

Distance in the Coordinate Plane

If the points lie in the **same quadrant**, subtract the absolute values of the coordinates.
 If the points lie in **different quadrants**, add the absolute values of the coordinates.

Find the distance between the pair of points.

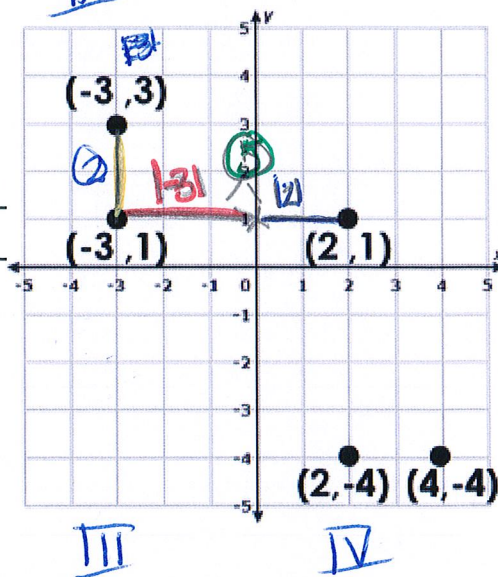
1. $(-3, 1)$ and $(2, 1)$

Different quadrants, so **add** the absolute values.

Horizontal distance from $(-3, 1)$ to y-axis: $|-3| = 3$

Horizontal distance from $(2, 1)$ to y-axis: $|2| = 2$

Distance from $(-3, 1)$ to $(2, 1)$ is $3 + 2 = 5$



2. $(-3, 3)$ and $(-3, 1)$

Same quadrant, so **subtract** the absolute values.

Vertical distance from $(-3, 3)$ to $(-3, 1)$:

$|3| = 3$ and $|1| = 1$ so $3 - 1 = 2$

3. $(2, 1)$ and $(2, -4)$ different quadrant $|1| + |-4|$ $1 + 4 = 5$ units

4. $(2, -4)$ and $(4, -4)$ Same quadrant $|4| - |2|$ $4 - 2 = 2$ units

Plot and label the points on these grids, then find the distance between them.

5. A $(0, 5)$ and B $(0, -5)$ $|5| + |-5|$
 $5 + 5 = 10$ units

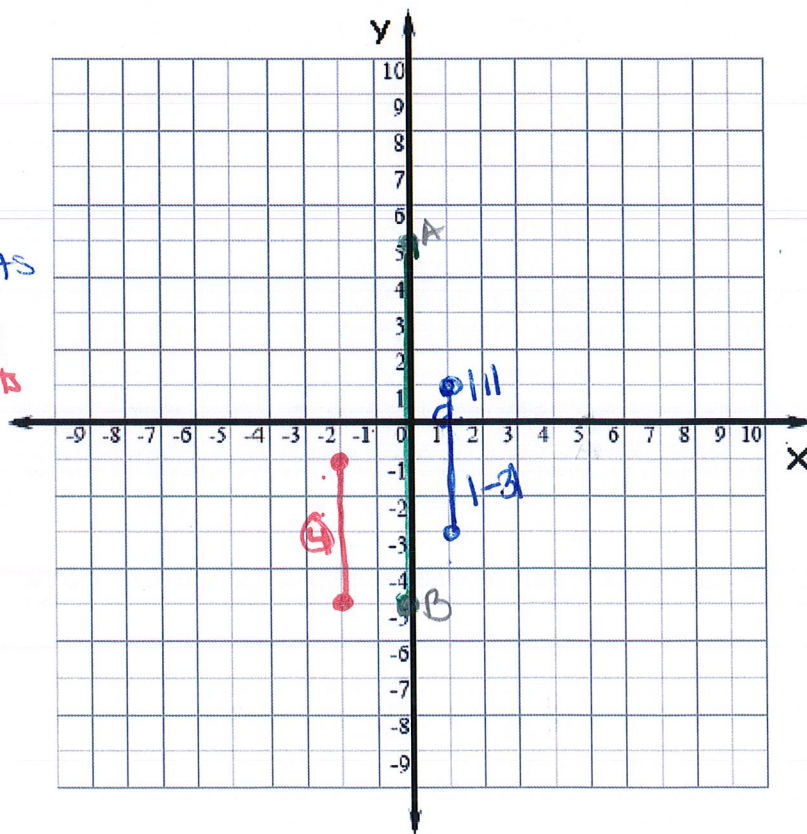
6. C $(1, 1)$ and D $(1, -3)$ $|3| + |1|$ $3 + 1 = 4$ units

7. E $(-2, -5)$ and F $(-2, -1)$ $|5| - |-1|$ $5 - 4 = 1$ units

8. G $(-7, 3)$ and H $(5, 3)$ _____

9. I $(3, -6)$ and J $(3, -10)$ _____

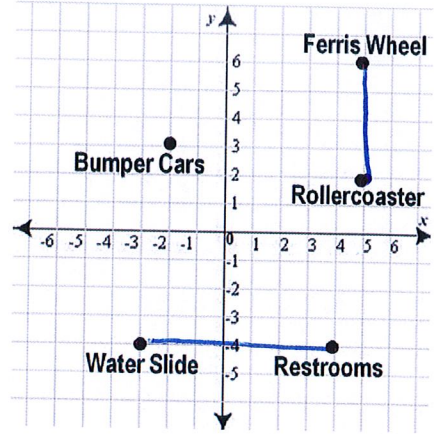
10. K $(8, 0)$ and L $(8, -8)$ _____



The map shows the location of several areas in an amusement park.

Each unit represents 1 kilometer.

Same sign -
diff. sign +



How far is the Ferris wheel from the rollercoaster?
 $(5, 6)$
 $(5, 2)$
 $|6 - 2| = 4$ units

How far is the water slide from the restrooms?
 $(-4, -4)$
 $(4, -4)$
 $| -4 - 4 | = 8$ units

Which of the following values could be the y-coordinate of the point $(10, \underline{\quad})$ that is 13 units from $(10, 6)$?

- A. 17
- B. 3
- C. -1
- D. -7

What is the distance between the points $(4, -7)$ and $(-5, -7)$?

- A. 1 unit
- B. 3 units
- C. 7 units
- D. 9 units

Josie started at home at $(4, 5)$ and then went to the store at $(4, 2)$. She decided to then stop for gas at $(4, -3)$ and then to pick up her printed photos at $(4, -5)$. She then went home. What was Josie's total distance?

home - store
 $(4, 5)$ $(4, 2)$
 $|5 - 2| = 3$ units

store -> photos
 $(4, 2)$ $(4, -5)$
 $|2 - (-5)| = 7$ units

photos -> home
 $(4, -5)$ $(4, 5)$
 $| -5 - 5 | = 10$ units

$(4, 5)$
 $3 + 7 + 10 = 20$ units

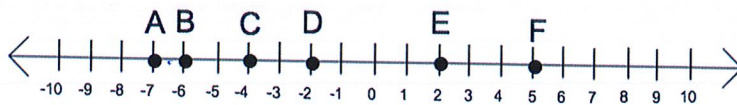
Two different points on the coordinate plane lie on the same vertical line. Do they have the same x-coordinate or the same y-coordinate?

Same x-coordinate

Two different points on the coordinate plane lie on the same horizontal line. Do they have the same x-coordinate or the same y-coordinate?

Same y-coordinate

Use the number line to find each measure.



a. CF
 $| -7 - 5 | = 12$
 $12 + 3 = 15$

b. BD
 $| -6 - (-2) | = 4$

c. AE
 $| -7 - 2 | = 9$