

Grid Side Quest

Plot polygons and measure their horizontal and vertical sides.

GRADE 6 • 6.PAR.8.4

6.PAR.8.4 "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 x-coordinate or the same y-coordinate."

NAME _____

DATE _____

MEASURE STRAIGHT SIDES

A vertical side joins points with the same x-coordinate, and a horizontal side joins points with the same y-coordinate. To find its length, subtract the smaller changing coordinate from the larger one and write the answer in units.

WORKED EXAMPLE

Plot A(21, 17), B(21, 8), and C(27, 8). Draw triangle ABC. Find AB and BC.

1. AB is vertical because both points have x-coordinate 21.
2. Subtract the y-coordinates: $17 - 8 = 9$.
3. BC is horizontal because both points have y-coordinate 8.
4. Subtract the x-coordinates: $27 - 21 = 6$.

Answer: AB = 9 units; BC = 6 units.

PRACTICE 6 problems

- 1** Plot L(-10, 2), M(-3, 2), and N(-10, 13). Draw triangle LMN. What is the length of LM?

ANSWER _____

- 2** Plot A(1, -4), B(1, 3), C(14, 3), and D(14, -4). Draw rectangle ABCD. What is the length of AB?

ANSWER _____

- 3** Points P(-12, -2) and Q(-12, 10) are endpoints of a segment. What is the length of PQ?

ANSWER _____

- 4** Plot W(-4, 11), X(3, 11), Y(3, 16), and Z(-4, 16). Draw quadrilateral WXYZ. Find the lengths of WX and XY.

ANSWER _____

- 5** Plot H(-11, -3), J(2, -3), and K(-11, 7). Draw triangle HJK. Find the lengths of HJ and HK.

ANSWER _____

- 6** Plot U(-13, -7), V(0, -7), W(0, 5), and X(-13, 5). Draw rectangle UVWX. What is its perimeter?

ANSWER _____

APPLY IT Show your work

- 1** A game designer makes a rectangular capture zone with corners at $(-5, -2)$, $(10, -2)$, $(10, 5)$, and $(-5, 5)$. Plot the zone. How many grid units are around its boundary?

WORK SPACE

ANSWER _____

- 2** For a dance video, four floor lights make a rectangle at $(2, -10)$, $(2, 3)$, $(16, 3)$, and $(16, -10)$. Plot the light pattern. How many units of cable are needed to connect the lights around the outside?

WORK SPACE

ANSWER _____

CHALLENGE One step up

CHALLENGE

A rectangular robot arena has vertices $A(-14, -1)$, $B(4, -1)$, and $C(4, 12)$, named in order. Find the coordinates of vertex D and the perimeter of the arena. Explain how the coordinates help you find both answers.

PART 1 • PRACTICE

#	PROBLEM	ANSWER
1	Plot L(-10, 2), M(-3, 2), and N(-10, 13). Draw triangle LMN. What is the length of LM?	7 units
2	Plot A(1, -4), B(1, 3), C(14, 3), and D(14, -4). Draw rectangle ABCD. What is the length of AB?	7 units
3	Points P(-12, -2) and Q(-12, 10) are endpoints of a segment. What is the length of PQ?	12 units
4	Plot W(-4, 11), X(3, 11), Y(3, 16), and Z(-4, 16). Draw quadrilateral WXYZ. Find the lengths of WX and XY.	WX = 7 units; XY = 5 units
5	Plot H(-11, -3), J(2, -3), and K(-11, 7). Draw triangle HJK. Find the lengths of HJ and HK.	HJ = 13 units; HK = 10 units
6	Plot U(-13, -7), V(0, -7), W(0, 5), and X(-13, 5). Draw rectangle UVWX. What is its perimeter?	50 units

PART 2 • APPLY IT

- 44 units** The horizontal sides are 15 units long, and the vertical sides are 7 units long. The perimeter is $15 + 7 + 15 + 7 = 44$ units.
- 54 units** The vertical sides are 13 units long, and the horizontal sides are 14 units long. The perimeter is $13 + 14 + 13 + 14 = 54$ units.

CHALLENGE

D(-14, 12); AB = 18 units, BC = 13 units, and the perimeter is 62 units.

Accept coordinate answers with equivalent spacing and punctuation. Lengths should be positive and labeled in units, and accept correct perimeter work even if the drawing is not to scale.