G.GPE.B.6 Directed Line Segments

1 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) $(6,0)$

2 Line segment RW has endpoints $R(-4,5)$ and $W(6,20)$. Point P is on $\overline{RW}$ such that $RP:PW$ is $2:3$. What are the coordinates of point P?
1) $(2,9)$
2) $(0,11)$
3) $(2,14)$
4) $(10,2)$

3 The coordinates of the endpoints of $\overline{AB}$ are $A(-8,-2)$ and $B(16,6)$. Point P is on $\overline{AB}$. What are the coordinates of point P, such that $AP:PB$ is $3:5$?
1) $(1,1)$
2) $(7,3)$
3) $(9.6,3.6)$
4) $(6.4,2.8)$

4 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) $\left(0,-\dfrac{3}{2}\right)$
4) $(1,-1)$

5 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) $\left(4,5\dfrac{1}{2}\right)$
2) $\left(-\dfrac{1}{2},-4\right)$
3) $\left(-4\dfrac{1}{2},0\right)$
4) $\left(-4,-\dfrac{1}{2}\right)$

6 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.]
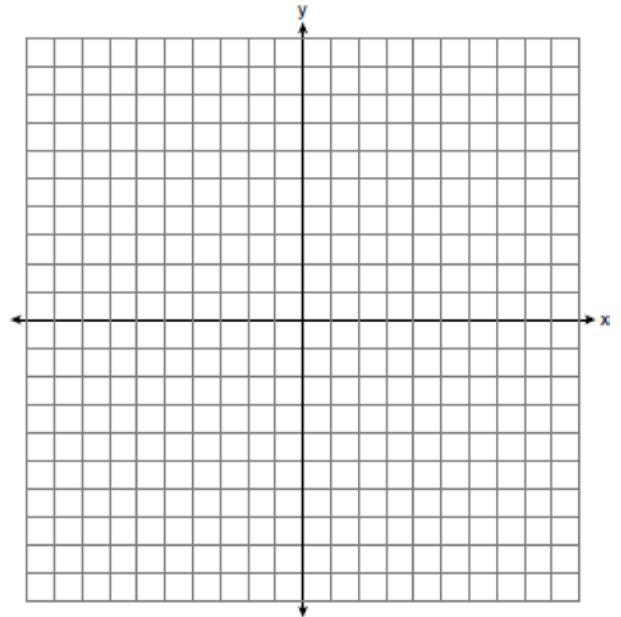
7   Directed line segment PT has endpoints whose coordinates are $P(-2,1)$ and $T(4,7)$. Determine the coordinates of point J that divides the segment in the ratio 2 to 1. [The use of the set of axes below is optional.]
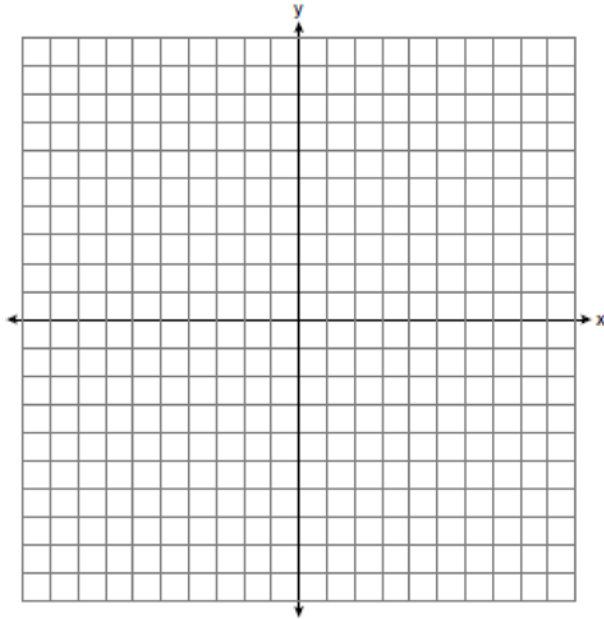
8   The endpoints of $\overline{DEF}$ are $D(1,4)$ and $F(16,14)$. Determine and state the coordinates of point E, if $DE:EF = 2:3$.

