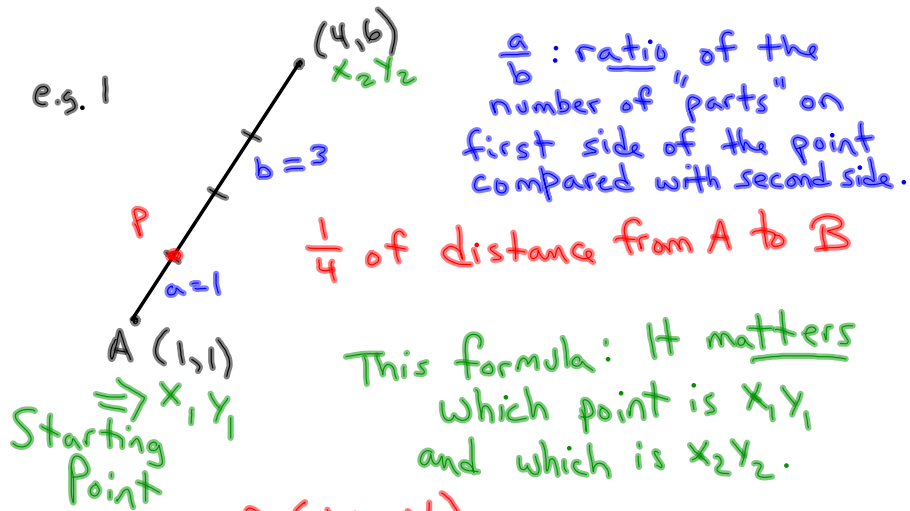


# Determining the Coordinates of a Point



$$P(x, y)$$

$$\frac{ax_2 + bx_1}{a+b} \qquad \frac{ay_2 + by_1}{a+b}$$

$$\frac{(1)(4) + (3)(1)}{1+3} \qquad \frac{(1)(6) + (3)(1)}{1+3}$$

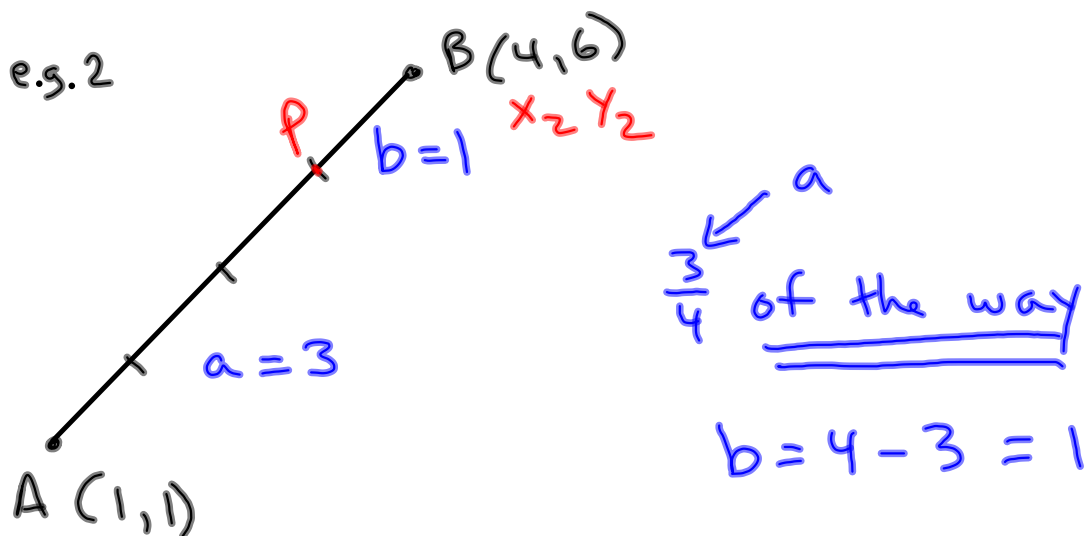
$$\frac{4+3}{4} \qquad \frac{6+3}{4}$$

$$x = \frac{7}{4} \qquad y = \frac{9}{4}$$

$$P\left(\frac{7}{4}, \frac{9}{4}\right)$$

OR  $P\left(1\frac{3}{4}, 2\frac{1}{4}\right)$

OR  $P(1.75, 2.25)$



$(x, y)$   
 $\swarrow \quad \searrow$

$$\frac{ax_2 + bx_1}{a+b} \qquad \frac{ay_2 + by_1}{a+b}$$

