Geometry HW #____ Name_____

Chapter 2 Review

Period____ Column_____

1. Use this conditional statement: If a figure is a square, then it is a rectangle.

a) What is the hypothesis?

b) What is the conclusion?

c) Write the converse.

d) Is the converse true or false?

2. Give a counterexample to show why the following statement is false.
   If $\angle A \cong \angle B$, then $\angle A$ and $\angle B$ are vertical angles.

3. Rewrite the biconditional statement below as two conditional statements.
   The lengths of two segments are equal if and only if the segments are congruent.

4. Combine the two conditional statements into a biconditional statement.
   If line k bisects $\overline{XY}$, then line k intersects $\overline{XY}$ at its midpoint.
   If line k intersects $\overline{XY}$ at its midpoint, then line k bisects $\overline{XY}$.

5. Justify each step with a property of algebra:

a. $\frac{2}{3}x = 8 - 2x$ a._____

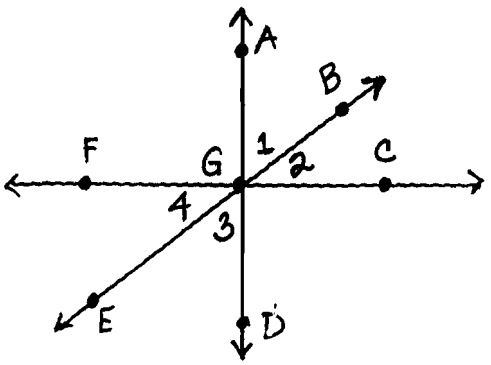
b. $3\left(\frac{2}{3}x\right) = 3(8-2x)$ b._____

c. $2x = 24 - 6x$ c._____

d. $8x = 24$ d._____

e. $x = 3$ e._____

6. Use the figure below and write a reason for each statement.



a. $FG + GC = FC$

b. If $\overrightarrow{GB}$ bisects $\angle AGC$, then $m\angle 1 = m\angle 2$.

c. If G is the midpoint of $\overline{FC}$, then $FG = GC$.

d. $m\angle 1 + m\angle 2 = m\angle AGC$

e. $\angle 1 \cong \angle 3$

f. If $\overrightarrow{GA} \perp \overrightarrow{GC}$, then $\angle AGC$ is a right angle.

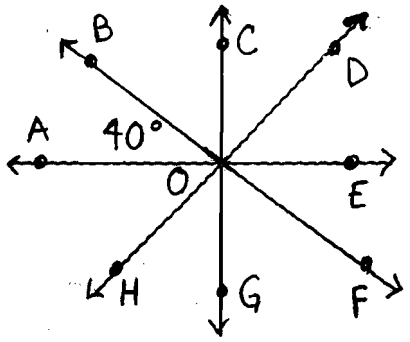
g. If $\overrightarrow{GE}$ bisects $\angle FGD$, then $m\angle 4 = \frac{1}{2} m\angle FGD$.

h. If $\angle 3$ and $\angle 4$ are complementary, then $m\angle 3 + m\angle 4 = 90$.

i. If $m\angle CGD = 90$, then $\angle CGD$ is a right angle.

j. If G is the midpoint of $\overline{AD}$, then $AG = \frac{1}{2} AD$.

7. In the diagram, $\overrightarrow{OC}$ bisects $\angle BOD$, $\overrightarrow{OB} \perp \overrightarrow{OD}$, and $m\angle BOA = 40$.



a. $m\angle BOC =$ b. $m\angle FOG =$

c. $m\angle AOH =$ d. $m\angle HOE =$

e. $m\angle HOF =$ f. $m\angle AOF =$

g. Name a supplement of $\angle BOE$.

h. Name a complement of $\angle COD$.

i. Name an angle adjacent to $\angle HOG$.

j. Name the sides of $\angle AOD$.

