

Coordinate Side Quest

Draw polygons, then measure their 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 _____

The big idea

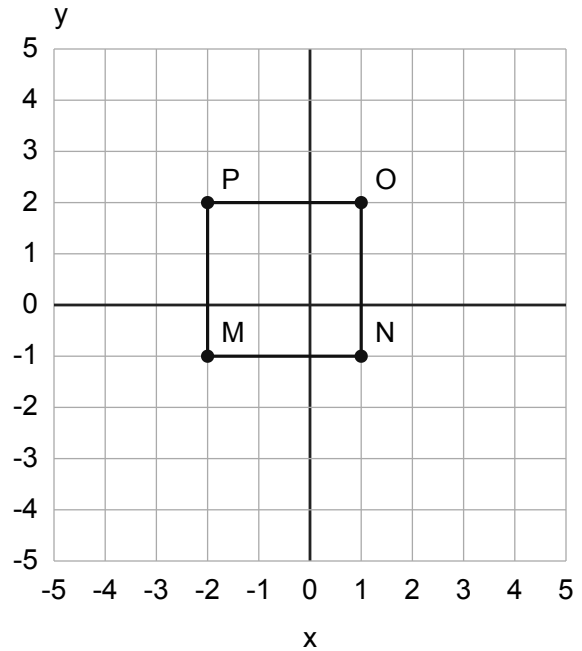
Plot each vertex (x, y) , connect consecutive vertices, and close the polygon. A horizontal side has equal y -values; a vertical side has equal x -values. Subtract the changing coordinates and take the positive distance.

Worked example

The rectangle has vertices $M(-2, -1)$, $N(1, -1)$, $O(1, 2)$, and $P(-2, 2)$. Find MN and NO .

MN is horizontal: $|1 - (-2)| = 3$. NO is vertical: $|2 - (-1)| = 3$.

Both sides are 3 units; this rectangle is also a square.



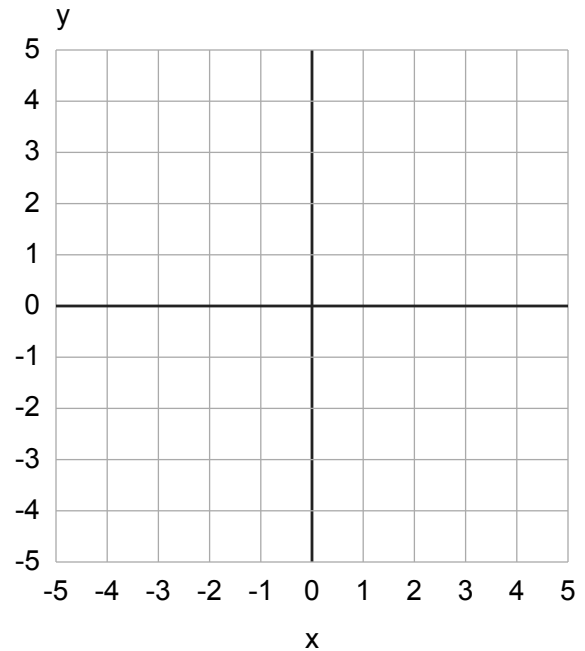
Plot and label all requested points. Use the ruled space for calculations and explanations.

1. Practice

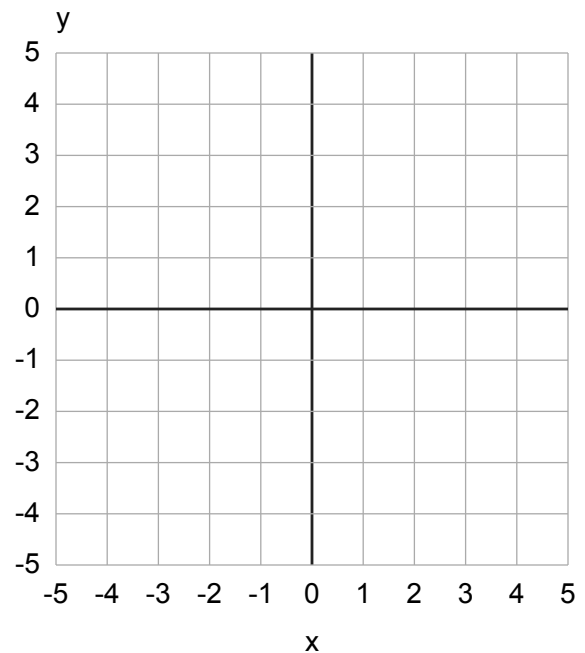
A polygon side joins $J(-4, 1)$ and $K(-4, 4)$. Explain why the side is vertical. Find JK .

