→ length

A directed line segment is a ___Vector___. It has ___direction___ and ___Magnitude___!

a) Given the points A(-2, 4) and B(7, -2), find the coordinates of the point P on directed line segment $\overline{AB}$ that partitions $\overline{AB}$ in the ratio 1:2.

Ray →

line segment ●——●

Vector ●——→
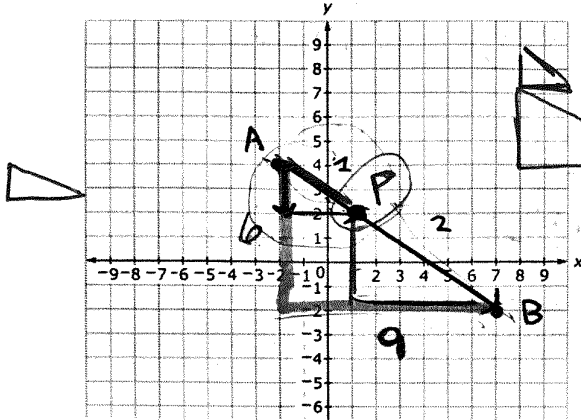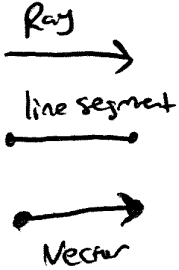
$6 \cdot \frac{1}{3} = 2$

$9 \cdot \frac{1}{3} = 3$

$a^2 + b^2 = c^2$
$2^2 + 3^2 = c^2$
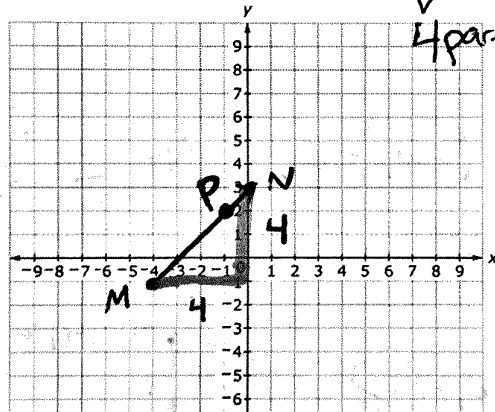$13 = c^2$
$\sqrt{13} = c$

$4^2 + 6^2 = c^2$
$16 + 36 = c^2$
$\sqrt{52} = \sqrt{c^2}$
$2\sqrt{13} = c$
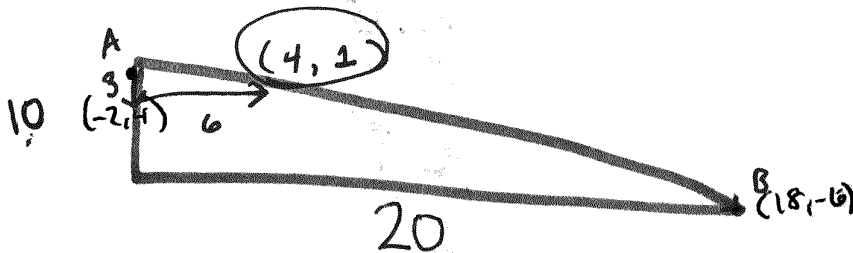
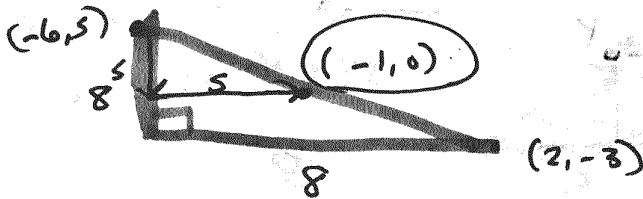b) Given M (−4, −1) and N (0, 3). Find the point P on MN such that MP = 3·PN.

4 parts

c) Given A (-2, 4) and B (18, -6). Find the coordinate that divides the segment from A to B in the ratio 3:7

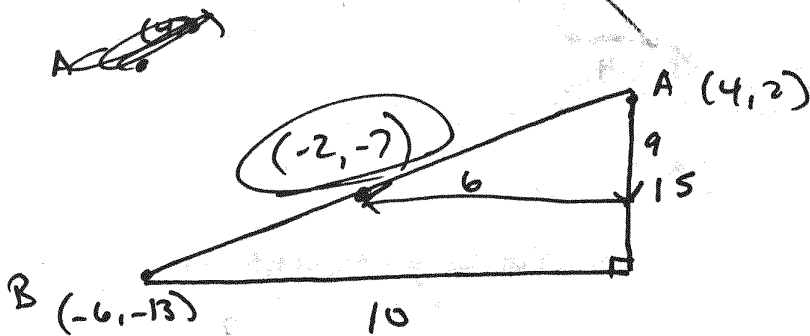$\frac{3}{10}$

(4, 1)

