

Coordinate Side Quest

Draw rational-coordinate shapes and solve map problems.

GRADE 6 • 6.PAR.8

6.PAR.8 "Graph rational numbers as points on the coordinate plane to represent and solve contextual, mathematical problems; draw polygons using the coordinates for their vertices and find the length of a side of a polygon."

NAME _____

DATE _____

The big idea

An ordered pair gives x first, then y . On these grids each small interval is 0.5 unit. Plot halfway values on their labeled grid lines. Horizontal lengths use the x -values; vertical lengths use the y -values. Distances are positive.

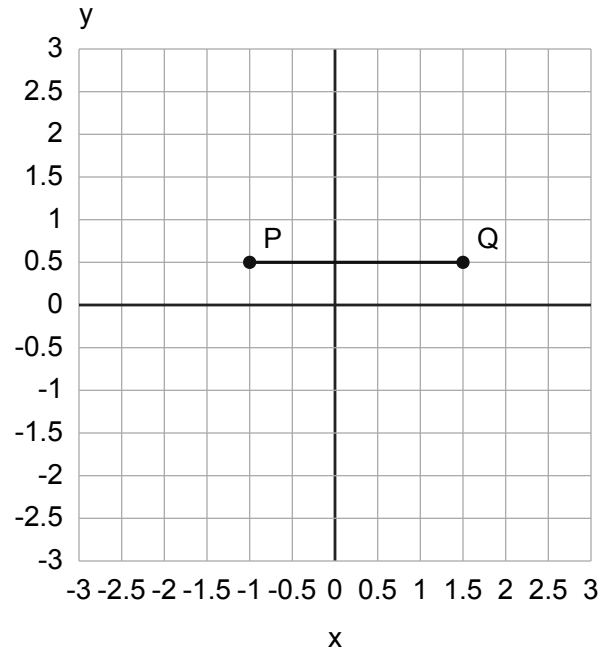
Worked example

Plot $P(-1, 0.5)$ and $Q(1.5, 0.5)$. How long is PQ ?

Both y -values are 0.5, so PQ is horizontal.

Subtract the x -values: $1.5 - (-1) = 2.5$.

$PQ = 2.5$ units.



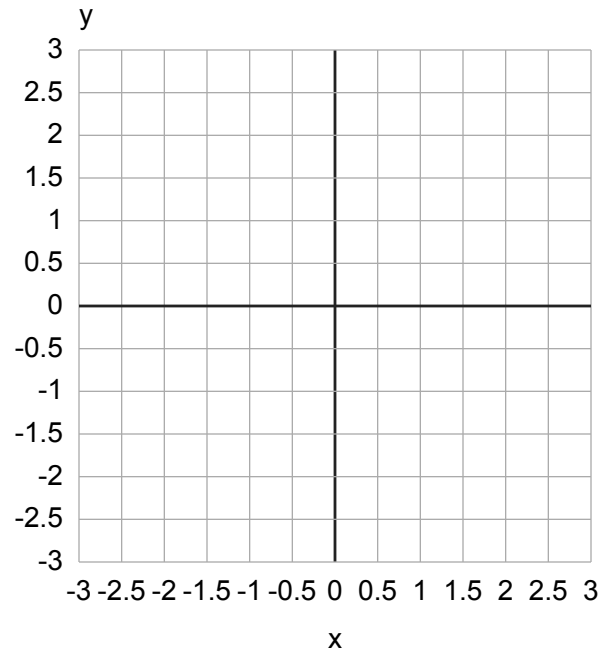
Plot and label all requested points. Use the ruled space for calculations and explanations.

