

Classwork Lesson 18: Get Started !!

Opening Exercise

Four friends are touring on motorcycles. They come to an intersection of two roads; the road they are on continues straight, and the other is perpendicular to it. The sign at the intersection shows the distances to several towns. Draw a map/diagram of the roads and use it and the information on the sign to answer the following questions:

Albertsville ← 8 mi

Blossville ↑ 3 mi

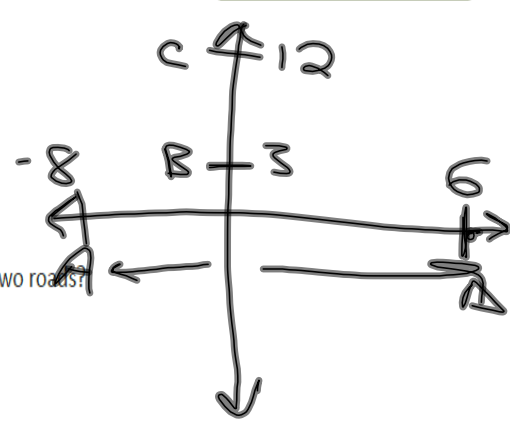
Cheyenne ↑ 12 mi

Dewey Falls → 6 mi

What is the distance between Albertsville and Dewey Falls?
 $| -8 | = 8$
 $| 6 | = 6$
 $8 + 6 = 14 \text{ mi}$

What is the distance between Blossville and Cheyenne?
 $| 12 | = 12$
 $| 3 | = 3$
 $12 - 3 = 9$

On the coordinate plane, what represents the intersection of the two roads?
The origin



Jan 27-7:45 AM

Example 1: The Distance Between Points on an Axis

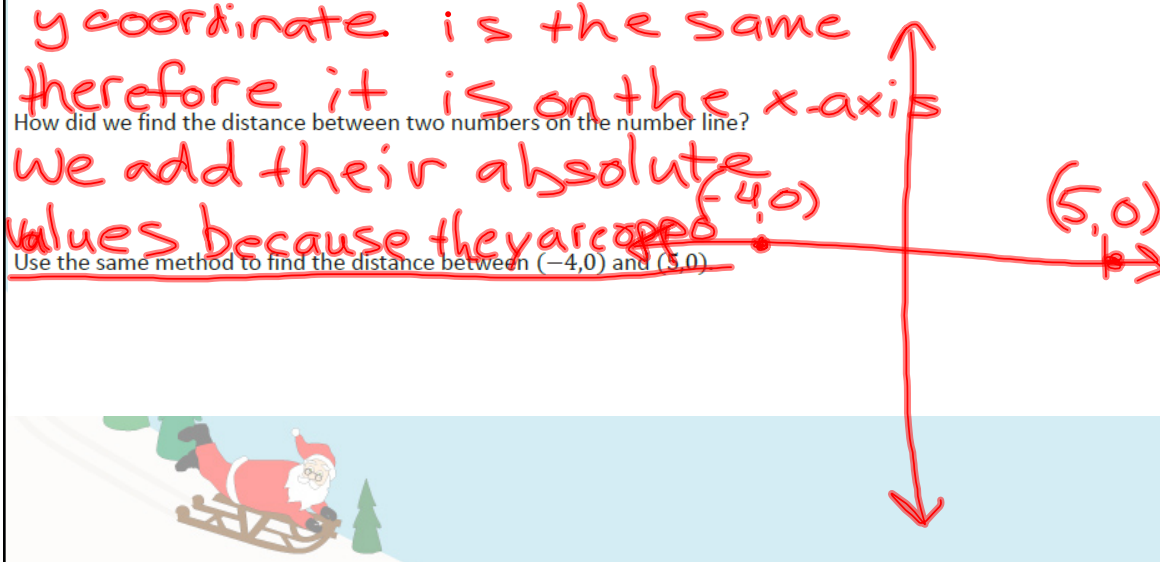
What is the distance between $(-4,0)$ and $(5,0)$? 9 units

$| -4 | = 4$
 $| 5 | = 5$
 $5 + 4 = 9$

What do the ordered pairs have in common and what does that mean about their location in the coordinate plane?
y coordinate is the same therefore it is on the x-axis

How did we find the distance between two numbers on the number line?
we add their absolute values because they are opposite

Use the same method to find the distance between $(-4,0)$ and $(5,0)$



Jan 27-8:13 AM

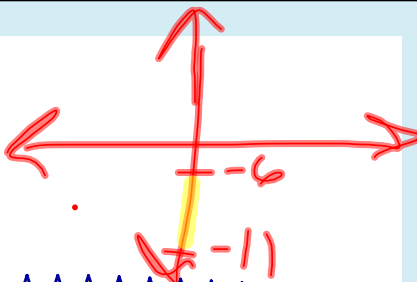
Example 2: The Length of a Line Segment on an Axis

What is the length of the line segment with endpoints $(0, -6)$ and $(0, -11)$?

$$|-6| = 6$$

$$|-11| = 11$$

$$|11 - 6| = 5$$



What do the ordered pairs of the endpoints have in common and what does that mean about the location of the line segment on the coordinate plane?

They have the same x-coordinate therefore the points are on the y-axis

~~Find the length of the line segment described by finding the distance between its endpoints $(0, -6)$ and $(0, -11)$.~~

Jan 27-8:14 AM

Example 3: Length of a Horizontal or Vertical Line Segment that does Not Lie on an Axis

Find the length of the line segment with endpoints $(-3, 3)$ and $(-3, -5)$.

What do the endpoints, which are represented by the ordered pairs, have in common? What does that tell us about the location of the line segment on the coordinate plane?

Find the length of the line segment by finding the distance between its endpoints.

Jan 27-8:14 AM

Exercises

1. Find the lengths of the line segments whose endpoints are given below. Explain how you determined that the line segments are horizontal or vertical.

a. $(-3,4)$ and $(-3,9)$

b. $(2,-2)$ and $(-8,-2)$

Jan 27-8:15 AM

c. $(-6,-6)$ and $(-6,1)$

d. $(-9,4)$ and $(-4,4)$

e. $(0,-11)$ and $(0,8)$

Jan 27-8:16 AM