

6th Grade Math

Lesson: April 8th, 2020

Learning Target:

Students will find distance between points on the Cartesian coordinate plane.

Let's Get Started:

Watch Video: [Vertical & Horizontal Line Distance](#)

Recognizing and writing the absolute value of a number

The absolute value of a number is the distance from itself to 0 on the number line. It is always positive or zero.



-4 is 4 units away from 0. Its absolute value is 4.

Similarly, the absolute value of 4 is also 4.

You can write $|-4| = 4$, and $|4| = 4$.

Quick Check

Use the symbol $||$ to write the absolute values of the following numbers.

6 11

7 -16

8 -21

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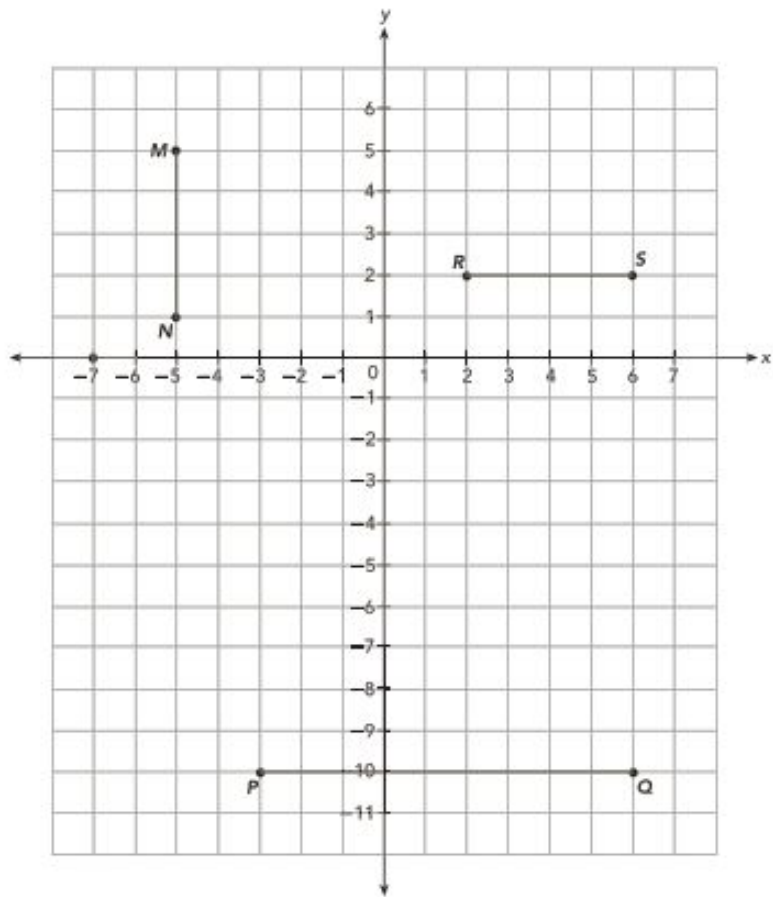
6 11 $|11| = 11$

7 -16 $|-16| = 16$

8 -21 $|-21| = 21$

Learn:

Find the lengths of the line segments \overline{RS} , \overline{MN} , and \overline{PQ} .



The line segment \overline{RS} joins points $R(2, 2)$ and $S(6, 2)$. The y -coordinates of points R and S are the same, so \overline{RS} is a horizontal line segment.

Using the x -coordinates of $R(2, 2)$ and $S(6, 2)$,

$$\begin{aligned}RS &= |x\text{-coordinate of } S| - |x\text{-coordinate of } R| \\ &= |6| - |2| \\ &= 4 \text{ units}\end{aligned}$$

So, the length of \overline{RS} is 4 units.

The line segment \overline{MN} joins points $M(-5, 5)$ and $N(-5, 1)$. The x -coordinates of points M and N are the same, so \overline{MN} is a vertical line segment.

Using the y -coordinates of $M(-5, 5)$ and $N(-5, 1)$,

$$\begin{aligned}MN &= |y\text{-coordinate of } M| - |y\text{-coordinate of } N| \\ &= |5| - |1| \\ &= 4 \text{ units}\end{aligned}$$

So, the length of \overline{MN} is 4 units.

\overline{RS} is parallel to the x -axis.



