Geometry

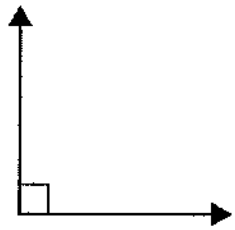
Unit 8a

Name: _____ **Period:**_____

Notes:

Notes:

Right Angle

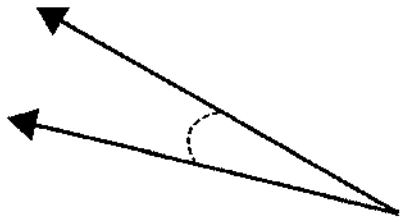


A right angle is an angle that measures exactly 90°. It always has a small square at the vertex to indicate it measures 90°.

Line or Straight Angle

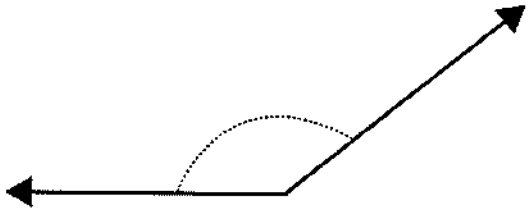
A line or straight angle is an angle that measures exactly 180°.

Acute Angle



An acute angle is an angle that measures less than 90°.

Obtuse Angle



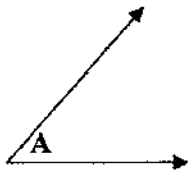
An obtuse angle is an angle that measures more than 90° and less than 180°.

Name: _____

Classifying Angles

Measure the degrees of each angle and say if it is an obtuse, acute or a right angle.

1.



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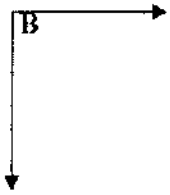

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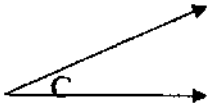

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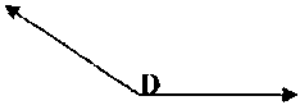

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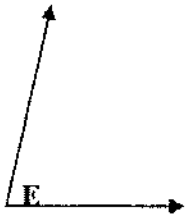

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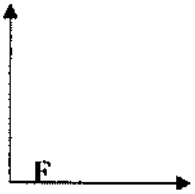

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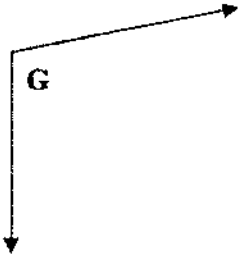
7. **G**



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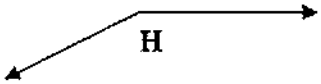

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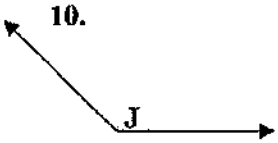
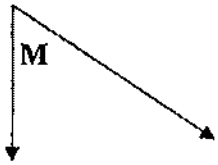


11.

12.

13.



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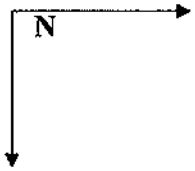

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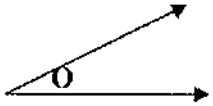

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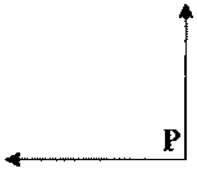

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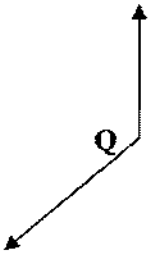

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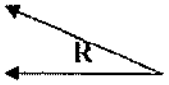

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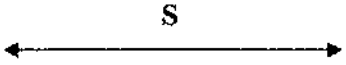

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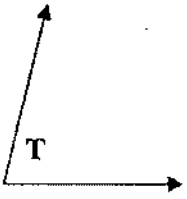


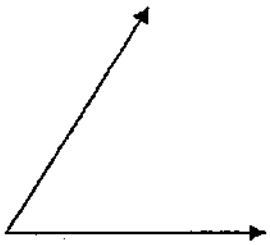
Name:_____ **Date:**_____

Unit: Geometry in 2-dimensions.

AIM: Triangle Properties

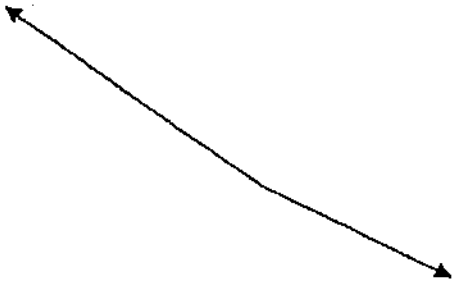
Do Now: Estimate the measure of each angle, and then measure the angles accurately, using your protractor. Do not forget your units.

1.)



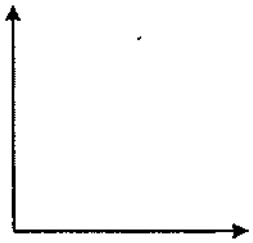
Estimate_____
Actual _____

2.)



Estimate _____
Actual _____

3.)

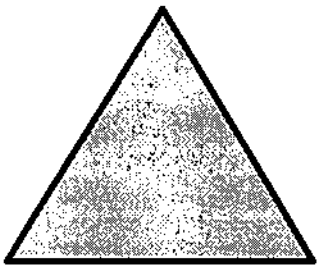


Estimate _____
Actual _____

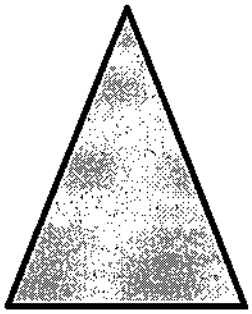
4.)

Estimate _____
Actual _____

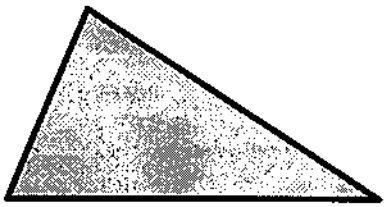
Classifying Triangles by their Sides



Equilateral
All sides are the same length

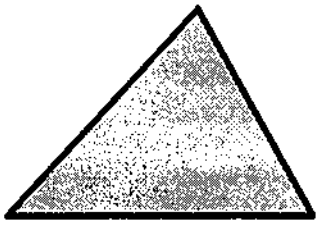


Isosceles
Two sides are the same length

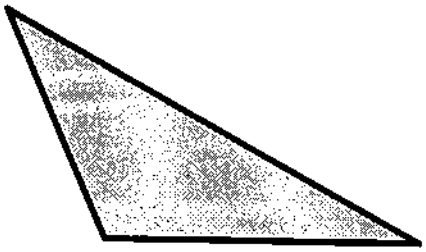


Scalene
All sides are different lengths

Classifying Triangles by their Angles



Acute
All angles are acute (less than 90 degrees)



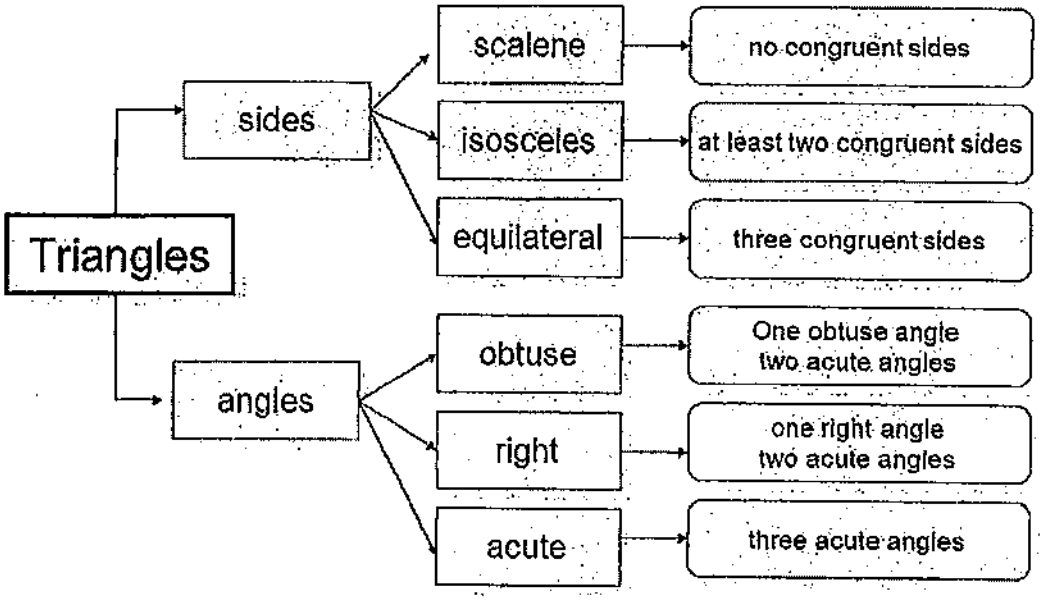
Obtuse
One obtuse angle (greater than 90 degrees)

Right
One right angle (equal to 90 degrees)

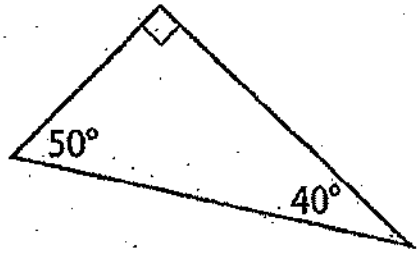
AIM: How do we classify triangles based on their sides and angles?

How do we find the missing angle of a triangle?

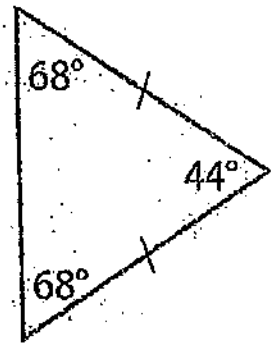
Triangle Classification



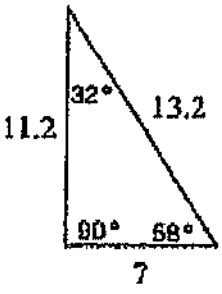
Directions: Classify each triangle by its sides and angles.



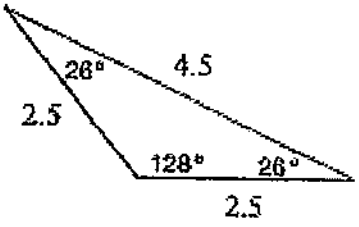
1.



2.



3.



4.

Name_____ Date_____ Period _____

TRIANGLE CLASSIFICATIONS

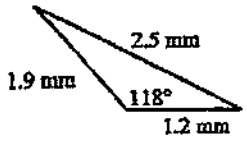
1. Classify the triangle with sides of length 9, 19, and 21.

   [A] straight [B] scalene [C] equilateral [D] isosceles

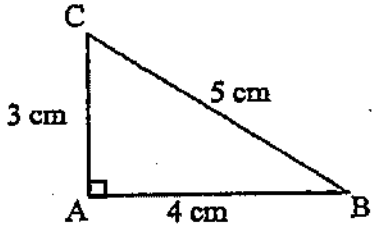
2. Classify the triangle with angles measuring 24°, 66°, and 90°.

   [A] acute [B] right [C] straight [D] obtuse

3. Classify the triangle two ways, by its sides and angles.



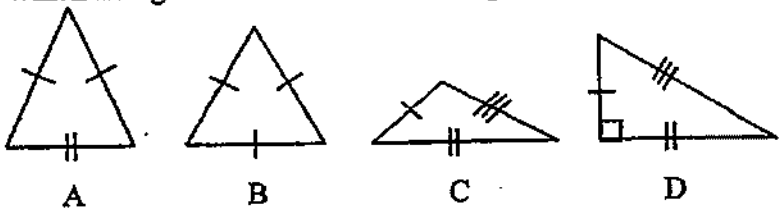
4. What side would you change in the figure below to make the scalene right triangle a non-scalene right triangle?



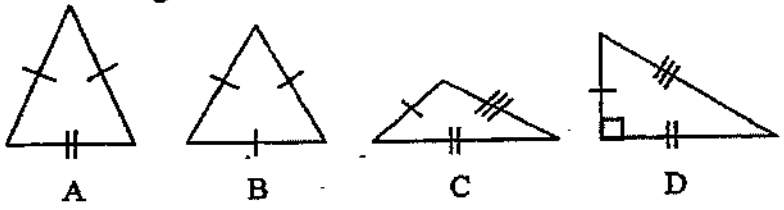
5. An isosceles triangle can never be a(n):

   [A] right triangle [B] equilateral triangle [C] scalene triangle [D] all of these answers

6. Which triangles below are scalene triangles?



7. Which triangles below are isosceles triangles?

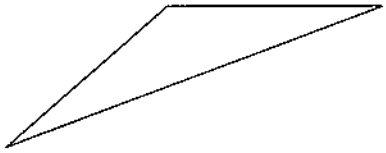


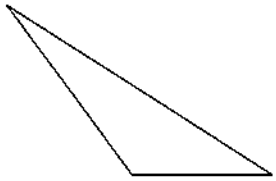
 Name_____

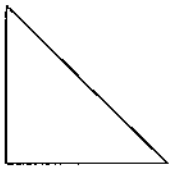
Classifying Triangles

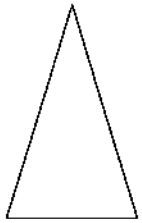
Date_____ Period____

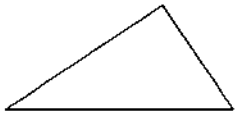
Classify each triangle by each angles and sides. Base your decision on the actual lengths of the sides and the measures of the angles.

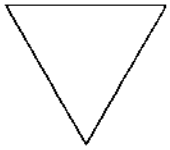
1) 

2) 

3) 

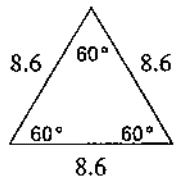
4) 

5) 

6) 

Classify each triangle by each angles and sides.

7)



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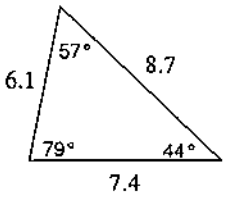

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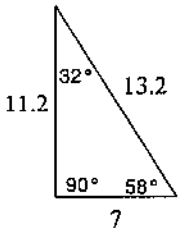

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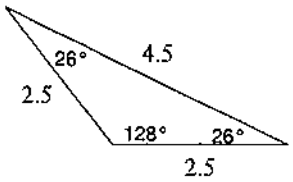

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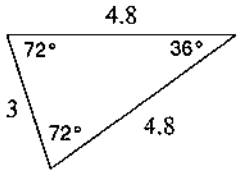

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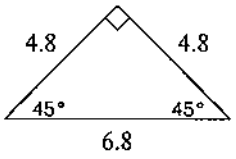
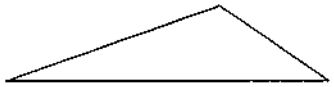


Classify each triangle by each angles and sides. Equal sides and equal angles, if any, are indicated in each diagram.

13)



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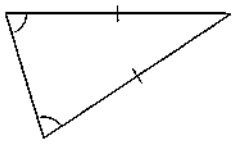
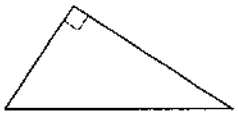
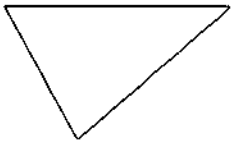
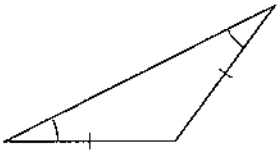
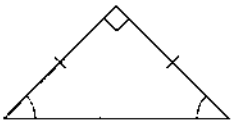


15) 

16) 

17) 

18) 

Sketch an example of the type of triangle described. Mark the triangle to indicate what information is known. If no triangle can be drawn, write "not possible."

19) acute isosceles

20) right scalene

21) right isosceles

22) right equilateral

23) acute scalene

24) obtuse scalene

25) right obtuse

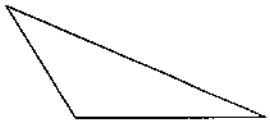
26) equilateral

Geometry Name_____

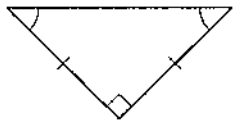
Classifying Triangles by Sides and/or Angles

Date_____ Period____

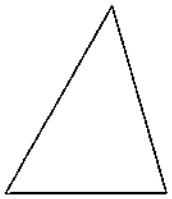
Classify each triangle by its sides. Equal sides and equal angles, if any, are indicated in each diagram.