10   (-2, 4)   6

20

B (18, -6)

Pg. 893 (B, 3 – 6)

⑤ A(-6,5) B(2,-3) 5 to 3

(-6,5)
(-6,5)
8⁵
8   5   (-1,0)
8   (2,-3)

⑥ A(4,2)   B(-6,-13)   3 to 2   → 5 parts

A (4,2)
9
(-2,-7)   6   √15
B (-6,-13)   10

$\frac{3}{5} \cdot \frac{+5^3}{1}$
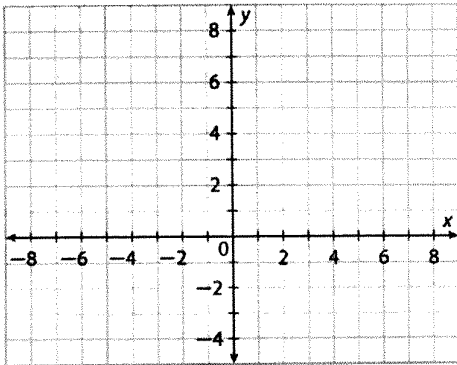
$\frac{3}{5} \cdot \frac{+0^2}{1}$

Subdividing a Segment in a Given Ratio

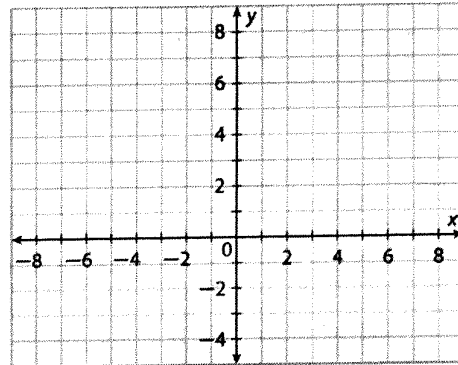***Practice and Problem Solving: A/B***

Find the coordinates of point Q that subdivides the segment with the given endpoints into two sub-segments with the given ratio. In each case, graph both the segment and the point Q.

1. endpoints: $A(-4, -2)$, $B(1, 8)$
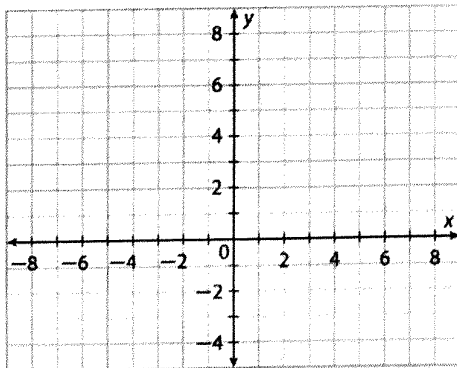   ratio: 4 to 1

   Q (_____, _____)
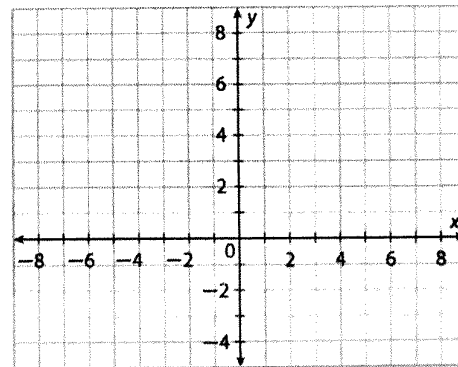
2. endpoints: $S(-1, 4)$, $T(-9, 0)$
   ratio: 1 to 3

   Q (_____, _____)

3. endpoints: $G(-3, -4)$, $Z(0, 8)$
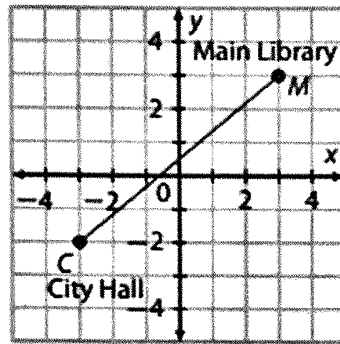   ratio: 2 to 1

   Q (_____, _____)

4. endpoints: $J(-7, 2)$, $K(8, -3)$
   ratio: 2 to 3

   Q (_____, _____)

Word Problem on Back!

The course for a marathon includes a straight segment from city hall to the main library. The planning committee wants to put water stations along this part of the course so that the stations divide the segment into three equal parts. Find the coordinates of the points at the which the water stations should be placed.

(Hint: It won't work out evenly)