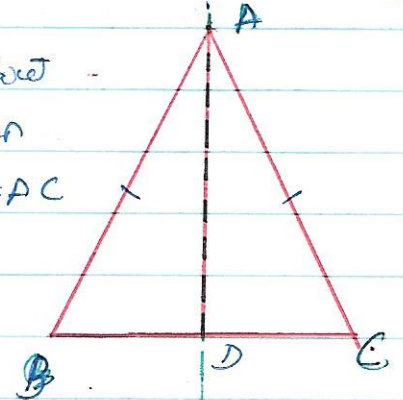


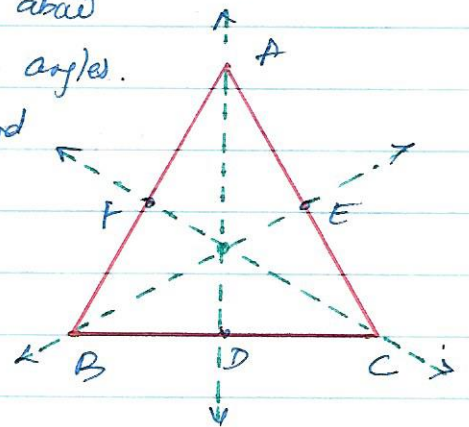
Chapter 14 : Symmetry

1) Symmetry : A figure has line of symmetry if there is a line about which the figure may be folded so that the two parts of figure will coincide. The line of symmetry is also called axis of symmetry.

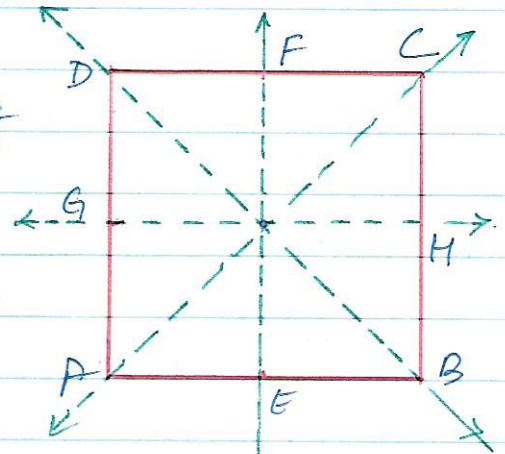
2) An isosceles triangle is symmetrical about the bisector of the angle included between the equal sides. In given figure $AB = AC$ and AD is the bisector of $\angle BAC$. Then line AD is the line of symmetry of $\triangle ABC$.



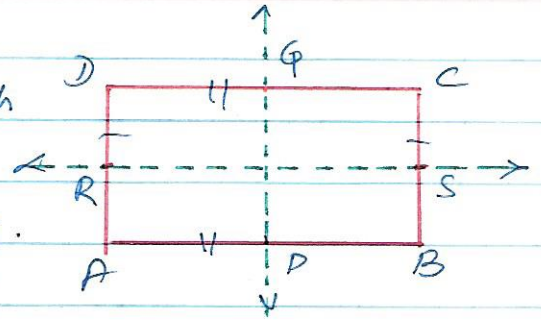
3) An equilateral triangle is symmetrical about each one of the bisectors of its interior angles. In $\triangle ABC$ is an equilateral triangle and lines AD , BE , or CF are bisectors. Then AD , BE and CF are lines of symmetry.



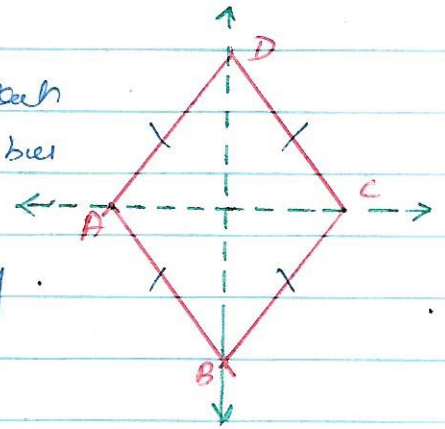
4) A square is symmetrical about the diagonals and the lines joining the mid-points of its opposite sides. In given figure $ABCD$ is a square. AC , BD , EF and GH are lines of symmetry.



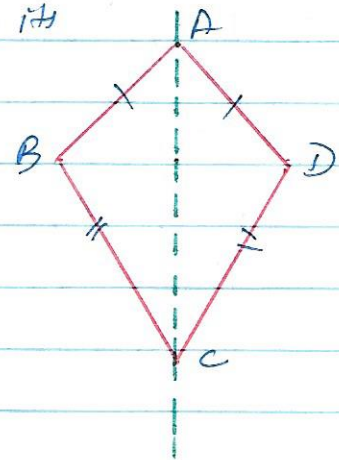
5) A rectangle has two lines of symmetry, each one of which is the line joining the mid-points of its opposite sides e.g. $ABCD$ is a rectangle. PQ and RS are lines of symmetry.