1) 

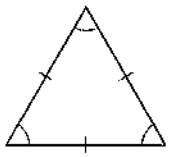
A) scalene B) equilateral
C) isosceles

2) 

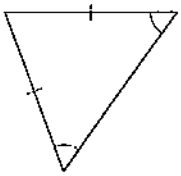
A) equilateral B) isosceles
C) scalene

3) 

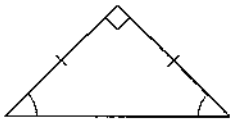
A) scalene B) isosceles
C) equilateral

4) 

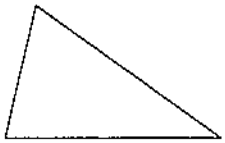
A) scalene B) equilateral
C) isosceles

5) 

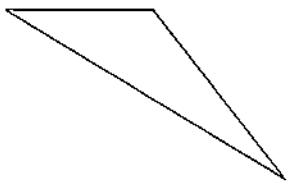
A) equilateral B) isosceles
C) scalene

6) 

A) isosceles B) equilateral
C) scalene

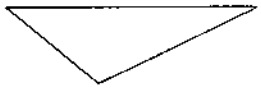
7) 

A) scalene B) isosceles
C) equilateral

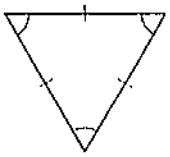
8) 

A) isosceles B) equilateral
C) scalene

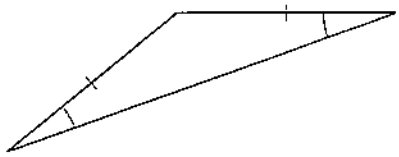
Classify each triangle by its angles.

9) 

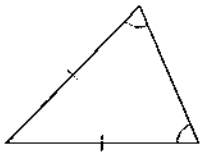
A) right B) obtuse
C) acute D) equiangular

10) 

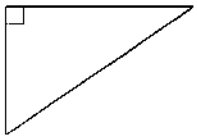
A) acute B) right
C) equiangular D) obtuse

11) 

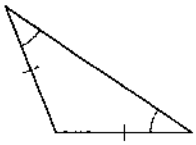
A) obtuse B) equiangular
C) acute D) right

12) 

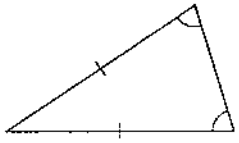
A) acute B) obtuse
C) right D) equiangular

13) 

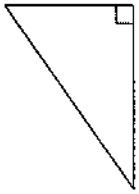
A) acute B) right
C) obtuse D) equiangular

14) 

A) right B) equiangular
C) obtuse D) acute

15) 

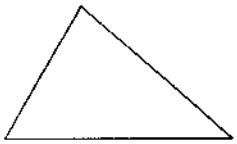
A) obtuse B) acute
C) right D) equiangular

16) 

A) acute B) right
C) equiangular D) obtuse

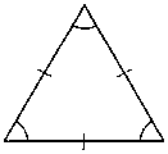
Classify each triangle by its angles and sides. Equal sides and equal angles, if any, are indicated in each diagram.

17)



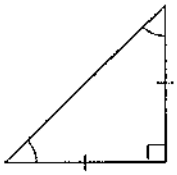
A) right isosceles
B) obtuse scalene
C) acute scalene
D) obtuse isosceles

18)



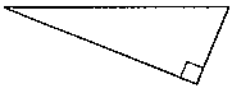
A) obtuse scalene
B) equilateral
C) obtuse isosceles
D) acute isosceles

19)



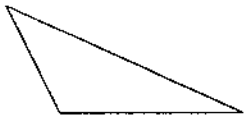
A) acute isosceles
B) acute scalene
C) equilateral
D) right isosceles

20)



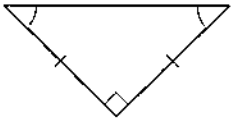
A) obtuse scalene
B) right scalene
C) acute scalene
D) acute isosceles

21)



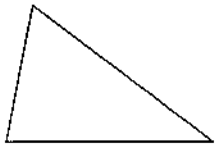
A) obtuse isosceles
B) obtuse scalene
C) right scalene
D) equilateral

22)



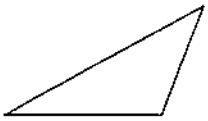
A) equilateral
B) obtuse scalene
C) acute isosceles
D) right isosceles

23)



A) right scalene
B) right isosceles
C) acute scalene
D) obtuse isosceles

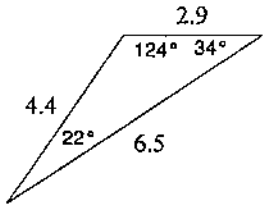
24)



A) right isosceles
B) obtuse scalene
C) equilateral
D) right scalene

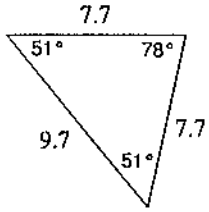
Classify each triangle by its angles and sides.

25)



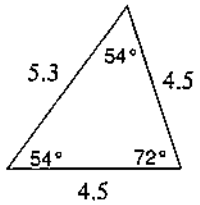
A) acute isosceles
B) obtuse scalene
C) equilateral
D) right isosceles

26)



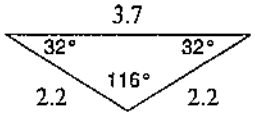
A) acute isosceles
B) equilateral
C) obtuse isosceles
D) right isosceles

27)



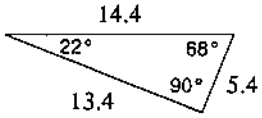
A) acute isosceles
B) equilateral
C) acute scalene
D) obtuse isosceles

28)



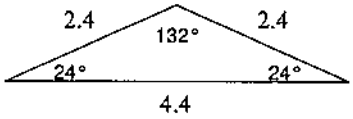
A) right isosceles
B) acute scalene
C) obtuse scalene
D) obtuse isosceles

29)



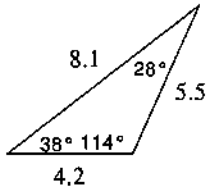
A) right isosceles
B) acute scalene
C) equilateral
D) right scalene

30)



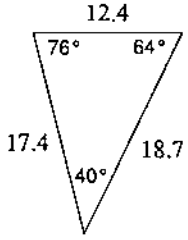
A) acute scalene
B) obtuse scalene
C) obtuse isosceles
D) right scalene

31)



A) equilateral
B) acute isosceles
C) obtuse scalene
D) acute scalene

32)



A) acute isosceles
B) right scalene
C) acute scalene
D) obtuse isosceles

Draw the triangle. Then, find x and the measure of each side of the triangle.

33) Triangle KLM is equilateral with $KM = d + 2$, $LM = 12 - d$, and $KM = 4d - 13$.

34) Triangle ABC is equilateral with $AB = 3x - 2$, $BC = 2x + 4$, and $CA = x + 10$.

35) Triangle DEF is isosceles, angle D is the vertex angle, $DE = x + 7$, $DF = 3x - 1$, and $EF = 2x + 5$.

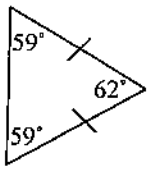
36) Triangle FGH is equilateral with $FG = x + 5$, $GH = 3x - 9$, and $FH = 2x - 2$.

9.1 I can classify triangles, angles of triangles, and congruent triangles. *NAME*_____

Match each triangle with its description.

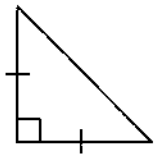
____	1. Side lengths: 2cm, 3cm, 4cm	A.	Equilateral
____	2. Side lengths: 3 cm, 2cm, 3cm	B.	Scalene
____	3. Side lengths: 1cm, 4cm, 5cm	C.	Obtuse
____	4. Side lengths: 4cm, 4cm, 4cm	D.	Not a triangle
____	5. Angle measures: 60°, 60°, 60°	E.	Equiangular
____	6. Angle measures: 30°, 60°, 90°	F.	Isosceles
____	7. Angle measures: 20°, 145°, 15°	G.	Right

Classify each triangle by its angles and by its sides.

8. 

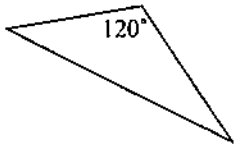
Sides: _____

Angles: _____

9. 

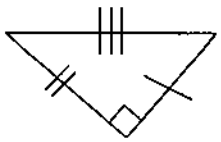
Sides: _____

Angles: _____

10. 

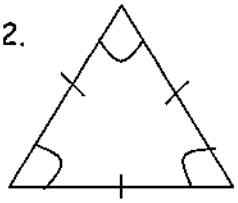
Sides: _____

Angles: _____

11. 

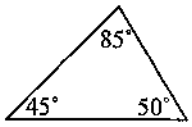
Sides: _____

Angles: _____

12. 

Sides: _____

Angles: _____

13. 

Sides: _____

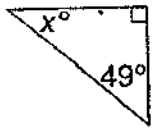
Angles: _____

LESSON 7-3

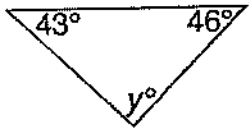
Practice B

Triangles

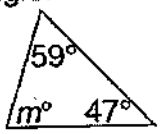
1. Find $x°$ in the right acute triangle.



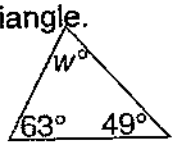
2. Find $y°$ in the obtuse triangle.



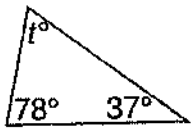
3. Find $m°$ in the triangle.



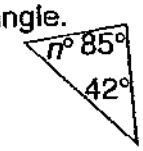
4. Find $w°$ in the acute scalene triangle.



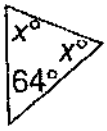
5. Find $t°$ in the scalene triangle.



6. Find $n°$ in the triangle.

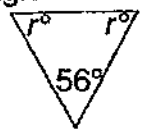


7. Find $x°$ in the isosceles isosceles triangle.



8. Find y in the equilateral triangle.

9. Find r in the triangle.



10. The second angle in a triangle is one third as large as the first. The third angle is two thirds as large as the first angle. Find the angle measures. Draw a possible picture of the triangle.

Tell whether a triangle can have sides with the given lengths. Explain.

11. 6 ft, 8 ft, 13 ft

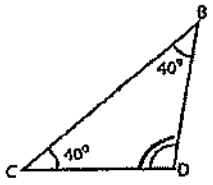
12. 15 cm, 8 cm, 2 cm

13. 9 mm, 22 mm, 14 mm

Name : _____ Score : _____

Triangle - Interior Angle

Example:



Sum of the interior angles = 180°

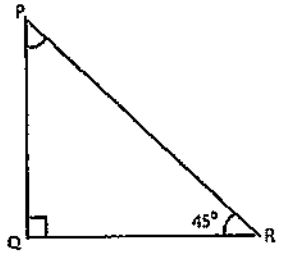
Sum of the interior angles = $40^\circ + 40^\circ + \angle D$

$180^\circ = 80^\circ + \angle D$

$\angle D = 180^\circ - 80^\circ = 100^\circ$

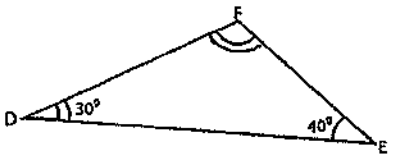
Find the unknown interior angle for each triangle.

1)



$\angle P =$ _____

2)

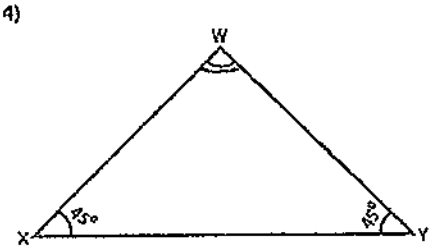


$\angle F =$ _____

3)

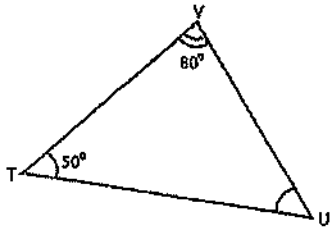
$\angle G =$ _____

4)



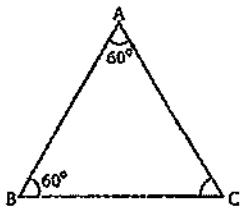
$\angle W =$ _____

5)



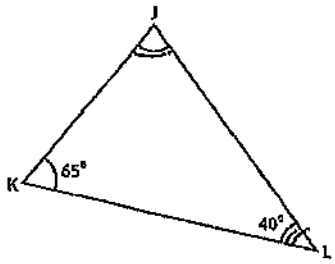
$\angle U =$ _____

6)



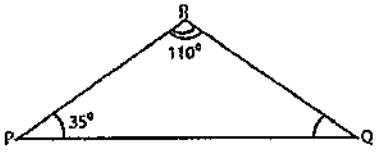
$\angle C =$ _____

7)



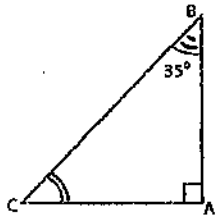
$\angle J =$ _____

8)



$\angle Q =$ _____

9)

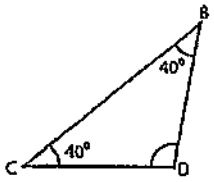


$\angle C =$ _____

Name : _____ Score : _____

Triangle - Interior Angle

Example:



Sum of the interior angles = 180°

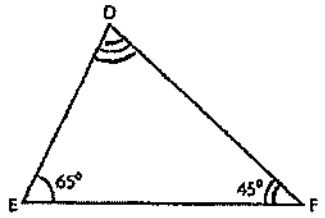
Sum of the interior angles = $40^0 + 40^0 + \angle D$

$180^0 = 80^0 + \angle D$

$\angle D = 180^0 - 80^0 = 100^0$

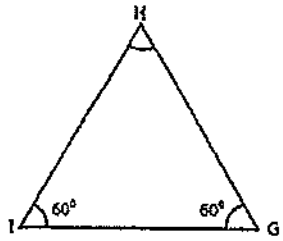
Find the unknown interior angle for each triangle.

1)



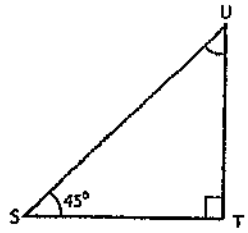
$\angle D =$ _____

2)



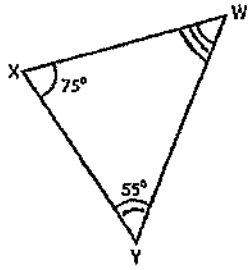
$\angle H =$ _____

3)



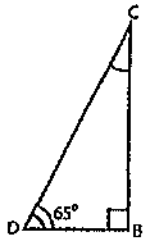
$\angle U =$ _____

4)



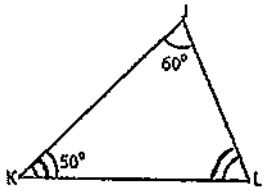
$\angle W =$ _____

5)



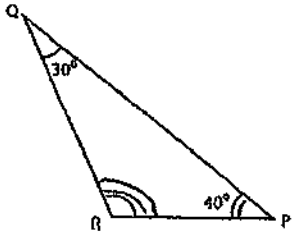
$\angle C =$ _____

6)



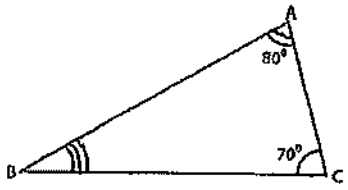
$\angle L =$ _____

7)



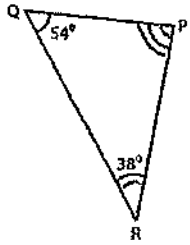
$\angle R =$ _____

8)



$\angle B =$ _____

9)

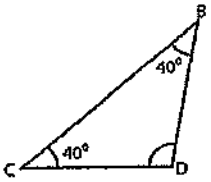


$\angle P =$ _____

Name : _____ Score : _____

Triangle - Interior Angle

Example:



Sum of the interior angles = 180°

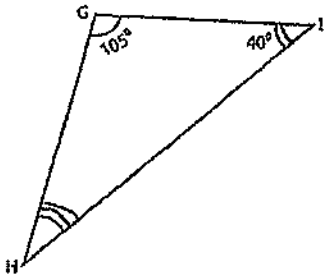
Sum of the interior angles = $40^\circ + 40^\circ + \angle D$

$180^\circ = 80^\circ + \angle D$

$\angle D = 180^\circ - 80^\circ = 100^\circ$

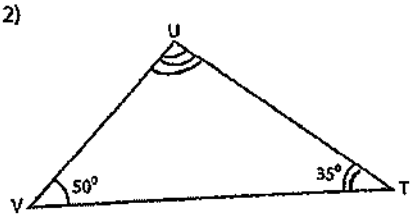
Find the unknown interior angle for each triangle.

