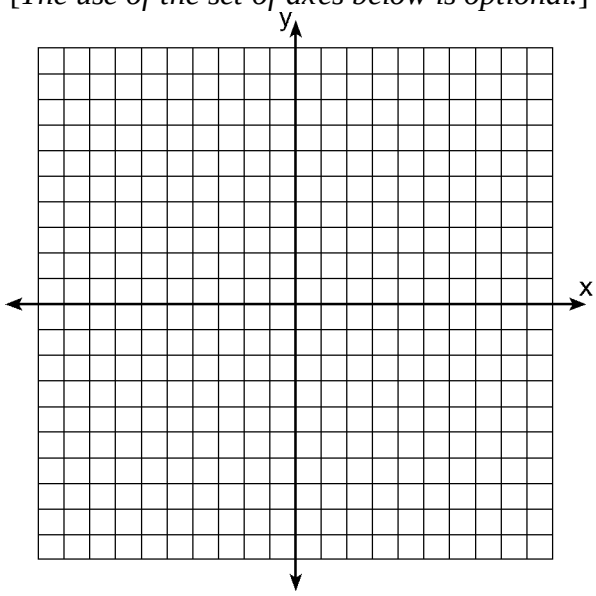
Name: _____

CC Geometry Homework

Partitioning a Line Segment

1) The coordinates of the endpoints of $\overline{AB}$ are $A(-6,-5)$ and $B(4,0)$. Point P is on $\overline{AB}$. Determine and state the coordinates of point P, such that $AP:PB$ is 2:3. [*Show all work.*]

[*The use of the set of axes below is optional.*]



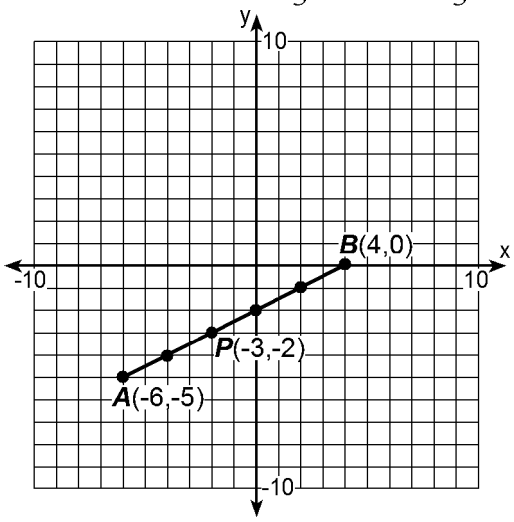
2) Point P is on the directed line segment from point $X(-6,-2)$ to point $Y(6,7)$ and divides the segment in the ratio 1:5. What are the coordinates of point P?

3) $\overline{AB}$ is a directed line segment from $A(11,-6)$ to $B(-10,8)$. Point C lies on $\overline{AB}$ and divides it in the ratio of 3 to 4. Find the coordinates of point C. [*Show all work*.]

4) Point J lies on the directed segment from $P(-3,-8)$ to $Q(2,7)$. If point J divides segment PQ in the ratio of 4 to 1, then find the coordinates of point J. [*Show all work*.]

1) $P(-2,-3)$

WORK SHOWN: $P_x = -6 + \frac{2}{5}(4 - -6) = -6 + \frac{2}{5}(10) = -6 + 4 = -2$; $P_y = -5 + \frac{2}{5}(0 - -5) = -5 + \frac{2}{5}(5) = -5 + 2 = -3$; $P(-2,-3)$



2) $(-4,-\frac{1}{2})$

3) $C(2,0)$

WORK SHOWN: $A(11,-6) = (x_1,y_1)$, $B(-10,8) = (x_2,y_2)$; ratio $= \frac{3}{4} = \frac{a}{b}$, $k = \frac{a}{a+b} = \frac{3}{3+4} = \frac{3}{7}$; partition point $(x,y) =$

$(x_1 + k(x_2 - x_1), y_1 + k(y_2 - y_1)) = (11 + \frac{3}{7}(-10 - (11)), -6 + \frac{3}{7}(8 - (-6))) = (11 + \frac{3}{7}(-21), -6 + \frac{3}{7}(14)) = (11 + 9, -6 + 6) = (2,0)$

4) $J(1,4)$

WORK SHOWN: $P(-3,-8) = (x_1,y_1)$, $Q(2,7) = (x_2,y_2)$; ratio $= \frac{4}{1} = \frac{a}{b}$, $k = \frac{a}{a+b} = \frac{4}{4+1} = \frac{4}{5}$; partition point $(x,y) =$

$(x_1 + k(x_2 - x_1), y_1 + k(y_2 - y_1)) = (-3 + \frac{4}{5}(2 - (-3)), -8 + \frac{4}{5}(7 - (-8))) = (-3 + \frac{4}{5}(5), -8 + \frac{4}{5}(15)) = (-3 + 4, -8 + 12) = (1,4)$