You'd be foolish not to check these answers! Name_____

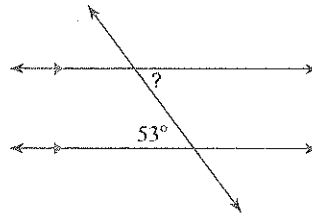# Unit 3 Test REVIEW

Packet #1 - Geometry

Identify each pair of angles as corresponding, alternate interior, alternate exterior, or same-side interior. (2 points each)
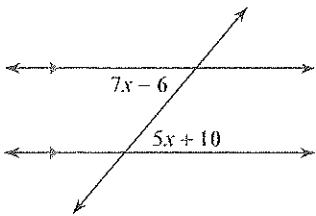
1)
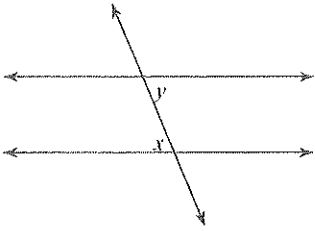
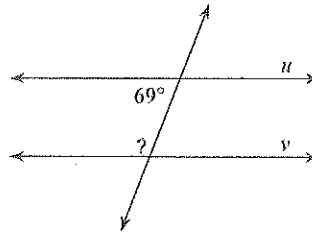**Find the measure of each angle indicated.(5 points)**

2)

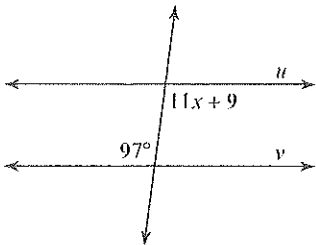Solve for *x*.(5 points each)

3)

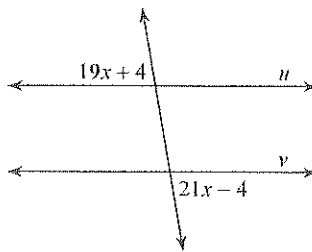**Find the measure of the indicated angle that makes lines u and v parallel.(5 points each)**

4)

Find the value of *x* that makes lines u and v parallel.(5 points each)
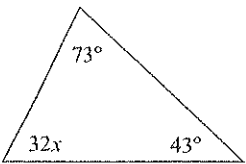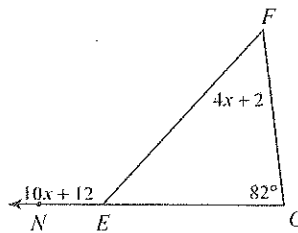
5)

6)

Solve for *x*.(5 points each)

7)

8)

Write the slope-intercept form of the equation with the given information.(5 points each)

9) through: $(-2, 5)$ and $(0, -3)$

10) through: $(-4, 2)$, perp. to $y = \dfrac{4}{5}x + 4$

ALGEBRA REVIEW: Solve each equation. (1 point each)

11) $\dfrac{k}{4} - 3 = -4$

12) $p - 5 = 3p + 9$
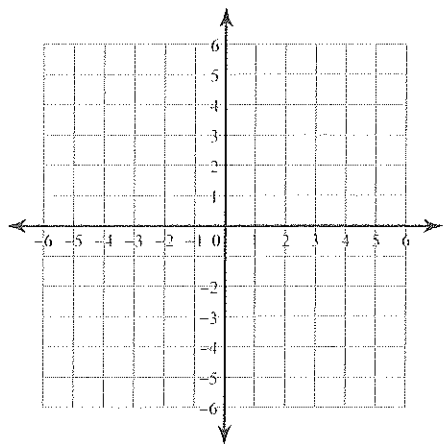
ALGEBRA REVIEW: Find each product. (1 point each)

13) $-4k^3(-k + 6)$

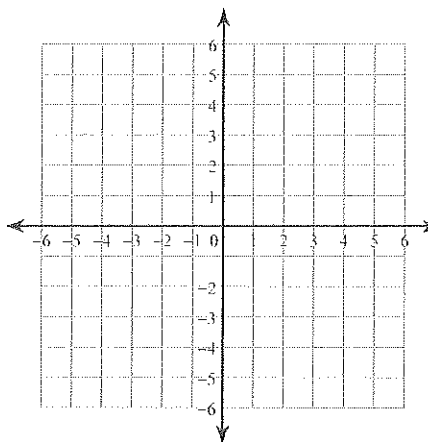**ALGEBRA REVIEW: Factor the common factor out of each expression. (1 point each)**

14) $48n^4 + 6n^3$

ALGEBRA REVIEW: Sketch the graph of each line.(1 point each)

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

16) $y = -5$

1) In one triangle one of the angles is four times the measure of another and the third angle is five times as much as that angle. What are the measures of all three angles? (5 points)

2) Mr. Kelly eats jelly beans out of a jar on his desk. After 1 week he has 9 jelly beans. After 3 weeks he has 3 jelly beans. (2 points each)
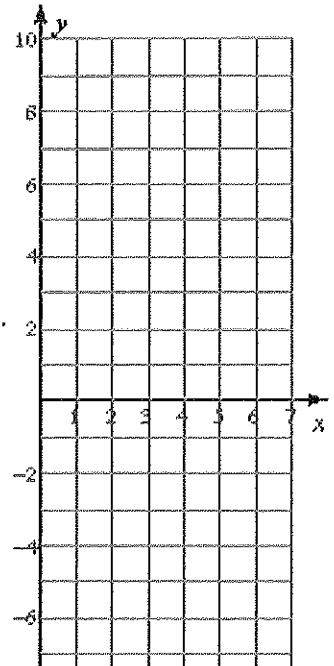
a) What's Mr. Kelly's slope (rate of change) for this situation?

b) What's Mr. Kelly's y-intercept (initial value) for this situation?

c) Write an equation of the line for the given situation. Graph the line.

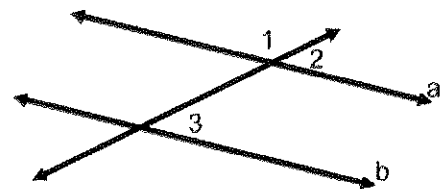d) How much money would Mr. Kelly have after 2 _months_?

e) Mr. Brust has a line that is parallel to Mr. Kelly's but he starts with 20 jelly beans. What is the equation of the line for Mr. Brust?

3) Complete a flow proof or two-column proof for the following.

Given: $\angle 1$ and $\angle 3$ are supplementary
Prove: $a \parallel b$

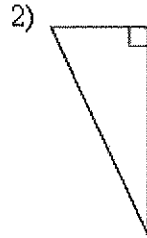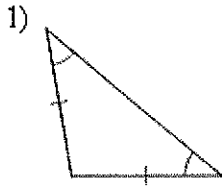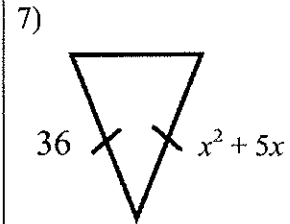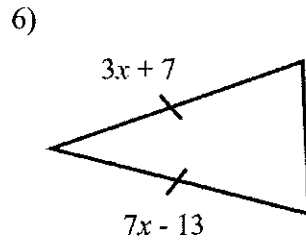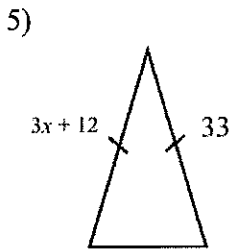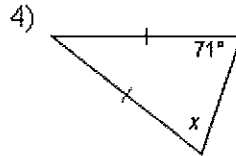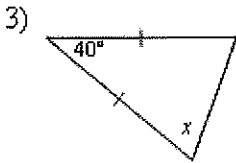NAME:_____

Packet #2- Geometry

DATE:_____
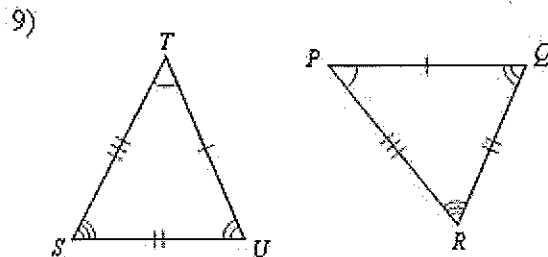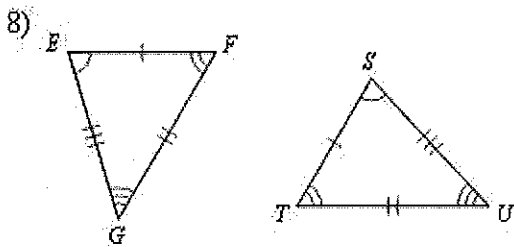
Classify each triangle by its sides (scalene, isosceles, or equilateral) as well as by its angles (acute, obtuse, or right).