1)



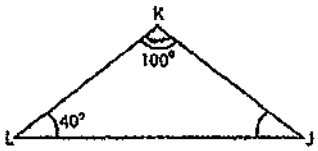
$\angle H =$ _____

2)



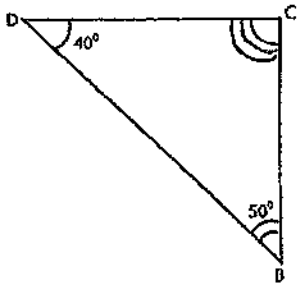
$\angle U =$ _____

3)



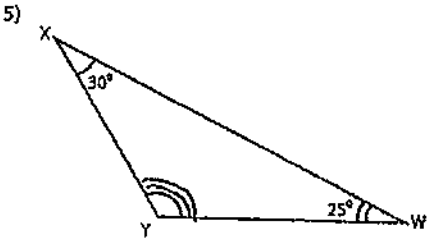
$\angle J =$ _____

4)



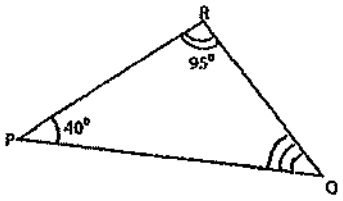
$\angle C =$ _____

5)



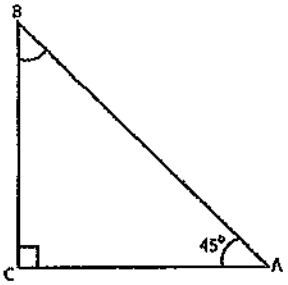
$\angle Y =$ _____

6)



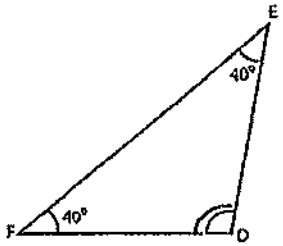
$\angle Q =$ _____

7)



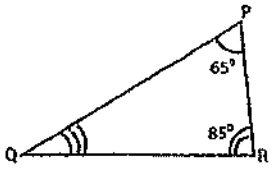
$\angle B =$ _____

8)



$\angle D =$ _____

9)

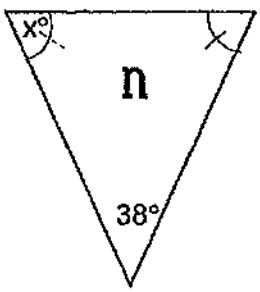


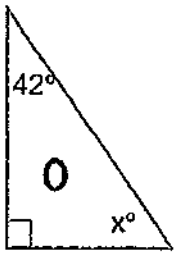
$\angle Q =$ _____

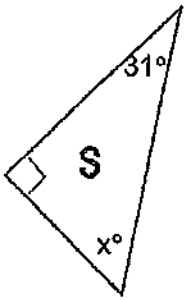
Name: _____ Class: _____ Date: _____

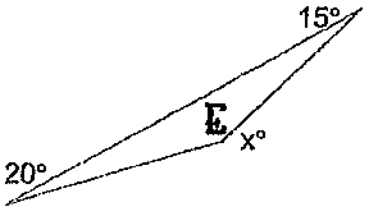
What did the triangle call the circle?

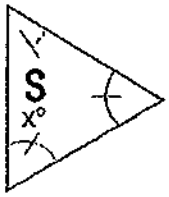
Find the value of the missing angle. Set up an equation and then solve for "x". Write the letter of the triangle below the measure of the missing angle in boxes at the bottom of the page.

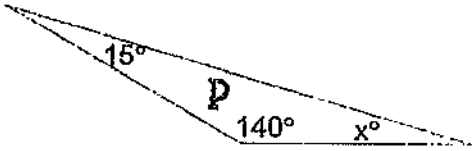


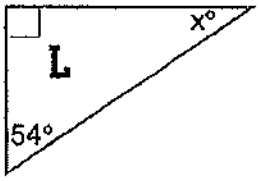


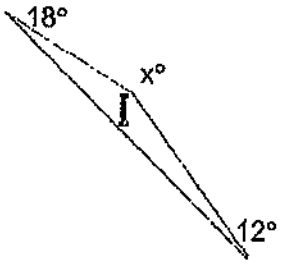


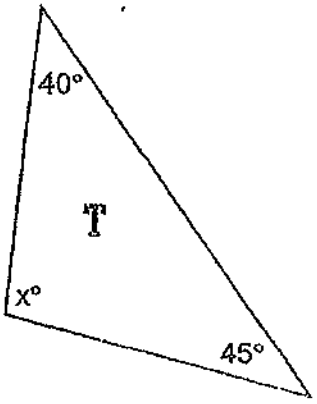








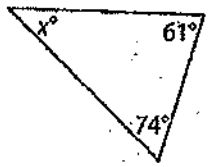




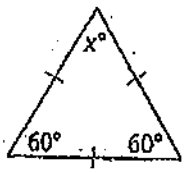
25°	48°	150°	71°	95°	36°	145°	59°	60°

HOMEWORK: Find the value of x in each triangle. Then classify each triangle by its angles and by its sides.

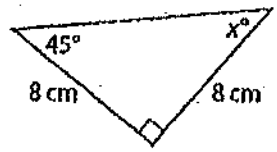
1.



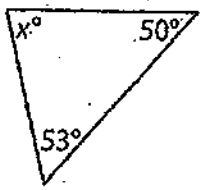
2.



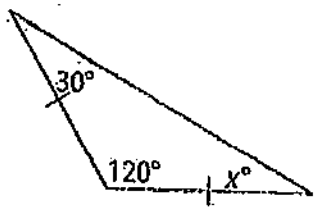
3.



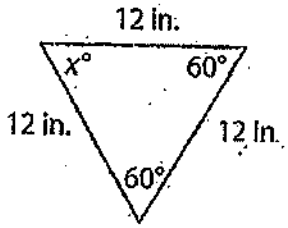
6.



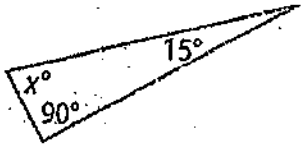
7.



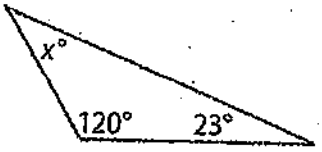
8.



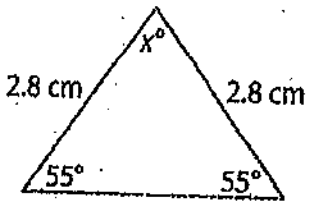
9.



10.



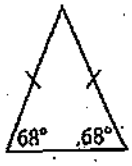
11.



AIM: How do we find the angles of a triangle whose measures are algebraic expressions?

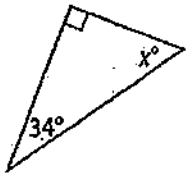
DO NOW:

34. Which of the following best describes the triangle with the given measures?

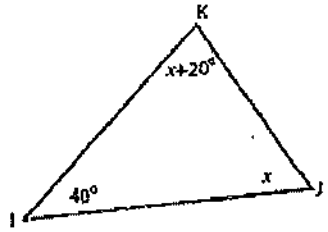


F acute isosceles triangle
G acute scalene triangle
H obtuse isosceles triangle
J acute equilateral triangle

36. Short Response Use the triangle shown below. Find the value of x.



Example:



Sum of the interior angles = 180°

Sum of the interior angles $= 40^\circ + x + 20^\circ + x$

$180^\circ = 60^\circ + 2x$

$2x = 180^\circ - 60^\circ = 120^\circ$

$x = \frac{120^\circ}{2} = 60^\circ$

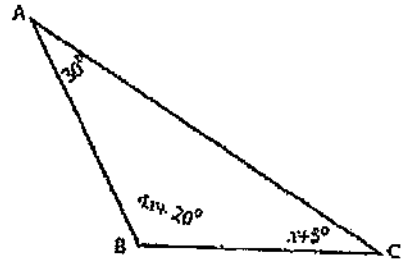
$\angle K = x + 20^\circ$

$\angle K = 60^\circ + 20^\circ$

$\angle K = 80^\circ$

$\angle J = 60^\circ$

1)



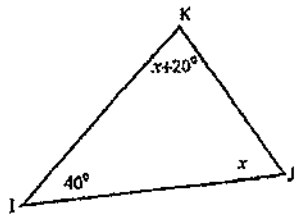
$x =$ _____

$\angle B =$ _____ ; $\angle C =$ _____

Name :_____ Score :_____

Triangle - Interior Angle

Example:



Sum of the interior angles = 180°

Sum of the interior angles = $40^\circ + x + 20^\circ + x$

$180^\circ = 60^\circ + 2x$

$2x = 180^\circ - 60^\circ = 120^\circ$

$x = \frac{120^\circ}{2} = 60^\circ$

$\angle K = x + 20^\circ$

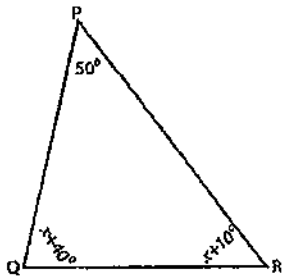
$\angle K = 60^\circ + 20^\circ$

$\angle K = 80^\circ$

$\angle J = 60^\circ$

Find the value of x and unknown interior angles for each triangle.

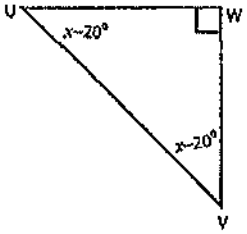
1)



$x =$ _____

$\angle Q =$ _____ ; $\angle R =$ _____

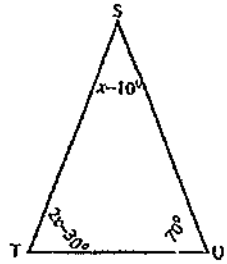
2)



$x =$ _____

$\angle U =$ _____ ; $\angle V =$ _____

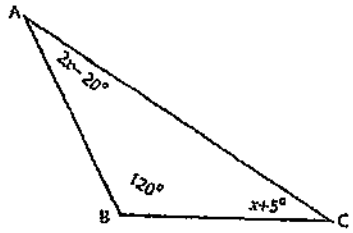
3)



$x =$ _____

$\angle S =$ _____ ; $\angle T =$ _____

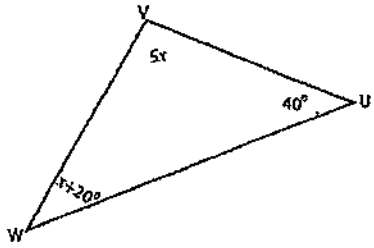
4)



$x =$ _____

$\angle A =$ _____ ; $\angle C =$ _____

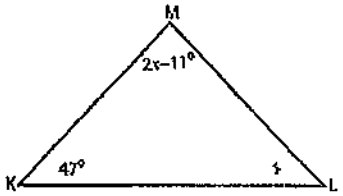
5)



$x =$ _____

$\angle W =$ _____ ; $\angle V =$ _____

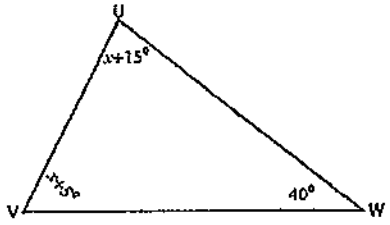
6)



$x =$ _____

$\angle L =$ _____ ; $\angle M =$ _____

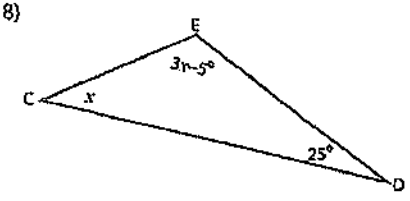
7)



$x =$ _____

$\angle U =$ _____ ; $\angle V =$ _____

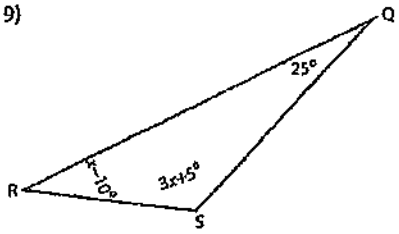
8)



$x =$ _____

$\angle C =$ _____ ; $\angle E =$ _____

9)



$x =$ _____

$\angle R =$ _____ ; $\angle S =$ _____

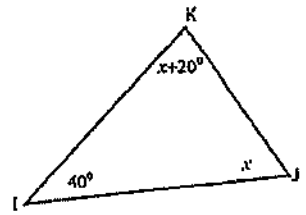
Solve for x. Then find the unknown angles. Show your work! Page #_____

1.	2.	3.
4.	5.	6.
7.	8.	9.

Name : _____ Score : _____

Triangle - Interior Angle HW

Example:



Sum of the interior angles = 180°

Sum of the interior angles $= 40^0 + x + 20^0 + x$

$180^0 = 60^0 + 2x$

$2x = 180^0 - 60^0 = 120^0$

$x = \frac{120^0}{2} = 60^0$

$\angle K = x + 20^0$

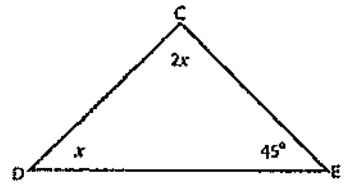
$\angle K = 60^0 + 20^0$

$\angle K = 80^0$

$\angle J = 60^0$

Find the unknown interior angle for each triangle.

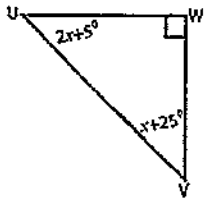
1)



$x =$ _____

$\angle C =$ _____ ; $\angle D =$ _____

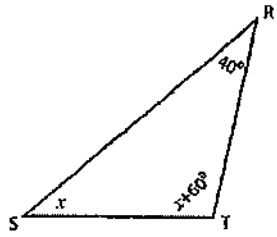
2)



$x =$ _____

$\angle U =$ _____ ; $\angle V =$ _____

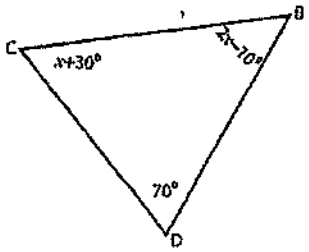
3)



$x =$ _____

$\angle S =$ _____ ; $\angle T =$ _____

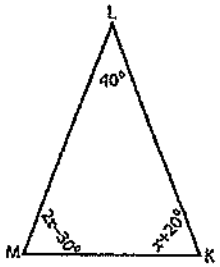
4)



$x =$ _____

$\angle B =$ _____ ; $\angle C =$ _____

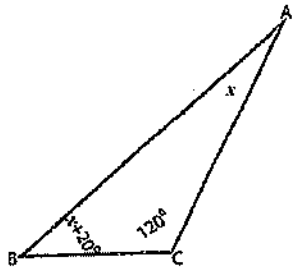
5)



$x =$ _____

$\angle K =$ _____ ; $\angle M =$ _____

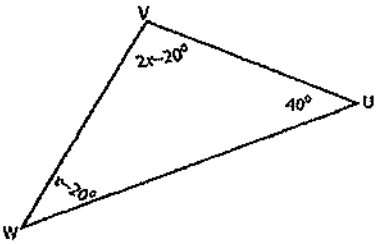
6)



$x =$ _____

$\angle A =$ _____ ; $\angle B =$ _____

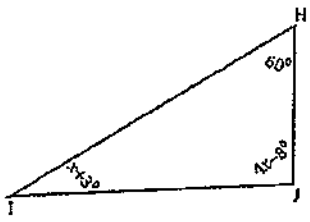
7)



$x =$ _____

$\angle V =$ _____ ; $\angle W =$ _____

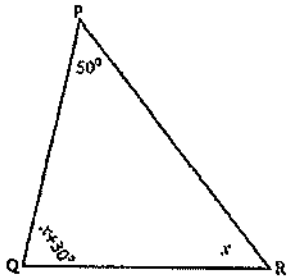
8)



$x =$ _____

$\angle I =$ _____ ; $\angle J =$ _____

9)



$x =$ _____

$\angle Q =$ _____ ; $\angle R =$ _____

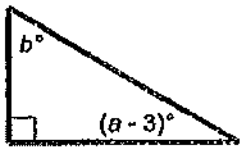
Solve for x. Then find the unknown angles. Show your work! Page #_____

1.	2.	3.
4.	5.	6.
7.	8.	9.