2. Practice

Plot $A(-3, -2)$, $B(2, -2)$, $C(2, 2)$, and $D(-3, 2)$.
Connect them in order and close the polygon.
Find AB and BC using the coordinates.

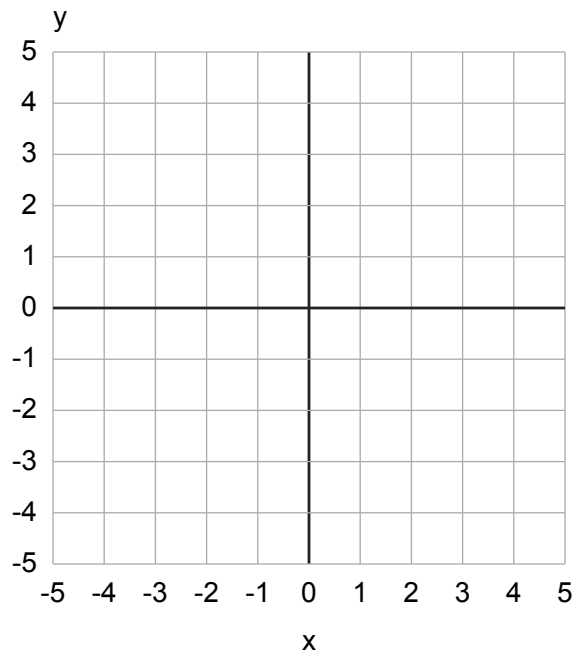
**3. Practice**

Plot $P(-2, -3)$, $Q(3, -3)$, and $R(-2, 2)$. Draw triangle PQR . Find the lengths of horizontal side PQ and vertical side PR .

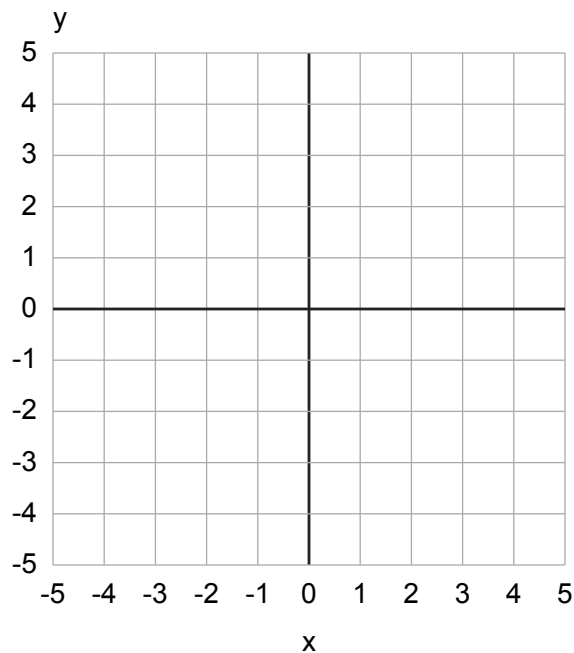


4. Practice

Draw the polygon with vertices $A(-3, -2)$, $B(3, -2)$, $C(3, 0)$, $D(0, 0)$, $E(0, 3)$, $F(-3, 3)$, in order. Find the horizontal side CD and vertical side DE .