1)

2)

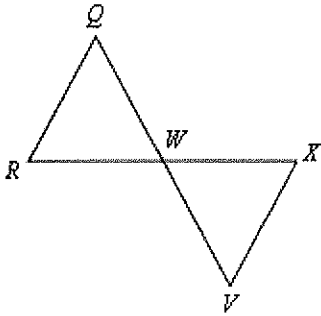Find the value of x.

3) 40° x

4) 71° x

5) $3x + 12$ 33

6) $3x + 7$ $7x - 13$

7) 36 $x^2 + 5x$

Write a statement that indicates that the triangles in each pair are congruent.

8) E   F   G   S   T   U
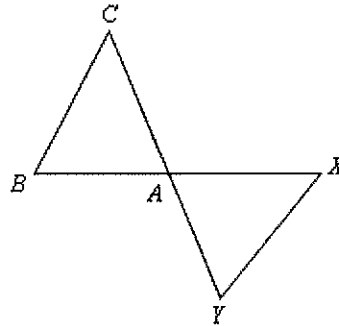
9) T   S   U   P   Q   R

Mark the angles and sides of each pair of triangles to indicate that they are congruent.

10) $\triangle WXV \cong \triangle WRQ$

11) $\triangle ABC \cong \triangle AYX$

Complete each congruence statement by naming the corresponding angle or side.

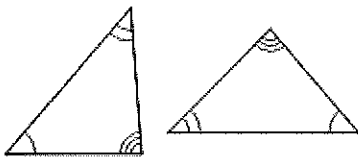12) $\triangle FGH \cong \triangle JKL$

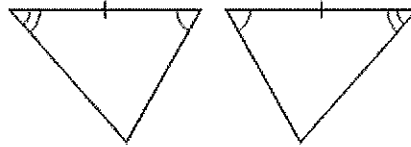$\angle H \cong$?

13) $\triangle DFE \cong \triangle XYZ$

$\overline{ED} \cong$?

State if the two triangles are congruent. If they are, state how you know.

14)

15)

16)
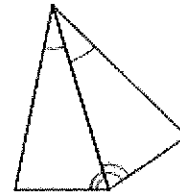
17)
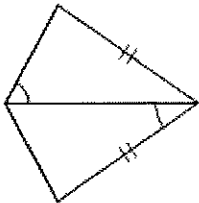
18)
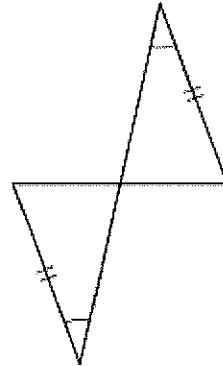
19)
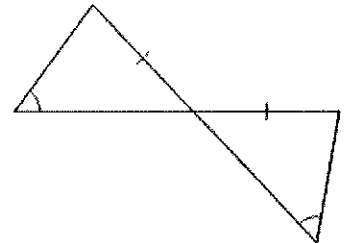
20)
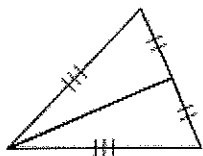
21)

22)

23)
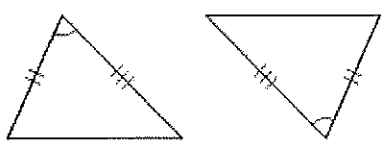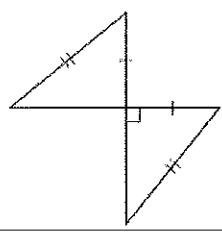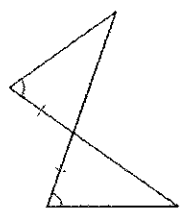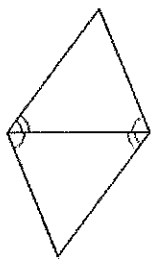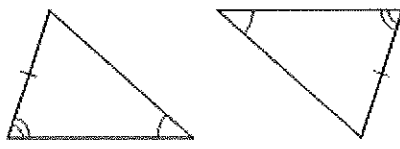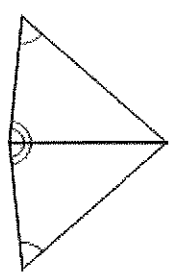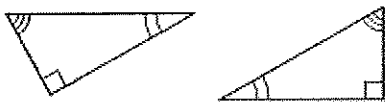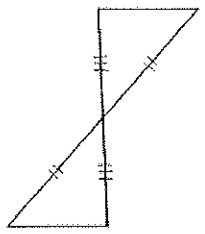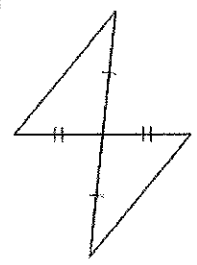
24)

25)

26)

27)

28)

29)

30)

31)

32)

33)

34)
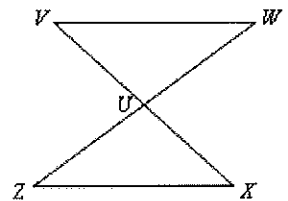
APPLICATION

Prove the following. Start by marking the picture and determining why the triangles are congruent.

35)

Given: U is the midpoint of $\overline{ZW}$

   $\angle V \cong \angle X$

Prove: $\overline{VW} \cong \overline{ZX}$

STATEMENTS	REASONS

Prove the following. Start by marking the picture and determining why the triangles are congruent. Then fill in the missing statements and reasons!   Packet # 2

36)

Given: $\overline{DE}$ bisects $\overline{CG}$
$\overline{DC} \parallel \overline{HE}$, $\overline{DE} \parallel \overline{HG}$
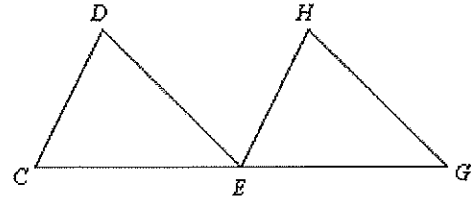
Prove: $\triangle DCE \cong \triangle HEG$

STATEMENTS	REASONS
1.	1. Given
2. $\angle DCE \cong \angle HEG$	2.
3. $\angle DEC \cong \angle HGE$	3.
4.	4. Definition of bisect
5.	5.

Prove the following. Start by marking the picture and determining why the triangles are congruent.

37)

Given: $\triangle ABC$ is isosceles with base $\overline{AC}$
$\overline{DB}$ is the perpendicular bisector of $\overline{AC}$
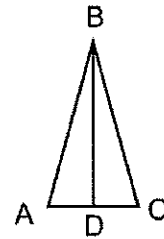
Prove: $\triangle ABD \cong \triangle CBD$

STATEMENTS	REASONS

Review Unit 5

Name:_____

$\frac{n}{360} = d$ where n = # of angles
d = # of degrees per angle.

