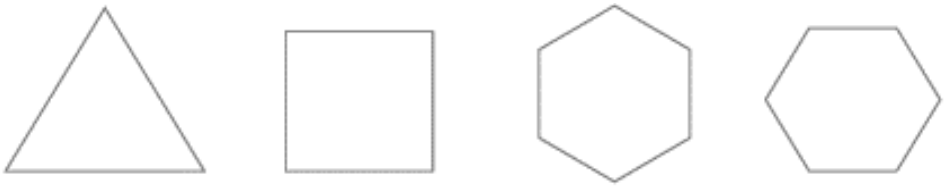
Rotational and reflection symmetry

Understanding: Rotational and Reflection Symmetry

- A figure has rotational symmetry if it looks the same after being turned around a point.
- A figure has reflection symmetry (or line symmetry) if one half is the mirror image of the other half.
- Some figures can have both rotational and reflection symmetry.

Important Points

- Centre of rotation is the fixed point around which the shape is rotated
- Line of symmetry divides a figure into two identical parts
- Figures with rotational symmetry have order (number of times they match in one full turn)
- Reflection symmetry is always straight, while rotation involves turning
- Figures Showing Both Rotational and Reflection Symmetry:



Examples with Solutions

Example

Does a square have both reflection and rotational symmetry?

A square has 4 lines of symmetry and looks the same after 90°, 180°, 270°, and 360° rotations

Yes, it has both types of symmetry

Example

Does the letter “H” have reflection and rotational symmetry?

“H” has a vertical and horizontal line of symmetry and looks the same after 180° rotation

Yes, it has both

Example

Does a circle have reflection and rotational symmetry?

A circle has infinite lines of symmetry and can be rotated by any angle and still look the same

Yes, it has both, to an infinite degree

Example

Does an equilateral triangle have both symmetries?

It has 3 lines of symmetry and matches at 120°, 240°, and 360° rotations

Yes, it has both

Example 5

Does the letter “F” have rotational or reflection symmetry?

“F” does not have rotational symmetry and has no line that divides it into mirror halves

No, it has neither rotational nor reflection symmetry

Summary Points

- Rotational symmetry means the figure matches itself after turning around a point.
- Reflection symmetry means one side is the mirror image of the other.
- Some figures have both types, some may have none.
- Regular shapes like squares and circles often have both.
- Understanding both symmetries helps in design, art, and geometry.