Name **ANSWERS** Period_____ Date_____
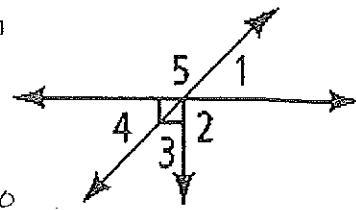
Geometry 22: Practice with (1.2→) 1.5

1. Use the diagram at the right to decide if each is true or false. Explain

a. ∠2 and ∠5 are adjacent angles. False, Don't share a side

b. ∠1 and ∠4 are vertical angles. True

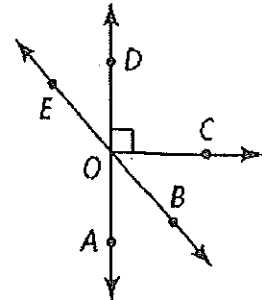c. ∠4 and ∠5 are complementary. False, they are lin. pr, so supplementary

2. Name an angle or angles in the diagram described by each of the following.
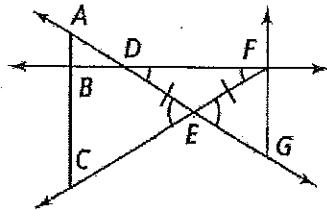
a. complementary to ∠BOC   ∠BOA

b. supplementary to ∠DOB   ∠AOB

c. adjacent to ∠AOC   ∠DOC

3. For the following exercises, can you make each conclusion from the information in the diagram below? Explain.

a. ∠BCE ≅ ∠FGE   NO

c. $\overline{DE} \cong \overline{EF}$ yes

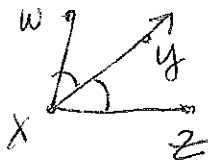b. $\overline{FE} \cong \overline{EG}$ NO

d. ∠ADB and ∠FDE are vertical angles   yes

4. Sketch the following situations with appropriate tick marks.

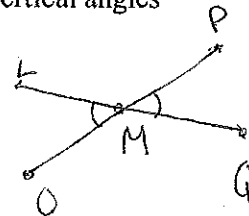a. ∠ABC and ∠CBD form a linear pair.
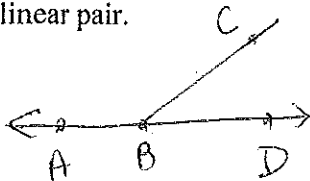
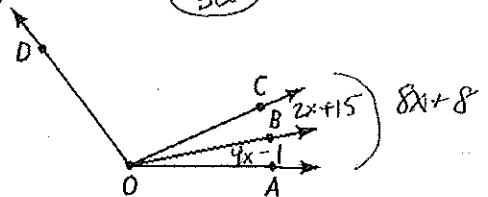b. $\overrightarrow{XY}$ bisects ∠WXZ

c. ∠LMO and ∠PMQ are vertical angles

5. Using the diagram below, given that $m\angle AOB = 4x - 1$; $m\angle BOC = 2x + 15$; $m\angle AOC = 8x + 8$. **Solve for x. Find the angle measures.** (11°) (21°) (32°)

$$4x-1 + 2x+15 = 8x+8$$
$$6x+14 = 8x+8$$
$$6 = 2x$$
$$x=3$$

6. Using the diagram below, given that $\overrightarrow{OB}$ **bisects** ∠COA. **Given that** $m\angle AOB = 3x + 8$ **and** $m\angle BOC = 2x + 14$. **What are** $m\angle AOB$ **and** $m\angle AOC$? (26°) (52°)

$$3x+8 = 2x+14$$
$$x = 6$$
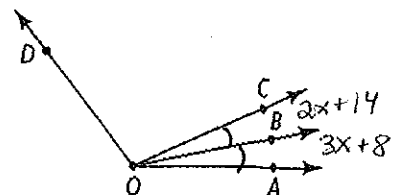
7. $\angle JKL$ and $\angle MNP$ are complementary; $m\angle JKL = 2x - 3$ and $m\angle MNP = 5x + 2$. What are $m\angle JKL$ and $m\angle MNP$? Show a check for your answer.

$(23°)$ $(67°)$

$$2x - 3 + 5x + 2 = 90$$
$$7x - 1 = 90$$
$$7x = 91$$
$$x = 13$$

8. $\overline{QS}$ bisects $\angle PQR$. Solve for x and find $m\angle PQR$. *Hint: Draw a diagram*
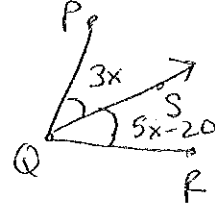
a. $m\angle PQS = 3x;\ m\angle SQR = 5x - 20$

$$3x = 5x - 20$$
$$20 = 2x$$
$$\boxed{x = 10}$$
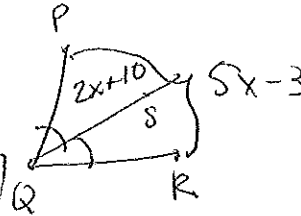$$\boxed{m\angle PQR = 60°}$$

b. $m\angle PQS = 2x + 10;\ m\angle PQR = 5x - 3$
56°

$$2x + 10 + 2x + 10 = 5x - 3$$
$$4x + 20 = 5x - 3$$
$$\boxed{23 = x}$$
$$\boxed{m\angle PQR = 112°}$$

9. The measure of one angle is $38°$ less than the measure of its *complement*. Find the measure of each angle.

$x = $ angle
$y = $ its complement

$$x + y = 90$$
$$x = y - 38$$
$$y - 38 + y = 90$$
$$2y - 38 = 90$$
$$2y = 128$$
$$y = 64$$

$\boxed{64° \text{ and } 26°}$

10. If $\angle 1$ and $\angle 2$ are form a linear pair. $m\angle 1$ is 12 more than 6 times the $m\angle 2$, find $m\angle 1$ and $m\angle 2$.

$m\angle 1 = x = $
$m\angle 2 = y$

$m\angle 1 = 6(m\angle 2) + 12$

$$x = 6y + 12$$
$$x + y = 180$$

$$6y + 12 + y = 180$$
$$7y + 12 = 180$$
$$7y = 168$$
$$y = 24$$

$\boxed{m\angle 1 = 156° \\ m\angle 2 = 24°}$

11. If $\angle 1$ and $\angle 2$ are complementary, $m\angle 1 = x^2 - 2x$ and $m\angle 2 = 27°$. Find x and $m\angle 1$. Check your answers!

$$x^2 - 2x + 27 = 90$$
$$x^2 - 2x - 63 = 0$$
$$(x - 9)(x + 7) = 0$$
$$\boxed{x = 9, -7}$$

$m\angle 1 = x^2 - 2x$

$9^2 - 2(9)$ or $(-7)^2 - 2(-7)$
$81 - 18$ $\qquad$ $49 + 14$
$(63°)$ $\qquad$ $(63°)$