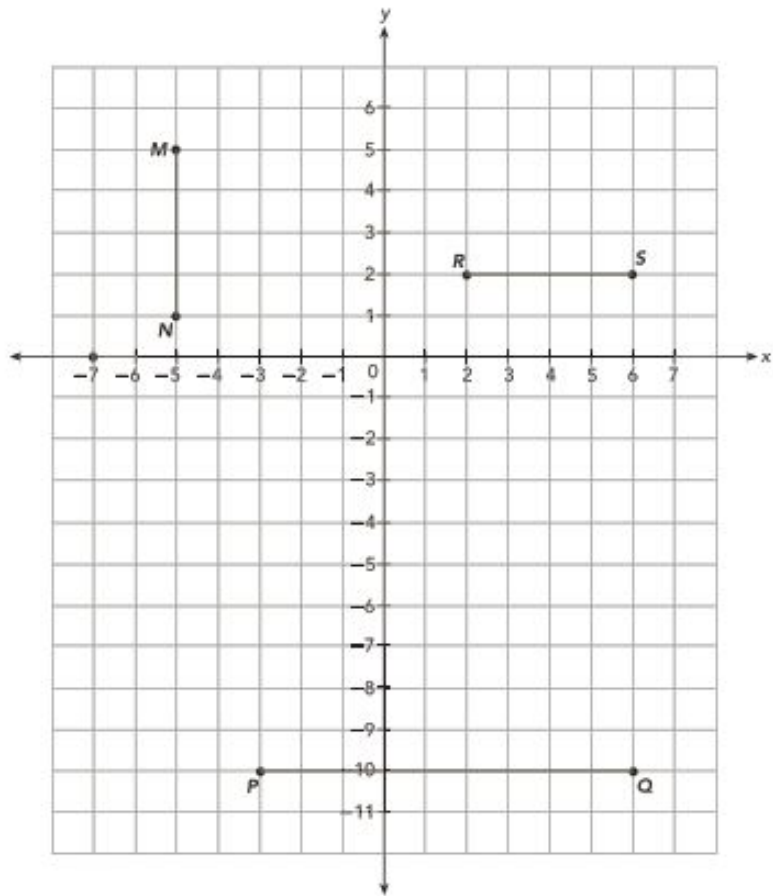
\overline{MN} is parallel to the y -axis.



When the coordinates are the same sign, both positive or both negative, you subtract the absolute value.

Learn:

Find the lengths of the line segments \overline{RS} , \overline{MN} , and \overline{PQ} .



The line segment \overline{PQ} joins points $P(-3, -10)$ and $Q(6, -10)$.
The y-coordinates of points P and Q are the same,
so \overline{PQ} is a horizontal line segment.

Using the x-coordinates of $P(-3, -10)$ and $Q(6, -10)$,

$$\begin{aligned}PQ &= |\text{x-coordinate of } P| + |\text{x-coordinate of } Q| \\ &= |-3| + |6| \\ &= 9 \text{ units}\end{aligned}$$

So, the length of \overline{PQ} is 9 units.

\overline{PQ} is parallel
to the x-axis.



When the coordinates have different signs, one positive and one negative, you add the absolute value.

Practice:

Use graph paper. Plot each pair of points on a coordinate plane. Connect the points to form a line segment and find its length.

