Proudly Completed By:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Distance Formula**



1. On the graph, plot the following points: A(8, 1) and B(4, 4)
2. Draw segment.
3. Start at point A. Draw a line from A up until it is equal to B.
4. Start at point B. Draw a line from B over to it reaches the line drawn from A. Label this intersecting point C.

B

C

1. What kind of shape do you see?

A

Right triangle

1. What property does every kind of shape as the one you mentioned in #5 have?

\_\_$a^{2}+b^{2}=c^{2}$\_\_\_\_\_\_\_

1. Use that property to find the distance between A and B. Show your work below.

Length of:$3^{2}+4^{2}=c^{2}, 9+16= c^{2}, 25= c^{2}, c=5$

1. Instead of counting boxes to find the length between AC and BC, subtract the x values from each other and the y values of the two points (8, 1) and (4, 4) from each other. Write your answer below:

= 4 = -3

1. Compare your values with those you got by counting boxes. How do they compare?

Same Numbers

1. Use those values to solve the problem the same way you did in #7. How do your answers compare?

Same answer!

1. One way to solve for the hypotenuse of a right triangle is . Looking at the relationship between and  and the boxes you counted, how could you write the distance formula between two points?

Distance between two points = 

1. Use your distance formula to find the distance between points X(1, 3) and Y(-2, -1). Plot the points above to check your work.

Length of XY: 5

1. The endpoints of *PQ* are *P*(-3,1) and *Q*(4,25). Find the length of *PQ*. Show all your work below:

PQ = 25

1. What is the length of the line segment that joins the points whose coordinates are (4,7) and (−3,5)? Show all your work below:

Length = $\sqrt{53}$

1. Find the distance between points *P*(–5, 1) and *Q*(3, 1). Show all your work below:

PQ = 8

1. The coordinates of point *R* are (-3,2) and the coordinates of point *T* are (4,8). What is the length of *RT*? Show all your work below:

RT = $\sqrt{85}$

 5. What is the distance between points  and ?

|  |  |
| --- | --- |
| A) |  |
| B) |  |
| C) |  |
| **D)** |  |

 6. If the endpoints of  are  and , what is the length of ?

|  |  |
| --- | --- |
| **A)** |  |
| B) | 2 |
| C) |  |
| D) | 8 |