Chapter 2 – Reasoning in Geometry
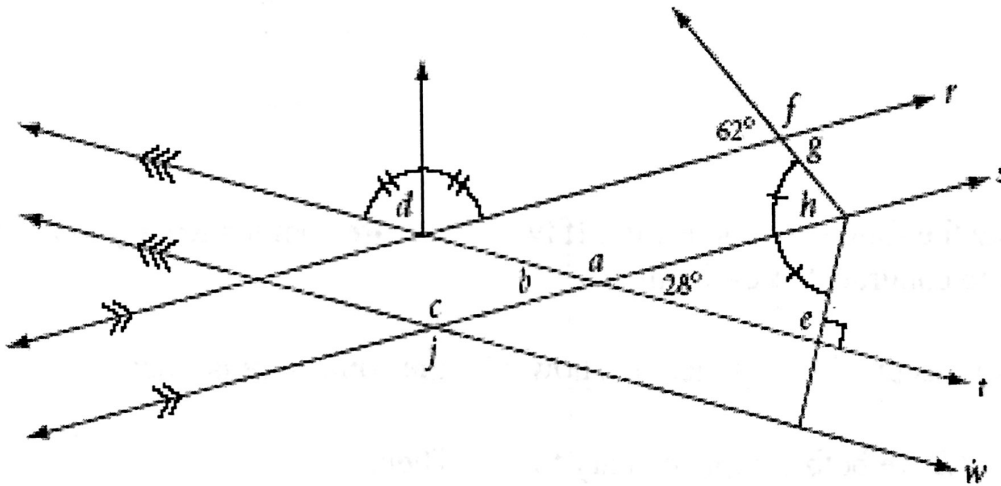## GEOMETRY 3412 REVIEW

Name: Key

Date: _____ Class: _____

In Problems 1–3, complete each statement.

1. If two angles are vertical angles, then they are _Congruent_.

2. If two angles are a linear pair of angles, then they are _Supplementary_.

3. If two angles are equal in measure and _Complementary_, then each angle measures 45°.

4. Find the measure of each lettered angle in the figure.

$a =$ _152°_ $b =$ _28°_ $c =$ _152°_

$d =$ _76°_ $e =$ _90°_ $f =$ _118°_

$g =$ _62°_ $h =$ _62°_ $j =$ _152°_

5. Write the converse of the statement: If two parallel lines are cut by a transversal, then the alternate interior angles are congruent.

    If two lines cut by a transversal form congruent alternate interior angles, then the lines are parallel.

For #6-7, write the statement that follows the following pair of true statements:

6. If Jesse watches football, then he will eat snacks. & If it is Sunday, then Jesse watches football.

    If it is Sunday, then Jesse will eat snacks.

7. If the sky is falling, then Chicken Little will panic. & The sky isn't falling.

    Chicken Little will not panic.

8. Suppose you make the following conjecture: If two angles are complementary to the same angle, then they are congruent to each other.

Complete the following deductive argument to show why the conjecture is true:

Assume that $\angle A$ and $\angle B$ are both complementary to $\angle C$. Then,

    a. $m\angle A + m\angle C =$ ___90___ and $m\angle B + m\angle C =$ ___90___

Solve the first equation for $m\angle A$.

    b. $m\angle A =$ ___$90 - m\angle C$___

Solve the second equation for $m\angle B$.

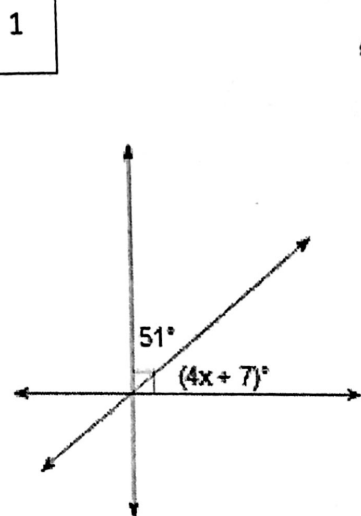   **c.** ___$m\angle B = 90 - m\angle C$___

So by substitution,

    d. ___$m\angle A = m\angle B$___.