1. Solve for a.

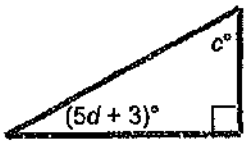
$a =$ _____

2. Solve for b.



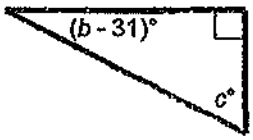
$b =$ _____

4. Solve for d.



$d =$ _____

3. Solve for c.



$c =$ _____

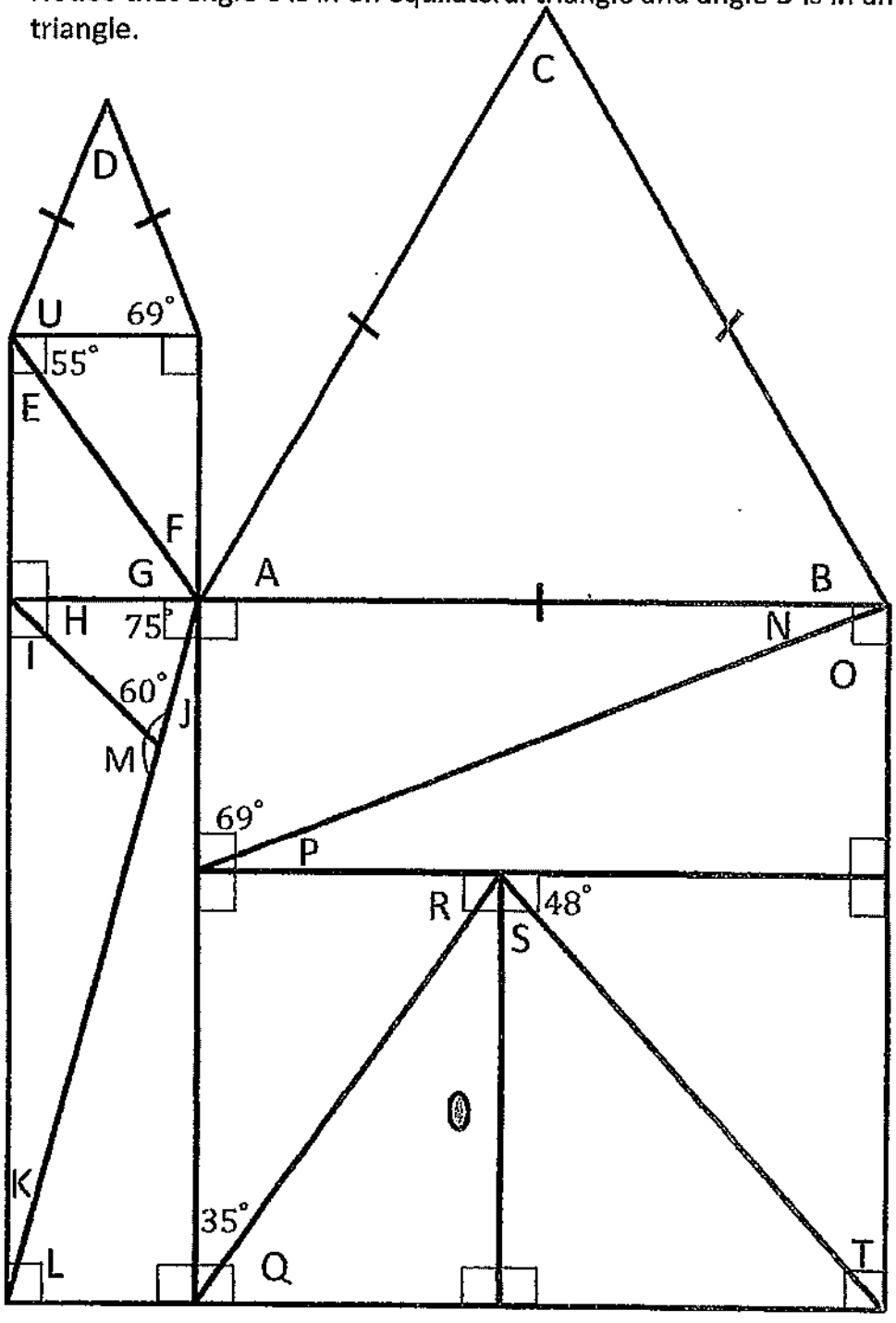
Name:_____ Date:_____

Missing Angles in Triangles

The sum of the angles of any triangle is _____

Find all the missing Angles in the triangles. Write each answer in the line provided beside the corresponding letter.

Notice that angle C is in an equilateral triangle and angle D is in an isosceles triangle.



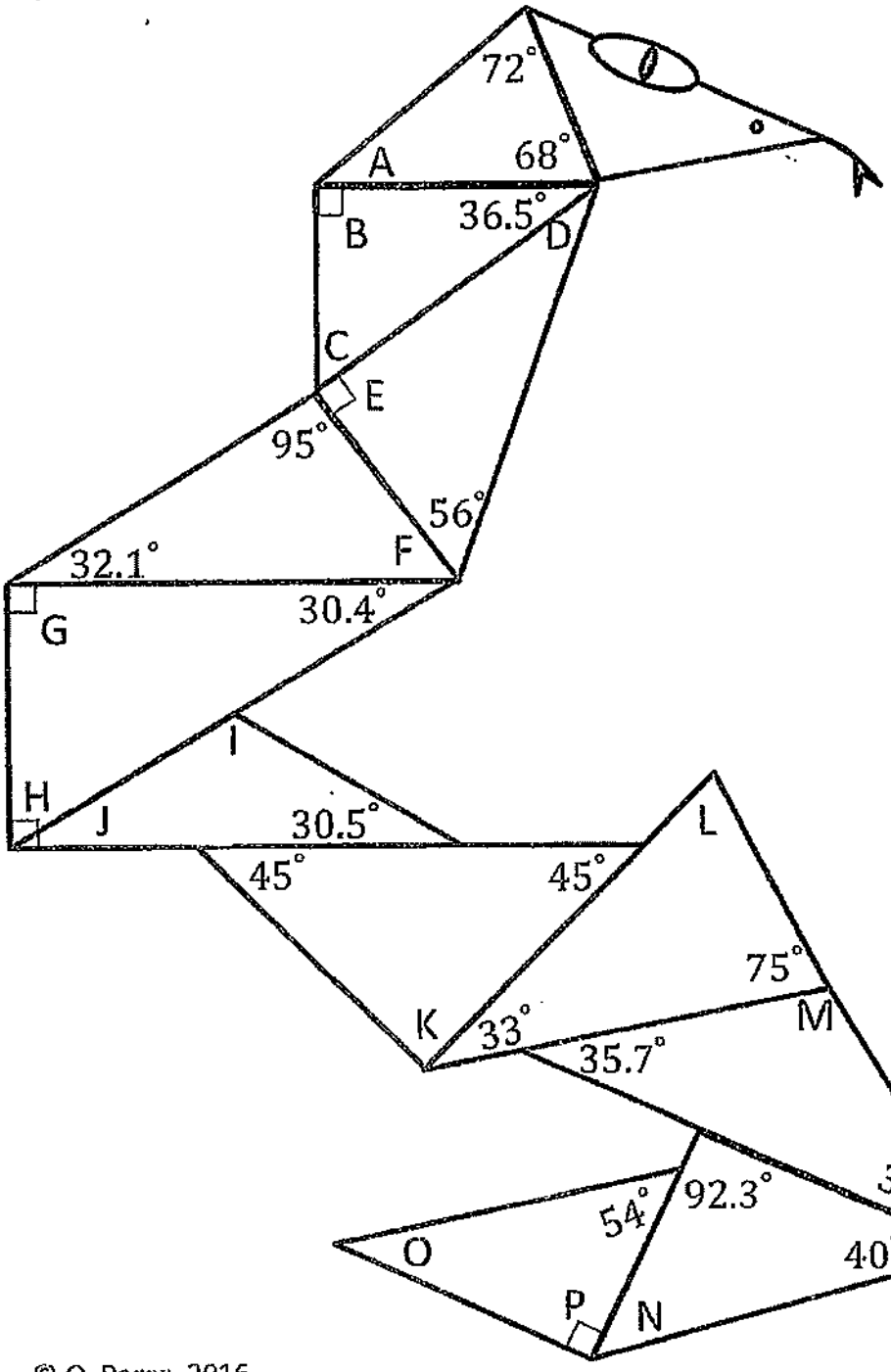
A _____
B _____
C _____
D _____
E _____
F _____
G _____
H _____
I _____
J _____
K _____
L _____
M _____
N _____
O _____
P _____
Q _____
R _____
S _____
T _____
U _____

Name:_____ Date:_____

Missing Angles in Triangles

The sum of the angles of any triangle is _____

Find all the missing angles in the triangles. Write each answer in the line provided beside the corresponding letter.



A _____

B_____

C _____

D _____

E _____

F _____

G _____

H _____

I _____

J _____

K _____

L _____

M _____

N _____

O _____

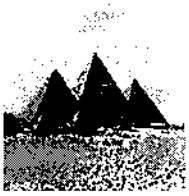
P _____

The Triangle Inequality

NAME _____

During this activity, you will compare the sum of the measures of any two sides of a triangle with the measure of the third side.

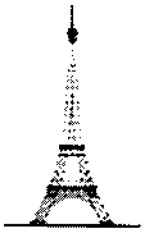
1. Use three pieces of straw to form a triangle. Measure each side of the triangle to the nearest centimeter. In the table below, record the measures of each side of the triangle from smallest to largest; then, find the sum of the measures of the small and medium sides. Repeat this activity twice, with two other triangles, to complete the chart.



SMALL	MEDIUM	LARGE	SMALL + MEDIUM

2. Use three pieces of straw so that it is impossible to form a triangle. Measure each side of the non-triangle to the nearest whole centimeter. In the table below, record the measures of each side of the non-triangle from smallest to largest; then, find the sum of the measures of the small and medium sides. Repeat this activity twice, with two other non-triangles, to complete the chart.

SMALL	MEDIUM	LARGE	SMALL + MEDIUM



3. Look at the last two columns of the first table, compare the sum of the measures of the small and medium sides to the measure of the large side for each triangle you created. Describe what you notice.

4. Look at the last two columns of the second table, compare the sum of the measures of the small and medium sides to the measure of the large side for each non-triangle you created. Describe what you notice.

5. **Make a conjecture**. Based on your observations, write a conjecture about the relationship between the sum of the measures of the small and medium sides of a triangle and the measure of the large side of the triangle. **Provide a reason for your conjecture.**

6. **Test your conjecture.**

   Work with your group. Based on your conjecture, predict whether you can create triangles using the given side lengths. Then use the straws to prove your prediction.

   a) 15 cm, 8 cm, 15 cm

   b) 13 cm, 8 cm, 15 cm

   c) 13 cm, 4 cm, 4 cm

7. **Consider this.**
   Is it possible to have a triangle such that the sum of the measures of the small and medium sides is equal to the measure of the large side? Provide a convincing reason for your answer. (You may use the straw pieces, if you like.)

Name_____ Date_____

Triangle Inequality Theorem

Practice

Is it possible for a triangle to have sides with the given lengths? Explain why.

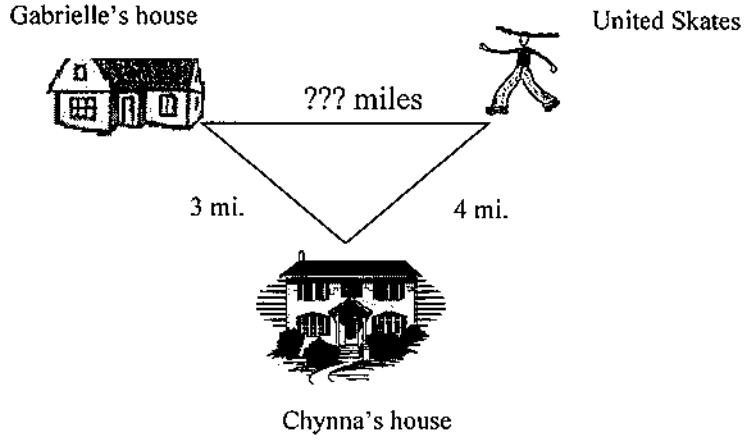
1. 2 in., 3 in., 6 in.

2. 11 cm., 15 cm., 12 cm.

3. 6 ft., 10 ft., 13 ft.

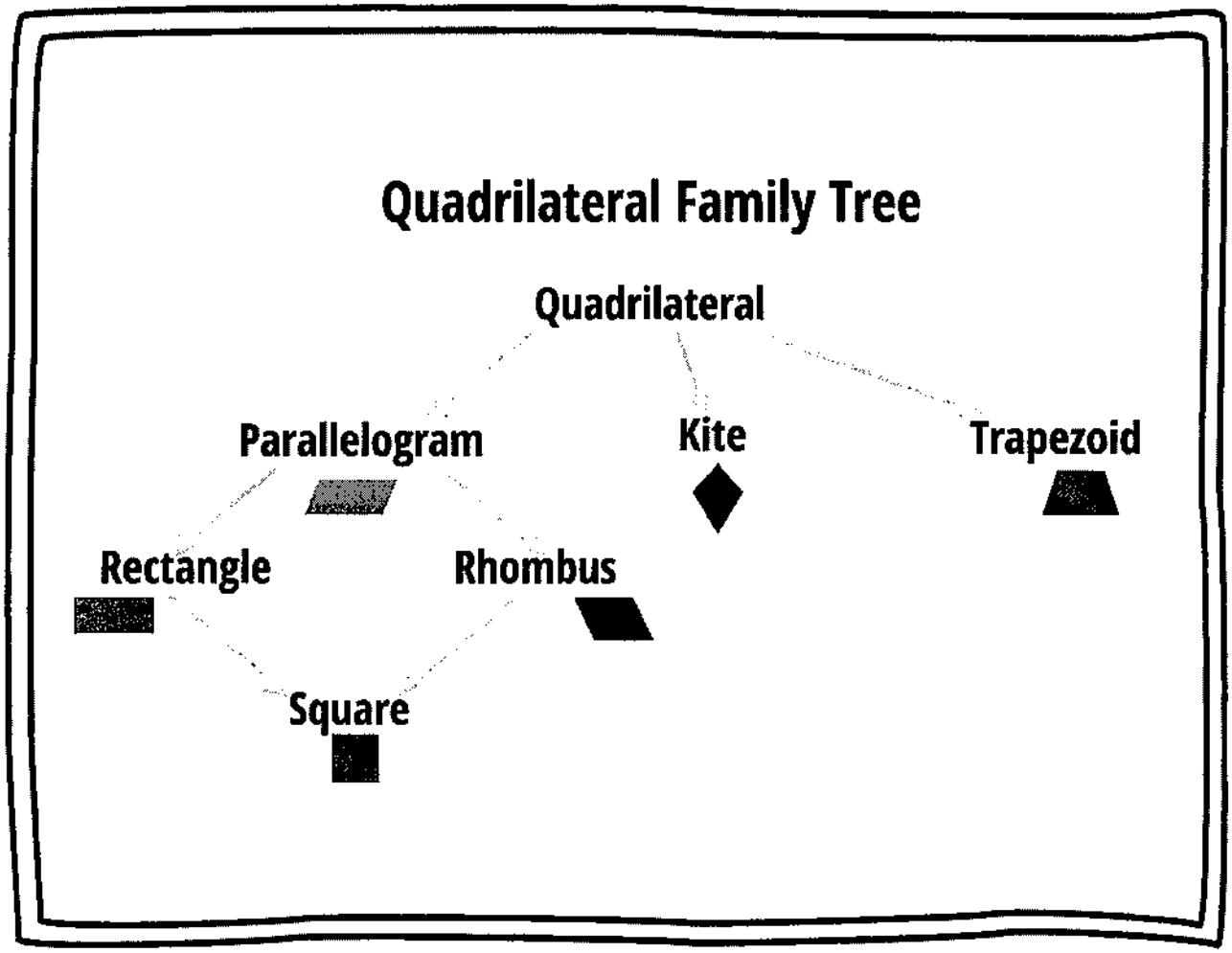
4. 19 m., 10 m., 8 m.