Find the measure of one interior angle in each regular polygon. Round your answer to the nearest tenth if necessary.

1)
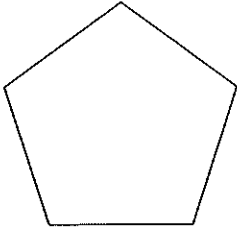
2) regular 18-gon

Find the measure of one exterior angle in each regular polygon. Round your answer to the nearest tenth if necessary.

3)
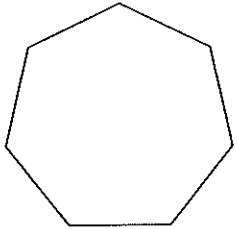
4) regular pentagon

Solve for x. Each figure is a parallelogram.

5)

X Y

$2 + 28x$

$58°$

W V

6)

V $x + 5$ S

U 8 T
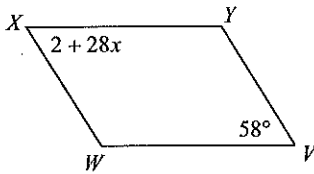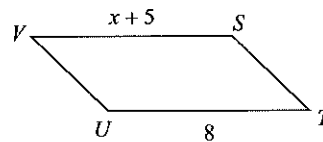
Find the measurement indicated in each parallelogram.

7) $CM = 4x - 2$
   $CE = 7x - 1$
   Find CM
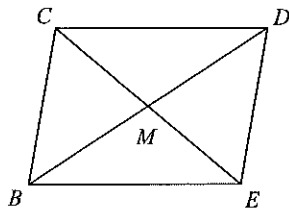
8) $KX = -9 + 2x$
   $KM = 3x - 9$
   Find KM
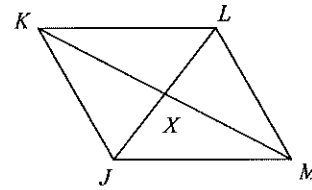
9) $SZ = -11 + 2x$
   $SU = 2x + 2$
   Find SU
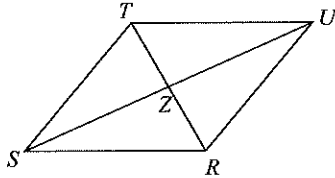
10) Find $m\angle V$
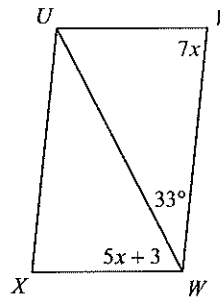
Solve for x. Each figure is a trapezoid.

11) $PR = 16$
    $QS = 5x - 14$
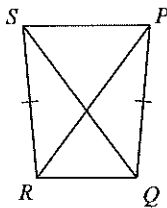
12)
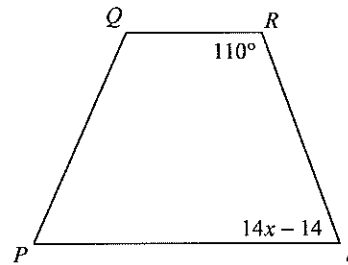
Find the length of the midsegment of each trapezoid.

13)
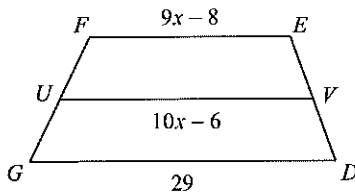
Find the length of the diagonal indicated for the trapezoid.

14) $UW = 2x + 6$
    $TV = 3x - 3$
    Find UW

15. Solve for x.

$2x + 20$

16. Find m∠1, m∠2 and m∠3.

$75°$ $66°$

$m∠1 =$ _____

$m∠2 =$ _____

$m∠3 =$ _____
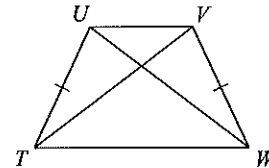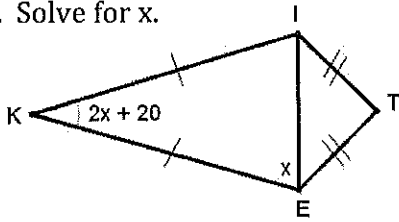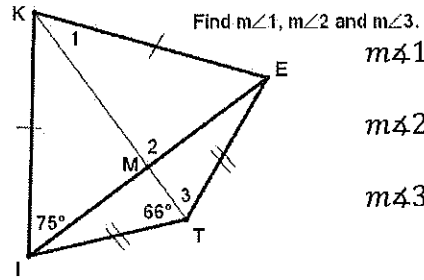
Set up and solve for x and y using a system of linear equations. Assume CDEF is a parallelogram.

17.

$3x + 18$

$3x - 7$

y

$6y$
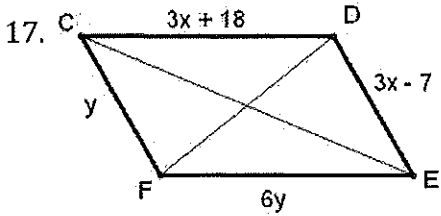
Set up and solve a quadratic equation to find the value of x in the following parallelogram.

18.

$9k$ $k^2 + 18$

19.

$5x - 10$

140
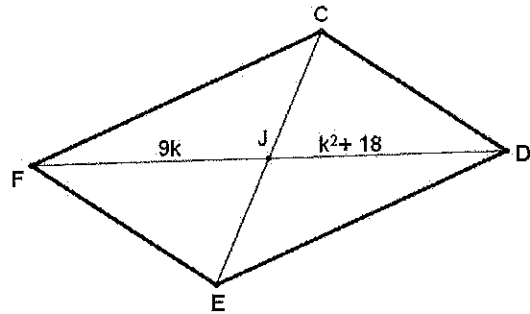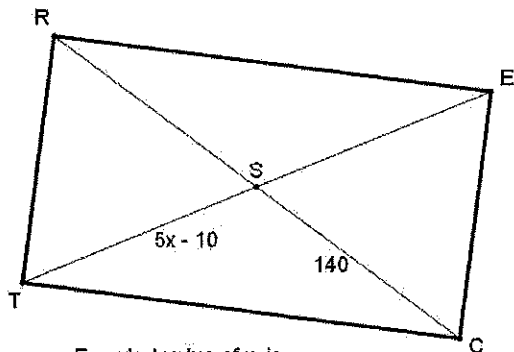
For what value of x is parallelogram RECT a rectangle?

20. For what value of x is parallelogram RHOM a rhombus?

$4x - 25$

$2x + 65$
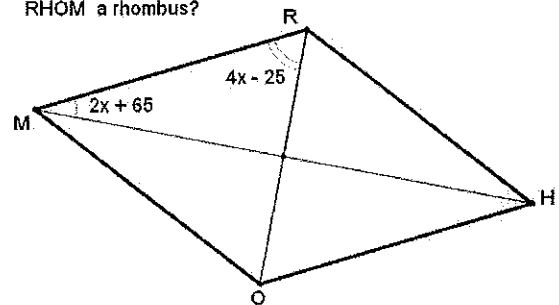
Application and Extension

Show all of your work clearly and completely!

