Name: Answer Key

Date: _____

Day 9: Coordinate Geometry Test Review

Geometry Unit 10

1. The endpoints of one side of a regular hexagon are (-7, -2), and (-4, -4). What is the perimeter of the hexagon?

1) $\sqrt{13}$

2) $\sqrt{45}$

3) $6\sqrt{13}$

4) $6\sqrt{45}$

6 sides

$\sqrt{(-4--7)^2+(-4-2)^2}$

$\sqrt{13}$

3

2. 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)

$\frac{2}{5}$

$3+\frac{2}{5}(8-3)$ $\quad 5+\frac{2}{5}(-5-5)$

5 , 1

1

3. Point P divides $\overline{AB}$ so that $AP:PB = 4:1$. If $A(-9,-5)$ and $B(11,-2)$, the coordinates of P are

1) $\left(7,-2\frac{3}{5}\right)$

2) $\left(6,-\frac{1}{4}\right)$

3) $\left(-4,-3\frac{1}{4}\right)$

4) $\left(-5,-3\frac{3}{5}\right)$

$\frac{4}{5}$

$-9+\frac{4}{5}(11--9)$ $\quad -5+\frac{4}{5}(-2--5)$

7 , $-\frac{13}{5}$

-2.6

1

4. What is an equation of the line that passes through the point $(2,4)$ and is perpendicular to the line whose equation is $3y = 6x + 3$?

1) $y = -\frac{1}{2}x + 5$

2) $y = -\frac{1}{2}x + 4$

3) $y = 2x - 6$

4) $y = 2x$

$y = 2x + 1$ → $m = -\frac{1}{2}$

$y - y_1 = m(x - x_1)$

$y - 4 = -\frac{1}{2}(x - 2)$

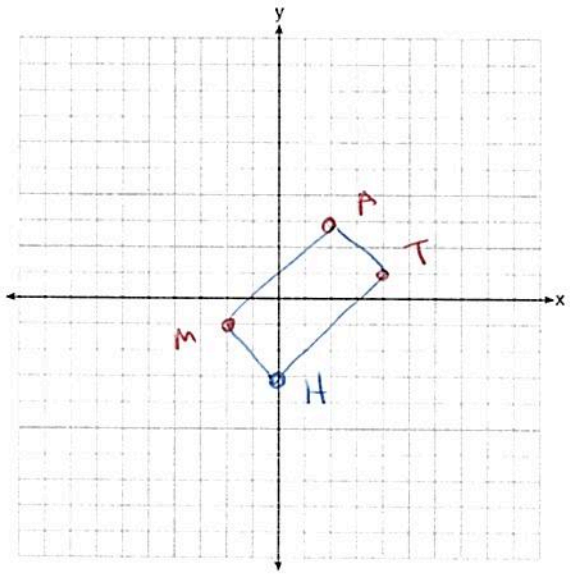
$y - 4 = -\frac{1}{2}x + 1$

$y = -\frac{1}{2}x + 5$

1

5. Quadrilateral *MATH* has vertices at $M(-2,-1)$, $A(2,3)$ and $T(4,1)$. Determine the coordinates of point H to create rectangle MATH.

$H(0,-3)$



6. What is an equation of the line that passes through the point $(-2,3)$ and is parallel to the line whose equation is $y=\frac{3}{2}x-4$?

$m=\frac{3}{2}$

Same slope

$y-y_1=m(x-x_1)$

$y-3=\frac{3}{2}(x+2)$

or

$y=\frac{3}{2}x+6$

7. The coordinates of the endpoints of directed line segment *ABC* are $A(-8,7)$ and $C(7,-13)$. If $AB:BC = 3:2$, the coordinates of *B* are

$\frac{3}{5}$

$-8+\frac{3}{5}(7--8)$ $\quad 7+\frac{3}{5}(-13-7)$

$(1,-5)$

3 distance and $a^2 + b^2 = c^2$

8. A triangle has vertices $J(-4, 1)$, $E(-2, -3)$, $N(2, -1)$ Prove that $\triangle JEN$ is an isosceles right triangle.

[The use of the grid is optional.]

JE $\sqrt{(-2--4)^2 + (-3-1)^2}$ $\sqrt{20}$

EN $\sqrt{(2--2)^2 + (-1-3)^2}$ $\sqrt{20}$

isosceles $\triangle$ has 2 $\cong$ sides.

JN $\sqrt{(2--4)^2 + (-1-1)^2}$ $\sqrt{40}$

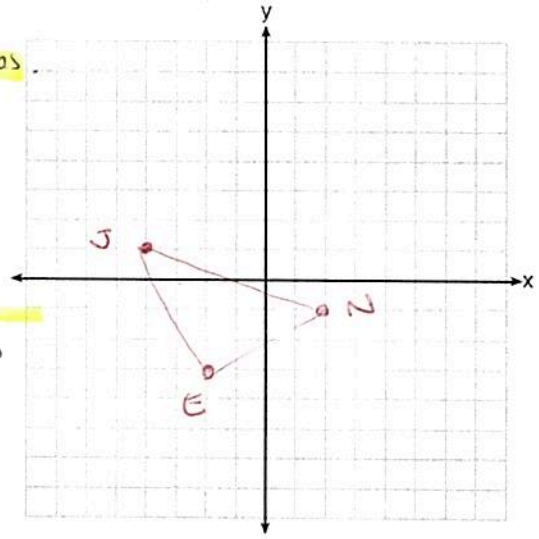
$a^2 + b^2 = c^2$

$\sqrt{20}^2 + \sqrt{20}^2 = \sqrt{40}^2$

$20 + 20 = 40$

$40 = 40$ ✓

Right $\triangle$ because Pythagorean theorem works.



