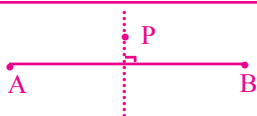
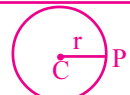
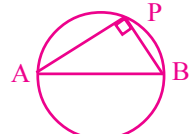
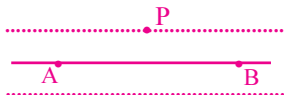
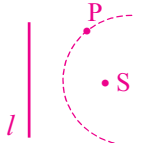

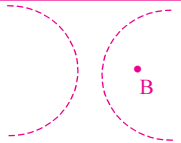
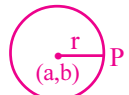
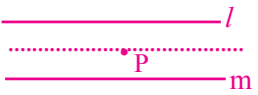



# 1. LOCUS

1 x 4 = 4 Marks

- 1) **Locus:** The path traced out by a variable point  $P(x, y)$  satisfying a well defined geometrical condition is called Locus of the point  $P$ .
- 2) Standard Geometrical conditions and their Loci with  $P(x, y)$  as variable point:

Geometrical condition	Description of the locus	Locus - figure
1) $P$ is equidistant from 2 points $A, B$ : $PA = PB$	Perpendicular bisector of $\overline{AB}$	
2) $P$ is at a constant distance $r$ from a fixed point $C$ : $CP = r$	Circle with centre at $C$ and radius $r$ .	
3) $A, B$ are two given points and $P$ is such that $\angle APB$ is a right angle: $PA^2 + PB^2 = AB^2$	Circle with $AB$ as diameter	
4) $A, B$ are two given points and $P$ is such that Area of $\triangle PAB = k$	Pair of lines parallel to the line $AB$	
5) $P$ is such that its distance from a given point $S$ is equal to its distance from a fixed line $l$ .	Parabola with $S$ as focus.	
6) $A, B$ are 2 given points & $P$ is such that $PA + PB = k$ , $k > AB$	Ellipse with $A, B$ as its foci	
7) $A, B$ are 2 given points & $P$ is such that $ PA - PB  = k$ , $k < AB$	Hyperbola with $A, B$ as its foci	
8) $x = a + r\cos\theta$ , $y = b + r\sin\theta$ , $\theta \in R$	Circle with centre $C(a, b)$ , radius $r$	
9) $P$ is equidistant from two parallel lines $l, m$	Line parallel to the given lines and lying midway between lines $l, m$ .	
10) $P$ is at a constant distance from a fixed line $l$ .	Pair of lines parallel to the given line $l$ .	
11) $P$ is equidistant from two intersecting lines $l, m$	Pair of lines which are the angular bisectors of the given lines.	