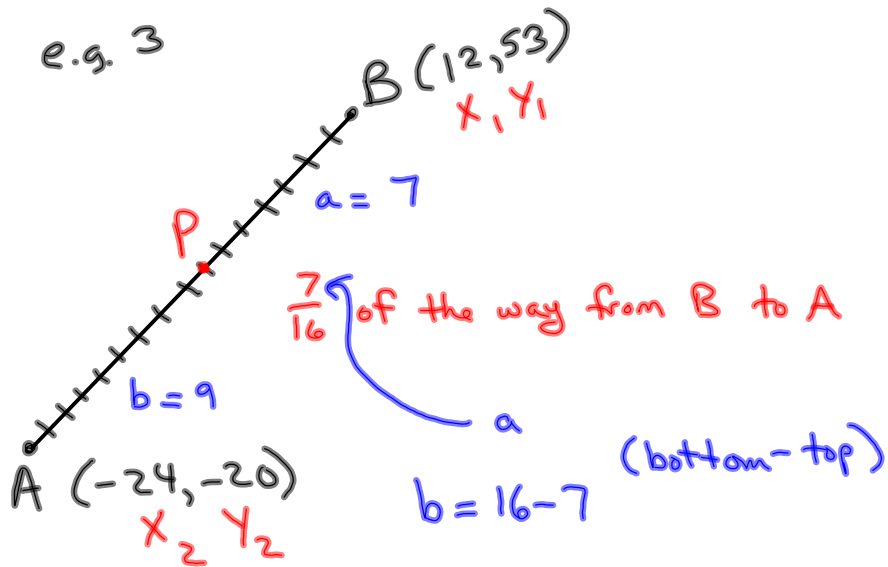
$$\frac{(3)(4) + (1)(1)}{3+1} \qquad \frac{(3)(6) + (1)(1)}{3+1}$$

$$\frac{12+1}{4} \qquad \frac{18+1}{4}$$

$$\left(\frac{13}{4}, \frac{19}{4}\right) \quad \text{is } \boxed{a \ b/c} \ 4 =$$

OR  $\left(3\frac{1}{4}, 4\frac{3}{4}\right)$

OR  $(3.25, 4.75)$



$P(x, y)$

$$\frac{ax_2 + bx_1}{a+b} \qquad \frac{ay_2 + by_1}{a+b}$$

$$\frac{(7)(-24) + (9)(12)}{7+9} \qquad \frac{(7)(-20) + (9)(53)}{7+9}$$

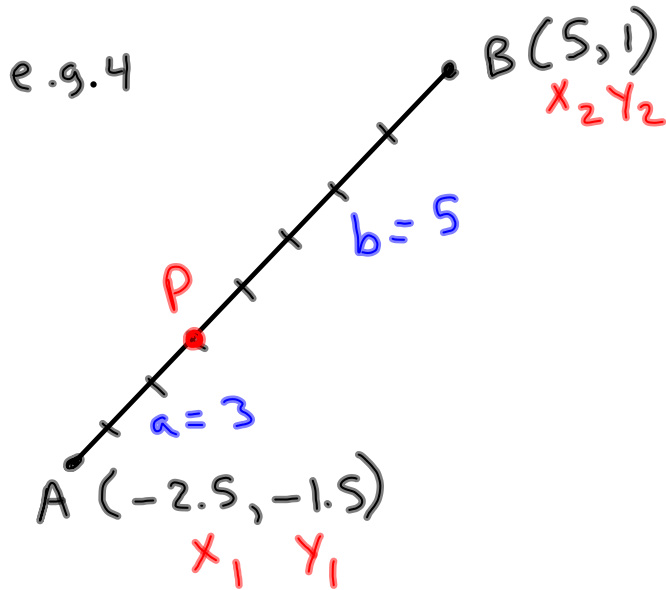
$$\frac{-168 + 108}{16} \qquad \frac{-140 + 477}{16}$$