1. The coordinates of the vertices of quadrilateral TRAP are T(-6, 2), R(-10, -3), A(-6, -6) and P(2, -4).
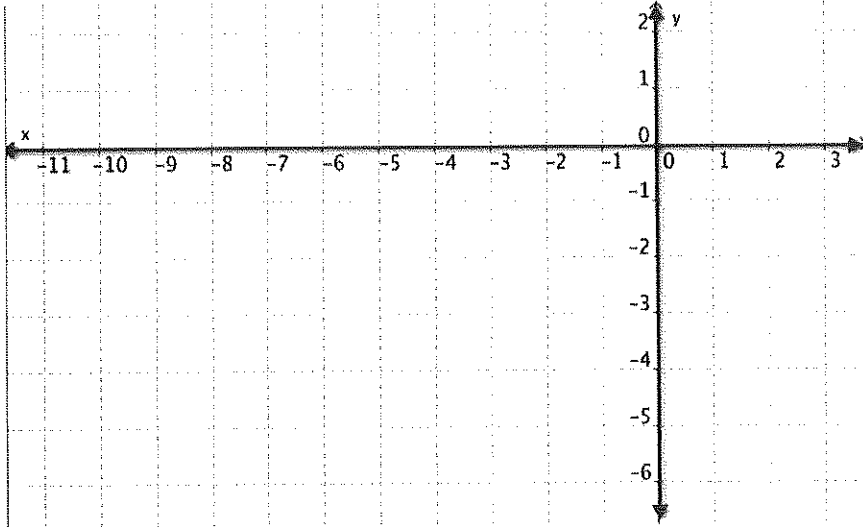
a. Graph and label TRAP.

b. Use the slope formula to show that TRAP is a trapezoid.

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$

c. Examine your answer to part b and determine if TRAP is a right trapezoid. How do you know?

d. Use the distance formula to determine whether TRAP is isosceles. $D = \sqrt{(x_2 - x_1)^2 + (y_2 - y_1)^2}$

2. Draw rhombus RHOM with diagonal RO. Find x if $m\angle HRO = (5x - 30)°$ and $m\angle MRO = (3x + 6)°$.

3. ___Statements___ | ___Reasons___
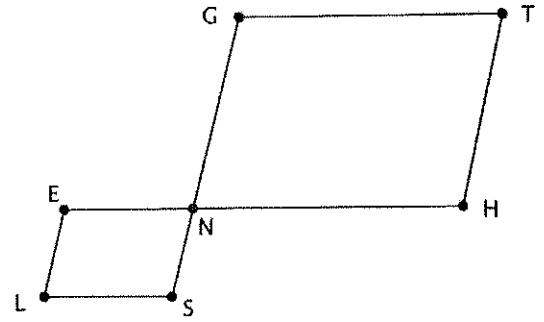
Given: ▱ LENS and NGTH

Prove: $\angle L \cong \angle T$

4. The car at each vertex of a Ferris Wheel holds a maximum of five people. The sum of the interior angles of the Ferris Wheel is 7740°. What is the maximum number of people the Ferris Wheel can hold

Algebra Review

Solve each equation for x!	
1. $-5x + 16 = -2(x - 1)$	2. $\dfrac{3}{x-1} = \dfrac{4}{X+1}$

Multiply!	Factor!
3. $(x + 4)(x - 4)$	4. $x^2 + 2x - 15$

5. Graph the equation:
   $y - x = 0$

6. Graph the equation:
   $4y = x$

Unit 5 Theorems

The following theorems *will not* be given on the Unit 5 test. Please make sure you know each theorem well!

Polygon Theorems:

⇒ **Polygon Angle-Sum Theorem:** The sum of the measures of the angles = (n − 2)(180°).

    Corollary: The measure of each angle of a regular n-gon is $\frac{(n-2)(180°)}{n}$

⇒ **Polygon Exterior Angle-Sum Theorem:** The sum of the measures of the exterior angles of a polygon, one at each vertex, is 360°.

Parallelogram Theorems:

⇒ If a quadrilateral is a parallelogram, then its opposite sides are congruent.
⇒ If a quadrilateral is a parallelogram, then its consecutive angles are supplementary.
⇒ If a quadrilateral is a parallelogram, then its opposite angles are congruent.
⇒ If a quadrilateral is a parallelogram, then its diagonals bisect each other.

Theorems for Proving Parallelogram:

⇒ If both pairs of opposite sides of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
⇒ If an angle of a quadrilateral is supplementary to both of its consecutive angles, then the quadrilateral is a parallelogram.
⇒ If both pairs of opposite angles of a quadrilateral are congruent, then the quadrilateral is a parallelogram.
⇒ If the diagonals of a quadrilateral bisect each other, then the quadrilateral is a parallelogram.
⇒ If one pair of opposite sides of a quadrilateral is both congruent and parallel, then the quadrilateral is a parallelogram.

Rhombus Theorems:

⇒ If a parallelogram is a rhombus, then its diagonals are perpendicular.
⇒ If a parallelogram is a rhombus, then each diagonal bisects a pair opposite angles.

Theorems for Proving Rhombuses:

⇒ If the diagonals of a parallelogram are perpendicular, then the parallelogram is a rhombus.
⇒ If one diagonal of a parallelogram bisects a pair of opposite angles, then the parallelogram is a rhombus.

Rectangle Theorems:

⇒ If the diagonals of a parallelogram are congruent, then the parallelogram is a rectangle.
⇒ If a parallelogram is a rectangle, then its diagonals are congruent.

Trapezoid Theorems:

⇒ If a quadrilateral is an isosceles trapezoid, then each pair of base angles is congruent.
⇒ If a quadrilateral is an isosceles trapezoid, then its diagonals are congruent.
⇒ **Trapezoid Midsegment Theorem:** If a quadrilateral is a trapezoid, then:
       1.) the mid-segment is parallel to the bases, and
       2.) the length of the mid-segment is half the sum of the lengths of the bases.

Kite Theorems:

⇒ If a quadrilateral is a kite, then its diagonals are perpendicular.

Packet #4 - Geometry
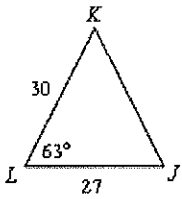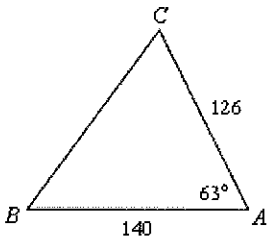
NAME:_____

Similarity

DATE:_____

The following triangles are similar. Fill in the blank (order is important!). Find the scale factor.

1.
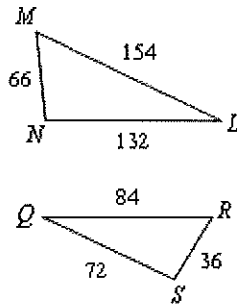
C

126

63°

B   140   A

K

30

63°

L   27   J

$\triangle ABC \sim$ _____

Scale Factor =

2.

M

154

66

N   132   L

84

Q _____ R

72   36

S

$\triangle LMN \sim$ _____
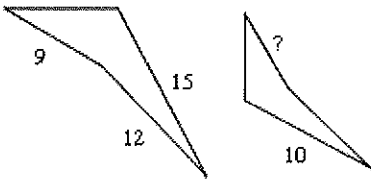
Scale Factor =

3.

E

77
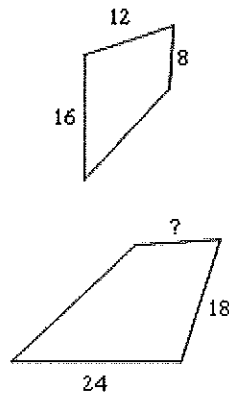
D

49

55

C

35

S

R
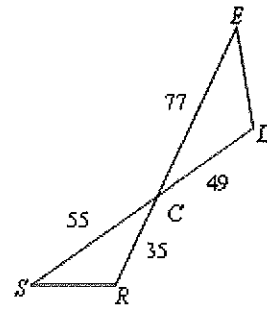
$\triangle CDE \sim$ _____

Scale Factor =

The polygons in each pair are similar. Find the missing length.

