LESSON MAKER PRO

Find Your Position

Locate points in three dimensions

HIGH SCHOOL · MM.D3D.A.11.a

MM.D3D.A.11.a "Describe the features of a three-dimensional Cartesian coordinate system and use them to graph points."

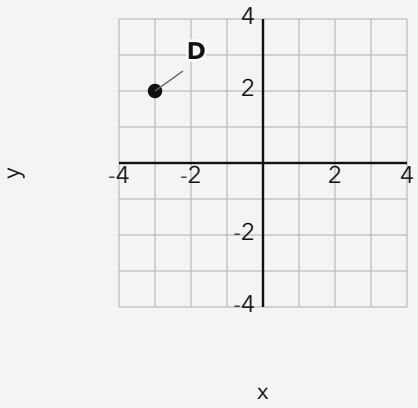
NAME _____ DATE _____

THREE COORDINATES

Three perpendicular axes meet at the origin. For a point (x, y, z), use x and y to find its position on the floor grid, then use z for its height above or below the floor.

WORKED EXAMPLE

The dot shows the floor position of a drone that is 5 units above the floor. Give its coordinates.



1. Read the dot's x-coordinate: -3.
2. Read its y-coordinate: 2.
3. Use 5 for its height, z.

Answer: (-3, 2, 5)

PRACTICE 4 problems

1 From the origin, move 1 unit in +x, 4 units in -y, and 6 units in +z. Write the coordinates.

ANSWER _____

2 Point Q is (-1, 4, 6). What are its x-coordinate and z-coordinate?

ANSWER _____

3 A point is on the z-axis, 6 units below the origin. Write its coordinates.

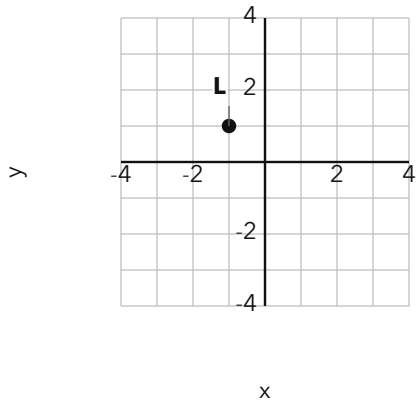
ANSWER _____

4 Start at (4, 1, -1) and move 4 units in -x. Write the new coordinates.

ANSWER _____

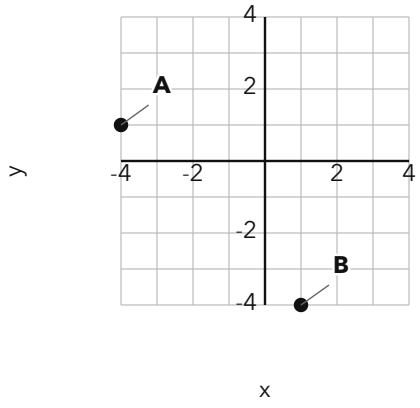
APPLY IT Show your work

1 A concert light is 6 m above the floor. Dot L marks the spot below it. The light shifts 1 m in +x. Plot its new floor spot M and give the light's new coordinates.



ANSWER _____

2 In a VR game, A is 6 units above the floor and B is 1 unit below it. The grid shows their floor positions. Write both 3D coordinates.



ANSWER _____

CHALLENGE One step up

A point is 4 units from the yz plane, 1 unit from the xz plane, and 6 units from the xy plane. It lies in the -x, +y, and -z directions. Give its coordinates and explain.

WORK SPACE AND ANSWER

ANSWER KEY

Find Your Position

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	From the origin, move 1 unit in +x, 4 units in -y, and 6 units in +z. Write the coordinates.	**(1, -4, 6)**
2	Point Q is (-1, 4, 6). What are its x-coordinate and z-coordinate?	**x = -1; z = 6**
3	A point is on the z-axis, 6 units below the origin. Write its coordinates.	**(0, 0, -6)**
4	Start at (4, 1, -1) and move 4 units in -x. Write the new coordinates.	**(0, 1, -1)**

PART 2 · APPLY IT

1. **M at (0, 1) on the grid; light at (0, 1, 6)** Move 1 unit right from L to plot M. The light keeps its height of 6 m.
2. **A = (-4, 1, 6); B = (1, -4, -1)** Read each floor position from the grid. Use positive z for A and negative z for B.

CHALLENGE

(-4, 1, -6). The distances give the sizes of x, y, and z; the stated directions give their signs.

For the concert light, accept a clearly plotted M at (0, 1) with the correct 3D coordinates. In the challenge, accept any explanation that matches each plane distance to its corresponding coordinate and uses the given signs.