5. Gabrielle is going to a party at United Skates. She has to pick up her friend Chynna first. Gabrielle told Chynna that based on the triangle inequality theorem that she learned about, and the picture that she drew below, her house is only 7 miles from United Skates. Is she correct? Explain why.



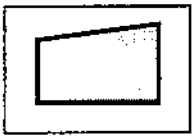
6. Two sides of a triangle measure 8 cm and 10 cm. What are the possible whole number values of the length of the third side? Explain your answer.

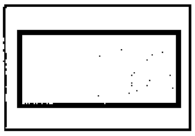
7. Can the following sets of angle measures be used to create a triangle $45^0, 55^0, 100^0$? Explain why.

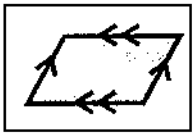

Quadrilateral Family Tree
Quadrilateral
Parallelogram
Kite
Trapezoid
Rectangle
Rhombus
Square

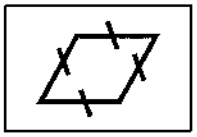
QUADRILATERAL FAMILY TREE

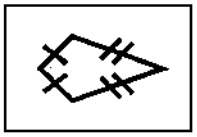
- PARALLELOGRAM WITH *all* EQUAL SIDES
- QUADRILATERAL WITH *only* ONE PAIR OF PARALLEL SIDES
- 4 SIDED POLYGON
- PARALLELOGRAM WITH *four* RIGHT ANGLES
- QUADRILATERAL WITH *opposite* SIDES PARALLEL
- *Two* PAIRS OF ADJACENT SIDES THAT HAVE EQUAL LENGTHS
- FOUR EQUAL SIDES *and* FOUR RIGHT ANGLES

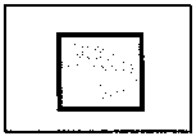


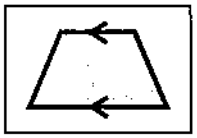












KITE

RHOMBUS

QUADRILATERAL

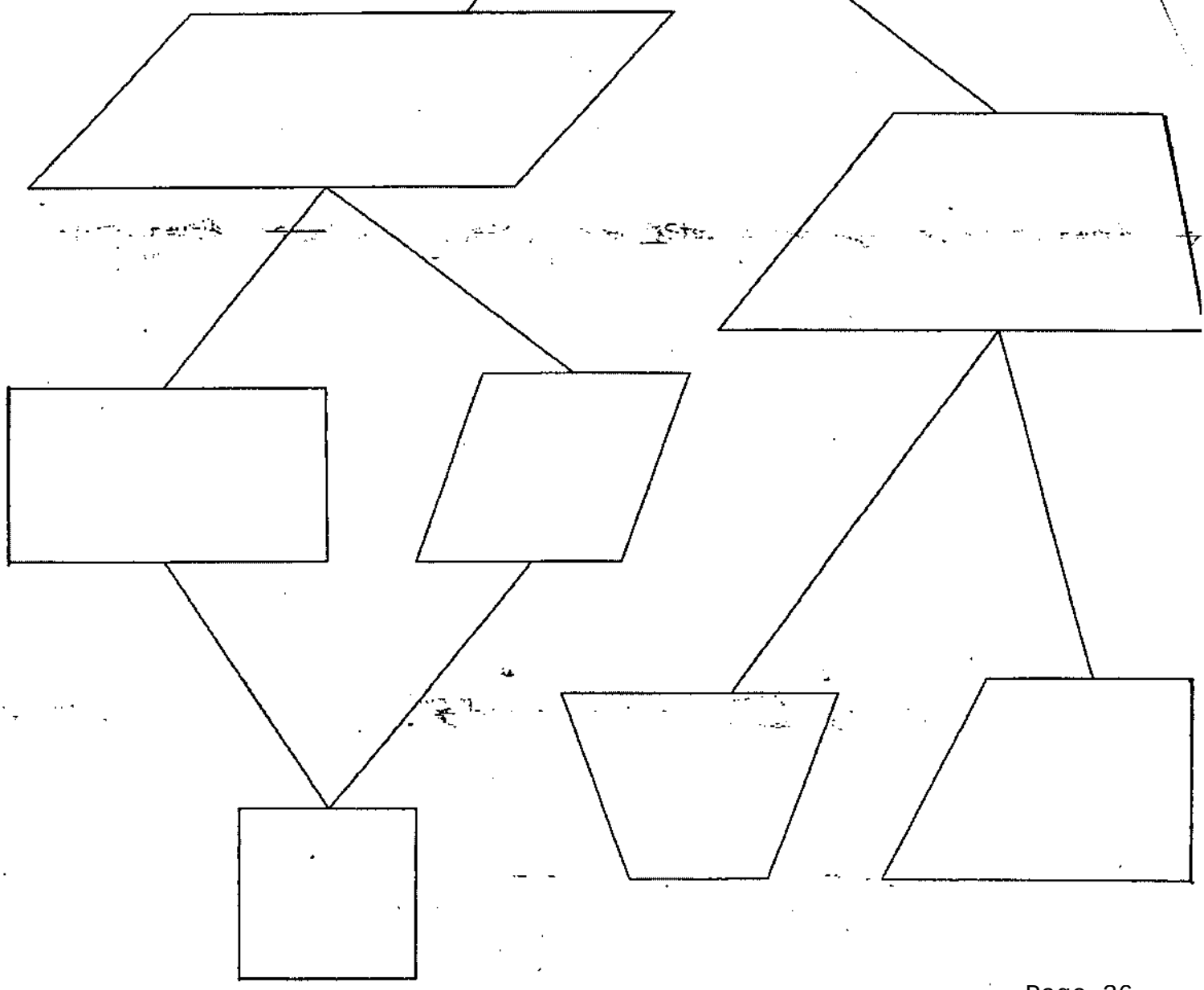
PARALLELOGRAM

RECTANGLE

SQUARE

TRAPEZOID

Quadrilateral Family Tree



Quadrilateral Fact Sheet

Parallelogram

- Both pairs of opposite sides are parallel
- Opposite sides of a parallelogram are congruent

Rectangle

A rectangle is a parallelogram, therefore

- Both pairs of opposite sides are parallel
- Opposite sides of a parallelogram are congruent
- Opposite angles of a parallelogram are congruent
- Contains four right angles

Rhombus

A Rhombus is a parallelogram, therefore

- Both pairs of opposite sides are parallel
- Opposite sides of a parallelogram are congruent
- Opposite angles of a parallelogram are congruent
- All sides are congruent

Square

A Square is a parallelogram, therefore

- Both pairs of opposite sides are parallel
- Opposite sides of a parallelogram are congruent
- Opposite angles of a parallelogram are congruent
- All sides are congruent
- Contains four right angles

Trapezoid

- A Trapezoid has exactly **one pair** of parallel sides
- An Isosceles trapezoid has legs that are congruent
- Base angles of an isosceles trapezoid are congruent
- A right trapezoid has two right angles

6-4 Classifying Quadrilaterals

NEW YORK *Performance Indicator* **7.G.7** **Find a missing angle when given angles of a quadrilateral**

What You'll LEARN

Find missing angle measures in quadrilaterals and classify quadrilaterals.

NEW Vocabulary

quadrilateral
trapezoid
parallelogram
rectangle
rhombus
square

Link to READING

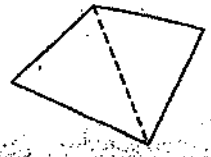
Everyday meaning of prefix quadri-: four

HANDS-ON Mini Lab

Materials
- paper
- straightedge
- protractor

Work with a partner.

The polygon at the right is a **quadrilateral**, since it has four sides and four angles.



STEP 1 Draw a quadrilateral.

STEP 2 Pick one vertex and draw the diagonal to the opposite vertex.

1. Name the shape of the figures formed when you drew the diagonal. How many figures were formed?
2. You know that the sum of the angle measures of a triangle is 180. What is the sum of the angle measures of a quadrilateral? Explain your reasoning.

The angles of a quadrilateral have a special relationship.

Noteables™ Key Concept: Angles of a Quadrilateral

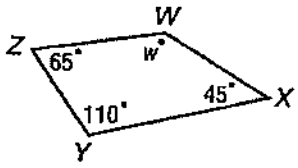
Words The sum of the measures of the angles of a quadrilateral is 360.

Model

Symbols $w + x + y + z = 360$

EXAMPLE Find a Missing Angle Measure

1 Find the value of w in quadrilateral $WXYZ$.

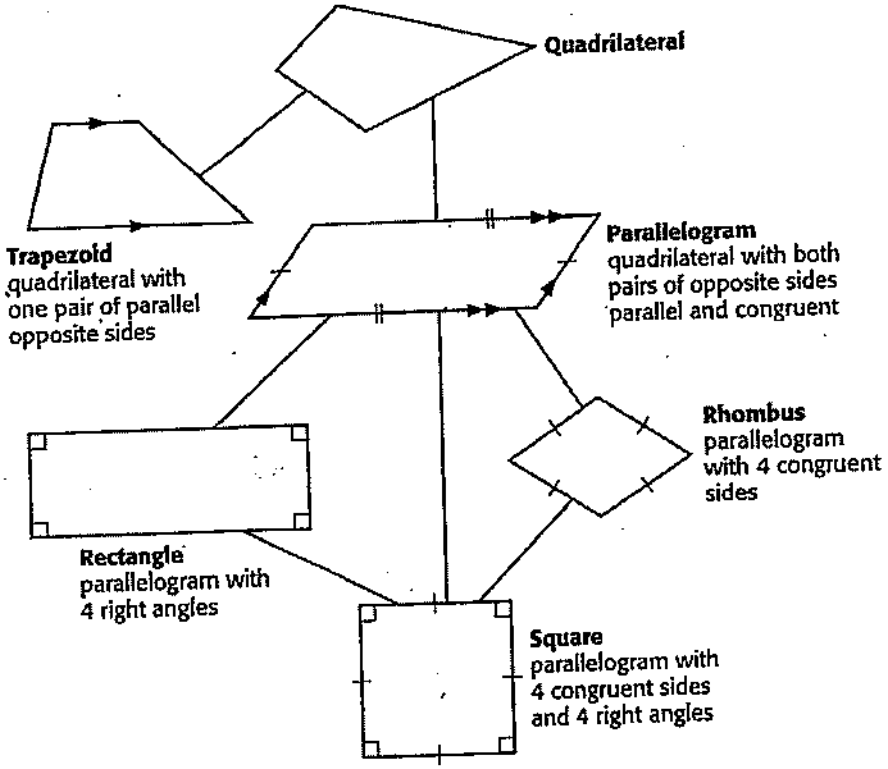


$m\angle W + m\angle X + m\angle Y + m\angle Z =$	360	The sum of the measures is 360.
$w + 45 + 110 + 65 =$	360	Let $m\angle W = w$, $m\angle X = 45$, $m\angle Y = 110$, and $m\angle Z = 65$.
$w + 220 =$	360	Simplify.
$- 220 = - 220$		Subtract 220 from each side.
$w =$	140	Simplify.

Math

Trapezoid A ... with one pair of ... congruent sides ... as an *isosceles* ...

The concept map below shows how quadrilaterals are classified. Notice that the diagram goes from the most general type of quadrilateral to the most specific.



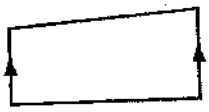
The best description of a quadrilateral is the one that is the most specific.

STUDY TIP

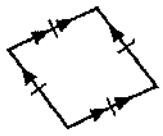
Classifying Quadrilaterals When classifying a quadrilateral, begin by counting the number of parallel lines. Then count the number of right angles and the number of congruent sides.

EXAMPLES Classify Quadrilaterals

Classify each quadrilateral using the name that *best* describes it.

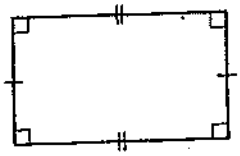
2 

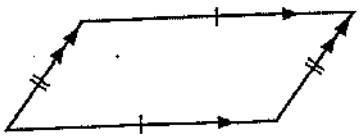
The quadrilateral has one pair of parallel sides. It is a trapezoid.

3 

The quadrilateral is a parallelogram with four congruent sides. It is a rhombus.

Your Turn **Classify each quadrilateral using the name that *best* describes it.**

a. 

b. 

Skill and Concept Check

1. **Writing Math** Explain why a square is a type of rhombus.

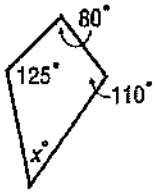
2. **OPEN ENDED** Give a real-life example of a parallelogram.

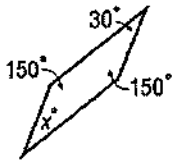
3. **Which One Doesn't Belong?** Identify the quadrilateral that does not belong with the other three. Explain your reasoning.

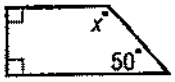
rhombus | rectangle | square | trapezoid

GUIDED PRACTICE

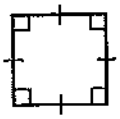
Find the value of x in each quadrilateral.

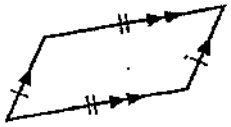
4. 

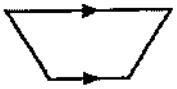
5. 

6. 

Classify each quadrilateral using the name that *best* describes it.

7. 

8. 

9. 

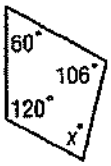
Practice and Applications

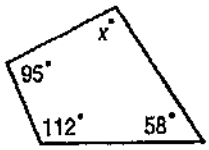
HOMEWORK HELP

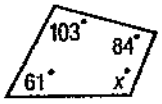
For Exercises	See Examples
10–15, 25–26	1
16–24, 27–30	2, 3

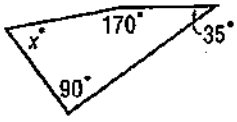
Extra Practice
See pages 630, 655.

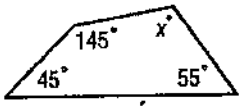
Find the value of x in each quadrilateral.

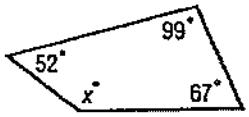
10. 

11. 

12. 

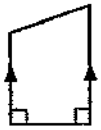
13. 

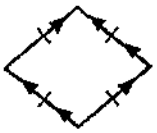
14. 

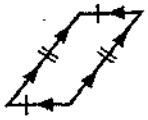
15. 

Classify each quadrilateral using the name that *best* describes it.

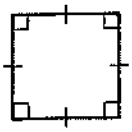
16. 

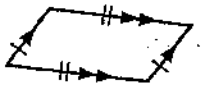
17. 

18. 

19. 