9. Quadrilateral *KATE* has vertices $K(1, 5)$, $A(4, 7)$, $T(7, 3)$, and $E(1, -1)$.

a. Prove that *KATE* is a trapezoid. [The use of the set of axes is optional.]

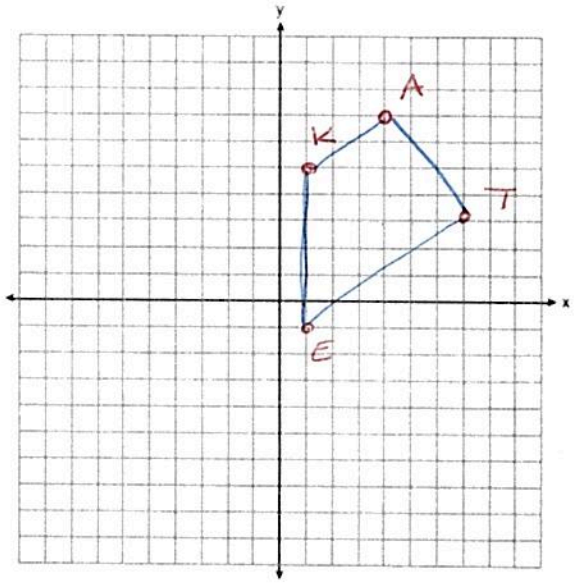
Slope KA: $\frac{2}{3}$

Slope AT: $-\frac{4}{3}$

Slope ET: $\frac{4}{6} = \frac{2}{3}$

Slope KE = $\frac{-6}{0}$

Trapezoid because one pair of opposite sides is parallel.



b. Wisey defines an isosceles trapezoid as a trapezoid with congruent diagonals. Use Wisey's definition to prove that *KATE* is *not* an isosceles trapezoid.

KT $\sqrt{(7-1)^2 + (3-5)^2}$

$\sqrt{40}$

It is not isosceles because diagonals are not $\cong$.

AE $\sqrt{(1-4)^2 + (-1-7)^2}$

$\sqrt{73}$

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

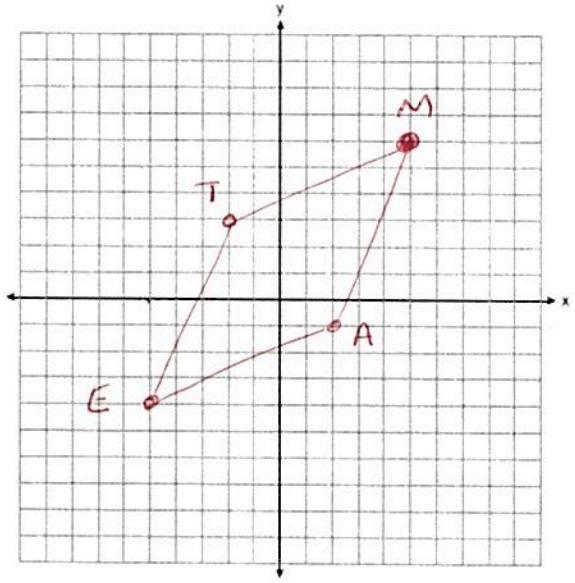
$\frac{1}{5}$

$-4 + \frac{1}{5}(6 - -4)$ $\quad 5 + \frac{1}{5}(20 - 5)$

$P(-2, 8)$

11. Jim is experimenting with a new drawing program on his computer. He created quadrilateral *TEAM* with coordinates $T(-2, 3)$, $E(-5, -4)$, $A(2, -1)$, and $M(5, 6)$. [The use of the grid is optional.]

Jim believes that he has created a rhombus and NOT a square. Prove that Jim is correct.



TE $\sqrt{(-5 - -2)^2 + (-4 - 3)^2}$ $\sqrt{58}$

EA $\sqrt{(2 - -5)^2 + (-1 - -4)^2}$ $\sqrt{58}$

AM $\sqrt{(5 - 2)^2 + (6 - -1)^2}$ $\sqrt{58}$

MT $\sqrt{(5 - -2)^2 + (6 - 3)^2}$ $\sqrt{58}$

TA $\sqrt{(2 - -2)^2 + (-1 - 3)^2}$ $\sqrt{32}$

EM $\sqrt{(5 - -5)^2 + (6 - 4)^2}$ $\sqrt{200}$

TEAM is a rhombus not square.
because all sides are $\cong$
and diagonals are not $\cong$