4.

9

15

12

?

10

5.

12

8

16

?

18

24

6.

G

63

R

8

36

14

F

Q   10   E

?

Solve for x. The triangles in each pair are similar.

7.

U

27

V   3x − 6   K

K _____ M

91   117

L

8.

T

6

12

G

E   4   U

x + 10

F

9.

4

x + 3

x
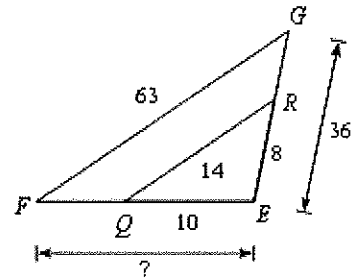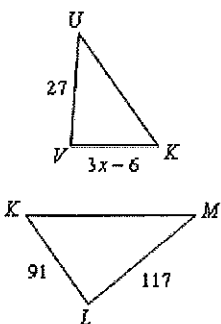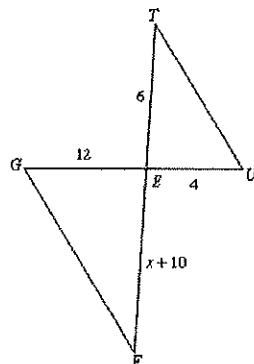
2x + 9
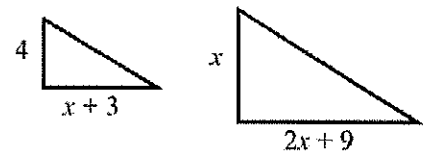
State if the triangles in each pair are similar. If so, state how you know they are similar and complete the similarity statement.

10.

ΔHGF ~ _____

11.

ΔHGF ~ _____

12.

ΔLMN ~ _____

Find the missing length indicated.

13.

14.

15.

Solve for x.

16.

17.

18.
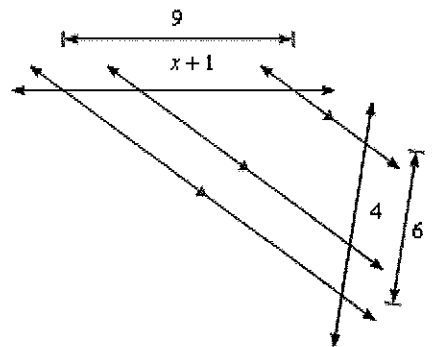
APPLICATIONS

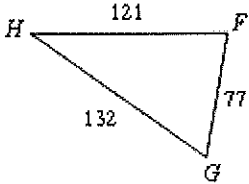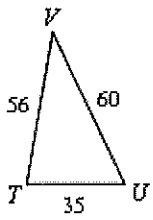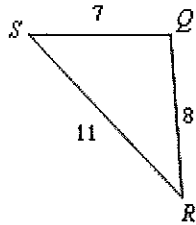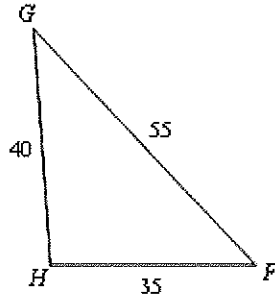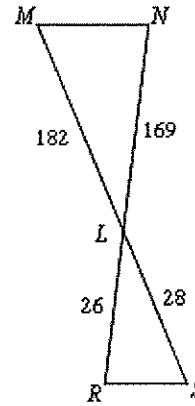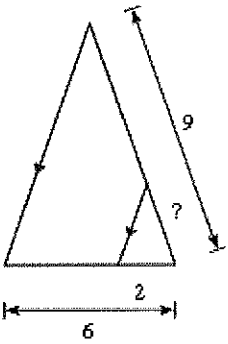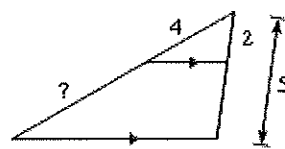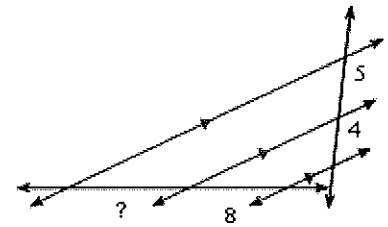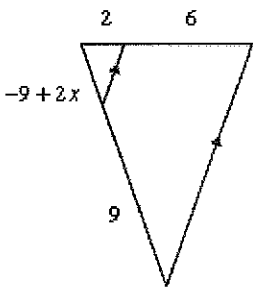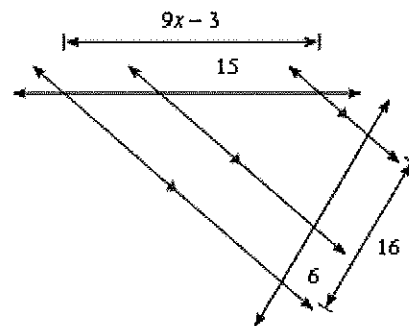1. Baumholder High School decides to build a statue of Tim Kelly in the front parking lot. Use the information below to determine the unknown height of the statue.

   x

   1.8 m

   |— 4 m —|— 2.4 m —|
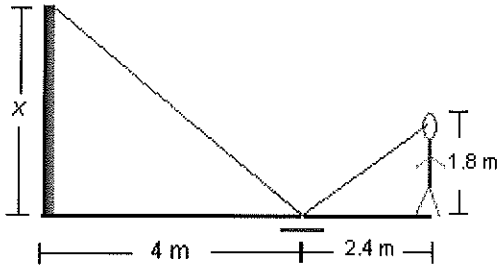
2. Mr. Sullivan doesn't think that the statue is big enough to honor Mr. Kelly so he builds a new statue in his backyard that shines through the night. Mr Sullivan is 160 cm tall, stands 360 cm from the glowing statue at night. Creeper Sully's shadow from the statue is 90 cm long. How high is the new Kelly statue?

   160 cm

   90 cm   360 cm
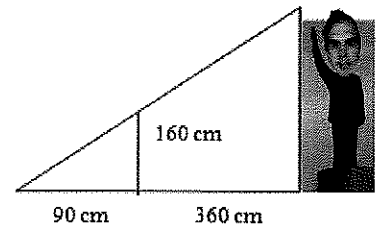
3. Baumholder administration quickly realizes that the statue was a bad idea and asks three students to pull it down using ropes. If all three ropes are parallel, $\overline{BG} \parallel \overline{AU} \parallel \overline{DY}$, and $GU = x + 3, GY = 16, BA = 13.5,$ $BD = 21$, then find GU.
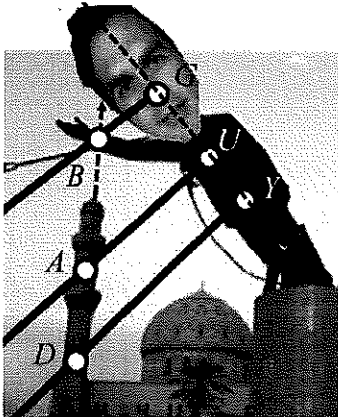
4. The head of Mr. Kelly's statue can be intercepted by parallel line segments $\overline{AC}$ and $\overline{EY}$ Given $FE = 19, FC = 12, \ AE = 9,$. Find CY.