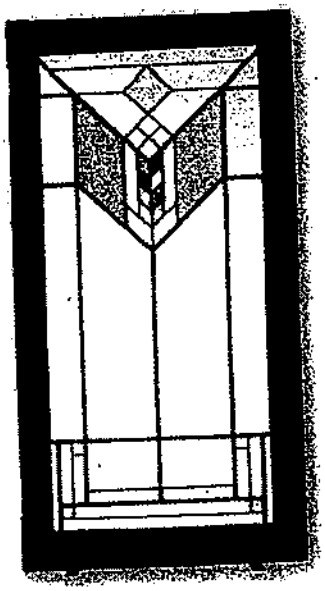
20. 

21. 

22. 

23. 

INTERIOR DESIGN The stained glass window shown is an example of how geometric figures can be used in decorating. Identify all of the quadrilaterals within the print.



ALGEBRA In parallelogram $WXYZ$, $m\angle W = 45°$, $m\angle X = 135°$, $m\angle Y = 45°$, and $m\angle Z = (x + 15)°$. Find the value of x.

ALGEBRA In trapezoid $ABCD$, $m\angle A = 2a°$, $m\angle B = 40°$, $m\angle C = 110°$, and $m\angle D = 70°$. Find the value of a.

Name all quadrilaterals with the given characteristic.

27. only one pair of parallel sides
28. opposite sides congruent
29. all sides congruent
30. all angles are right angles

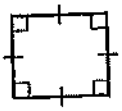
CRITICAL THINKING **Determine whether each statement is *true* or *false*. If *false*, draw a counterexample.**

31. All trapezoids are quadrilaterals.
32. All squares are rectangles.
33. All rhombi (plural of rhombus) are squares.
34. A trapezoid can have only one right angle.

Spiral Review with Standardized Test Practice

NEW YORK Test Practice

35. **MULTIPLE CHOICE** Which of the following does *not* describe the quadrilateral at the right?



(A) parallelogram (B) square
(C) trapezoid (D) rhombus

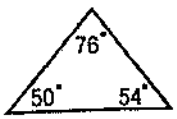
36. **SHORT RESPONSE** In rhombus $WXYZ$, $m\angle Z = 70°$, $m\angle X = 70°$, and $m\angle Y = 110°$. Find the measure of $\angle W$.

37. The length of the hypotenuse of a 30°-60° right triangle is 16 feet. Find the length of the side opposite the 60° angle. Round to the nearest tenth. (Lesson 6-3)

38. The length of one of the legs of a 45°-45° right triangle is 8 meters. Find the length of the hypotenuse. Round to the nearest tenth. (Lesson 6-3)

Classify each triangle by its angles and by its sides. (Lesson 6-2)

39.



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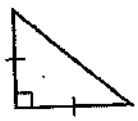

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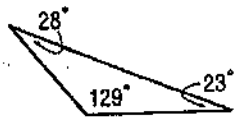
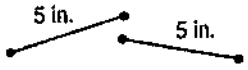


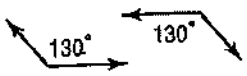
GETTING READY FOR THE NEXT LESSON

PREREQUISITE SKILL **Decide whether the figures are congruent. Write *yes* or *no* and explain your reasoning.** (Lesson 4-5)

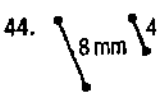
42.



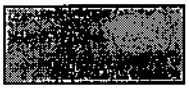
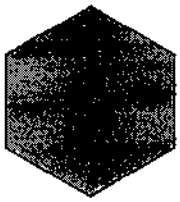
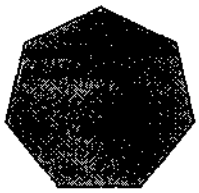
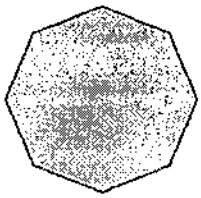
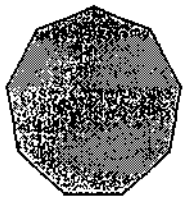
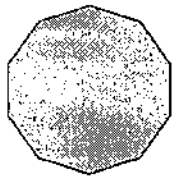
43.



44.



Name:_____ Date:_____

Polygon	# of sides	# of Triangles	Total Degrees within triangles	Total Degrees of polygon	Polygon Name
					
					
					
					
					
					
					
					

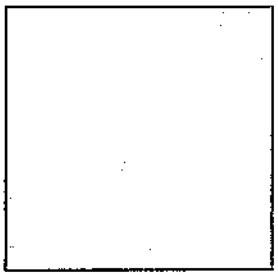
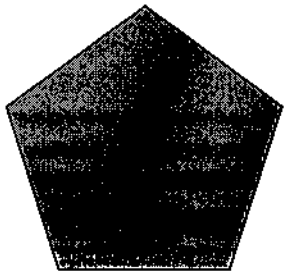
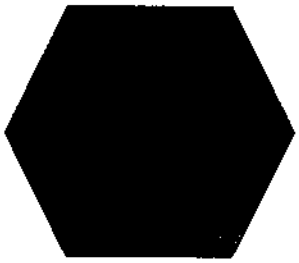
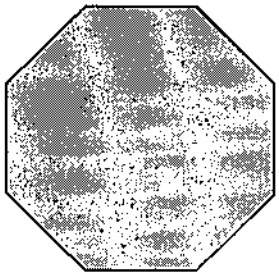
Name _____ Date_____

Interior Angles of a Polygon Investigation

Part One:

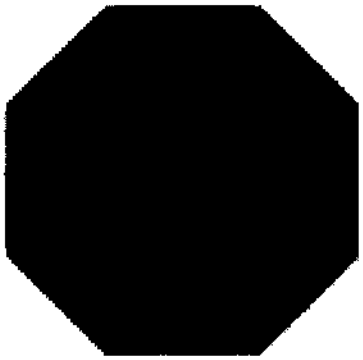
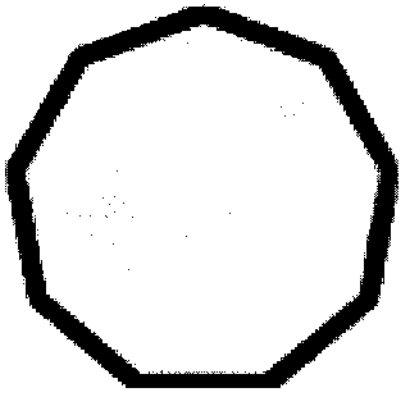
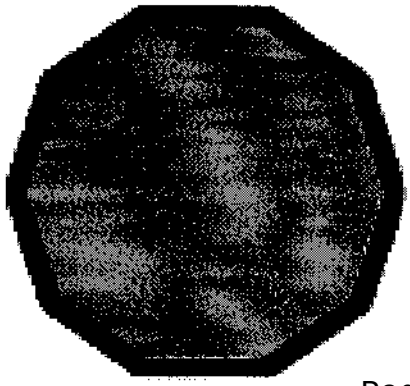
A ***diagonal*** of a polygon connects a vertex of the polygon to a non-adjacent vertex.

Select one vertex from each polygon below and draw all the diagonals from that vertex.

Now complete the table below. HINT: There are _____ degrees in a triangle.

Polygon	Number of Sides	Number of Triangles	Sum of Interior Angles
Quadrilateral			
Pentagon			
Hexagon			
Heptagon			
Octagon			
Nonagon			
Decagon			
n-gon			

Part Two: Pattern, Observations and Formulas

With your group answer the following questions:

- Patterns...

1. Compare the number of triangles formed from the diagonal to the number of sides in your polygon.
   - What do you notice about the number of triangles formed by one diagonal as you increase the number of sides?

   - How would you write this as a formula using "n" to represent the number of sides?

2. What do you notice about the sum of the interior angles as you increase the number of sides?

   - How would you write this as a formula using "n" to represent the number of sides?

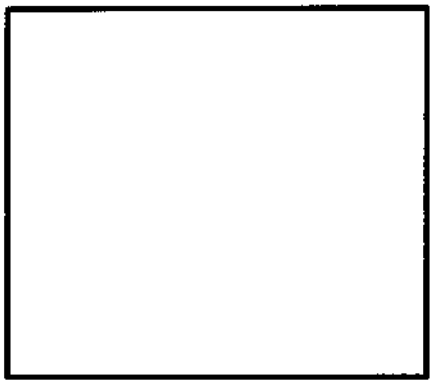
3. What is special about a regular polygon? How would you find the measure of each interior angle of a regular polygon if you knew the number of sides? (**Hint:** Compare the number of interior angles to the number of sides.)

   - How would you write a formula to find the measure of each interior angle in a regular polygon with n-sides? (**Hint:** How would you modify the formula that you found in question 3?)

Part Three: Applications and Examples

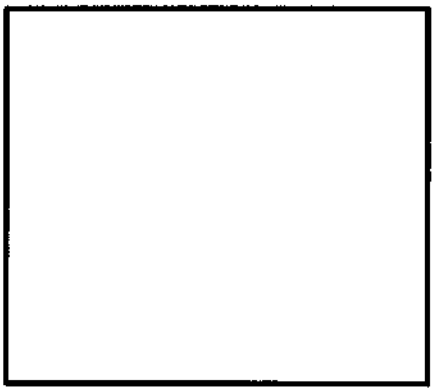
Find the sum of the measures of the interior angle. Show your work in the boxes below.

A regular dodecagon (12-sides)



a regular 21-gon

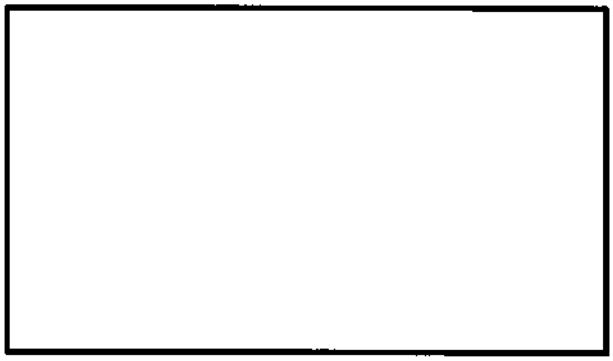
a regular 15-gon



Find the measure of each angle in a regular polygon. Show your work in the boxes below.

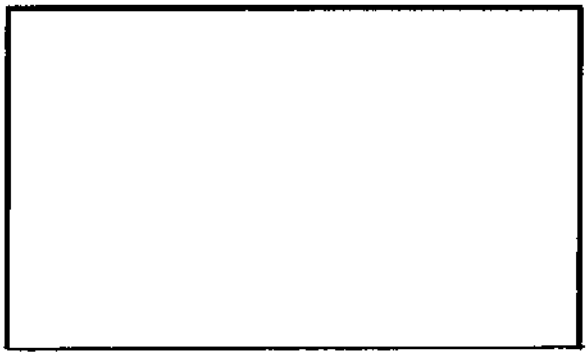
a regular octagon

a regular hexagon

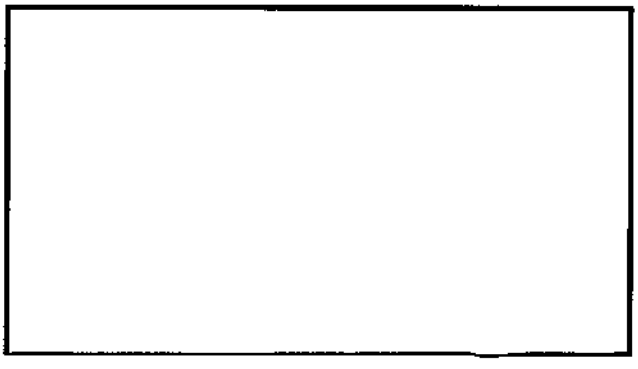


Find the number of sides for each situation given (Hint: Use algebra to help solve an equation):

An interior angle sum of 2160^0



An interior angle sum of 4140^0



8. If the sum of the interior angles of a polygon equals 900°, how many sides does the polygon have?

9. Find the measure of each interior angle of a regular decagon.

10. How many degrees are there in each interior angle of a hexagon?

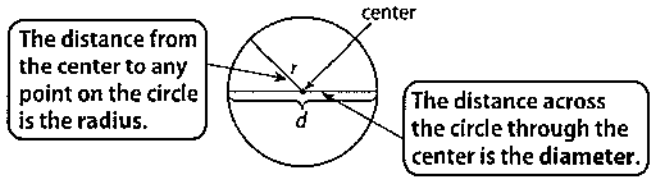
11. If a regular polygon has 7 sides, how many degrees are there in any one of its angles?

NAME _____ DATE _____ PERIOD _____

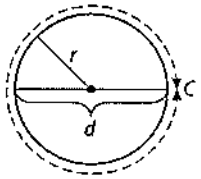
Lesson 1 Reteach

Circles and Circumference

A **circle** is the set of all points in a plane that are the same distance from a given point, called the **center**.



The **circumference** of a circle is the distance around the circle. In every circle, the ratio of the circumference to the diameter is equal to approximately 3.14, represented by the Greek letter π **(pi)**.

Circumference of a Circle		
Words	The circumference C of a circle is equal to its diameter times π, or 2 times its radius times π.	**Model** 
Symbols	$C = \pi d$ or $C = 2\pi r$	

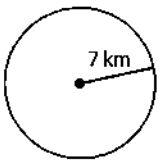
Example **Find the circumference of the circle. Round to the nearest tenth.**

$C = 2\pi r$ Circumference of a circle

$= 2 \cdot \pi \cdot 7$ Replace r with 7.

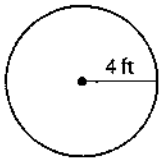
≈ 44.0 Simplify. Use a calculator.

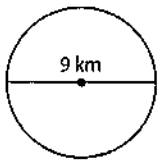
The circumference is about 44.0 kilometers.

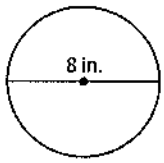


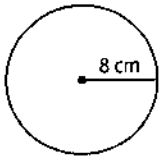
Exercises

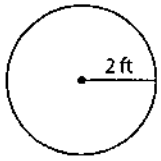
Find the circumference of each circle. Round to the nearest tenth.

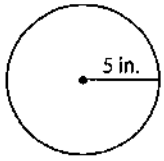
1. 

2. 

3. 

4. 

5. 

6. 

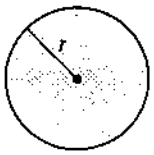
7. diameter = 5 centimeters

8. radius = 3 feet

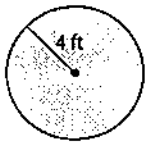
NAME _____ DATE _____ PERIOD _____

Lesson 2 Reteach

Area of Circles

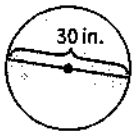
Area of Circles		
Words	The area A of a circle in square units is equal to π times the square of the length of its radius.	**Model** 
Symbols	$A = \pi r^2$	

Example **Find the area of each circle. Round to the nearest tenth.**

a. 

$A = \pi r^2$	Area of a circle
$= \pi \cdot (4)^2$	Replace r with 4.
$= \pi \cdot 16$	Evaluate $(4)^2$.
≈ 50.3	Use a calculator.

The area is about 50.3 ft^2.

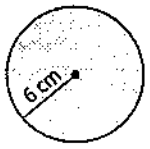
b. 

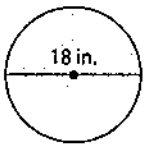
$A = \pi r^2$	Area of a circle
$= \pi \cdot (15)^2$	Replace r with 15.
$= \pi \cdot 225$	Evaluate $(15)^2$.
≈ 706.9	Use a calculator.

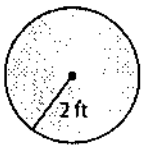
The area is about 706.9 in^2.

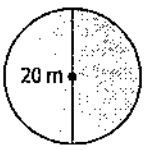
Exercises

Find the area of each circle. Round to the nearest tenth.

1. 

2. 

3. 

4. 

Match each circle described in the column on the left with its corresponding area in the column on the right.

5. radius = 6 units
6. diameter = 24 units
7. diameter = 50 units
8. radius = 16 units
9. radius = 50 units
10. radius = 26 units

a. 452.4 units^2
b. 804.2 units^2
c. 7854.0 units^2
d. 113.1 units^2
e. 2123.7 units^2
f. 1963.5 units^2

NAME_____ DATE _____ PERIOD _____

Lesson 3 Reteach

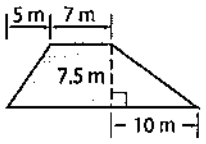
Area of Composite Figures

To find the area of a composite figure, decompose the composite figure into shapes with areas you know how to find. Then find the sum of those areas.

