Name: _____

Teacher: A. Zito Lakeside Academy MYP 3 - Worksheet # 206.1

Analytical Geometry: Division Point of a Line Segment, Midpoint,
From Extra Practice 4.2 (page R-19 Carrousel)

Change in x : $\Delta x = x_2 - x_1$ *Change in y* : $\Delta y = y_2 - y_1$
Division Point : $\left(x_D = x_1 + \left(\frac{a}{a+b}\right)(\Delta x),\quad y_D = y_1 + \left(\frac{a}{a+b}\right)(\Delta y) \right)$
Remember Ratio vs. Fraction

Ratio	Fraction
$a : b$ *a to b* *ratio* $\frac{a}{b}$	$\frac{a}{a+b}$ *a out of* $a + b$

1) Determine the coordinates of the point dividing line segment $\overline{AB}$ in the given ratio:

a) $A(-2,-4)$, $B(6,4)$, $\frac{1}{3}$

b) $A(2,4)$, $B(12,-1)$, $\frac{3}{2}$

c) $A(-5,3)$, $B(4,-6)$, $\frac{2}{7}$

d) $A(-12,17)$, $B(14,5)$, $\frac{7}{4}$

2) Given line segment $\overline{MN}$:

a) Point $(-1,1)$ is the midpoint of $\overline{MN}$. If the coordinates of M are $(-1,3)$, determine those of N.

b) Point $(5,1)$ is the midpoint of $\overline{MN}$. If the coordinates of N are $(1,-3)$, determine those of M.

3) Point $C(-8,3)$ is the centre of a circle . A diameter if this circle has A and B as its endpoints. The coordinates of point A are $(3,5)$. Find the coordinates of point B.

4) Find the coordinates of the point that divide the line segment whose endpoints are $A(-8,10)$ and $B(10,-2)$ into three congruent sections.

5) A line segment CD is divided into five congruent points P_1, P_2, P_3, P_4. In what ratio does each of the points divide line segment CD.

6) $A(-1,1)$, $B(3,-5)$, $C(5,3)$, are the vertices of a triangle. Calculate the length of each of the medians of the triangle.