7 $A(1, -2)$ and $B(6, -2)$

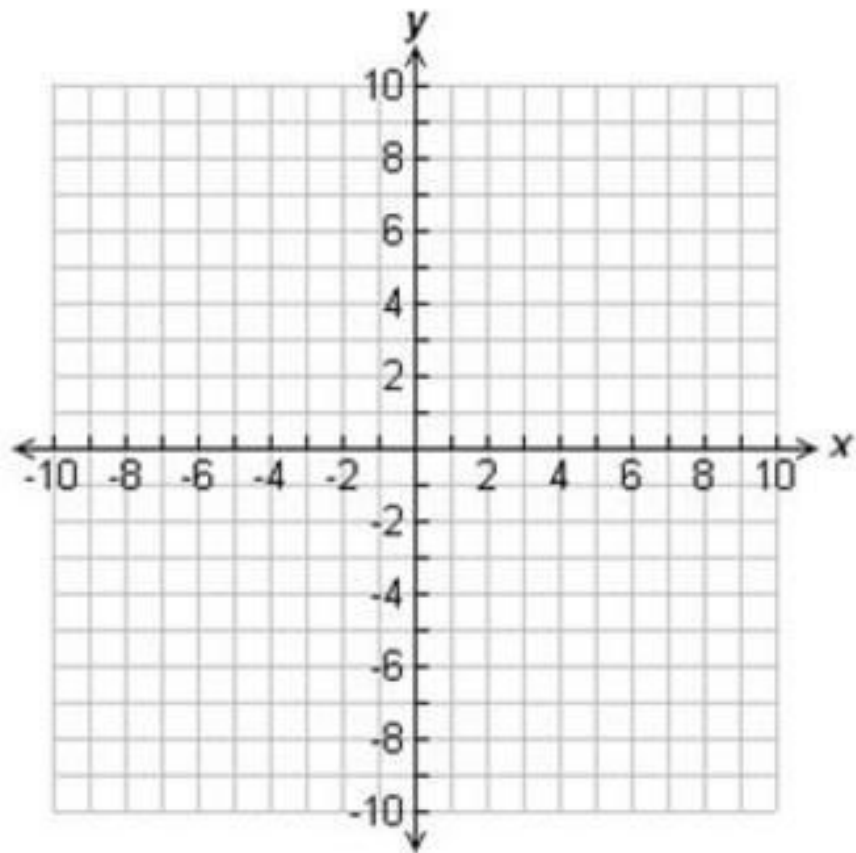
8 $C(-1, 3)$ and $D(5, 3)$

9 $E(-3, 4)$ and $F(1, 4)$

10 $G(-3, 2)$ and $H(-3, 6)$

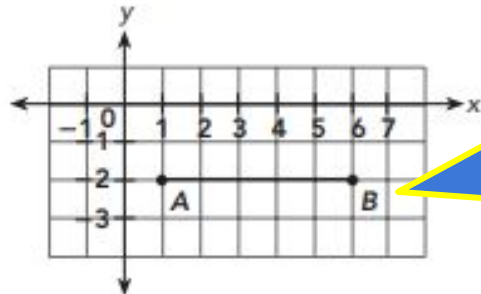
11 $J(-1, -6)$ and $K(-1, 4)$

12 $L(5, 6)$ and $M(5, 1)$



Practice: (Answer Key)

7.

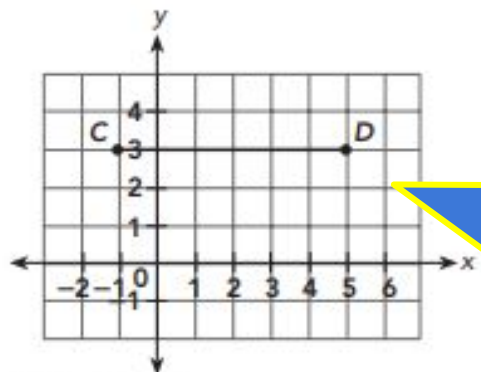


A (1, -2) B (6, -2)

$$|6| - |1| = 5 \text{ units}$$

AB = 5 units

8.

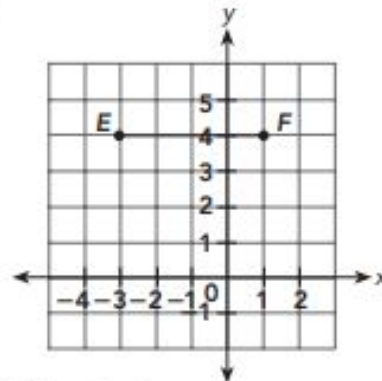


C (-1, 3) D(5, 3)

$$|-1| + |5| = 6 \text{ units}$$

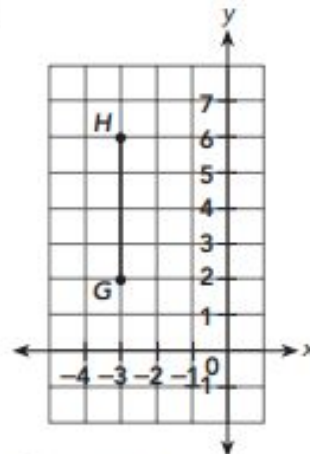
CD = 6 units

9.



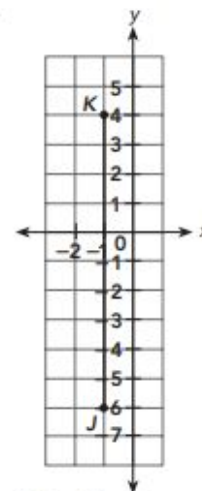
EF = 4 units

10.



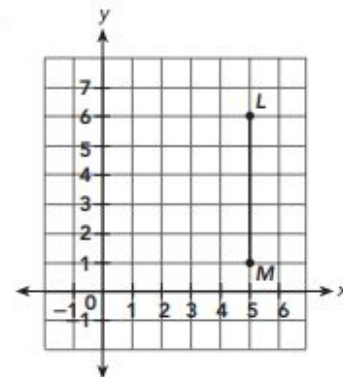
GH = 4 units

11.