   F

   A

   C

   E

   Y
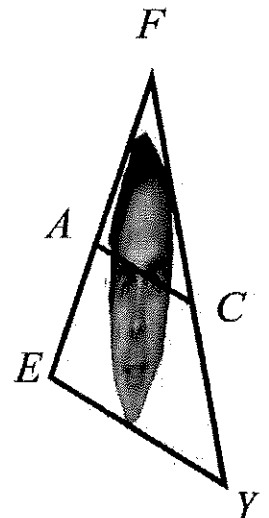
NAME:_____

UNIT 7 TEST REVIEW

ALGEBRA REVIEW: 2 points each.

1) Solve: $\dfrac{v}{20} + 7 < 8$	2) Factor: $2x^2 - 5x - 7$	3) Graph: 5x – 2y = 10

Directions: Find the missing side of each triangle 4 points each.

Round your answers to the nearest tenth if necessary.

4)

11.8 in

6.6 in

x
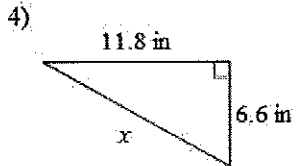
Leave your answers in simplest radical form.

5)

$\sqrt{14}$ mi

$\sqrt{10}$ mi

x

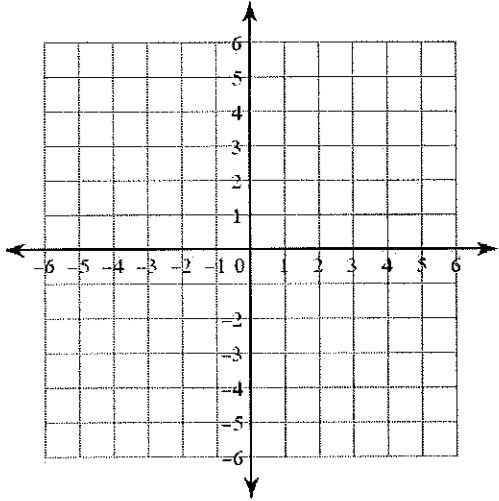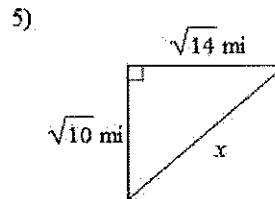**Directions: State if each triangle is acute, obtuse, or right. 4 points each.**

6)

12 km   13 km

7 km
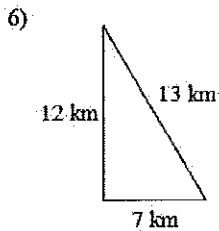
Directions: Find the missing side lengths. Leave your answers as radicals in simplest form. 4 points each.

7)

x

60°

y

$5\sqrt{3}$

8)

7

45°

45°

x
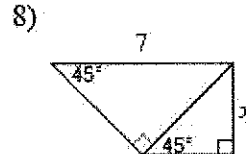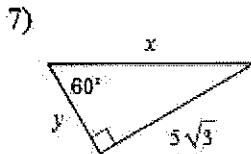
Directions: Find the missing side. Round to the nearest tenth. 4 points each.

9)

x 15

57°

10)

15

45°

x
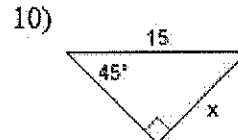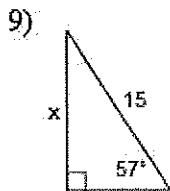
Directions: Find the measure of the indicated angle to the nearest degree. 4 points each.

11)
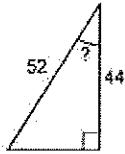
12)

Directions: For each situation draw a picture and then solve. Round to the nearest tenth if necessary. 5 points each.

20) What is the angle of depression between a woman in a hot air balloon that is 94 feet off the ground and her friend that is 200 feet from being directly underneath the balloon?

Unit 7 Applications

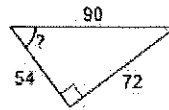22) Mr. Brust is building his own house deep in the woods of Germany. He wants to be in an area that is all by himself because he doesn't play well with others. He builds the south wall of his house to be 56 feet high and perpendicular to floor which will be 105 feet long. He's running out of funds so instead of building a normal house with 4 sides, his house is going to have 3 sides. That means the last side will be a slanted roof.

    a) Draw a picture, labeled correctly, of this situation (2 points).

    b) Mr. Brust goes to the store and buys wood to build the slanted roof to be 125 feet long. Did he buy the correct amount of wood for the roof?

23) The Algebros go boating one day. Mr. Kelly and Mr. Brust ended up off course (typical!). When they realized that they needed to boat back to Mr. Sullivan they were 400 feet apart. The angle between each other and Mr. Sullivan for each of them was 45°.
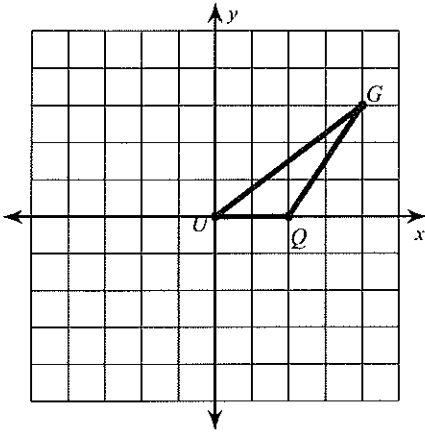
    a) Draw a picture, labeled correctly, of this situation (2 points).

    b) How far are they each to Mr. Sullivan?

Packet #5 - Geometry
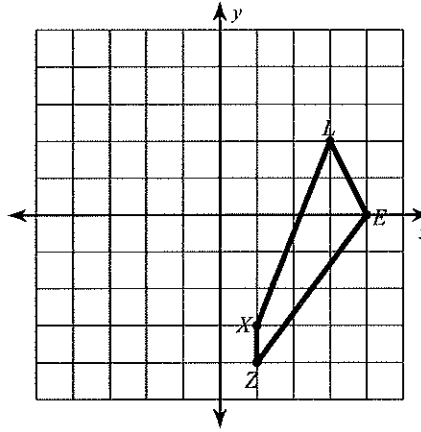
Name_____

Review Unit 8

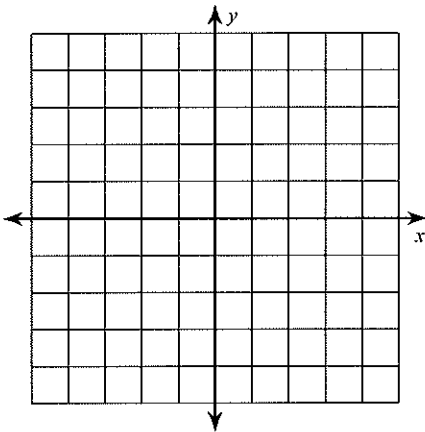**Graph the image of the figure using the transformation given.**

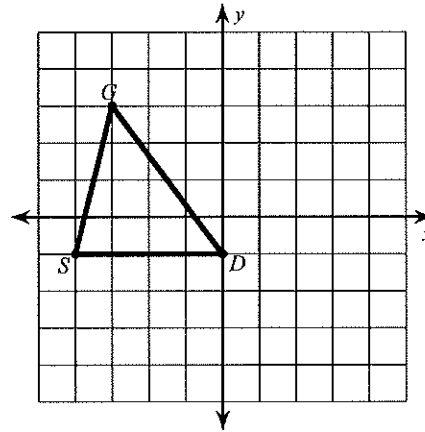1) translation: 2 units left and 1 unit up

2) translation: 5 units left

3) translation: $(x, y) \rightarrow (x, y + 5)$
   $H(-3, -2), A(0, -1), Y(-3, -4)$

4) translation: $(x, y) \rightarrow (x + 4, y - 2)$

Write an ALGEBRAIC RULE to describe each transformation.

