3306 Honors Geometry **Name_____Answer Key_____**
Summer Work Test Review **Date_____Period_____**

Geometry-Chapter 1
Name the object(s) using the diagram below.

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1. Give two other names for $\overleftrightarrow{AC}$. **Use any two points on $\overleftrightarrow{AC}$. Sample answers: line k, $\overleftrightarrow{CA}$, $\overleftrightarrow{AB}$, $\overleftrightarrow{BA}$, $\overleftrightarrow{BC}$, $\overleftrightarrow{CB}$**

2. Name three points that are collinear. ***A, B,* and *C* or *B, F,* and *E***

3. Give another name for plane $\mathcal{P}$. **Use any three noncollinear points that lie in plane $\mathcal{P}$. Sample answers: plane *ABD* or plane *DCB***

4. What is another name for $\overrightarrow{CB}$? $\overrightarrow{CA}$

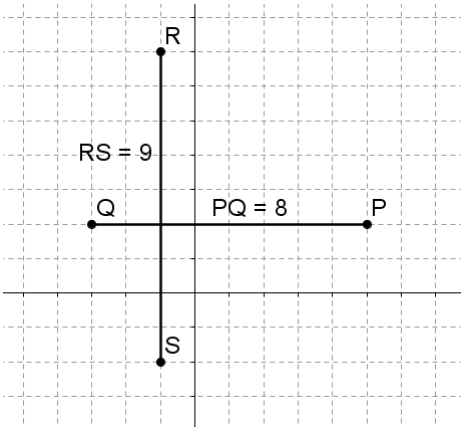
5. Name two pairs of opposite rays. $\overrightarrow{BC}$ **&** $\overrightarrow{BA}$; $\overrightarrow{BE}$ **&** $\overrightarrow{BF}$

6. Give another name for $\overleftrightarrow{EB}$. **Use any two points on $\overleftrightarrow{EB}$. Sample answers: line ℓ, $\overleftrightarrow{BE}$, $\overleftrightarrow{BF}$, $\overleftrightarrow{FB}$, $\overleftrightarrow{FE}$, $\overleftrightarrow{EF}$**

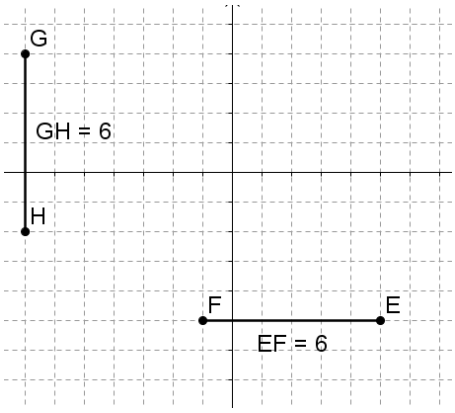
7. Name the intersection of line ℓ and $\overleftrightarrow{AC}$. **Point *B***

Plot the given points in a coordinate plane. Then determine whether the line segments named are congruent.

8. $P(5, 2)$, $Q(-3, 2)$, $R(-1, 7)$, $S(-1, -2)$
   $\overline{PQ}$ and $\overline{RS}$
   No, $\overline{PQ}$ is not congruent to $\overline{RS}$.

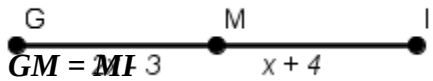


9. $E(5, -5)$, $F(-1, -5)$, $G(-7, 4)$, $H(-7, -2)$
   $\overline{FE}$ and $\overline{GH}$ **Yes, $\overline{FE} \cong \overline{GH}$**



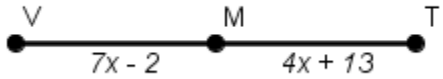
In each diagram, *M* is the midpoint of the segment. Find the indicated length.

