Exercise 12(A)

1. Complete the following table:

	Point	Transformation	Image
(a)	**(5, -7)**		**(-5, 7)**
(b)	**(4, 2)**	**Reflection in x-axis**	
(c)		**Reflection in y-axis**	**(0, 6)**
(d)	**(6, -6)**		**(-6, 6)**
(e)	**(4, -8)**		**(-4, -8)**

Solution:

	Point	Transformation	Image
(a)	(5, -7)	Reflection in origin	(-5, 7)
(b)	(4, 2)	Reflection in x-axis	(4, -2)
(c)	(0, 6)	Reflection in y-axis	(0, 6)
(d)	(6, -6)	Reflection in origin	(-6, 6)
e)	(4, -8)	Reflection in y-axis	(-4, -8)

2. A point P is its own image under the reflection in a line l. Describe the position of point the P with respect to the line l.
Solution:

As, the image of the point P is the same point under the reflection in the line l we can say, point P is an invariant point.
Thus, the position of point P remains unaltered.

3. State the co-ordinates of the following points under reflection in x-axis:
(i) (3, 2)
(ii) (-5, 4)
(iii) (0, 0)
Solution:

(i) (3, 2)
The co-ordinates of the given point under reflection in the x-axis are (3, -2).

(ii) (-5, 4)
The co-ordinates of the given point under reflection in the x-axis are (-5, -4).

(iii) (0, 0)
The co-ordinates of the given point under reflection in the x-axis are (0, 0).

4. State the co-ordinates of the following points under reflection in y-axis:
(i) (6, -3)
(ii) (-1, 0)
(iii) (-8, -2)

Solution

(i) (6, -3)
The co-ordinates of the given point under reflection in the y-axis are (-6, -3).

(ii) (-1, 0)
The co-ordinates of the given point under reflection in the y-axis are (1, 0).

(iii) (-8, -2)
The co-ordinates of the given point under reflection in the y-axis are (8, -2).

5. State the co-ordinates of the following points under reflection in origin:
(i) (-2, -4)
(ii) (-2, 7)
(iii) (0, 0)
Solution:

(i) (-2, -4)
The co-ordinates of the given point under reflection in origin are (2, 4).

(ii) (-2, 7)
The co-ordinates of the given point under reflection in origin are (2, -7).

(iii) (0, 0)
The co-ordinates of the given point under reflection in origin are (0, 0).

6. State the co-ordinates of the following points under reflection in the line x = 0:
(i) (-6, 4)
(ii) (0, 5)
(iii) (3, -4)
Solution:

(i) (-6, 4)
The co-ordinates of the given point under reflection in the line x = 0 are (6, 4).

(ii) (0, 5)
The co-ordinates of the given point under reflection in the line x = 0 are (0, 5).

(iii) (3, -4)
The co-ordinates of the given point under reflection in the line x = 0 are (-3, -4).

7. State the co-ordinates of the following points under reflection in the line y = 0:
(i) (-3, 0)
(ii) (8, -5)
(iii) (-1, -3)
Solution:

(i) (-3, 0)
The co-ordinate of the given point under reflection in the line y = 0 is (-3, 0).

(ii) (8, -5)
The co-ordinate of the given point under reflection in the line y = 0 is (8, 5).

(iii) (-1, -3)
The co-ordinate of the given point under reflection in the line y = 0 is (-1, 3).

8. A point P is reflected in the x-axis. Co-ordinates of its image are (-4, 5).
(i) Find the co-ordinates of P.
(ii) Find the co-ordinates of the image of P under reflection in the y-axis.
Solution:

(i) As, M_x (-4, -5) = (-4, 5)
Hence, the co-ordinates of P are (-4, -5).

(ii) Co-ordinates of the image of P under reflection in the y-axis (4, -5).

9. A point P is reflected in the origin. Co-ordinates of its image are (-2, 7).
(i) Find the co-ordinates of P.
(ii) Find the co-ordinates of the image of P under reflection in the x-axis.
Solution:

(i) As, Mo (2, -7) = (-2, 7)
Hence, the co-ordinates of P are (2, -7).

(ii) Co-ordinates of the image of P under reflection in the x-axis (2, 7)