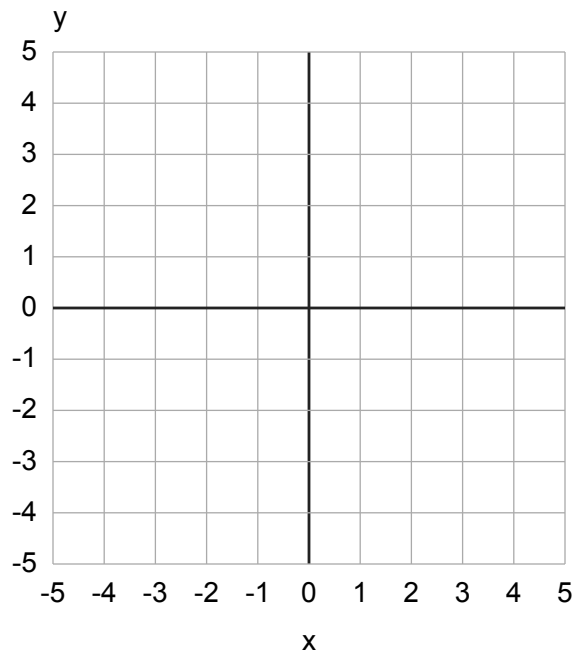
**5. Apply**

A garden map uses 1 unit = 1 meter. Draw the boundary $A(-4, -1)$, $B(2, -1)$, $C(2, 3)$, $D(-4, 3)$, connecting in order. Find the length of each side and the total fencing needed.

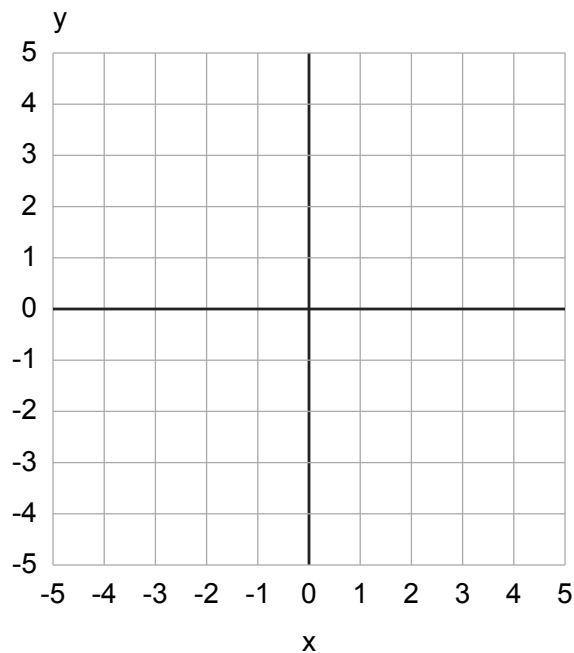


6. Apply

A square art panel has bottom vertices $W(-2, -3)$ and $X(2, -3)$. The panel extends upward. Find top vertices Y and Z , then plot and draw $WXYZ$. State its side length.

**7. Challenge**

A rectangle has consecutive vertices $A(-3, -2)$, $B(1, -2)$, and $C(1, 3)$. Find D and draw the rectangle. Explain how you know each side is horizontal or vertical; find its perimeter.



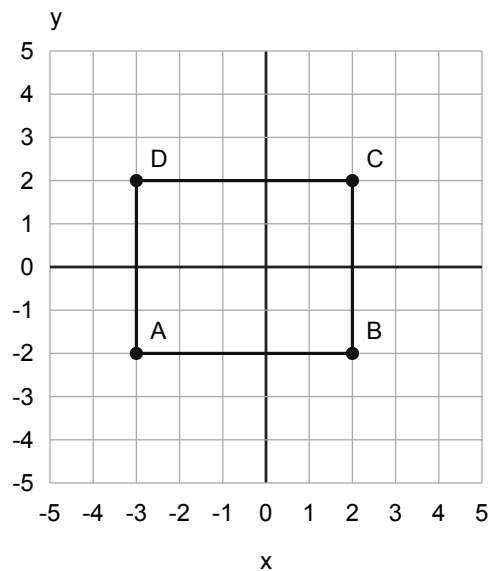
Check plotted vertices and all requested connecting sides. Each grid interval is 1 unit. Task 3 requires only the horizontal and vertical side lengths, not the diagonal. Task 6 extends upward and has one intended square.