$$\left( \frac{-60}{16}, \frac{+337}{16} \right)$$

$\left( -\frac{15}{4}, \frac{337}{16} \right)$

OR  $\left( -3\frac{3}{4}, 21\frac{1}{16} \right)$

OR  $(-3.75, 21.06)$



$(x, y)$

$$\frac{ax_2 + bx_1}{a+b}$$

$$\frac{ay_2 + by_1}{a+b}$$

$$\frac{(3)(5) + (5)(-2.5)}{3+5}$$

$$\frac{(3)(1) + (5)(-1.5)}{3+5}$$

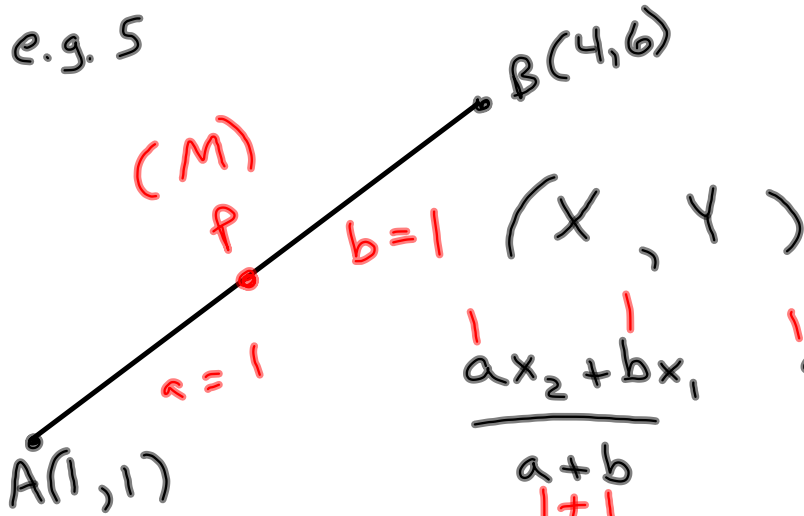
$$\frac{15 - 12.5}{8}$$

$$\frac{3 - 7.5}{8}$$

$$\frac{2.5}{8}, \frac{-4.5}{8}$$

$$(0.31, -0.56)$$

e.g. 5



$$\frac{ax_2 + bx_1}{a+b} \quad \frac{ay_2 + by_1}{a+b}$$

$\frac{1+4}{1+1}$ 
 $\frac{1+6}{1+1}$

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

$$\left( \frac{1+4}{2}, \frac{1+6}{2} \right)$$

$$\left( \frac{5}{2}, \frac{7}{2} \right)$$

OR  $\left( 2\frac{1}{2}, 3\frac{1}{2} \right)$

OR  $(2.5, 3.5)$

Whenever you are finding  
 $a + b$  (the ratio of parts)

and the question reads :

$\frac{m}{n}$  "of the way"

$$a = m$$

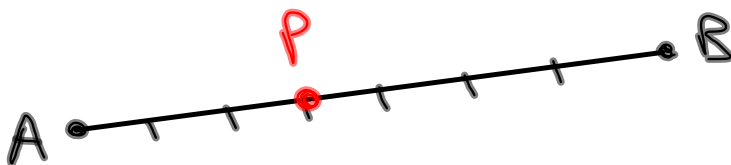
$$b = n - m$$

If the problem reads :  
 "in a ratio of  $\frac{m}{n}$ "