5)
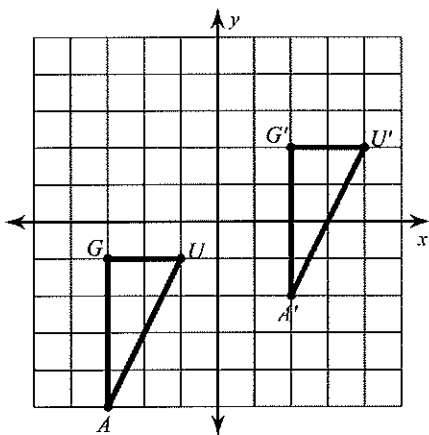
6)
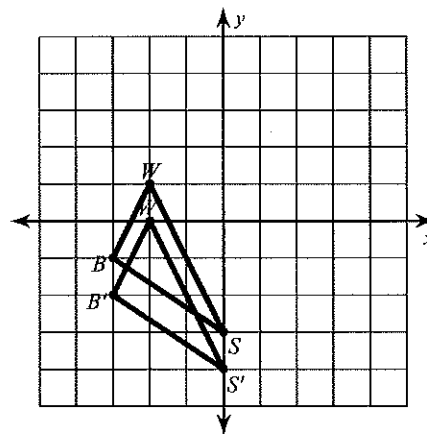
Graph the image of the figure using the transformation given.

7) reflection across the y-axis

8) reflection across $y = x$

Give the line of reflection (equation or axis) for the transformations below:

9)

10)
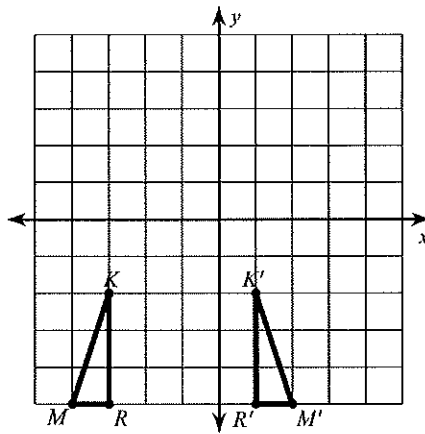
Graph the image of the figure using the transformation given.

11) rotation 180° about the origin
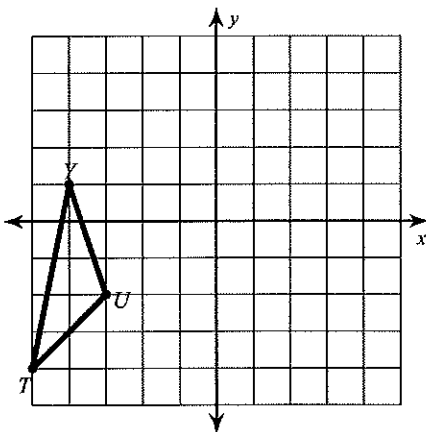
12) rotation 90° clockwise about the origin

- 2 -

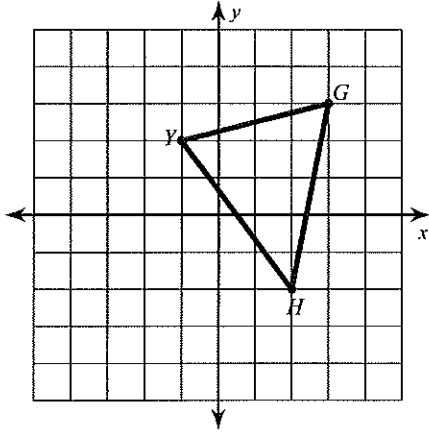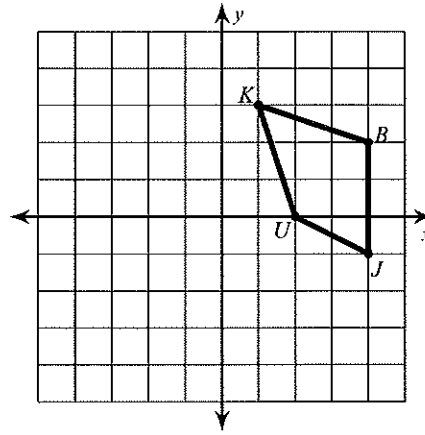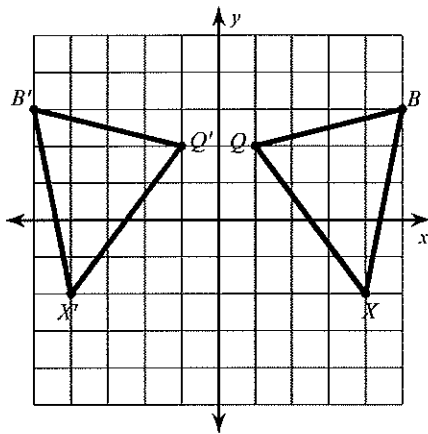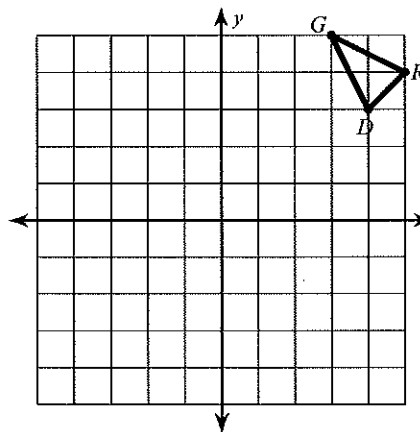13) rotation 90° counterclockwise about the origin
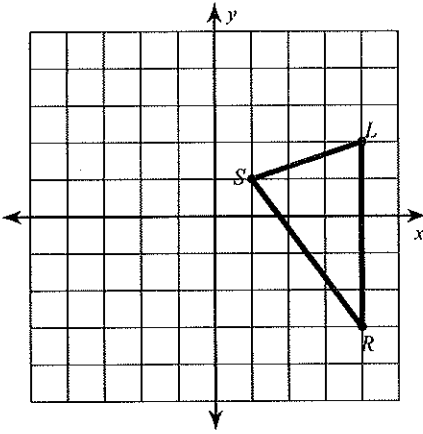
14) rotation 90° clockwise about the origin
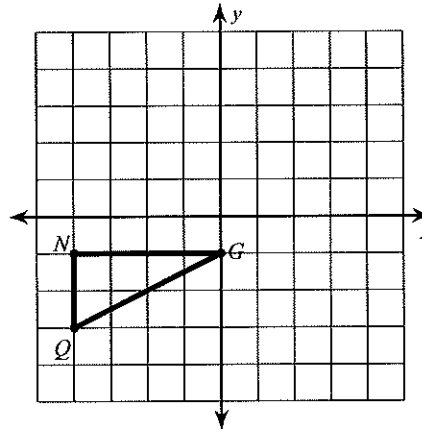
Find the coordinates of the vertices of each figure after the given transformation.