8. An angle's measure is 29°. The measure of its complement is _____ and the measure of its supplement is _____.

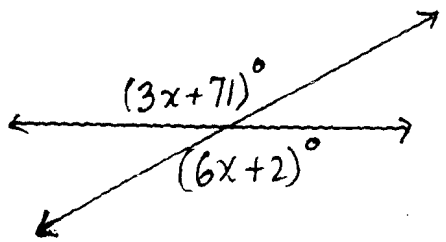
9. The measure of an angle is 3y. The measure of its complement is _____ and the measure of its supplement is _____.

* SHOW WORK *

10. $\angle A$ and $\angle B$ are complementary, $m\angle A = x + 10$, and $m\angle B = 2x - 7$. Find $m\angle B$.

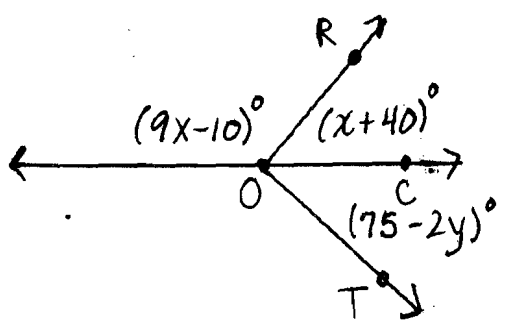
11. $\angle C$ and $\angle D$ are supplementary, $m\angle C = y - 9$, and $m\angle D = 4y + 14$. Find $m\angle D$.

12. Find the value of x.



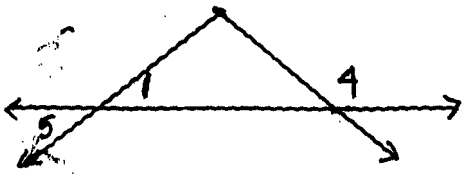
13. The measure of the complement of an angle is three more than twice the measure of the angle.. Find the measure of the angle_____ and its complement_____.
(Write an equation & show work)

14. $\overrightarrow{OC}$ bisects $\angle ROT$. Find x and y.



15. Given: $\angle 1$ and $\angle 4$ are supplementary

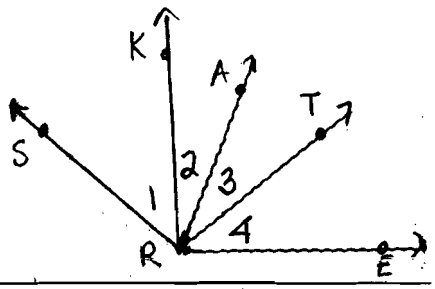
Prove: $m\angle 5 + m\angle 4 = 180$



STATEMENTS	REASONS
1. $\angle 1$ and $\angle 4$ are supplementary	1.
2. $m\angle 1 + m\angle 4 = 180$	2.
3. $m\angle 1 = m\angle 5$	3.
4.	4.

16. Given: $m\angle 1 = m\angle 4$; $\overrightarrow{RA}$ bisects $\angle KRT$

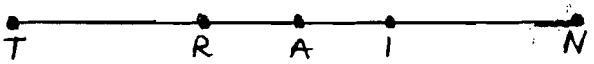
Prove: $m\angle SRA = m\angle ERA$



STATEMENTS	REASONS
1. $\overrightarrow{RA}$ bisects $\angle KRT$	1.
2. $m\angle 2 = m\angle 3$	2.
3. $m\angle 1 = m\angle 4$	3.
4. $m\angle 2 + m\angle 1 = m\angle 3 + m\angle 4$	4.
5. $m\angle 2 + m\angle 1 = m\angle$ _____ $m\angle 3 + m\angle 4 = m\angle$ _____	5.
6.	6.

17. Given: A is the midpoint of $\overline{RI}$; $TA = AN$

Prove: $TR = IN$



STATEMENTS	REASONS
1. $TA = AN$	1.
2. $TA =$ _____ + _____ $AN =$ _____ + _____	2.
3. $TR + RA = AI + IN$	3.
4. A is the midpoint of $\overline{RI}$	4.
5. $RA = AI$	5.
6.	6.