9   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.

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Answer Section

1 ANS: 1

$3 + \frac{2}{5}(8-3) = 3 + \frac{2}{5}(5) = 3 + 2 = 5 \quad 5 + \frac{2}{5}(-5-5) = 5 + \frac{2}{5}(-10) = 5 - 4 = 1$

REF: 011720geo

2 ANS: 2

$-4 + \frac{2}{5}(6--4) = -4 + \frac{2}{5}(10) = -4 + 4 = 0 \quad 5 + \frac{2}{5}(20-5) = 5 + \frac{2}{5}(15) = 5 + 6 = 11$

REF: 061715geo

3 ANS: 1

$-8 + \frac{3}{8}(16--8) = -8 + \frac{3}{8}(24) = -8 + 9 = 1 \quad -2 + \frac{3}{8}(6--2) = -2 + \frac{3}{8}(8) = -2 + 3 = 1$

REF: 081717geo

4 ANS: 4

$-5 + \frac{3}{5}(5--5) \quad -4 + \frac{3}{5}(1--4)$

$\quad -5 + \frac{3}{5}(10) \quad\quad -4 + \frac{3}{5}(5)$

$\quad\quad -5 + 6 \quad\quad\quad -4 + 3$
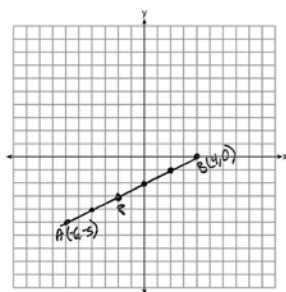
$\quad\quad\quad 1 \quad\quad\quad\quad -1$

REF: spr1401geo

5 ANS: 4

$x = -6 + \frac{1}{6}(6--6) = -6 + 2 = -4 \quad y = -2 + \frac{1}{6}(7--2) = -2 + \frac{9}{6} = -\frac{1}{2}$

REF: 081618geo

6 ANS:

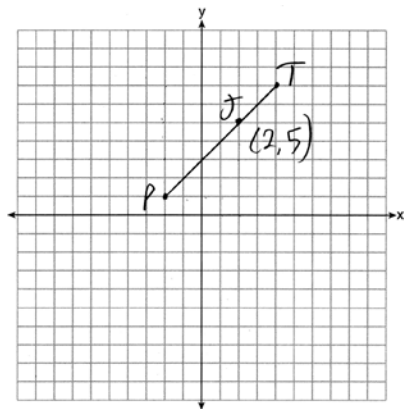$-6 + \dfrac{2}{5}(4 - -6)$ $-5 + \dfrac{2}{5}(0 - -5)$ $(-2, -3)$

$-6 + \dfrac{2}{5}(10)$ $-5 + \dfrac{2}{5}(5)$

$-6 + 4$ $-5 + 2$

-2 -3

REF: 061527geo

7 ANS:

$x = \dfrac{2}{3}(4 - -2) = 4$ $-2 + 4 = 2$ $J(2, 5)$

$y = \dfrac{2}{3}(7 - 1) = 4$

$1 + 4 = 5$

REF: 011627geo

8 ANS:

$\dfrac{2}{5} \cdot (16 - 1) = 6$ $\dfrac{2}{5} \cdot (14 - 4) = 4$ $(1 + 6, 4 + 4) = (7, 8)$

REF: 081531geo

2

9 ANS:

$4 + \dfrac{4}{9}(22-4)$ $2 + \dfrac{4}{9}(2-2)$ $(12,2)$

$4 + \dfrac{4}{9}(18)$ $2 + \dfrac{4}{9}(0)$

$4 + 8$ $2 + 0$

12 2

REF: 061626geo