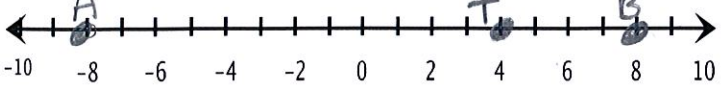
$x_1 + \frac{a}{a+b}(x_2 - x_1)$

Key

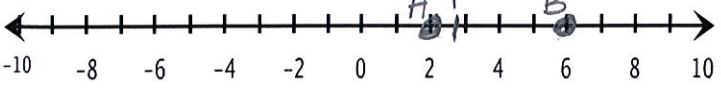
CLASSWORK!!

1. A is at -8 (x_1) and B is at 8 (x_2). Find the point, T, so that T partitions A to B in a 6:2 ratio. $\frac{6}{8}$



$-8 + \frac{6}{8}(8 - -8) = -8 + \frac{6}{8}(16) = -8 + 12 = \boxed{4}$

2. A is at 2 and B is at 6. Find the point, T, so that T partitions A to B in a 1:4 ratio. $\frac{1}{5}$



$2 + \frac{1}{5}(6-2) = 2 + \frac{1}{5}(4) = 2 + \frac{4}{5} = \boxed{2.8}$

3. Mile Markers are used for the Silver Comet trail to help identify where you are on the trail. They start at 1 at the beginning and go up as you continue the trail. Suppose you are riding a bike for exercise.

A. Your starting point is mile marker 3 (x_1) and you end at 12 (x_2). What marker divides your trip into a 2:1 ratio? a b

$3 + \frac{2}{2+1}(12-3) = 3 + \frac{2}{3}(9) = 3 + 6 = \boxed{9}$

B. Your starting point is maker 8 (x_1) and your ending is marker 32 (x_2). What marker is 3/8 the way into your ride?

$8 + \frac{3}{8}(32-8) = 8 + \frac{3}{8}(24) = 8 + 9 = \boxed{17}$

4. Find the coordinates of T that partitions A(4, 8) to B(5, 3) in a 1:3 ratio. a b $\rightarrow \frac{1}{4}$

x_1, y_1 x_2, y_2

$T\left(4 + \frac{1}{4}(5-4),\ 8 + \frac{1}{4}(3-8)\right)$

$\boxed{(4.25,\ 6.75)}$

5. Find the coordinates of T that partitions A(-3, 6) to B(4, 12) in a 2:3 ratio. $\rightarrow \frac{2}{5}$

x_1, y_1 x_2, y_2

$T\left(-3 + \frac{2}{5}(4 - -3),\ 6 + \frac{2}{5}(12-6)\right)$

$\boxed{(-.2,\ 8.4)}$

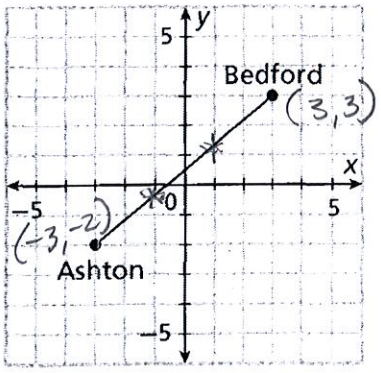
6. Find the coordinates of point P along the directed line segment AB so that AP to PB is the given ratio.

A(-2, -4), B(7, -10); 9 to 1. $\Rightarrow$ 9:1 $\Rightarrow \frac{9}{10}$

$T\left(-2 + \frac{9}{10}(7 - -2),\ -4 + \frac{9}{10}(-10 - -4)\right)$

$\boxed{(6.1,\ -9.4)}$

7. The map shows a straight highway between two towns. Highway planners want to build two new rest stops between the towns so that the two rest stops divided the highway into three equal parts. Find the coordinates of the points at which the rest stops should be built.



1st Stop $\left(-3 + \frac{1}{3}(3 - -3),\ -2 + \frac{1}{3}(3 - -2)\right) = \boxed{(-1, -.3)}$

2nd Stop $\left(-3 + \frac{2}{3}(3 - -3),\ -2 + \frac{2}{3}(3 - -2)\right) = \boxed{(1, 1.3)}$