Marking guide | Coordinates and three-dimensional space

Year 8 Coordinates and three-dimensional space - topic test

15 questions | 28 marks | 45 minutes

Work from short skills to connected reasoning and practical applications. Show enough working to explain each answer.

Equivalent correct methods earn the corresponding marks.

1. Write the x- and y-coordinates of A(−2,3). [1 mark]

Read the first then second entries.

Answer: x=−2, y=3.

2. Translate (1,−2) three units left and four units up. [2 marks]

1−3=−2; −2+4=2.

Answer: (−2,2)

3. Reflect (−3,1) in the y-axis. [2 marks]

Change x to its opposite.

Answer: (3,1)

4. Rotate (2,−1) 90° anticlockwise about the origin. [2 marks]

Use (x,y)→(−y,x).

Answer: (1,2)

5. A crate is 4 units across, 3 units in depth and 2 units high. Write (x,y,z). [1 mark]

Use across, depth, height order.

Answer: (4,3,2)

6. Which point lies on the xy-plane: A(2,0,3), B(3,1,0) or C(0,2,1)? Explain. [2 marks]

The xy-plane has height zero.

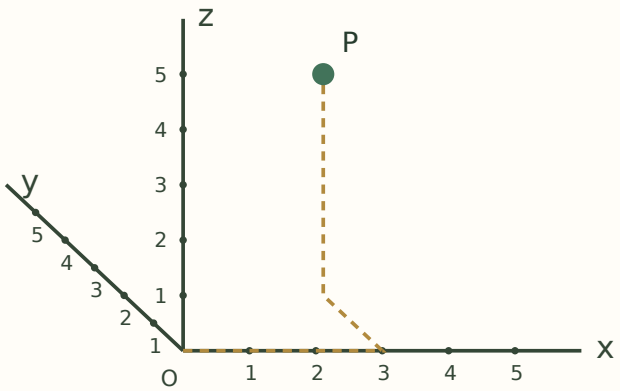
Answer: B, because its z-coordinate is zero.

7. Which axis contains (0,4,0)? [1 mark]

Only the y-entry is non-zero.

Answer: The y-axis.

8. State P’s coordinates from the labelled 3D diagram. [2 marks]



Dashed route follows x, then y, then z.
Sketch of 3D axes; each numbered step is 1 unit.

Read the dashed construction in x,y,z order.

Answer: (3,2,4)

9. From (2,3,1), move parallel to z until the height is 5. Give the endpoint. [2 marks]

Only z changes.

Answer: (2,3,5)

10. Start at (1,1,0). Move 3 units in positive x, 2 in positive z and 1 in negative y. Give endpoint and route length. [3 marks]

(1,1,0)→(4,1,0)→(4,1,2)→(4,0,2).

3+2+1=6.

Answer: (4,0,2); 6 units.

11. A robot moves from (2,2,1) to (5,1,3), changing one coordinate at a time without reversing. Find the route length. [2 marks]

Changes have lengths 3,1,2.

3+1+2=6.

Answer: 6 units.

12. A camera's front view shows x,z. Find the front view of (4,2,3). [1 mark]

The y-coordinate is hidden.

Answer: (4,3)

13. A point has front view (3,5) on x,z and top view (3,2) on x,y. Find its triple. [2 marks]

Combine x=3,z=5 with y=2.

Answer: (3,2,5)

14. A(2,1,4) and B(2,3,4) look like one point in the front view on x,z. Explain why that does not mean A=B. [2 marks]

Both project to (2,4), but 1≠3 in the y-coordinate.

Answer: The view hides y; A and B have different depths.

15. A delivery robot starts at (1,2,0), moves 4 units in positive x, 3 units in positive z, then returns along exactly the same route. State its final position and total distance. [3 marks]

Outward distance=4+3=7.

Returning adds another 7, so total=14.

The robot reaches its starting position.

Answer: (1,2,0); 14 units.