Warm Up 2/22/23

1. Find $\frac{2}{5}$ of 15.

2. Find $\frac{3}{2}$ of 12.

3. Find $\frac{1}{6}$ of 24.

4. Find $\frac{4}{3}$ of 27.

12.2 Subdividing a Segment in a Given Ratio

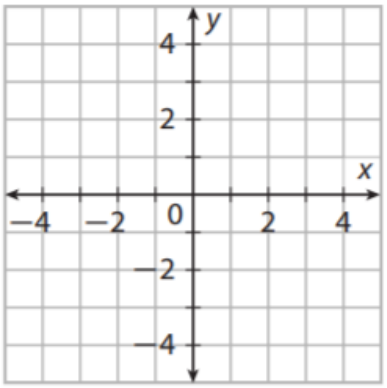
A **directed line segment** is segment between two points A and B with a specified direction from A to B or B to A. To partition a directed line segment is to divide it into two segments with a given ratio.

Find the coordinates of the point P that divides the directed line segment from A to B in the given ratio.

$A(-4, 4), B(2, 1)$; 1 to 2

Step 1 Write a ratio that expresses the distance of point P along the segment from A to B.

Point P is $\frac{\square}{\square + \square} = \frac{\square}{\square}$ of the distance from A to B.



Step 2 Graph the directed line segment. Find the rise and the run of the directed line segment.

$\text{run} = 2 - (-4) = 6$

$\text{rise} = \square - \square = \square$

Step 3 Point P is $\frac{\square}{\square}$ of the distance from point A to point B.

$\frac{\square}{\square}$ of run $= \frac{\square}{\square}(6) = \square$ $\frac{\square}{\square}$ of rise $= \frac{\square}{\square}(\square) = \square$

Step 4 To find the coordinates of point P, add the values from Step 3 to the coordinates of point A.

x-coordinate of point $P = -4 + \square = \square$ y-coordinate of point $P = 4 + \square = \square$

The coordinates of point P are $(\square, \square)$. Plot point P on the above graph.

Try: Find the coordinates of the point P that divides the segment $A(-6, 5), B(2, -3)$ from A to B in the ratio 5 to 3.