LESSON MAKER PRO

Grid Side Detectives

Use coordinates to measure polygon sides.

GRADE 6 · 6.G.A.3

CCSS.Math.Content.6.G.A.3 "Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate..."

NAME _____ DATE _____

MEASURE STRAIGHT SIDES

If two points have the same x-coordinate, the segment is vertical, so subtract the y-coordinates and use the positive distance. If two points have the same y-coordinate, the segment is horizontal, so subtract the x-coordinates and use the positive distance.

WORKED EXAMPLE

Find the length of MN if M(-8, 5) and N(-8, -2).

1. The x-coordinates match, so MN is vertical.
2. Subtract the y-coordinates: 5 - (-2) = 7.
3. MN = 7 units.

Answer: 7 units

PRACTICE 6 problems

1 Find the length of AB if A(-6, 1) and B(-6, 4).

ANSWER _____

2 Find the length of CD if C(-3, 9) and D(6, 9).

ANSWER _____

3 Triangle EFG has vertices E(-4, -3), F(-4, 6), and G(0, 6). Find EF and FG.

ANSWER _____

4 Plot H(1, -6), I(4, -6), J(4, 0), and K(1, 0). Connect the points in order. What is the perimeter of HIJK?

ANSWER _____

5 Quadrilateral LMNO has vertices L(-9, 3), M(-9, -1), N(-3, -1), and O(-3, 3). Find the lengths of its horizontal sides.

ANSWER _____

6 Plot P(0, 4), Q(6, 4), and R(0, 1). Connect the points to make triangle PQR. Find PQ and PR.

ANSWER _____

APPLY IT Show your work

1 A robotics club marks a rectangular test zone on a floor grid. Its corners are A(-9, -4), B(-9, 0), C(-3, 0), and D(-3, -4). The club puts tape all the way around the zone. How many units of tape are needed?

WORK SPACE

ANSWER _____

2 A game designer uses a coordinate grid for a rectangular arena. The corners are J(1, -9), K(1, 3), L(4, 3), and M(4, -9). A glowing border goes around the arena. How many grid units long is the border?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangle has vertices A(-9, -1), B(-9, 3), C(x, 3), and D(x, -1). Its perimeter is 20 units. What are all possible values of x? Explain why both values are possible.

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_____

ANSWER KEY

Grid Side Detectives

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PART 1 · PRACTICE

#	PROBLEM	ANSWER
1	Find the length of AB if A(-6, 1) and B(-6, 4).	**3 units**
2	Find the length of CD if C(-3, 9) and D(6, 9).	**9 units**
3	Triangle EFG has vertices E(-4, -3), F(-4, 6), and G(0, 6). Find EF and FG.	**EF = 9 units; FG = 4 units**
4	Plot H(1, -6), I(4, -6), J(4, 0), and K(1, 0). Connect the points in order. What is the perimeter of HIJK?	**18 units**
5	Quadrilateral LMNO has vertices L(-9, 3), M(-9, -1), N(-3, -1), and O(-3, 3). Find the lengths of its horizontal sides.	**MN = 6 units; OL = 6 units**
6	Plot P(0, 4), Q(6, 4), and R(0, 1). Connect the points to make triangle PQR. Find PQ and PR.	**PQ = 6 units; PR = 3 units**

PART 2 · APPLY IT

1. **20 units** AB and CD are 4 units long, and BC and DA are 6 units long. Add 4 + 6 + 4 + 6 to get 20 units.
2. **30 units** JK and LM are 12 units long, and KL and MJ are 3 units long. Add 12 + 3 + 12 + 3 to get 30 units.

CHALLENGE

x = -3 or x = -15. The horizontal side must be 6 units long, so C can be 6 units right or left of x = -9.

Accept correct positive lengths with or without the word units. For the challenge, accept either order of the two x-values if the student explains that the horizontal distance is 6 units.