JK = 10 units

12.



LM = 5 units

More Practice:

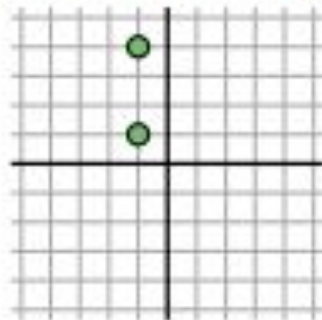


Finding Distance on a Grid

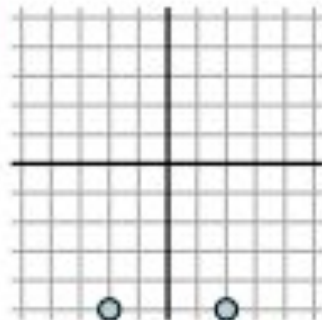
Name: _____

Find the distance between points.

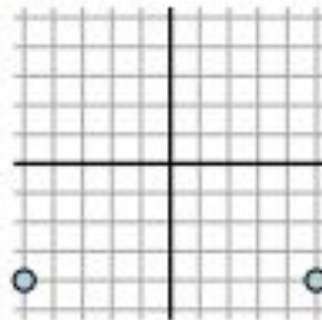
Ex)



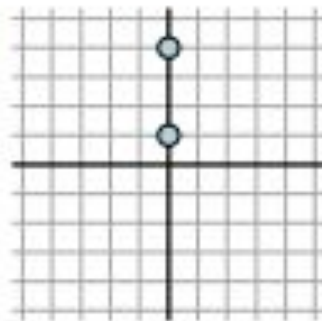
1)



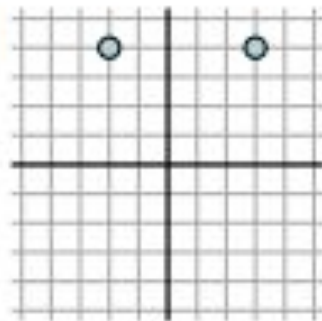
2)



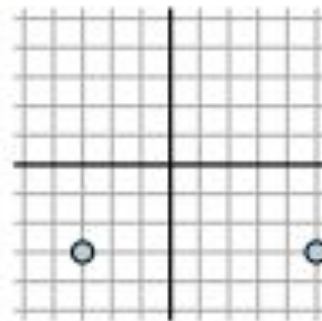
3)



4)



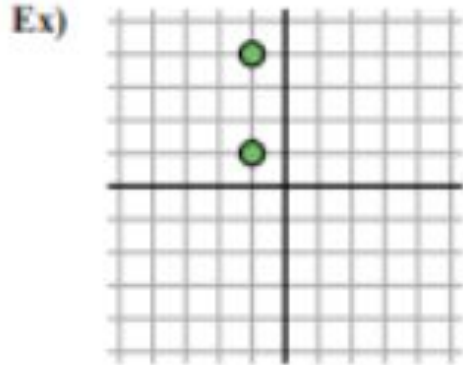
5)



More Practice: (Answer Key)

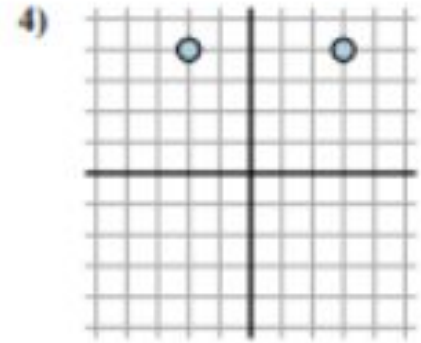
$(-1,4)$ to $(-1,1)$

$$|4| - |1| = 3 \text{ units}$$



Answers

- Ex. 3
1. 4
2. 10
3. 3
4. 5
5. 8



$(-2,4)$ to $(3,4)$

$$|-2| + |3| = 5 \text{ units}$$

Additional Resources:

Click on the links below to get additional practice and to check your understanding!

[Khan Academy: Distance Between Two Points](#)

[Find the Distance between two points](#)

Reflection:

Complete a quick write about your understanding of today's lesson using the scale below. What action steps should you take to continue your learning?

Rate Your Understanding

0	1	2	3	4
				
I am so lost.	I don't really get it.	I'm starting to get it.	I got this.	I could teach it.