### **Class 10-Mathematics**

Instructions for students: The notes provided must be copied to the Maths copy and then do the homework in the same copy.

### **Chapter 10**

# Reflection

- The reflection of a point P in a line AB is a point P' such that AB is the perpendicular bisector of the line segment PP'.
- The line AB is called the **axis of reflection**.
- If the point P lies on the line AB, Then the image of P is P itself.
  Then the point P is called an **invariant point**.

The reflection of any point P(x, y) in the x- axis is the point P' (x,-y)

The reflection of any point **P**(**x**, **y**) in the **y**- **axis** is the point **P**'(-**x**, **y**).

The reflection of any point P(x, y) in the origin is the point P' (-x, -y).

The reflection of any point P(x, y) in a line y = a is the point P' (x, -y+2a)

The reflection of any point P(x, y) in a line x = a Is the point P' (-x+2a, y)

#### Exercise 10

7. i) Solution:

Reflection of P(2, 3) in line x=4 is  $\rightarrow$  P' (-x+2a, y)

→ P<sup>′</sup> (-2+2×4, 3) → P<sup>′</sup>(6, 3) В

P

## 8. ii) Solution:

Reflection of P(-3,-5) in line y= -2 is P'(x, -y+2a) $P'(-3, 5+2\times-2)$ P'(-3, 1) 9. Solution:

The reflection of P (-4, -5) in the y- axis is P' (4, -5).

The reflection of P'(4, -5)) in the origin is P''(-4, 5).

 $P(-4, -5) \xrightarrow{x-axis} P''(-4, 5)$ 

The single transformation that maps P onto  $P^{''}$  is reflection of P in x- axis.

Y

23. Solution:



- i) Coordinates of Q are (-2, -4)
- ii) Coordinates of R are (-2, 4)
- iii) PQR is a right angled triangle.

iv) Area of 
$$\triangle PQR = \frac{1}{2} \times 4 \times 8$$
  
=16 sq. units.

Home Work: Solve **Exercise 10** in the Maths copy.

Complete the graph works in graph copy.