Triangle	Trapezoid	Parallelogram	Circle
$A = \frac{1}{2}bh$	$A = \frac{1}{2}h(b_1 + b_2)$	$A = bh$	$A = \pi r^2$

Example **Find the area of each figure. Round to the nearest tenth if necessary.**

a.

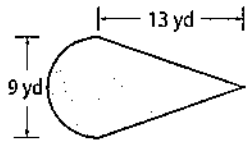


Area of Trapezoid
$A = \frac{1}{2}h(b_1 + b_2)$
$A = \frac{1}{2}(7.5)(7 + 12)$
$A = 71.25$

Area of Triangle
$A = \frac{1}{2}bh$
$A = \frac{1}{2}(10 \cdot 7.5)$
$A = 37.5$

The area of the figure is 71.25 + 37.5 or about 108.75 square meters.

b.



Area of Semicircle
$A = \frac{1}{2}\pi r^2$
$A = \frac{1}{2}\pi(4.5)^2$
$A \approx 31.8$

Area of Triangle
$A = \frac{1}{2}bh$
$A = \frac{1}{2}(9 \cdot 13)$
$A = 58.5$

The area of the figure is 31.8 + 58.5 or about 90.3 square yards.

Exercises

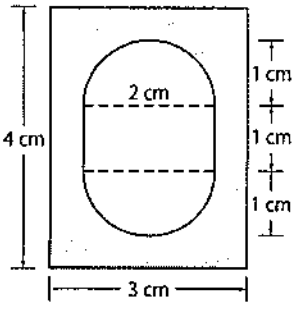
Find the area of each figure. Round to the nearest tenth if necessary.

1. What is the area of a figure formed using a rectangle with a base of 10 yards and a height of 4 yards and two semicircles, one with a radius of 5 yards and the other a radius of 2 yards?

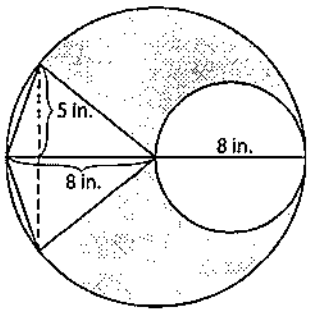
2. Find the area of a figure formed using a square and three triangles all with sides of 9 centimeters. Each triangle has a height of 6 centimeters.

Find the area of each shaded region. Round to the nearest tenth. (*Hint:* Find the total area and subtract the non-shaded area.)

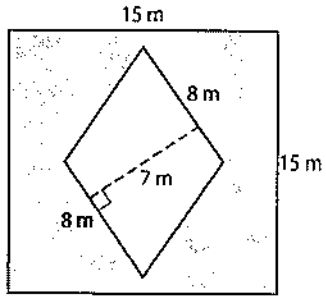
3.



4.



5.



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Lesson 1 Homework Practice

Circles and Circumference

Find the circumference of each circle. Round to the nearest tenth.

1. diameter = 18 yards

2. radius = 4 meters

3. diameter = 4.2 meters

4. radius = 4.5 feet

5. radius = $9\frac{3}{4}$ miles

6. diameter = 6 kilometers

7. diameter = $2\frac{5}{8}$ inches

8. radius = $11\frac{3}{16}$ centimeters

Match each circle described in the column on the left with its corresponding circumference in the column on the right.

9. radius = 8.5 units

10. diameter = 9 units

11. diameter = 6.5 units

12. radius = 12 units

a. 53.4 units

b. 20.4 units

c. 28.3 units

d. 75.4 units

13. A baseball has a radius of about 1.5 inches. Home plate is 16 inches wide. If a baseball were rolled across home plate, how many complete rotations would it take to cover the distance?

14. A soccer ball has a circumference of about 28 inches, while the goal is 24 feet wide. How many soccer balls would be needed to cover the distance between the goalposts?

15. Chariot races reached their peak in popularity in ancient Rome around the 1st and 2nd centuries A.D. A chariot wheel had a radius of about one foot. One lap around the track in the Circus Maximus was approximately 2300 feet. How many chariot-wheel revolutions did it take to complete one lap?

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Lesson 1 Problem-Solving Practice

Circles and Circumference

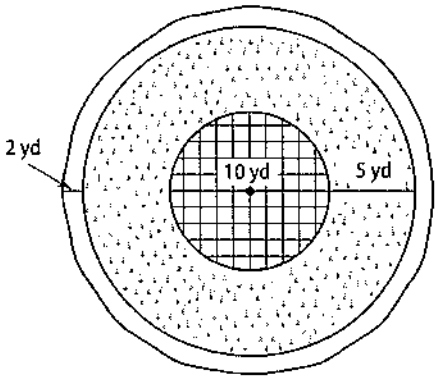
1. To protect an elm tree in your backyard, you need to attach gypsy moth caterpillar tape around the trunk. The tree has a diameter of 1.1 feet. What length of tape is needed? Round to the nearest tenth.

2. The diameter of Earth at the equator is approximately 7926.41 miles. What is the circumference of Earth at the equator to the nearest mile?

3. The local gasoline distributor just built a new storage tank. For safety reasons they need to enclose the tank within a circular fence. The radius of the tank is 6 feet and the walkway between the tank and the fence is 4 feet. How much fencing will they need to order to fence off the tank? Round to the nearest tenth.

4. The diameter of a circular placemat is 15 inches. Devon wants to sew a border of lace around the placemat. If the lace he wants is sold by the foot, how many feet of lace will he need to purchase?

5. The courtyard below was designed for an apartment complex. The outer area will be covered with grass and is 5 yards wide. The inner circle is tiled and has a diameter of 10 yards. There will also be a fence around the courtyard 2 yards out from the outer circle.



The landscaper must order the fencing for the courtyard. How much should he order to the nearest tenth of a yard?

6. Bicycles are often classified by tire diameter. A common diameter is 26 inches. What is the circumference of this bicycle tire? Round to the nearest tenth.

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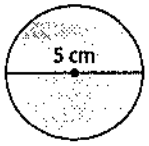
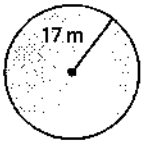
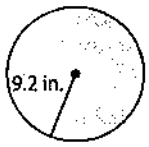
Lesson 2 Homework Practice

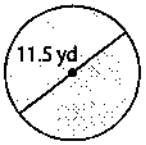
Area of Circles

Find the area of each circle. Round to the nearest tenth.

1. 

2. 

3. 

4. 

5. diameter = 9 kilometers

6. radius = 21 inches

7. diameter = 19.8 yards

8. radius = 7.3 feet

9. radius = 0.5 centimeter

10. diameter = 6.4 meter

11. The top of a pretzel canister has a diameter of 6 cm. What is the area of the top of the canister? Round to the nearest tenth.

12. What is the difference in area between a cookie cut from a cutter that has a diameter of 4 inches and a cookie cut from a cutter with a radius of 3 inches? Round to the nearest tenth.

13. The spray from a rotating sprinkler makes a circle with a 20-foot diameter. What area of a yard does the water from the sprinkler cover? Round to the nearest tenth.

14. A semicircular window has a diameter of 24 inches. Lou wants to insert a laminated sun-block coating that costs $1.50 per square inch to apply. How much will Lou spend to coat the window with sun-block? Round to the nearest cent.

15. Pizza Palace's largest pizza box has side lengths of 18 inches. A customer wants to special order a pizza with an area of 300 square inches. Will the pizza fit in one of Pizza Palace's pizza boxes? Explain.

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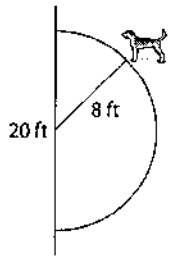
Lesson 2 Problem-Solving Practice

Area of Circles

1. Doug ordered a circular pizza. The length of the edge of each slice from the crust to the center is 9 inches. What is the area of the pizza? Round to the nearest tenth.

2. Carl's dog, Buddy, is on an 8-foot leash that is attached to the center of a 20-foot fence. How much space does Buddy have to roam around? Round to the nearest tenth.



3. Mr. Margulies bought four new stools for her kitchen. Each stool top has a diameter of 14 inches. Mr. Margulies wants to make pads for each stool. The padding is three cents per square inch. How much will Mr. Margulies spend in padding for the four stools?

4. Josh has a large plastic disc that he uses to play catch with his dog. The disc has a radius of 6 inches. What is the area of the disc? Round to the nearest tenth.

5. At Paco's Pizza Shop, a large pizza has a diameter of 16 inches. A small pizza has a diameter of 12 inches. What is the area of the small pizza? What is the area of the large pizza? Round to the nearest tenth.

6. Refer to the information in Exercise 5. A large pizza costs $9.95 and a small pizza costs $5.95. Which pizza is a better deal? Explain.

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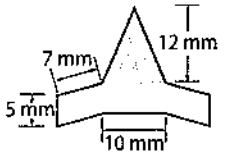
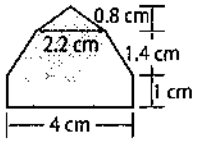
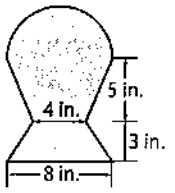
Lesson 3 Homework Practice

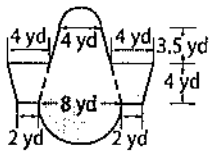
Area of Composite Figures

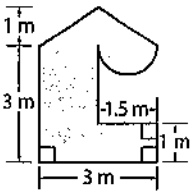
Find the area of each figure. Round to the nearest tenth if necessary.

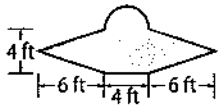
1. 

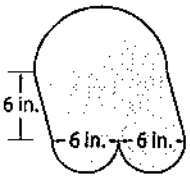
2. 

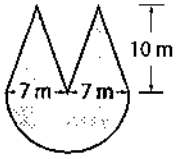
3. 

4. 

5. 

6. 

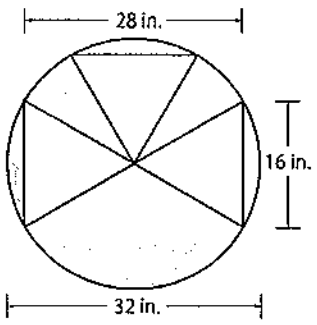
7. 

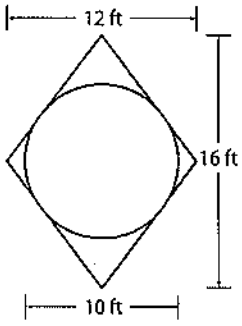
8. 

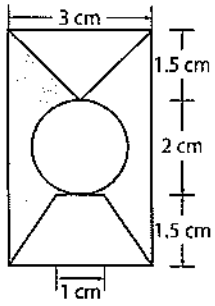
9. What is the area of a figure formed using a square with sides of 15 centimeters and four attached semicircles?

10. Find the area of a figure formed using a parallelogram with a base of 10 yards and a height of 12 yards and two triangles with bases of 10 yards and heights of 5 yards.

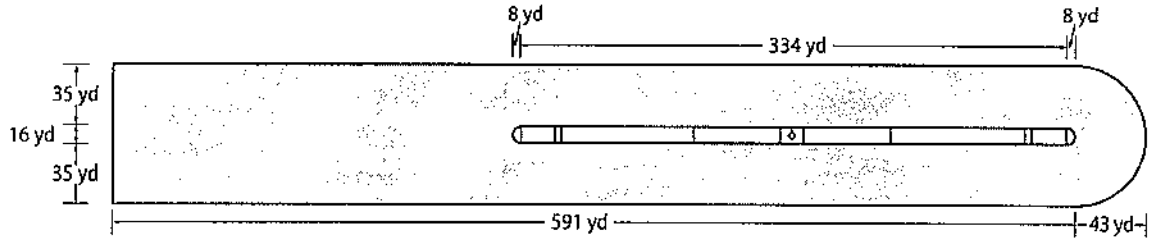
Find the area of each shaded area. Round to the nearest tenth, if necessary. (*Hint:* Find the total area and subtract the non-shaded area.)

11. 

12. 

13. 

14. What is the area of the track in the Circus Maximus as represented below? The center barrier was named the *spina*.

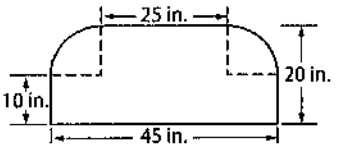


NAME _____ DATE _____ PERIOD _____

Lesson 3 Problem-Solving Practice

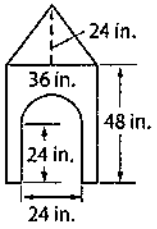
Area of Composite Figures

1. The back of a shelving unit is shown below. How much plywood is needed to construct this piece of the unit? Round to the nearest whole number.

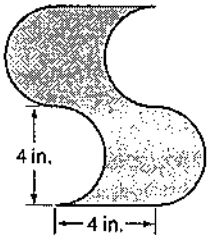


2. Peter's backyard is rectangular in shape, with dimensions 60 feet by 50 feet. He plans to install a circular pool that has a diameter of 20 feet. What will be the area of his backyard that is left after installing the pool? Round to the nearest whole number.

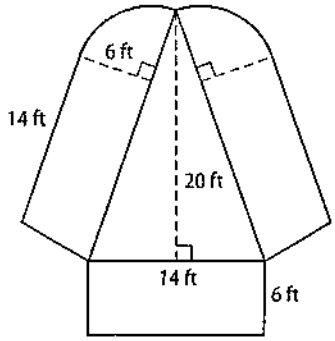
3. Barbara is going to paint the front of her dog's house green. If one quart of paint covers 8 square feet, will she need more than one quart? Explain.



4. The logo for Super Snacks Company is shown below. What is the area of the shaded region? Round to the nearest whole number.

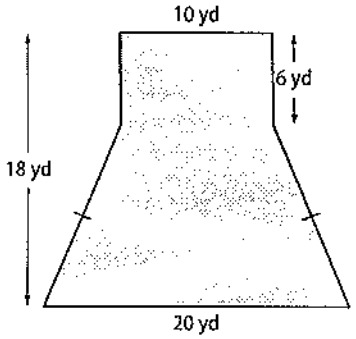


5. Frank is using a template to make a boat cover out of canvas for his boat. The template is shown below.



How many square feet of canvas will he need to make the template? Round to the nearest whole number.

6. A restaurant owner wants to carpet the floor of his restaurant. The carpet costs $12 per square yard. Based on the floor plan below, how much will it cost him to carpet his restaurant?

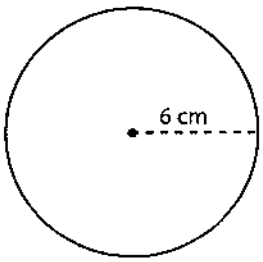


Name : _____ Score : _____

Area - Mixed Shapes

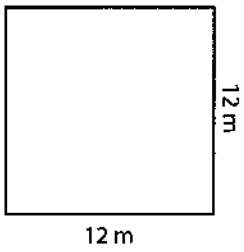
Find the area of each figure.

