

Name: _____

Date: _____

CC GEOMETRY

TROICI

LESSON #3: DIRECTED LINE SEGMENTS

WORD	DEFINITION	EXAMPLE
Directed Line Segment		
Initial Point		
Partition		
Partition Ratio		
Dilation Scale Factor		

EXAMPLE 1: Directed line segment PT has endpoints whose coordinates are $P(-2, 1)$ and $T(4, 7)$. Determine the coordinates of point J that divides the segment in the ratio 2 to 1. [The use of the set of axes below is optional.]

STEP 1: Graph and connect the directed line segment

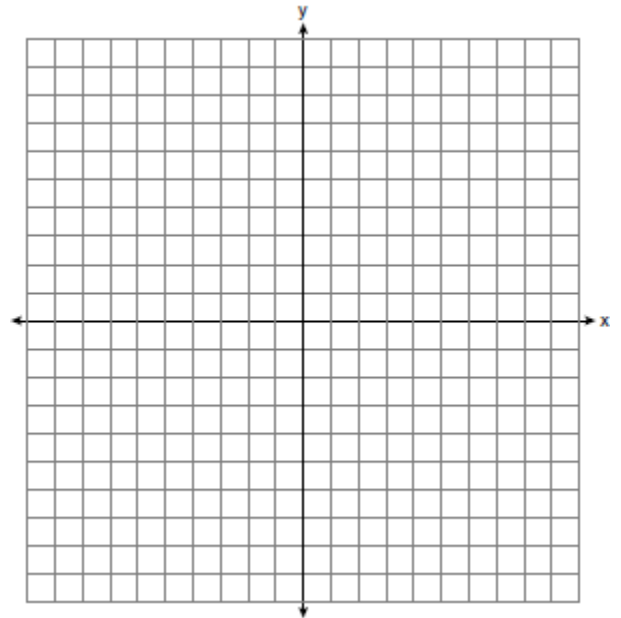
STEP 2: Identify the initial point (x_1, y_1)

STEP 3: Identify the Dilation Scale Factor (k)

WHICH POINT ARE YOU LOOKING FOR? _____

HOW MANY TOTAL PARTS ARE THERE? _____

STEP 4: Identify the slope of the line segment $\left(\frac{RISE}{RUN}\right)$

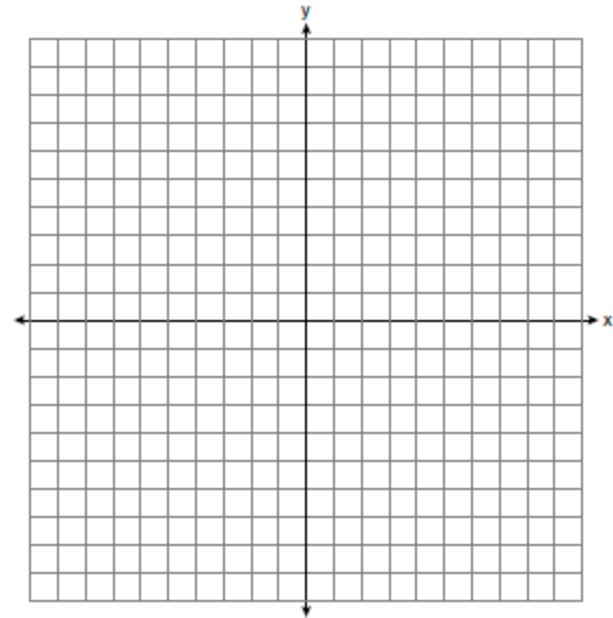


STEP 5: Substitute into the following formula to find the coordinates of J:

$$[x_1 + k(RUN), y_1 + k(RISE)]$$

PRACTICE:

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 $2:3$. [The use of the set of axes below is optional.]



2. Point P is on segment AB such that $AP:PB$ is $4:5$. If A has coordinates $(4, 2)$, and B has coordinates $(22, 2)$, determine and state the coordinates of P .

3. The endpoints of \overline{DF} are $D(1, 4)$ and $F(16, 14)$. Determine and state the coordinates of point E , if $DE:EF = 2:3$.

4. Point Q is on \overline{MN} such that $MQ:QN = 2:3$. If M has coordinates $(3, 5)$ and N has coordinates $(8, -5)$, the coordinates of Q are
- 1) $(5, 1)$
 - 2) $(5, 0)$
 - 3) $(6, -1)$
 - 4) $(6, 0)$
5. What are the coordinates of the point on the directed line segment from $K(-5, -4)$ to $L(5, 1)$ that partitions the segment into a ratio of 3 to 2?
- 1) $(-3, -3)$
 - 2) $(-1, -2)$
 - 3) $\left(0, -\frac{3}{2}\right)$
 - 4) $(1, -1)$
6. 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 ?
- 1) $\left(4, 5\frac{1}{2}\right)$
 - 2) $\left(-\frac{1}{2}, -4\right)$
 - 3) $\left(-4\frac{1}{2}, 0\right)$
 - 4) $\left(-4, -\frac{1}{2}\right)$