

## Translation in Cartesian Plane

Name: \_\_\_\_\_ Class: S. 1 \_\_\_\_\_ ( ) Date: \_\_\_\_\_

First, check the box "Show coordinates".

Move point  $P$  at the left on the screen to the position specified in each question.

Also, drag the red arrow at the right of the screen to control the direction of translation and distance.

Task 1 Translate vertically

Coordinates of $P$	Direction of translation and distance	Coordinates of $P$ after translation (i.e. Coordinates of $P'$ )
e.g. (2, 1)	4 units upwards	(2, 5)
1. (1, -1)	4 units upwards	
2. (-3, -2)	5 units upwards	
3. (-1, 6)	4 units downwards	
4. (2, 3)	2 units downward	
5. (-3, 20)	11 units downward	
6. (100, 15)	20 units upwards	

Task 2 Translate horizontally

Coordinates of $P$	Direction of translation and distance	Coordinates of $P$ after translation (i.e. Coordinates of $P'$ )
e.g. (2, 1)	3 units to the right	(5, 1)
7. (6, 1)	4 units to the left	
8. (4, -3)	2 units to the right	
9. (-1, -2)	4 units to the left	
10. (4, 0)	1 unit to the left	
11. (-20, 60)	10 units to the left	
12. (2000, 90)	10 units to the right	

Conclusion:

Let  $P = (x, y)$ . Coordinates of  $P$  after translating  $h$  units upwards is \_\_\_\_\_.

Let  $P = (x, y)$ . Coordinates of  $P$  after translating  $h$  units downwards is \_\_\_\_\_.

Let  $P = (x, y)$ . Coordinates of  $P$  after translating  $k$  units to the left is \_\_\_\_\_.

Let  $P = (x, y)$ . Coordinates of  $P$  after translating  $k$  units to the right is \_\_\_\_\_.

### Exercise

Coordinates of $P$	Direction of translation and distance	Coordinates of $P$ after translation (i.e. Coordinates of $P'$ )
13. (7, 2)	3 units to the right	
14. (5, -1)	9 units to the right	
15. (-30, -24)	2 units to the left	
16. (0, 10)	5 units to the left	
17. (-5, 9)	15 units upwards	
18. (-24, 3)	8 units upwards	
19. (-15, -4)	1 unit downwards	
20. (6, 2)	20 units downwards	
21. (4, -10)	2 units to the right, and then 4 units upwards	
22. (8, 3)	5 units to the right, and then 7 units downwards	
23. (6, 0)	9 units to the left, and then 11 units upwards	
24. (0, -7)	3 units to the left, and then 6 units downwards	
25. (200, 50)	1 unit upwards, and then 2 units to the right	
26. (-30, 10)	4 units downwards, and then 12 units to the right	
27. (2014, 2015)	6 units upwards, and then 13 units to the left	
28. (-2014, 2015)	14 units downwards, and then 2 units to the left	