

9/17/19 - Warm Up Problem

Find the length of each segment

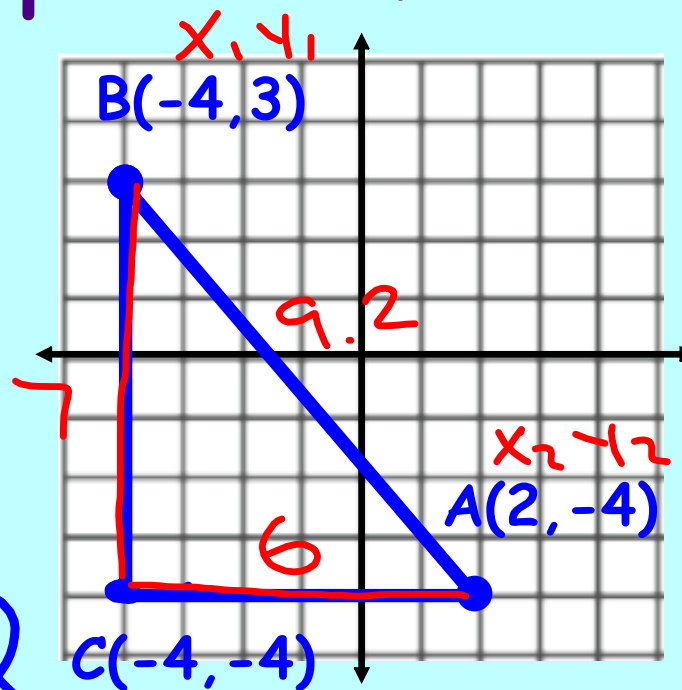
1. $BC = \frac{7}{6}$

2. $AC = \frac{6}{9.2}$

3. $BA = \frac{9.2}{9.2}$

4. What is the perimeter of $\triangle ABC$?

$$7 + 6 + 9.2 = 22.2 \text{ units}$$



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

$$\sqrt{(6)^2 + (-7)^2}$$

concept 4 WS

$$\textcircled{4} R(\overset{x_1, y_1}{0, 5}) \quad S(\overset{x_2, y_2}{12, 3})$$

$$\sqrt{(12-0)^2 + (3-5)^2}$$

$$\sqrt{(12)^2 + (-2)^2}$$

$$\sqrt{144+4}$$

$$\sqrt{148} = 12.2$$

a) $T(x_1, y_1)$ Midpoint $(5, -8)$

$$\left(\frac{5+x}{2}, \frac{-15+y}{2} \right) \quad (5, -1)$$

$$\frac{5+x}{2} = 5 \cdot 2$$

$$5+x=10$$

$$\underline{x=5}$$

$$\frac{-15+y}{2} = -8 \cdot 2$$

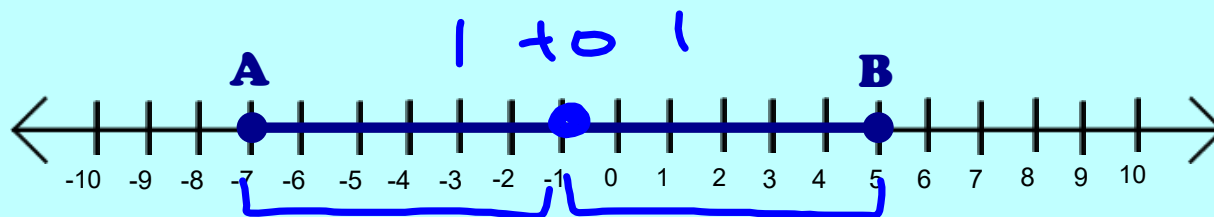
$$-15+y=-16$$

$$\underline{y=-1}$$

Concept 4 - Partitioning a Segment

Goal: Review finding midpoint and distance

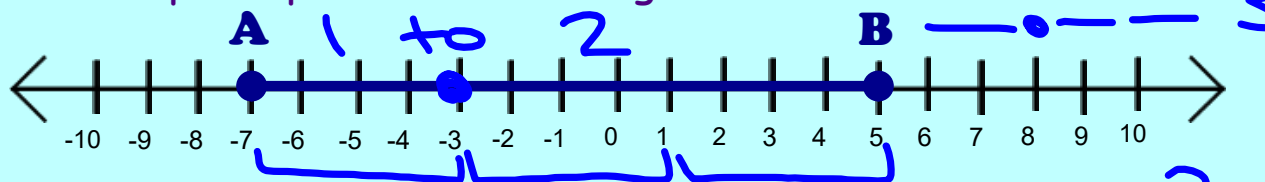
Partition a segment according to a given ratio



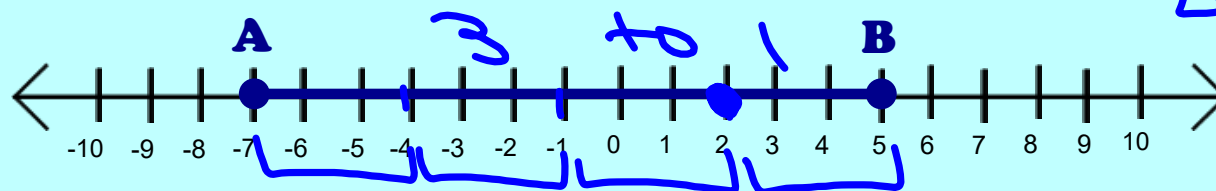
What is the length of AB? 12

Where is the midpoint of AB? -1

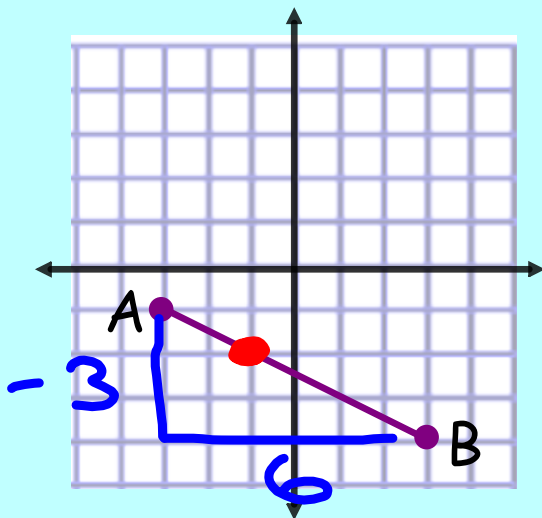
Which point partitions the segment in a 1 to 2 ratio?