10. Find *GM*



$2x - 3 = x + 4$
$x = 7$, so $GM = 11$

11. Find *TV*



$VM = MT$
$7x - 2 = 4x + 13$
$3x = 15$

$x = 5$, so $TV = 66$

12. Find the coordinates of the midpoint of the segment with endpoints *G*(-6, 7) and *H*(10, -1).
The midpoint of $\overline{GH}$ is (2, 3).

13. Find the coordinates of the other endpoint of a segment with given endpoint *Q*(2, -3) and midpoint *M*(-6, -4). **Hint: Draw a picture!! The other endpoint is (-14, -5).**

14. Find *AB* for *A*(-2, 0) and *B*(-3, 6). Round your answer to the nearest hundredth.

$$AB = \sqrt{(-2-(-3))^2 + (0-6)^2} = \sqrt{(1)^2 + (-6)^2} = \sqrt{1+36} = \sqrt{37} \approx 6.08 \text{ units}$$

In 15 – 17, use the given information to find the indicated angle measure.

15. Given $m\angle ABC = 123°$, find $m\angle ABD$.
$2x + 15 + x - 30 = 123$
$3x - 15 = 123$
$3x = 138$
$x = 46$, so $m\angle ABD = 107°$

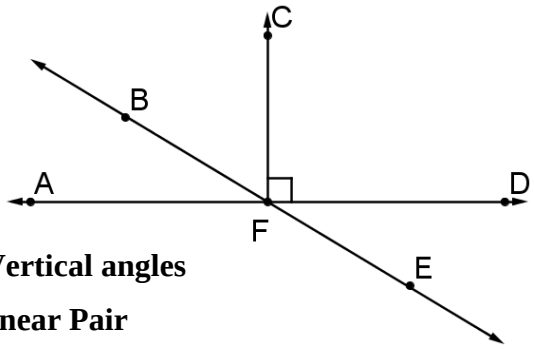
16. Given $m\angle JKL = 70°$, find $m\angle MKL$.
$x + 31 + 4x + 9 = 70$
$5x + 40 = 70$
$5x = 30$
$x = 6$, so $m\angle MKL = 33°$

17. Given $\overrightarrow{BC}$ bisects $\angle RBH$, find $m\angle RBH$.
$6x - 9 = 4x + 7$
$2x = 16$
$x = 8$, so $m\angle RBH = 78°$

18. Plot the points below in a coordinate plane and draw $\angle TUV$. Classify the angle. Then give the coordinates of a point that lies in the interior of the angle.
T(-1, -2), *U*(1, 4), *V*(-2, 4)
$\angle TUV$ is an acute angle; (-1,3) is one point that is in the interior of $\angle TUV$.

19. $\angle 1$ and $\angle 2$ are complementary angles and $\angle 2$ and $\angle 3$ are supplementary angles. If $m\angle 1 = 36°$, find $m\angle 2$ and $m\angle 3$.
$m\angle 2 = 54°$, $m\angle 3 = 126°$

20. If $m\angle BFC = 30°$, find the indicated measure.



a. $m\angle AFB$ **= 60°**

b. $m\angle AFE$ **= 120°**

c. $m\angle DFE$ **= 60°**

d. $m\angle CFE$ **= 150°**

e. What kind of angles are $\angle AFB$ and $\angle DFE$? **Vertical angles**

f. What kind of angles are $\angle AFE$ and $\angle$DFE? **Linear Pair**

Algebra Skills Review

Simplify the radical expressions

21. $\sqrt{27} = 3\sqrt{3}$

22. $3\sqrt{250} = 15\sqrt{10}$

23. $3\sqrt{2} - \sqrt{3} + 6\sqrt{3} - 5\sqrt{18} = 5\sqrt{3} - 12\sqrt{2}$

24. $\dfrac{\sqrt{24}}{\sqrt{4}} = \sqrt{6}$

25. $\left(3\sqrt{5}\right)\left(4\sqrt{20}\right) = 120$

Solve the following equations or systems of equations.