1. Practice

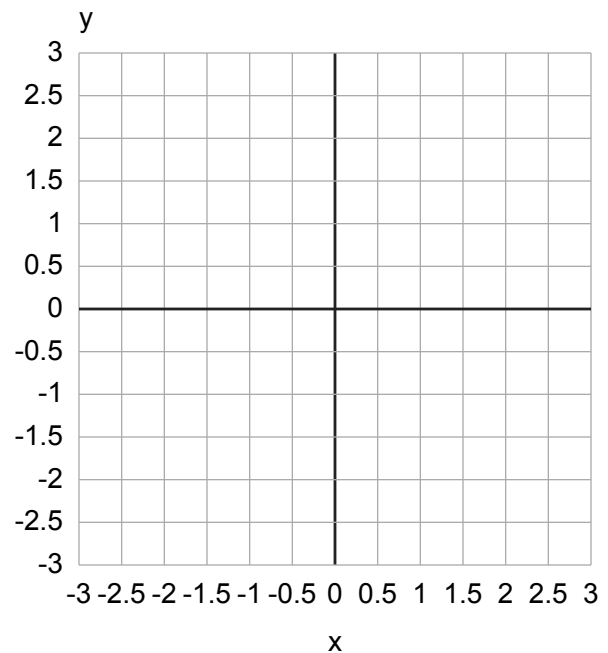
A point is 2.5 units left of the origin and 1.5 units down. Write its ordered pair and name its quadrant.

2. Practice

Plot $A(-1.5, 2)$, $B(2, 2)$, and $C(2, -1)$. Connect A to B to C to A. Find AB and BC using the coordinates.

**3. Practice**

Plot $W(-2, -1.5)$, $X(1, -1.5)$, $Y(1, 1)$, and $Z(-2, 1)$. Connect the vertices in order and close the polygon. Find WX, XY, and its perimeter.

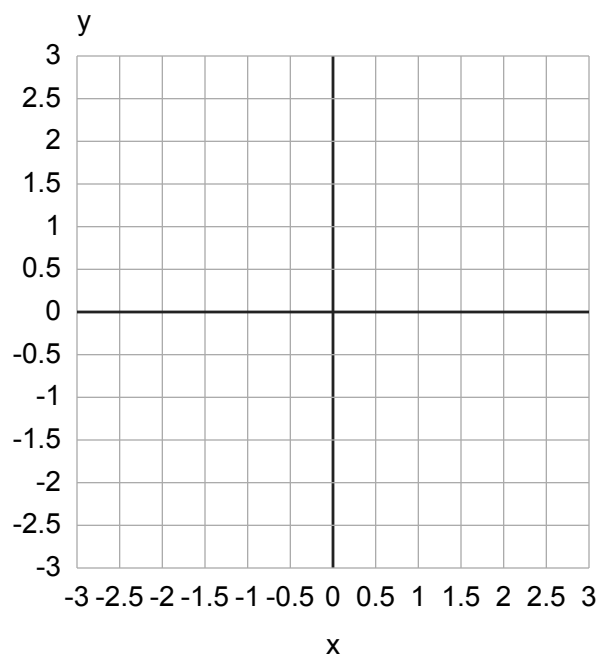


4. Practice

A side joins $P(-1.25, 0.75)$ to $Q(1.5, 0.75)$. Is it horizontal or vertical? Find its length and explain why the y -values do not affect this length.

