

UNIT 01 / 14 · LEARN & TRY

Orienting Yourself: The Use of Coordinates

Name: _____ Date: _____

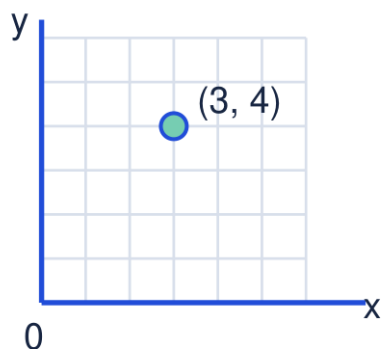
Goal: Plot and interpret coordinates and describe locations on a plane.

Learn

An ordered pair (x, y) gives horizontal then vertical position. Coordinate differences form a right triangle: distance is $\sqrt{[(x_2-x_1)^2+(y_2-y_1)^2]}$. A midpoint averages the two x values and the two y values.

Worked example

Between $A(1,2)$ and $B(7,10)$, the changes are 6 and 8. Distance = 10; midpoint = $(4,6)$.



First: 3 right

Then: 4 up

Each grid square is one unit. Plot a different ordered pair and explain why the order of the coordinates matters.

1. State the quadrant of $(-3, 4)$.

2. Find the distance between $(2,1)$ and $(5,5)$.

UNIT 01 · PRACTISE · 3–6

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3. Find the midpoint of $(-2,6)$ and $(4,0)$.

4. Show that $(0,0)$, $(2,3)$, $(4,6)$ are collinear using distances.

5. Check whether $A(0,0)$, $B(4,0)$, $C(4,3)$ form a right triangle.

6. A learner reverses both coordinates when plotting a floor plan. Why can this change the location?

Explain one answer. Choose a question to revisit after a few days.

UNIT 01 · ANSWER GUIDANCE

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1. Quadrant II
2. 5 units
3. (1,3)
4. Distances are $\sqrt{13}$, $\sqrt{13}$ and $2\sqrt{13}$; the first two sum to the third.
5. Yes, $AB^2 + BC^2 = 16 + 9 = 25 = AC^2$; right angle at B.
6. Coordinates are ordered; (2,5) and (5,2) are different positions unless the values coincide.

Teaching note

Start by checking: Plot ordered pairs and use Pythagoras. Model the worked example, then ask for a reason as well as an answer. Revisit tasks 2 and 6 after two days, using different numbers where appropriate.