Task 1

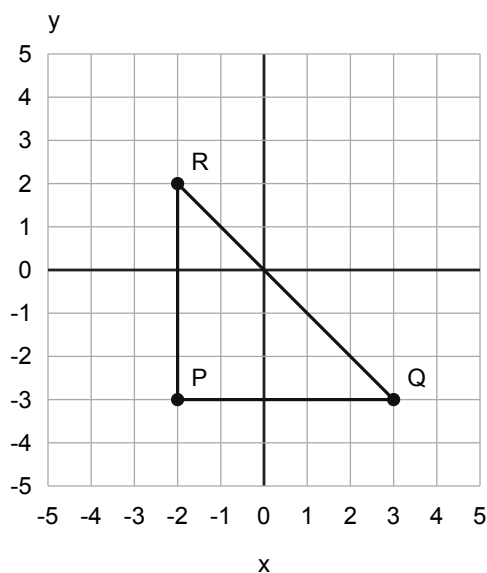
The x-coordinates are equal. $JK = |4 - 1| = 3$ units.

Task 2

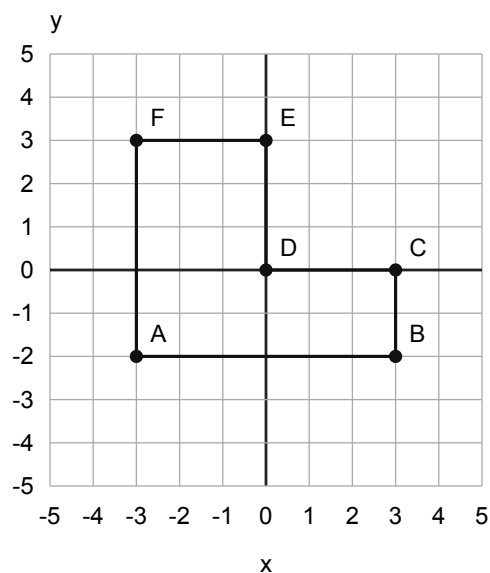
Rectangle ABCD; $AB = 5$ units and $BC = 4$ units.

**Task 3**

$PQ = 5$ units; $PR = 5$ units. The diagonal QR is not requested.

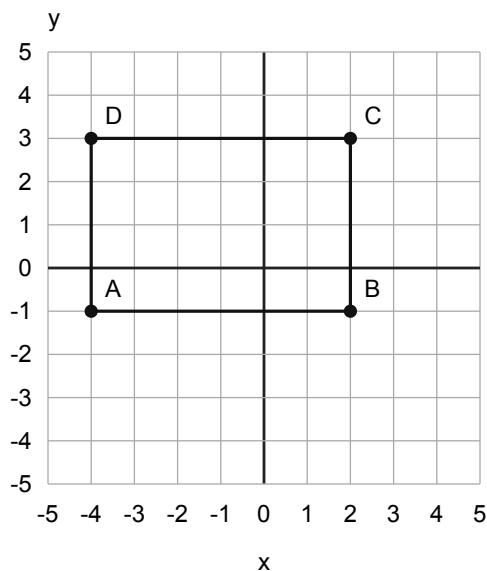
**Task 4**

L-shaped polygon ABCDEF. $CD = 3$ units and $DE = 3$ units.



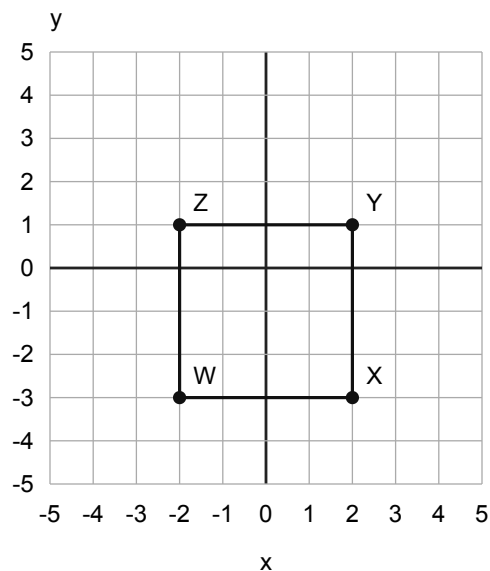
Task 5

$AB = CD = 6$ m; $BC = DA = 4$ m. Total fencing = 20 meters. Add two 6-meter sides and two 4-meter sides.



Task 6

$Y(2, 1)$, $Z(-2, 1)$; each side is 4 units. The horizontal side is $2 - (-2) = 4$, so the top y-coordinate is $-3 + 4 = 1$.



Task 7

$D(-3, 3)$. Consecutive vertices share y or x alternately. Sides are 4 and 5 units; perimeter = 18 units.