Therefore, $\angle A \cong \angle B$ by the definition of congruent angles.
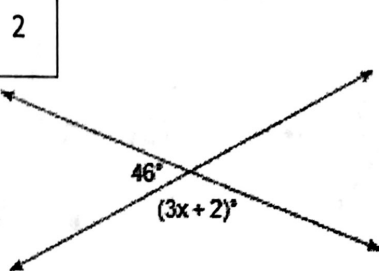
2.5 Review-Find the Sum

Solve for x. Find the sum of all 6 answers.
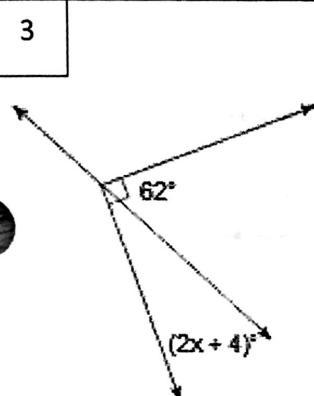
1

$4x + 7 + 51 = 90$

$4x = 32$

$\boxed{x = 8}$

51°

(4x + 7)°

2

$3x + 2 + 46 = 180$

$3x + 48 = 180$

$3x = 132$

$\boxed{x = 44}$

46°

(3x + 2)°

3

$2x + 4 + 62 = 90$

$2x = 24$

$\boxed{x = 12}$

62°

(2x + 4)°

4
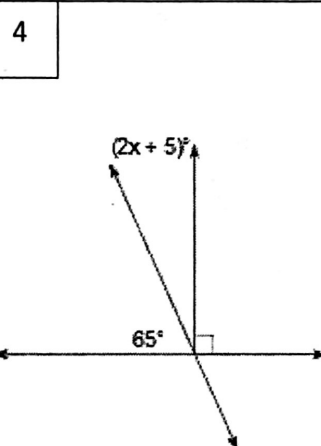
$2x + 5 + 65 = 90$

$2x + 70 = 90$

$2x = 20$

$\boxed{x = 10}$

(2x + 5)°

65°

5

$2x + 1 = 49$

$2x = 48$

$\boxed{x = 24}$

(2x + 1)°

49°

6
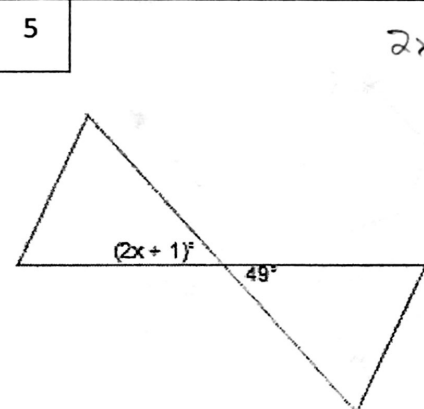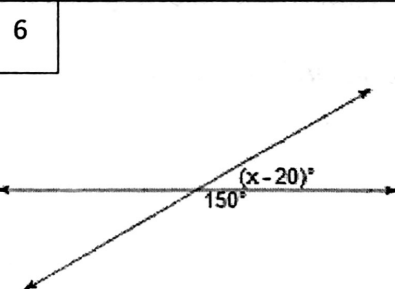
$x - 20 + 150 = 180$

$x + 130 = 180$

$\boxed{x = 50}$

(x − 20)°

150°

Total Sum:

148

Find the value of x and y.

1. $p \parallel q$

$$2x + 10 = 120$$
$$2x = 110$$
$$x = 55$$

2.