15) rotation 90° clockwise about the origin
$T(3, 5), G(5, 5), A(5, 4)$

16) rotation 180° about the origin
$J(2, 2), T(5, 3), Q(2, 0)$

17) rotation 90° counterclockwise about the origin
$A(1, -1), P(3, 3), Z(5, 0)$

18) rotation 180° about the origin
$Y(-5, -3), M(-4, 1), D(-1, 0)$

19. Give three numbers that have reflectional symmetry.

20. Give an example of a food that has rotational symmetry.

Application and Extension

21. a. Graph T'A'G', the image of T(-4, 1), A(-5, 0), G(-1, -2) after a translation using the rule (x,y) → (x + 3, y + 4).

     b. Graph T"A"G", the image of T'A'G', after a reflection in the y-axis.

     c. Graph T'''A'''G''', the image of T"A"G", after a CLOCKWISE rotation of 90⁰.

     d. Is the transformation of △TAG → △T'A'G' → △T"A"G" → △T'''A'''G''' an isometry?
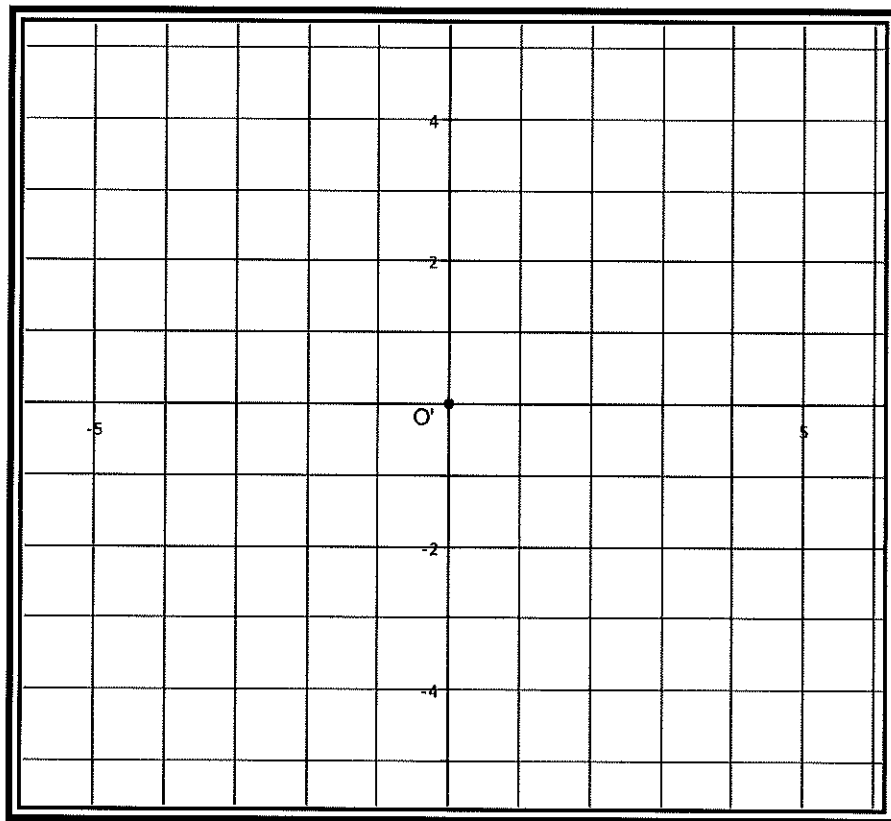
Tell if the following logos have Rotational Symmetry, Reflectional Symmetry, neither, or both.

22.

23.

24.

Solve each equation for x!

1. $-3x - 5 > 15$

2. $2x - 5 - x = 3x - 15$

Factor!

3. $2x^2 + 3x - 2$

Factor!

4. $x^2 + 4x + 4$
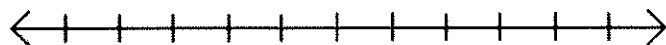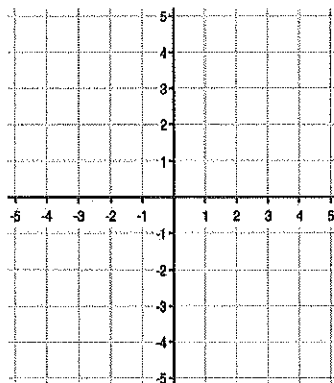
5. Graph the equation:

$2y - x = 2$

6. Graph the equation:

$2x + 3y = 12 + 2x$

Algebra Review

Packet #6 - Geometry
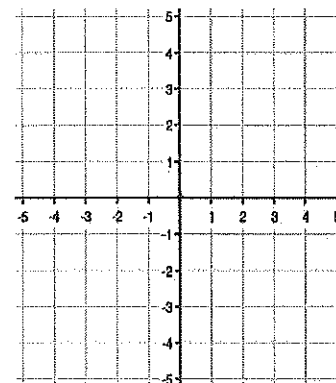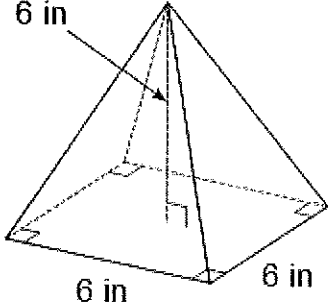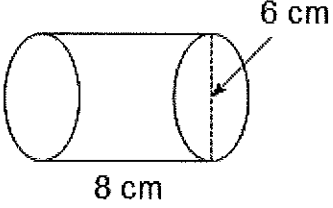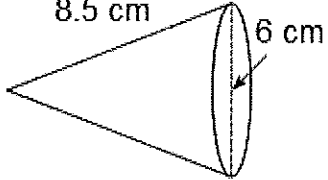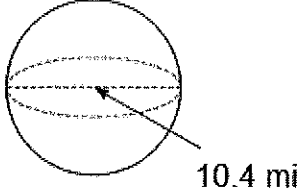
Unit 10 Review

ALGEBRA REVIEW: 1 point each.

1) Solve: $-3(-6+8m) \geq 4m+18$	2) Solve $-(m+6) \leq -7-m$	3) Find the equation of the line in slope-intercept form.
4) Factor completely. $24x^2 + 90x + 54$	5) Factor completely. $3x^2 - 48$	6) Solve the system by graphing. $y = -\frac{1}{2}x + 4$ $y = x - 2$

Directions: Find the Surface Area and Volume of each. CHECK EACH FOR ROUNDING!

FIGURE	SURFACE AREA	VOLUME
7) 12 yd, 7 yd, 6.7 yd, 8 yd, 12 yd		

FIGURE	SURFACE AREA	VOLUME
8) 6 in, 6 in, 6 in	Round to nearest Tenth.	Round to nearest Tenth.
9) 6 cm, 8 cm	Leave in Terms of π.	Leave in Terms of π.

FIGURE	SURFACE AREA	VOLUME
10) 8.5 cm, 6 cm	Leave in Terms of π.	Leave in Terms of π.
11) 10.4 mi	Round to nearest Tenth.	Round to nearest Tenth.

DIRECTIONS: Find the missing part.

12) A square pyramid has a surface area of 72 in² with a slant height of 3 in. What is the length of one side of the base?
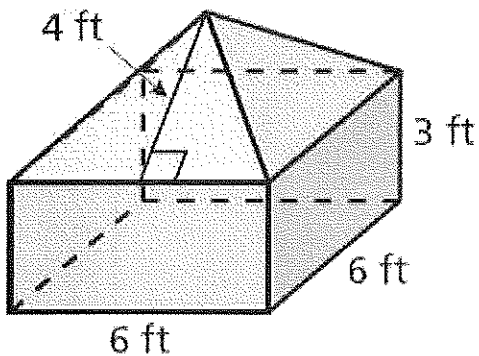
13) A cylinder has a volume of 324π in^3 with a height of 9 in. What's the length of the radius?

14) The volume of a cone is 64π and has a height of 12. What is the radius of the cone?

15) The surface area of a sphere is 144π in^2. What's the sphere's volume?

APPLICATION AND EXTENSION

16) Find the SURFACE AREA and VOLUME of the following composite solid. (5 POINTS)

4 ft

3 ft

6 ft

6 ft

17) Mr. Kelly finally bought his DREAM HOME...a real life house made of legos. He wanted to find out how many legos went into building the house. He knows the house is 30 feet long, 18 feet wide and 16 feet tall. He also knows that the dimensions of what shows on the surface for each lego is .2 feet by .15 feet. How many legos did it take to make the outside of the house? (hint...don't find the area of the ground as it was made of wood) (5 POINTS)