

NAME: _____

P.I. G.G.67: Find the length of a line segment, given its endpoints

1. Explain why you can use the coordinates of either point as (x_2, y_2) when finding the distance between two points.
2. Use the distance formula to show why the distance between two points on a number line is $|a - b|$, where a and b are the x -coordinates of the points.

[1] In the distance formula, you square the differences, and $(a-b)^2 = (b-a)^2$.

Using the points $(a, 0)$ and $(b, 0)$,

$$d = \sqrt{(a-b)^2 + (0-0)^2}$$

$$= \sqrt{(a-b)^2}$$

[2] $= |a-b|$