26. $x^2 - 5x + 6 = 0$ $\quad (x-3)(x-2) = 0$ $\quad x = 3,2$

27. $4x - 5 = x - x^2$ $\quad x^2 + 3x - 5 = 0$ $\quad \dfrac{-3 \pm \sqrt{9 - 4(1)(-5)}}{2} = \dfrac{-3 \pm \sqrt{29}}{2}$

28. $3(x-11)^2 = 21$ $\quad (x-11)^2 = 7$ $\quad \sqrt{(x-11)^2} = \sqrt{7}$ $\quad x - 11 = \pm\sqrt{7}$ $\quad x = 11 \pm \sqrt{7}$

29. $6x - 3y = -9$
$x + 3y = -12$ $\quad$ (-3, -3)

30. $4x + 3y = 31$
$y = 2x + 7$ $\quad$ (1,9)

Putting It Together

Use the given information to find the indicated measure or value.

31. Given that point B is between A and C on AC. Find AB and BC.

AB = $4x$ +3 AB + BC = AC AB = 4(8) +3 = 35

BC = $8x$-11 $10.5x + 4 = 4x + 3 + 8x - 11$ BC = 8(8)-11 = 53

AC = $10.5x$ +4 $x = 8$

32. Use the segment addition postulate to prove that these points are collinear.

A(-1, -8) B(4,7) C(6, 13) AB + BC = AC

AB = $\sqrt{=(-1-4)^2+(-8-7)^2} = \sqrt{250} = \sqrt{25} * \sqrt{10} = 5\sqrt{10}$

BC = $\sqrt{=(4-6)^2+(7-13)^2} = \sqrt{40} = \sqrt{4} * \sqrt{10} = 2\sqrt{10}$

AC = $\sqrt{=(-1-6)^2+(-8-13)^2} = \sqrt{490} = \sqrt{49} * \sqrt{10} = 7\sqrt{10}$

Since $5\sqrt{10} + 2\sqrt{10} = 7\sqrt{10}$, the points ARE collinear

33. The sum of the measures of two complementary angles exceeds the difference of the measures of their supplements by 32°. Find the measure of each angle.

Write 2 equations: $x + y = 90$ and $(180 - x) - (180 - y) + 32 = 90$ simplifies $-x + y = 58$

Add to eliminate:

$$\begin{array}{rl} & x + y = 90 \\ + & -x + y = 58 \\ \hline & 2y = 148 \end{array}$$

$y = 74°$

$x = 16°$

34. Given $\angle A$ and $\angle B$ are complementary and $m\angle A = (2x^2 + 35)°$ and $m\angle B = (x + 10)°$, What are the measures of the angles? (*Could have two possible answers*).

$m\angle A + m\angle B = 90$ Since the equation is a quadratic, we will factor to solve.

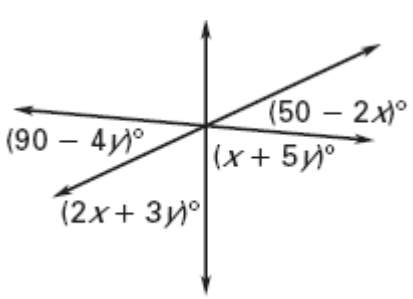
$2x^2 + x + 45 = 90$ A = $2(9/2)^2+35$ = 75.5 or $2(-5)^2+35$ = 85

$2x^2 + x - 45 = 0$ B = (9/2)+10 = 14.5 or (-5)+10 = 5

$(2x - 9)(x + 5) = 0$ When x = 4.5, A = 75.5 and B = 14.5

$x = 9/2 \quad x = -5$ When x = -5, A = 85, B=5

35. Find the values of x and y shown in the diagram.



$50 - 2x = 90 - 4y \longrightarrow -2x + 4y = 40$

$2x + 3y + x + 5y + 50 - 2x = 180 \longrightarrow x + 8y = 130$

To eliminate, multiply 2nd equation by 2 and add it to the first.

$20y = 300$ *y = 15, x = 10*