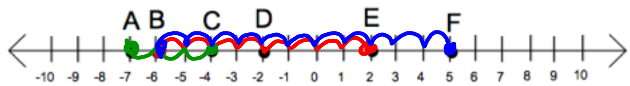
The distance between two points is the length of the segment between the two points. These points are called endpoints.

distance

Remember that distance is always positive.

Use the number line to find each measure



a. BE 8

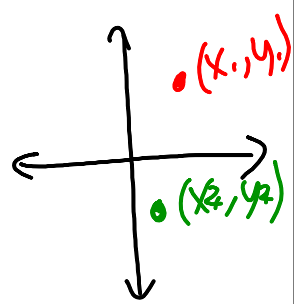
b. AC 3

c. FB 11

To find the distance between two coordinate points, or points on the coordinate plane, we need to use the distance formula.

$3^2 = 3 \cdot 3$

$$\text{Distance} = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$$



Distance = $\sqrt{(\text{diff in } x\text{'s})^2 + (\text{diff in } y\text{'s})^2}$

Find the distance between

a. C(-4,-6) and D(5,-1)

x's ↓ ↓ y's

$-4-5=-9$ $\left\langle \begin{matrix}(-4,-6)\\(5,-1)\end{matrix} \right\rangle$ $-6+1=-5$

$D:\sqrt{(-9)^2+(-5)^2}$

$=\sqrt{81+25}$

$=\sqrt{106}$ *calc.

$\approx \boxed{10.3}$

b. E(-5,6) and F(8,-4)

2nd 1st

$8+5=13$ $\left\langle \begin{matrix}(8,-4)\\(-5,6)\end{matrix} \right\rangle$ $-4-6=-10$

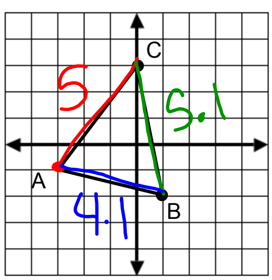
$D:\sqrt{(13)^2+(-10)^2}$

$=\sqrt{169+100}$

$=\sqrt{269}$ *calc

$\boxed{\approx 16.4}$

Find the perimeter of the following triangle



A:(-3,-1) B:(1,-2) C:(0,3)

$-3-0=-3$ $\left\langle \begin{matrix}(-3,-1)\\(0,3)\end{matrix} \right\rangle$ $-1-3=-4$

$D:\sqrt{(-3)^2+(-4)^2}$

$=\sqrt{9+16}$

$=\sqrt{25}=5$

$\boxed{P: 5+5.1+4.1 = 14.2}$

$0-1=-1$ $\left\langle \begin{matrix}(0,3)\\(1,-2)\end{matrix} \right\rangle$ $3+2=5$

$D:\sqrt{(-1)^2+(5)^2}$

$=\sqrt{1+25}$

$=\sqrt{26}=5.1$

$-3-1=-4$ $\left\langle \begin{matrix}(-3,-1)\\(1,-2)\end{matrix} \right\rangle$ $-1+2=1$

$D:\sqrt{(-4)^2+(1)^2}$

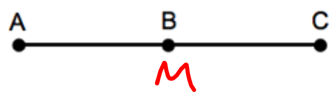
$=\sqrt{16+1}$

$=\sqrt{17}=4.1$

The midpoint of a segment is the point halfway between the two endpoints

If B is the midpoint of AC then AB=BC . To find the midpoint of a segment, we add the two endpoints together and then divide by 2.

AC=10 AB=5 BC=5

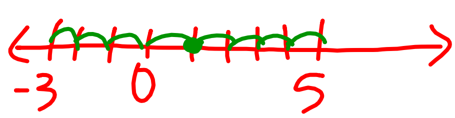


$$B = \frac{A + C}{2}$$

Find the midpoint of the following $B = \frac{A + C}{2}$

a. -3 and 5

$$\frac{-3+5}{2} = \frac{2}{2} = \boxed{1}$$



b. 4 and -7

$$\frac{4+-7}{2} = \frac{-3}{2}$$
$$= -1.5$$

To find a midpoint on the coordinate plane, we find the midpoint of the x coordinates and the midpoint of the y coordinates. This will give us the point halfway between the two points.

(x_1, y_1) (x_2, y_2)

$$M = \left(\frac{x_1 + x_2}{2}, \frac{y_1 + y_2}{2}\right)$$

(x , y)

M= (middle of the x's, middle of y's)

(x,y)

Find the midpoint of

a. G(3,2) and H(5,-2)

x's: $\frac{3+5}{2} = \frac{8}{2} = 4$

y's: $\frac{2+-2}{2} = \frac{0}{2} = 0$

$\boxed{(4,0)}$

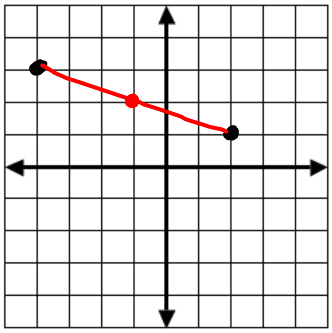
b. L (-7, -4) and M (-5, 1)

x's: $\frac{-7+-5}{2} = \frac{-12}{2} = -6$

y's: $\frac{-4+1}{2} = \frac{-3}{2} = -1.5$

$\boxed{(-6,-1.5)}$

Graph the following endpoints and find the midpoint



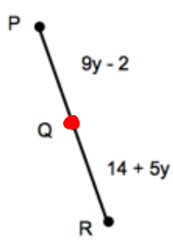
A(-4,3) and B(2,1)

x's: $\frac{-4+2}{2} = \frac{-2}{2} = -1$

y's: $\frac{3+1}{2} = \frac{4}{2} = 2$

$(-1, 2)$

Find the measure of PQ if Q is the midpoint of PR



$9y \cancel{-2} = 14 + 5y$

$\quad \cancel{+2} \qquad +2$

$9y = 16 + \cancel{5y}$

$-5y \qquad \cancel{-5y}$

$\frac{\cancel{4}y}{\cancel{4}} = \frac{16}{4}$

$y = 4$

PQ

$9y - 2$

$9 \cdot 4 - 2$

$36 - 2$

$\boxed{PQ = 34}$

$D = \left\langle \begin{matrix} (1,1) \\ (2,5) \end{matrix} \right\rangle$ $\qquad$ $M: \dfrac{x+x}{2} \quad \dfrac{y+y}{2}$

$\sqrt{(\ \ )^2+(\ \ )^2}$