Describing routes and relative positions

6 questions | 12 marks

Equivalent correct methods earn the corresponding marks.

1. Start at (0,0,0). Move 2 in positive x, 3 in positive y and 1 in positive z. Give the endpoint. [2 marks]

Apply each change to its matching entry.

Answer: (2,3,1)

2. Start at (3,2,1). Move 2 in negative y. Give the endpoint. [2 marks]

$2-2=0$ in the y-entry.

Answer: (3,0,1)

3. Start at (1,1,1). Move 4 in positive x then 2 in negative x. Give endpoint and distance. [2 marks]

Final $x=1+4-2=3$. Distance $=4+2=6$.

Answer: (3,1,1); 6 units.

4. Describe the change from A(2,5,1) to B(2,1,4). [2 marks]

Compare corresponding entries: $\Delta x=0$, $\Delta y=-4$, $\Delta z=3$.

Answer: 4 units in negative y and 3 units in positive z; x stays unchanged.

5. Find the length of an axis-aligned route from (1,2,3) to (4,1,5) without reversing direction. [2 marks]

The leg lengths are 3, 1 and 2. Add: $3+1+2=6$.

Answer: 6 units.

6. Mia says returning to the start means the total distance is zero. She walks 3 units out and 3 back. Correct her. [2 marks]

Both legs contribute distance: $3+3=6$.

Answer: Her final position change is zero, but she travels 6 units.