

Coordinate Quest

Plot polygons and measure their straight sides.

GRADE 6 • 6.MG.3.f

6.MG.3.f "Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to determine the length of a side joining points with the same first coordinate or the same second coordinate..."

NAME _____

DATE _____

COORDINATE SIDE LENGTHS

Plot each ordered pair, then connect the points in order to draw the polygon. If two points have the same first coordinate, the side is vertical, so subtract the second coordinates. If two points have the same second coordinate, the side is horizontal, so subtract the first coordinates and use a positive length.

WORKED EXAMPLE

Find the length of MN if M(11, 14) and N(11, 20).

1. The points have the same first coordinate, 11.
2. MN is a vertical segment.
3. Subtract the second coordinates: $20 - 14 = 6$.

Answer: MN = 6 units.

PRACTICE 6 problems

- 1** Plot A(-8, 1), B(-4, 1), C(-4, 5), and D(-8, 5). Connect the points in order. Name the polygon and find AB.

ANSWER _____

- 2** Plot E(-7, -5), F(0, -5), G(0, -1), and H(-7, -1). Connect the points in order. Find EF.

ANSWER _____

- 3** Quadrilateral JKLM has vertices J(4, -7), K(4, 1), L(8, 1), and M(8, -7). Find JK.

ANSWER _____

- 4** Plot L(-5, 8), M(-1, 8), N(-1, 4), and O(-5, 4). Connect the points in order. Find MN.

ANSWER _____

- 5** Triangle RST has vertices R(-8, -4), S(-8, 4), and T(5, 4). Find RS and ST.

ANSWER _____

- 6** Hexagon UVWXYZ has vertices U(1, -7), V(8, -7), W(8, 0), X(5, 0), Y(5, -4), and Z(1, -4). Find UV and VW.

ANSWER _____

APPLY IT Show your work

- 1** A gaming club is designing a rectangular screen zone on a coordinate grid. Its corners are $(-8, -5)$, $(0, -5)$, $(0, 2)$, and $(-8, 2)$. What are the side lengths, and what is the perimeter of the zone?

WORK SPACE

ANSWER _____

- 2** A robotics team programs a robot to travel around a rectangular test zone with corners $(0, -1)$, $(5, -1)$, $(5, 7)$, and $(0, 7)$. How far does the robot travel if it goes around the outside once?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

Rectangle ABCD has vertices $A(-8, -5)$, $B(4, -5)$, $C(4, 2)$, and D. What are the coordinates of D? Find the two side lengths and the perimeter. Explain how you know D is in the correct location.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Plot A(-8, 1), B(-4, 1), C(-4, 5), and D(-8, 5). Connect the points in order. Name the polygon and find AB.	Square; AB = 4 units.
2	Plot E(-7, -5), F(0, -5), G(0, -1), and H(-7, -1). Connect the points in order. Find EF.	EF = 7 units.
3	Quadrilateral JKLM has vertices J(4, -7), K(4, 1), L(8, 1), and M(8, -7). Find JK.	JK = 8 units.
4	Plot L(-5, 8), M(-1, 8), N(-1, 4), and O(-5, 4). Connect the points in order. Find MN.	MN = 4 units.
5	Triangle RST has vertices R(-8, -4), S(-8, 4), and T(5, 4). Find RS and ST.	RS = 8 units; ST = 13 units.
6	Hexagon UVWXYZ has vertices U(1, -7), V(8, -7), W(8, 0), X(5, 0), Y(5, -4), and Z(1, -4). Find UV and VW.	UV = 7 units; VW = 7 units.

PART 2 • APPLY IT

- The side lengths are 8 units and 7 units. The perimeter is 30 units.** The horizontal sides go from -8 to 0, so they are 8 units long. The vertical sides go from -5 to 2, so they are 7 units long, and $8 + 7 + 8 + 7 = 30$.
- 26 units.** The horizontal sides are 5 units long, and the vertical sides are 8 units long. The distance around the rectangle is $5 + 8 + 5 + 8 = 26$ units.

CHALLENGE

D(-8, 2); the side lengths are 12 units and 7 units; the perimeter is 38 units. D must have the same first coordinate as A, -8, and the same second coordinate as C, 2.

Accept side lengths written with or without the word units when the measurement is clear. For the challenge, accept an equivalent explanation that D shares A's first coordinate and C's second coordinate.