

Grid Distance Quest

Use right triangles to measure straight-line distance.

GRADE 8 • TEKS 8.7.D

8.7.D "determine the distance between two points on a coordinate plane using the Pythagorean Theorem."

NAME _____

DATE _____

FIND THE DISTANCE

Find the horizontal change by subtracting the x-coordinates and the vertical change by subtracting the y-coordinates. Use $d^2 = (\text{horizontal change})^2 + (\text{vertical change})^2$, then take the positive square root to find d. The order of subtraction does not matter because each change is squared.

WORKED EXAMPLE

Find the distance between (11, 14) and (14, 18).

1. Horizontal change = $14 - 11 = 3$.

2. Vertical change = $18 - 14 = 4$.

3. $d^2 = 3^2 + 4^2 = 25$.

4. $d = \sqrt{25} = 5$.

Answer: 5 units

PRACTICE 6 problems

1 Find the distance between (-7, 0) and (0, 0).

ANSWER _____

2 Find the distance between (0, -8) and (0, 0).

ANSWER _____

3 Find the distance between (-9, -10) and (-9, 2).

ANSWER _____

4 Find the distance between (-6, -1) and (2, 9).
Write your answer in simplest radical form.

ANSWER _____

5 Find the distance between (-12, -7) and (-2, 17).

ANSWER _____

6 Find the distance between (6, -8) and (21, 12).

ANSWER _____

APPLY IT Show your work

- 1** A concert festival map uses coordinates in meters. The main stage is at $(-8, -6)$, and the merch tent is at $(7, 6)$. What is the straight-line distance between them in simplest radical form?

WORK SPACE

ANSWER _____

- 2** On a biking app's grid, a rider is at checkpoint $(-9, -7)$ and wants to reach checkpoint $(15, 11)$. Each grid unit is 100 meters. What is the straight-line distance between the checkpoints?

WORK SPACE

ANSWER _____

CHALLENGE One step up

Point A is at $(-4, -3)$, and point B is at $(x, 9)$. The points are 15 units apart. Determine all possible values of x .

WORK SPACE AND ANSWER

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Find the distance between (-7, 0) and (0, 0).	7 units
2	Find the distance between (0, -8) and (0, 0).	8 units
3	Find the distance between (-9, -10) and (-9, 2).	12 units
4	Find the distance between (-6, -1) and (2, 9). Write your answer in simplest radical form.	$2\sqrt{41}$ units
5	Find the distance between (-12, -7) and (-2, 17).	26 units
6	Find the distance between (6, -8) and (21, 12).	25 units

PART 2 • APPLY IT

- $3\sqrt{41}$ meters** The horizontal change is 15 meters and the vertical change is 12 meters. The distance is $\sqrt{15^2 + 12^2} = \sqrt{369} = 3\sqrt{41}$ meters.
- 3,000 meters** The horizontal and vertical changes are 24 units and 18 units. The distance is 30 grid units, and $30 \times 100 = 3,000$ meters.

CHALLENGE

$$x = 5 \text{ or } x = -13$$

Accept equivalent exact radical forms, including $\sqrt{164}$ for $2\sqrt{41}$ and $\sqrt{369}$ for $3\sqrt{41}$. Distances must be positive, and word-problem answers should include units.