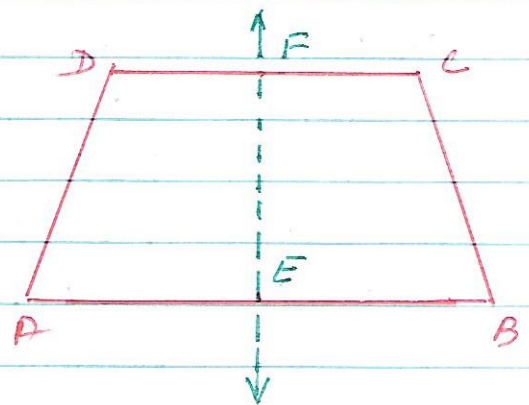
6) A rhombus is symmetrical about each one of its diagonals. $ABCD$ is a rhombus. AC and BD are diagonals. Then, AC and BD are lines of symmetry.



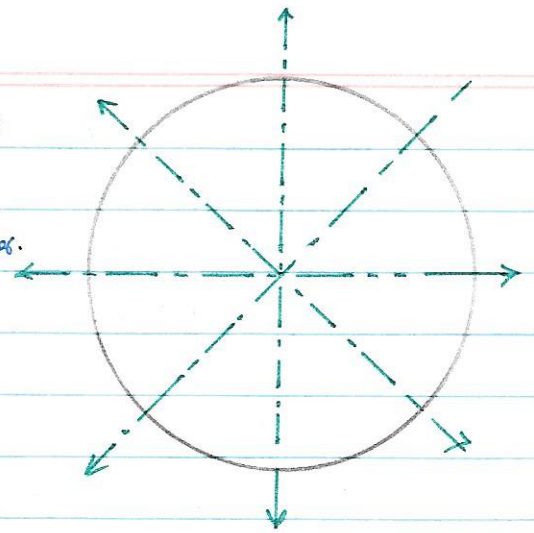
7) A kite is symmetrical about one of its diagonals. $ABCD$ is a kite. $AB = AD$, $BC = CD$. AC is the line of symmetry.



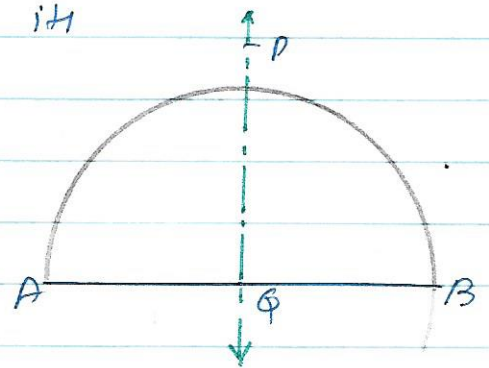
8) An isosceles trapezium is symmetrical about the line joining the mid-points of the parallel line. $ABCD$ is a trapezium. $AB \parallel CD$, $AD = BC$, E and F be the mid-points of AB and DC respectively. EF is the line of symmetry.



9) A circle is symmetrical about each one of its diameters. In given figure, a circle has many diameters. Then, all diameters are line of symmetry.



10) A semi-circle is symmetrical about its perpendicular bisector of its diameter. PQ is the line of symmetry.



11. Regular polygons have equal sides and equal angles. They have multiple (i.e. more than one) lines of symmetry.

12. Each regular polygon has many lines of symmetry as it has sides.

Regular Polygon	Regular Hexagon	Regular Pentagon	Square	Equilateral Triangle
Number of Lines of Symmetry	06	05	04	03

13. Mirror reflection leads to symmetry, under which the left-right orientation has to be taken care of.

15) Rotation turns an object about a fixed point.

This fixed point is the centre of rotation.

The angle by which the object rotates is the angle of rotation.

A half-turn means rotation by 180° ; a quarter-turn means rotation by 90° . Rotation may be clockwise or anticlockwise.

16) If, after rotation, an object looks exactly the same, we say that it has a rotational symmetry.

17) In a complete turn (of 360°), the number of times an object looks exactly the same is called the order of rotational symmetry. The order of symmetry of a square, for example, is 4 while, for an equilateral triangle, it is 3.

18) Some shapes have only one line of symmetry, like the letter E; some have only rotational symmetry, like the letter S; and some have both symmetries like the letter H.