

Lesson 27: Drawing Polygons

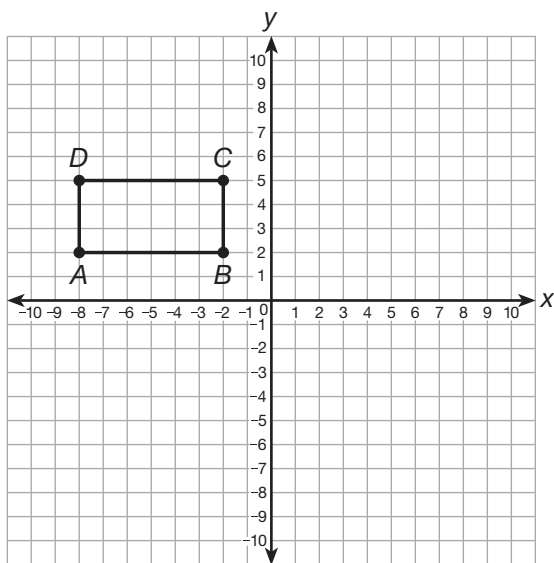
A **polygon** is a closed 2-dimensional figure made up of straight lines. You can create polygons on the coordinate grid.

▶ Example

Plot the following points, and use them to create a polygon.

$$A(-8, 2) \quad B(-2, 2) \quad C(-2, 5) \quad D(-8, 5)$$

Point A is 8 units to the left and 2 units up from the origin. Point B is 2 units to the left and 2 units up from the origin. Point C is 2 units to the left and 5 units up from the origin. Point D is 8 units to the left and 5 units up from the origin. The coordinate plane below shows these points connected with lines to form a rectangle.



▶ Example

Using the points in the coordinate plane from the previous example, find the distance from A to B , from B to C , from C to D , and from D to A .

Each pair of points has one identical coordinate in their ordered pairs. To find the distance between them, find the absolute value of the difference of the different coordinates.

$$A \text{ to } B: |-8 - (-2)| = |-6| = 6$$

$$B \text{ to } C: |5 - 2| = |3| = 3$$

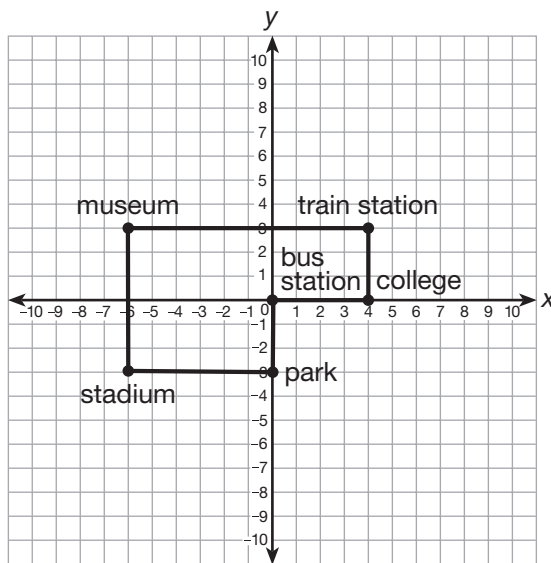
$$C \text{ to } D: |-8 - (-2)| = |-6| = 6$$

$$D \text{ to } A: |5 - 2| = |3| = 3$$

Example

A city bus follows a specific route. Each unit on the grid below represents one city block. The origin of the coordinate plane is the bus headquarters. The bus makes the following stops after leaving the bus station: college (4, 0), train station (4, 3), museum (−6, 3), stadium (−6, −3), and park (0, −3). Draw a polygon to show the bus route. Then determine the distances between the stops.

To create the polygon, plot the points and draw the route.



To determine the distances between the stops, find the absolute value of the difference between the different coordinates.

bus station to college: $|4 - 0| = |4| = 4$ blocks

college to train station: $|3 - 0| = |3| = 3$ blocks

train station to museum: $|4 - (-6)| = |10| = 10$ blocks

museum to stadium: $|3 - (-3)| = |6| = 6$ blocks

stadium to park: $|-6 - 0| = |-6| = 6$ blocks

park to bus station: $|3 - 0| = |3| = 3$ blocks