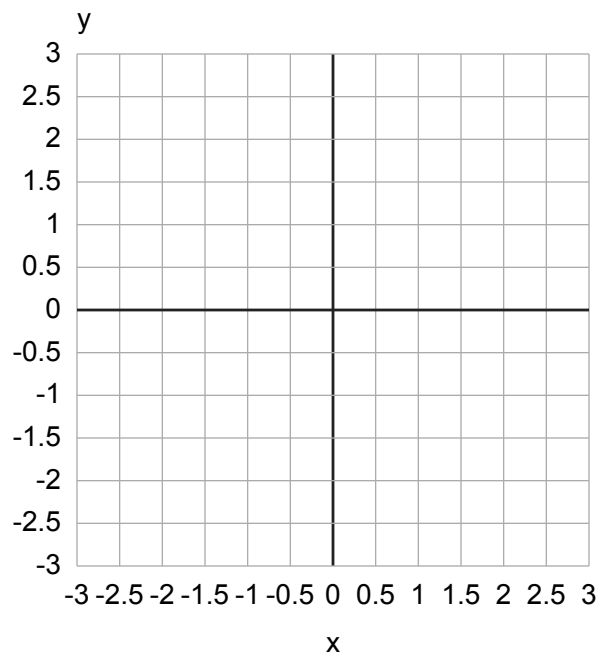
5. Apply

A garden map uses 1 unit = 1 meter. Plot $A(-1.5, -1)$, $B(1.5, -1)$, $C(1.5, 2)$, and $D(-1.5, 2)$. Draw the boundary in order. How much edging is needed for the entire boundary?

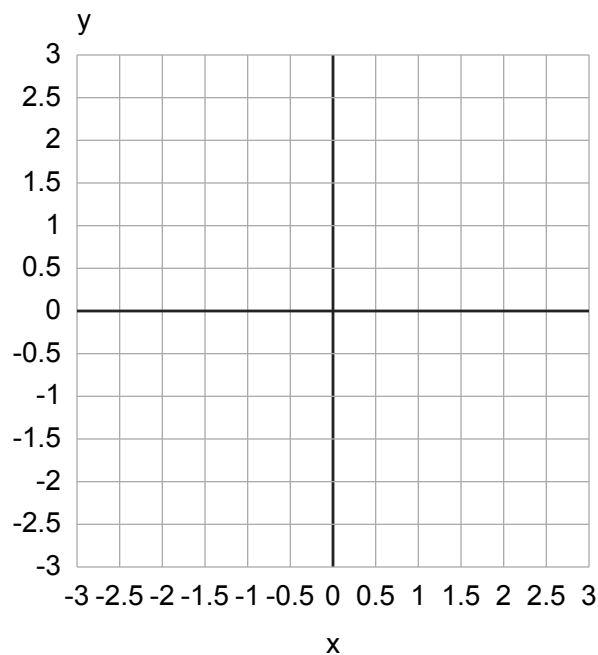


6. Apply

A robot travels from $R(-2, 1.5)$ straight down to $S(-2, -0.5)$, then right to $T(1, -0.5)$. Plot and connect R - S - T . Each unit is 1 meter. Find both leg lengths and the total travel distance.

**7. Challenge**

Three consecutive vertices of a rectangle are $A(-1.5, -1)$, $B(2, -1)$, and $C(2, 1.5)$. Find vertex D . Plot all four vertices and draw the rectangle. Justify D using its shared coordinates.



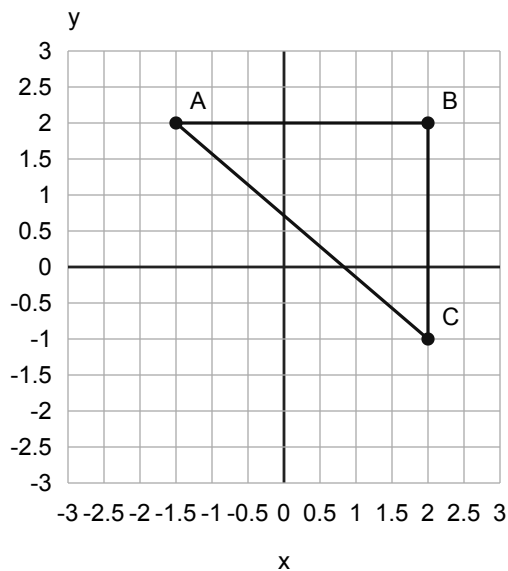
Check every requested vertex and connecting segment. Half-unit grid spacing is explicit. Accept equivalent fractions or decimals. Task 6 is an open two-leg route, not a closed polygon.