Which point partitions the segment in a 3 to 1 ratio?

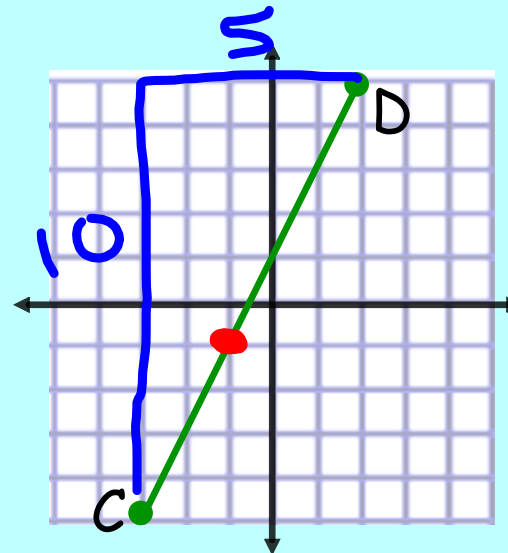


Partition a Segment in the Coordinate Plane



Partition in a 1 to 2 ratio
from point A to B

$$\begin{aligned}
 -3 \cdot \frac{1}{3} &= \frac{-3}{3} = -1 \\
 6 \cdot \frac{2}{3} &= \frac{12}{3} = 4
 \end{aligned}$$



Partition in a 2 to 3 ratio
from point C to D

$$\begin{aligned}
 -2 \cdot \frac{2}{5} &= \frac{-4}{5} = -0.8 \\
 -10 \cdot \frac{3}{5} &= \frac{-30}{5} = -6
 \end{aligned}$$

Partitioning a Segment

Find the coordinates of point P that lies on the directed line segment from $A(-2,1)$ to $B(8,6)$ and partitions the segment in the ratio 2 to 3.

1. Convert ratio into a fraction

$$2 \text{ to } 3 \text{ ratio} = \frac{2}{5}$$

2. Determine the run and rise

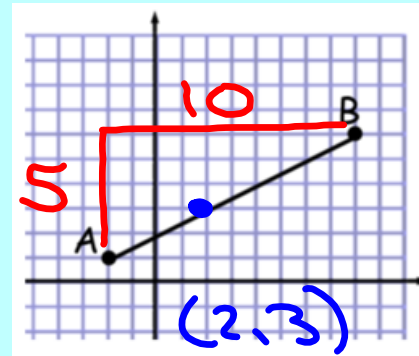
$$X \text{ run} = 10 \cdot \frac{2}{5} = \frac{20}{5} = 4$$

$$Y \text{ rise} = 5 \cdot \frac{2}{5} = \frac{10}{5} = 2$$

3. Calculate the needed fraction of the run and rise

4. Add calculated run and rise to 1st endpoint to get new coordinates.

$$\begin{array}{r} A(-2, 1) \\ +4 \quad +2 \\ \hline 2, 3 \end{array}$$



$$(2, 3)$$

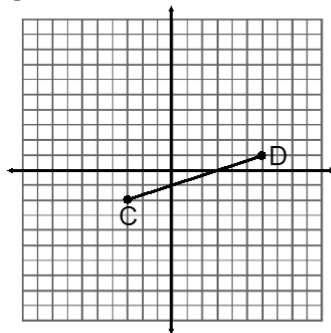
Assignment:

Concept 4 Worksheet (back)

- due by Monday 9/23

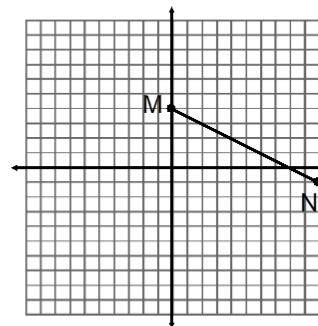
PARTITIONING A SEGMENT

11. Find the coordinates of the point P that lies along the directed line segment from $C(-3,-2)$ to $D(6,1)$ and partitions the segment in the ratio 2 to 1.



Coordinates of P: _____

12. Find the coordinates of point P that lies along the directed line segment from $M(0,4)$ to $N(10,-1)$ and partitions the segment in the ratio of 3 to 2.



Coordinates of P: _____

13. Find the coordinates of the point P that lies along the directed line segment from $R(-3,-4)$ to $S(5,0)$ and partitions the segment in the ratio 2 to 3.

$x \text{ run} = 8 \cdot \frac{2}{5} = \frac{16}{5} = 3.2$
 $y \text{ rise} = 4 \cdot \frac{2}{5} = \frac{8}{5} = 1.6$

$R(-3, -4)$
 $+3.2 + 1.6$
 $P(.2, -2.4)$

14. Find the coordinates of the point P that lies along the directed line segment from $J(-2,5)$ to $K(2,-3)$ and partitions the segment in the ratio 4 to 1.

$y \text{ rise} = -8$

15. Find the coordinates of point P that lies along the directed line segment from $M(5,-5)$ to $N(-5,3)$ and partitions the segment in the ratio 1 to 3.