

Challenge Problems

10.2

NAME _____

Module 10 Coordinate Geometry and Spatial Visualization
Lesson 2 Classifying Geometric Figures Using Points

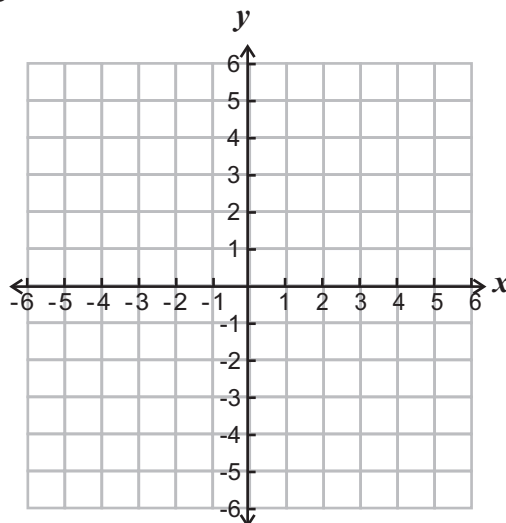
Set 1

1

A line segment has one endpoint at $(-4, 3)$. It passes through the point $(1, 3)$, and its other endpoint is at $(7, y)$. What is the value of y ? Explain how you know.

2

Point A is at $(2, 1)$, and point B is at $(4, 2)$. Graph \overrightarrow{AB} . Does \overrightarrow{AB} pass through the origin? Graph \overrightarrow{BA} . Does \overrightarrow{BA} pass through the origin?



Set 2

1

The vertices of an isosceles triangle are $(-4, 1)$, $(2, 1)$, and $(x, 5)$. What is the value of x ? Explain how you know.

2

A parallelogram has vertices at $(0, 0)$, $(4, 0)$, and $(1, 5)$. What are the possible coordinates for the fourth vertex? (Hint: There are three possible vertices.)

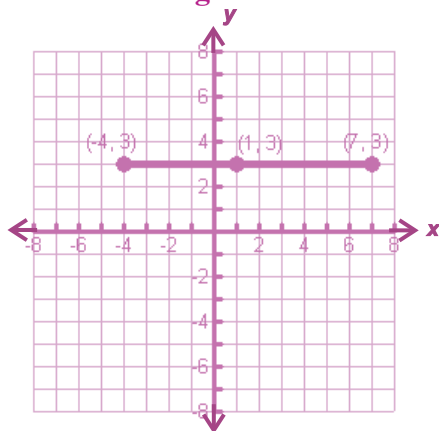
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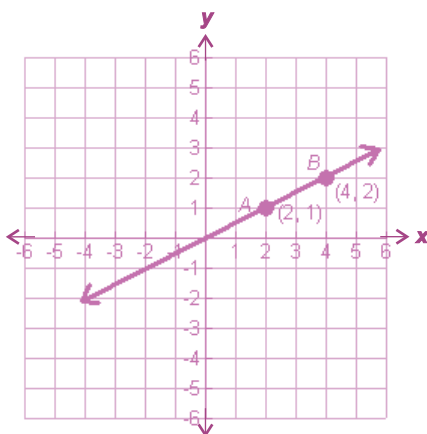
Possible Answers

Set 1

1. If one endpoint is at $(-4, 3)$ and the line segment passes through $(1, 3)$, then the line segment is horizontal. The other endpoint must have a y -coordinate of three just like all the other points on the segment.

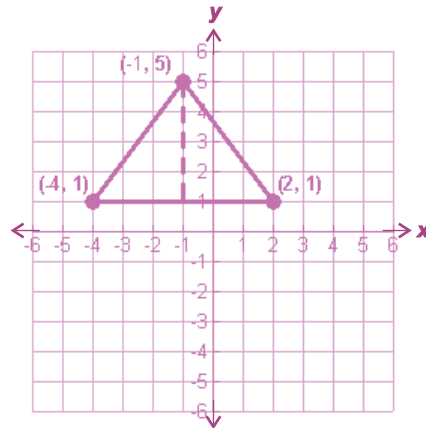


2. \overrightarrow{AB} starts at A , goes through B , and continues indefinitely in that direction. It does not pass through the origin. \overrightarrow{BA} starts at B , goes through A , and continues indefinitely in that direction. If the ray is extended beyond the y -axis, it passes through the origin.



Set 2

- The base of this triangle is a horizontal line segment. An isosceles triangle has two congruent sides. In order for the other two sides to be equal in length, the x -coordinate of that vertex must be the number that is halfway between the x -coordinates of the bottom vertices. Since it is six units from -4 to $+2$, halfway is three units. So, the x -coordinate of the top vertex is -1 .



- The possibilities for the fourth vertex are $(5, 5)$, $(-3, 5)$ and $(3, -5)$.

