmetry
- Symmetrical Figures

Symmetry

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Introduction

In our day to life we come across so many things around us which seems to be divided into two equal halves and both the halves look like in exact correspondence or position along an imaginary line. Take a look at the following figures.



If we fold these figures along an imaginary line, we will find that both the halves are mirror images of each other. The very common term used in our day to day life for these type of figures is "symmetry". So, symmetry occurs when one shape becomes exactly the same or both the figures overlap each other. Such types of figures are called symmetrical figures.

Line of symmetry

Line of symmetry is a line that divides a figure into two identical parts, each of which is the mirror image of the other. In the above figures the imaginary line is known as the line of symmetry, so the line of symmetry is the imaginary line along which we can fold the figures so that both the halves coincide each other.

Note:

- ✤ A line of symmetry divides a figure into two equal halves.
- ✤ A figure can have more than one line of symmetry.
- ✤ A figure cannot have any line of symmetry.

Illustrative EXAMPLE

Which of the following figures does not have any line of symmetry?







How many line(s) of symmetry does a regular octagon can have? Solution: A regular octagon have 8 lines of symmetry, which is shown below



Self Evaluation





7. Which of the following letter of English alphabet does not have any line of symmetry?

(a) X

(b) O (d) I

- (c) Z
- (e) None of these

8. Statement 1: A symmetrical figure has at least one line of symmetry.

Statement 2: A symmetrical figure does not have any line of symmetry.

- (a) Statement 1 is true while statement 2 is false
- (b) Statement 2 is true while statement 1 is false
- (c) Both statements are true
- (d) Both statements are false
- (e) None of these

9. How many line(s) of symmetry does the following figure have?



10. Choose the odd one out from the following figures on the basis of line of symmetry.



| | Answers – Self Evaluation Test | | | | | | | | | | | | | | | | | | |
|----|--------------------------------|----|---|----|---|----|---|----|---|----|---|----|---|----|---|----|---|-----|---|
| 1. | В | 2. | В | 3. | А | 4. | В | 5. | А | 6. | D | 7. | С | 8. | А | 9. | D | 10. | D |

Self Evaluation Test SOLUTIONS

- 2. The given figure have only one line of symmetry which is shown below:
- **3.** A parallelogram does not have any line of symmetry as no vertical or horizontal lines can be drawn in a parallelogram which divides it into two identical halves.
- 6. A given figure can have infinite lines of symmetry.
- 7. The letter Z of English alphabet does not have any line of symmetry.
- **9.** The given figure is a regular octagon so it can have eight lines of symmetry.