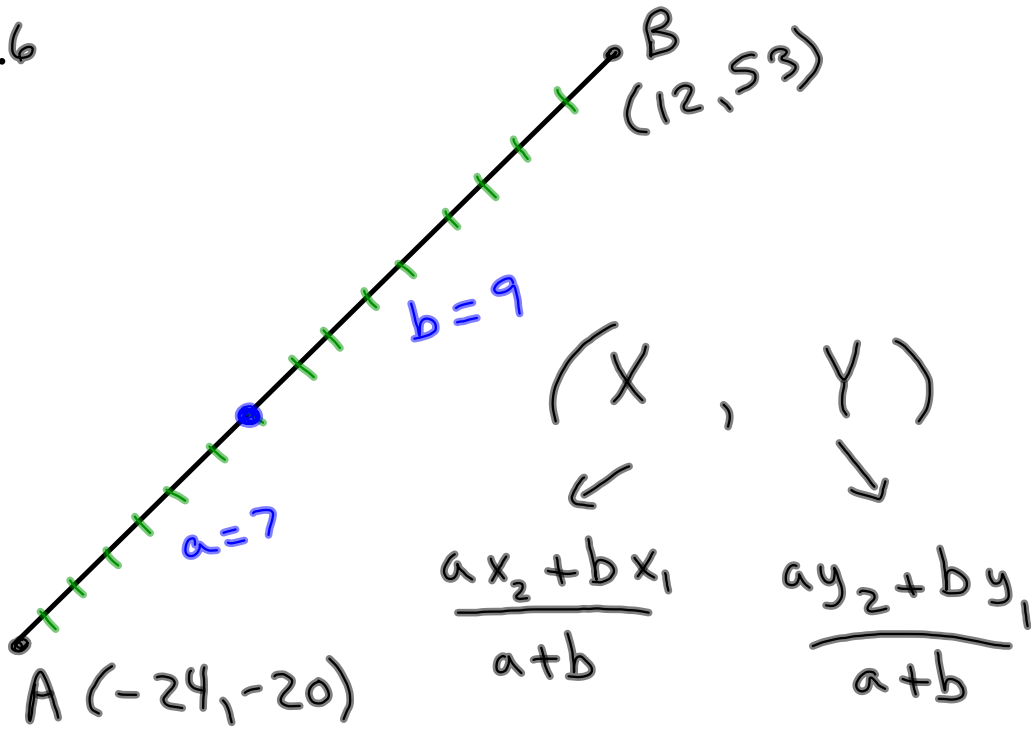
$$a = m$$

$$b = n$$

e.g. If point P divides  $\overline{AB}$  in  
 a ratio of  $\frac{3}{4}$



e.g.6



A (-24, -20)

$x_1, y_1$

$$\frac{(7 \cdot 12) + (9 \cdot -24)}{9 + 7}$$

$$\frac{84 + (-216)}{16}$$

$$\frac{-132}{16} \div 4 = \frac{33}{4}$$

$$\frac{(7 \cdot 53) + (9 \cdot -20)}{9 + 7}$$

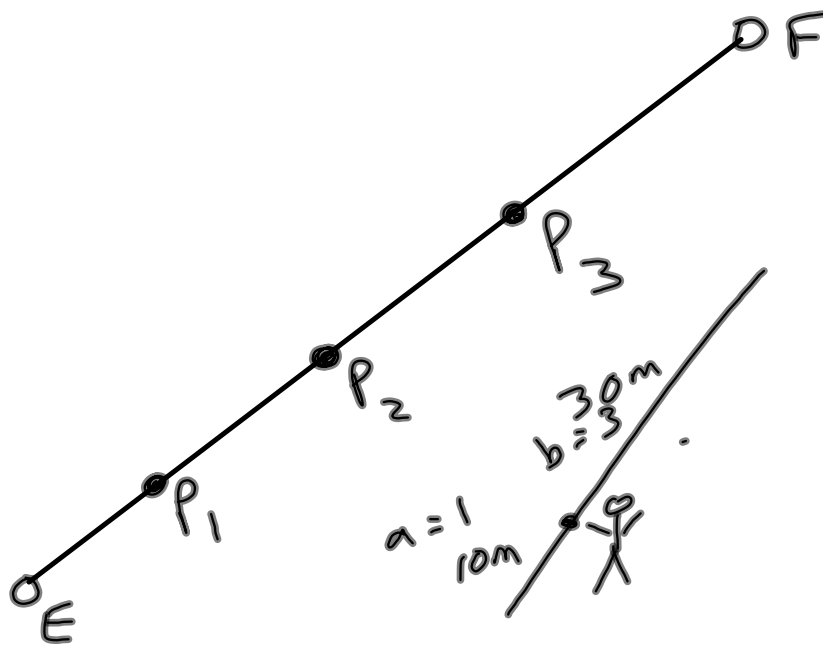
$$\frac{371 + (-180)}{16}$$

$$\frac{191}{16}$$

$$11 \frac{15}{16}$$

ANS:

$$\left(-8 \frac{1}{4}, 11 \frac{15}{16}\right)$$



Review booklet :

finish up to & including  
 p.29  
 Quiz # 4