Task 1

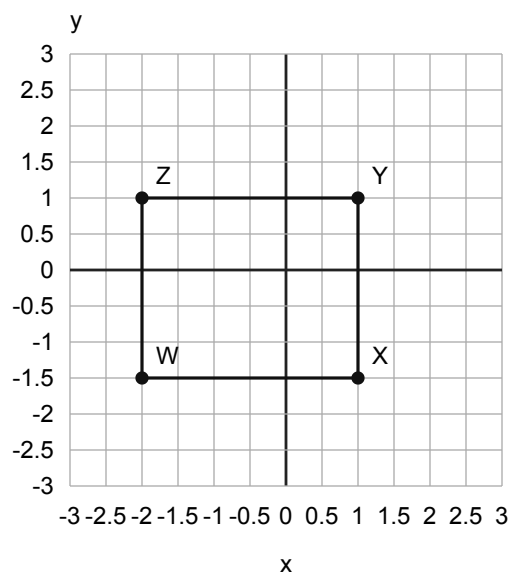
$(-2.5, -1.5)$, Quadrant III.

Task 2

Triangle ABC; $AB = 3.5$ units, $BC = 3$ units.

**Task 3**

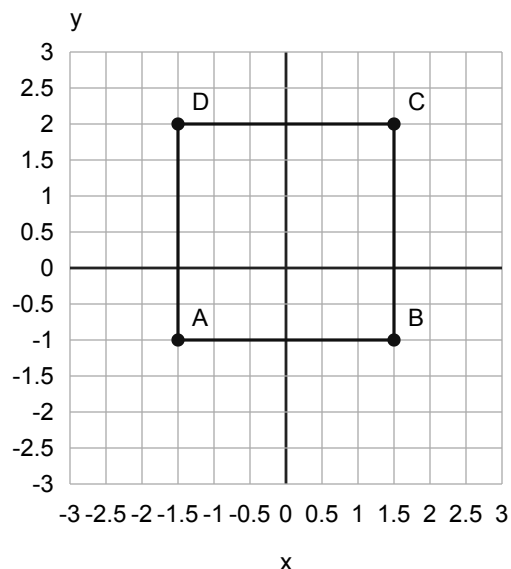
Rectangle WXYZ: $WX = 3$; $XY = 2.5$; perimeter = 11 units.

**Task 4**

Horizontal; length = $1.5 - (-1.25) = 2.75$ units. Equal y-values mean there is no vertical change.

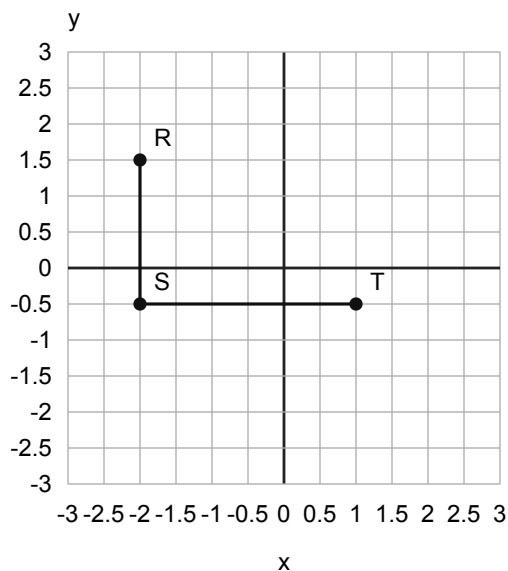
Task 5

Square ABCD; each side is 3 m. Edging = 12 meters. Horizontal length: $1.5 - (-1.5) = 3$. Vertical length: $2 - (-1) = 3$.



Task 6

$RS = 2$ m; $ST = 3$ m; total = 5 meters. The two straight legs follow matching x- or y-coordinates. The route follows a vertical leg and then a horizontal leg.



Task 7

D(-1.5, 1.5). D shares x with A and y with C. $AB = 3.5$ and $BC = 2.5$ units.