$5x°$

$40°$

$(3y - 1)°$

40
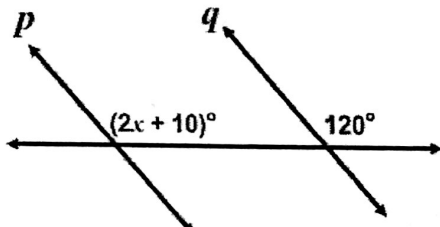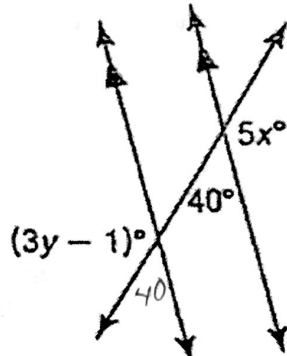
$$5x + 40 = 190$$
$$5x = 140$$
$$\boxed{x = 28}$$

$$3y - 1 + 40 = 180$$
$$3y = 141$$
$$\boxed{y = 47}$$
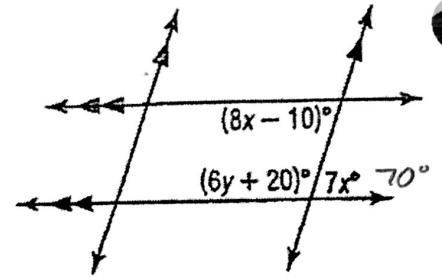
3.

$(8x - 10)°$

$(6y + 20)°$ $7x°$ $70°$

$$7x = 8x - 10$$
$$-x = -10$$
$$\boxed{x = 10}$$

$$6y + 20 + 70 = 180$$
$$6y + 90 = 180$$
$$6y = 90$$
$$\boxed{y = 15}$$

Solve for $\angle 1$ in #4-5.

4.

$60°$

1 $60°$

$20°$

$20°$

$$m\angle 1 = 60 + 20$$
$$\boxed{m\angle 1 = 80°}$$

5.

$140°$

$40°$ 1 $140°$

$32°$

$32°$
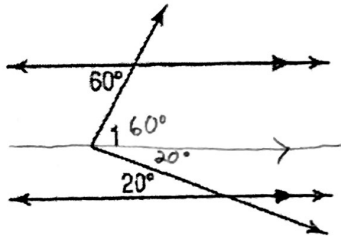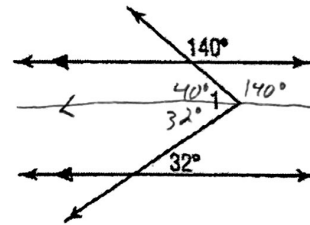
$$m\angle 1 = 40 + 32$$
$$\boxed{m\angle 1 = 72°}$$

6. Use the diagram to answer the following questions given $\ell \parallel m$.

a. $m\angle 3 = 2x + 16$ and $m\angle 5 = 7x - 4$

$$2x + 16 = 7x - 4$$
$$20 = 5x$$
$$\boxed{4 = x}$$

ℓ

m

2 3

1 4

6 7

5 8
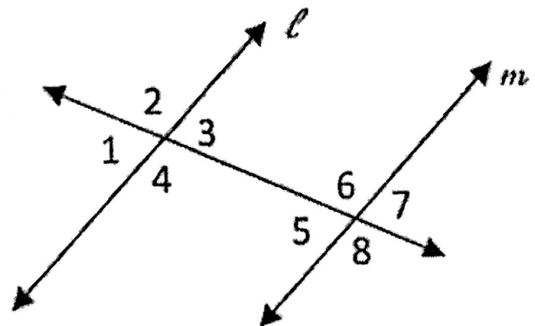
b. $m\angle 4 = 8x - 80$ and $m\angle 5 = -2x + 116$

$$8x - 80 - 2x + 116 = 180$$
$$6x + 36 = 180$$
$$6x = 144$$
$$\boxed{x = 24}$$

c. $m\angle 2 = 3x + 19$ and $m\angle 6 = 2(x + 10)$

$$3x + 19 = 2(x + 10)$$
$$3x + 19 = 2x + 20$$
$$x + 19 = 20$$
$$\boxed{x = 1}$$