DO NOW

What is an equation of a line which passes through (6,9) and is perpendicular to the line whose equation is $4x - 6y = 15$?

$-4x \quad -4x$

$\frac{-6y}{-6} = \frac{-4x}{-6} + \frac{15}{-6}$

$y = \frac{2}{3}x - \frac{5}{2}$

$m = \frac{2}{3}$

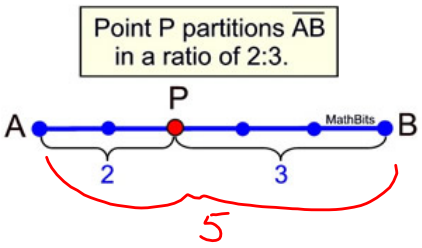
$m = -\frac{3}{2}$

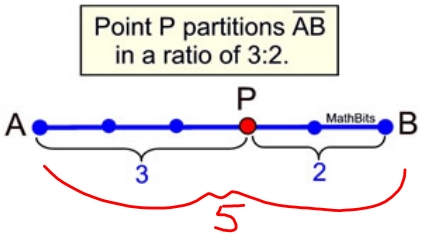
through (6,9)

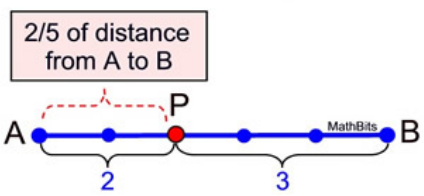
$y - 9 = -\frac{3}{2}(x - 6)$

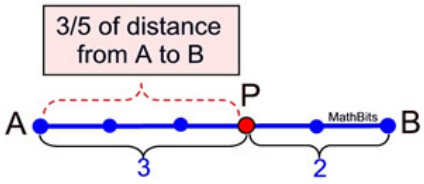
Mar 28-1:13 PM

Partition means to separate or to divide. A line segment can be partitioned into smaller segments which are compared as ratios. Partitions occur on line segments that are referred to as **directed segments.**



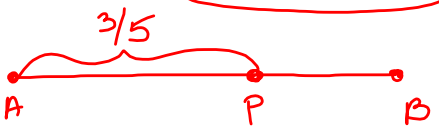






Mar 28-12:59 PM

1) In the following graph, segment AB has endpoints at $A(0,10)$ and $B(15,0)$. We want to locate point P on AB such that $AP : PB = 3 : 2$. What are the coordinates of P?



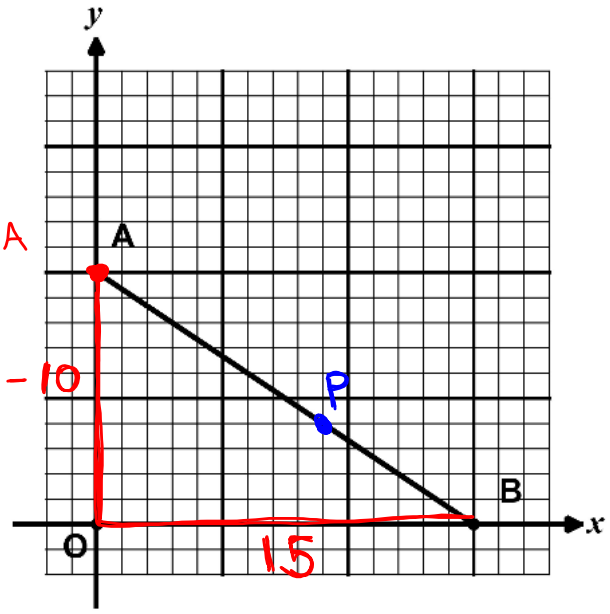
Vertical

$\frac{3}{5}(-10) = -6$ units from point A

Horizontal

$\frac{3}{5}(15) = 9$ units from point A

$P(9,4)$



Apr 3-8:27 AM

2) On the grid to the right EF is plotted with endpoints at:

$E(6, 4)$ and $F(8,3)$

Find the coordinates of point G lying on EF such that $EG : GF = 3 : 4$

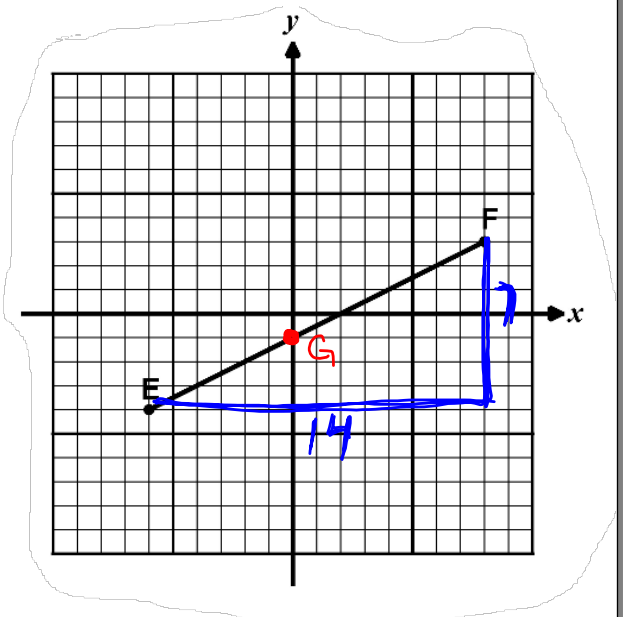
Horizontal: $\frac{3}{7}(14)$

6 units from E

Vertical: $\frac{3}{7}(7)$

3 units from E

$G(0,-1)$



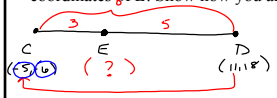
Mar 28-1:02 PM

To partition a line segment without a graph:

- Use the ratio $a : b$ to write a fraction $\frac{a}{a+b}$
- Multiply the fraction by the horizontal and vertical lengths between the endpoints of the segment, $x_2 - x_1$ and $y_2 - y_1$
- Add these lengths to the x- and y-coordinate of your starting point (x_1, y_1)

---

3) Segment CD has point E located on it such that $CE : ED = 3:5$ If the endpoints are located at $C(-5, -6)$ and $D(11,18)$ then find the coordinates of E. Show how you arrived at your answer.



$E\ (-5+6, -6+9)$

$E\ (1,3)$

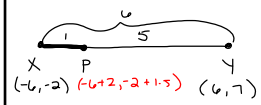
Horizontal: $\frac{3}{8}(16) = 6$ units away from C

$11-(-5)$

Vertical: $\frac{3}{8}(24) = 9$ units away from C

$18-(-6)$

4) Point P is on the directed line segment from point $X(-6, -2)$ to point $Y(6, 7)$ and divides the segment in the ratio 1:5 . What are the coordinates of point P?



H: $\frac{1}{6}(6-(-6)) = \frac{1}{6}(12) = 2$ units

V: $\frac{1}{6}(7-(-2)) = \frac{1}{6}(9) = 1.5$ units

$P(-4, -.5)$

Apr 3-8:19 AM