1)



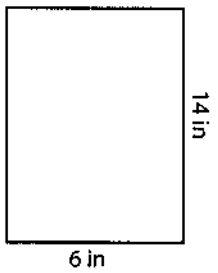
Area = _____

2)



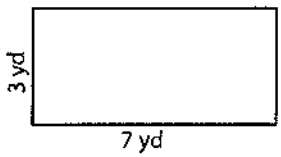
Area = _____

3)



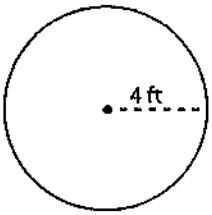
Area = _____

4)



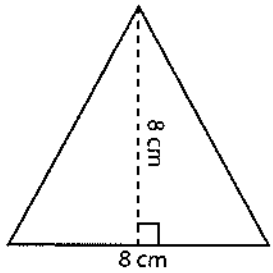
Area = _____

5)



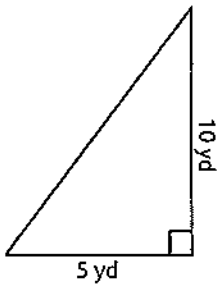
Area = _____

6)



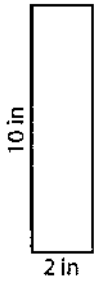
Area = _____

7)



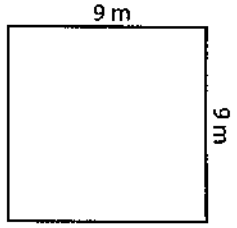
Area = _____

8)



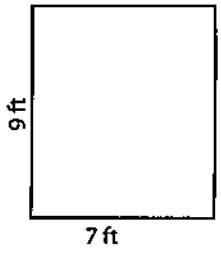
Area = _____

9)



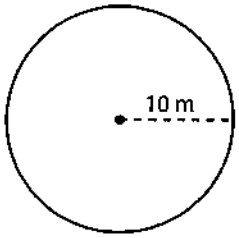
Area = _____

10)



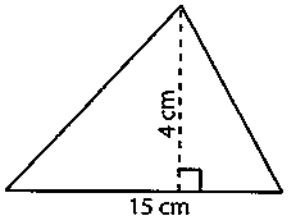
Area = _____

11)



Area = _____

12)



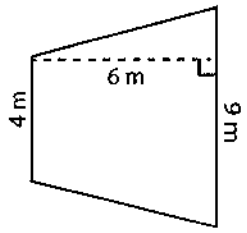
Area = _____

Name : _____ Score : _____

Area - Mixed Shapes

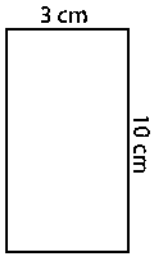
Find the area of each figure.

1)



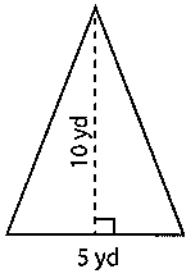
Area = _____

2)



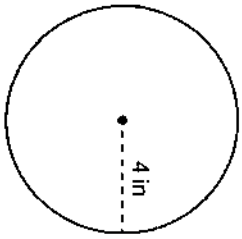
Area = _____

3)



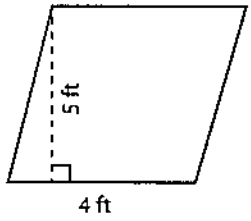
Area = _____

4)



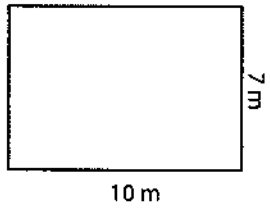
Area = _____

5)



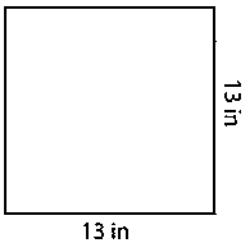
Area = _____

6)



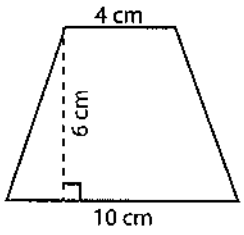
Area = _____

7)



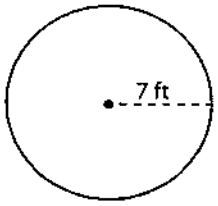
Area = _____

8)



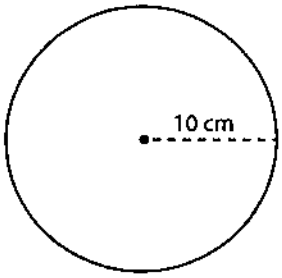
Area = _____

9)



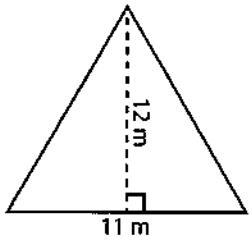
Area = _____

10)



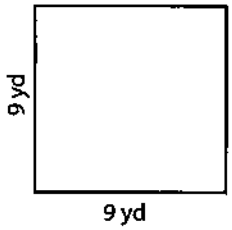
Area = _____

11)



Area = _____

12)



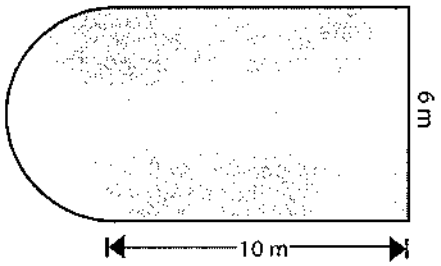
Area = _____

Name : _____ Score : _____

Area - Compound Shapes

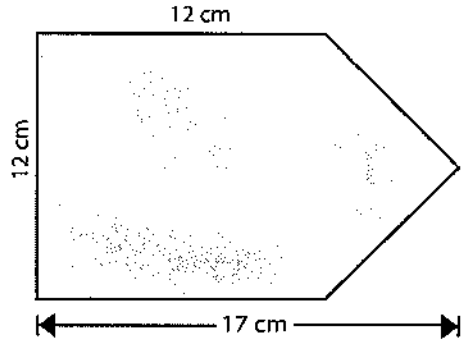
Find the area of each figure. Round the answer to 2 decimal places if necessary.

1)



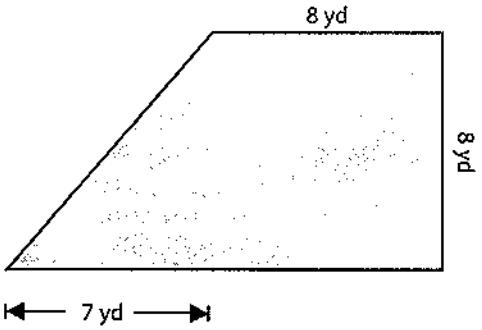
Area = _____

2)



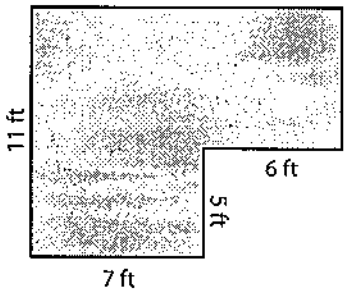
Area = _____

3)



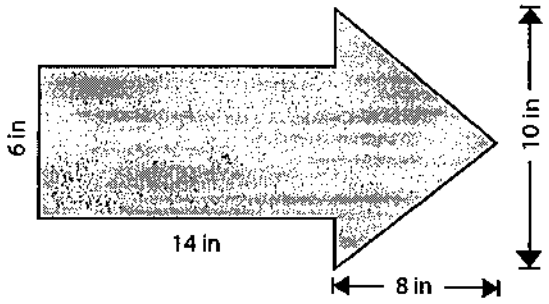
Area = _____

4)



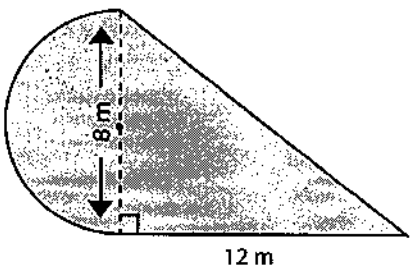
Area = _____

5)



Area = _____

6)



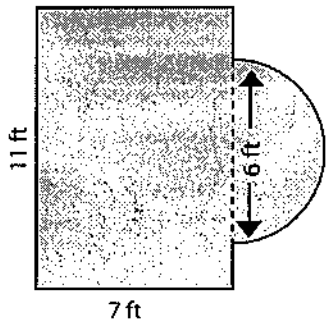
Area = _____

Name : _____ Score : _____

Area - Compound Shapes

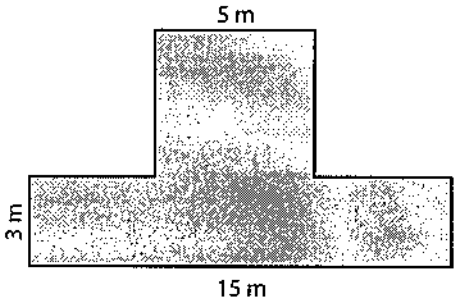
Find the area of each figure. Round the answer to 2 decimal places if necessary.

1)



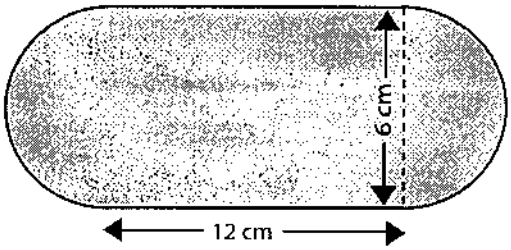
Area = _____

2)



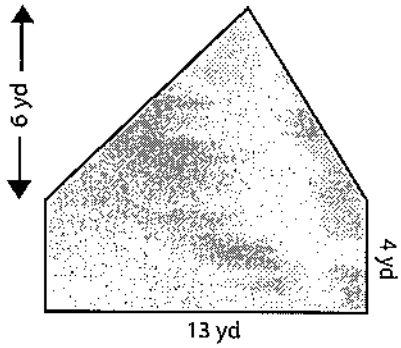
Area = _____

3)



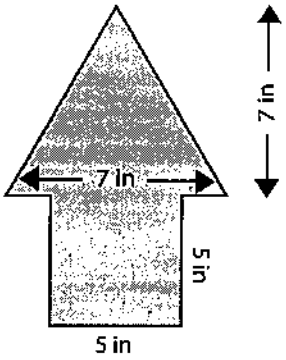
Area = _____

4)



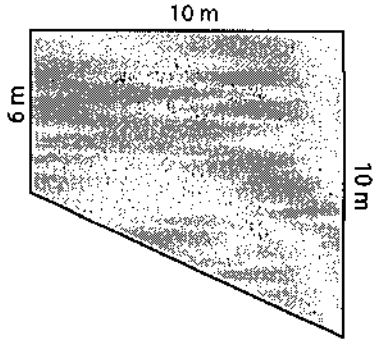
Area = _____

5)



Area = _____

6)



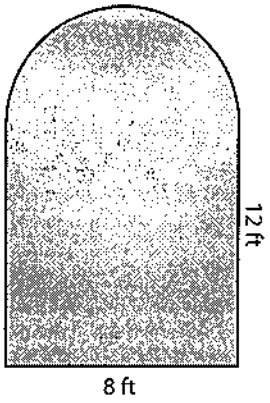
Area = _____

Name : _____ Score : _____

Area - Compound Shapes

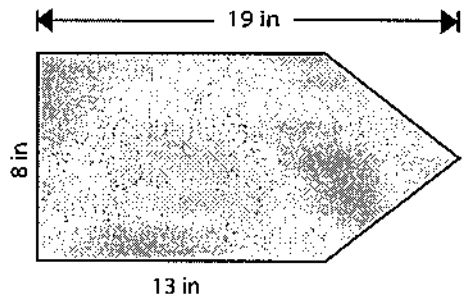
Find the area of each figure. Round the answer to 2 decimal places if necessary.

1)



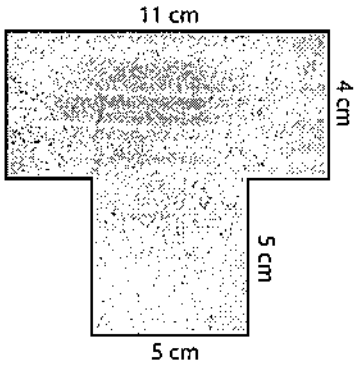
Area = _____

2)



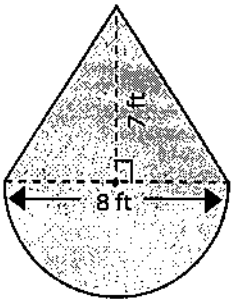
Area = _____

3)



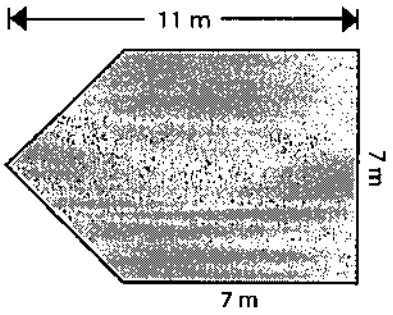
Area = _____

4)



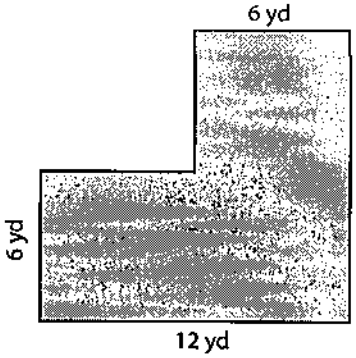
Area = _____

5)



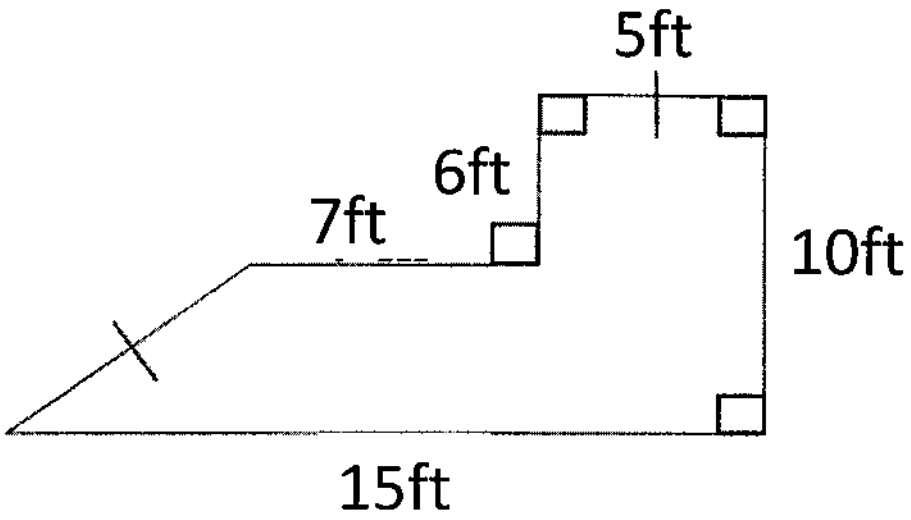
Area = _____

6)



Area = _____

Composite Figure Closet



Bianca has a bathroom in her house that needs new tile. She wants to purchase new tile herself in order to save some money, but she doesn't know how much to buy or how much it will cost. Help Bianca figure out how much new tile to purchase and how much it is going to cost.

1. What three shapes make up this composite figure? _____, _____, _____. Please draw lines on the original drawing and label any missing measurements.
2. What are the areas of the three shapes? _____, _____, _____.
3. How can we find the total area of Bianca's bathroom? _____

   _____.

4. What is the total area of the bathroom?_____/
5. If the tile cost $2.25 per square foot, how much will her tile cost? (Please show work below)_____

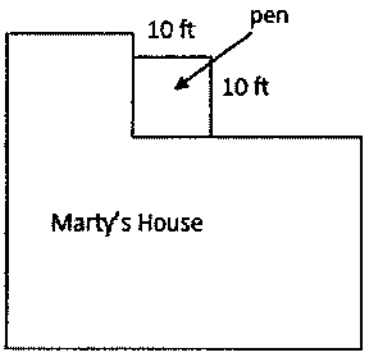
Name_____ Date_____ Period_____

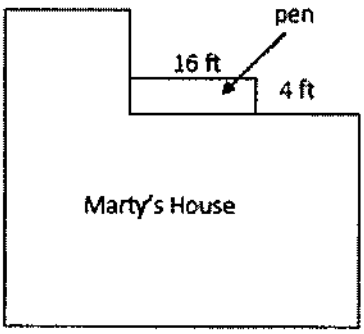
Directions: *Use the Legos to make a model of the diagram for each problem. The scale for the model is: 1 Lego peg = 1 foot. After creating the diagram with Legos, trace the diagram onto the whiteboard table or mats.*

Problem #1

Anthony has 20 feet of wire to make a pen for his new puppy. He is going to attach the wire to his house so he can make the pen larger. Two sides of the pen will be wire and the other two sides will be walls of the house.

Anthony is considering the two options below. Both pens use 20 feet of wire.





Anthony will choose the option that will give his puppy the most area.

1. Find the area of the pen with dimensions 10 feet by 10 feet.

2. Find the area of the pen with dimensions 4 feet by 16 feet..

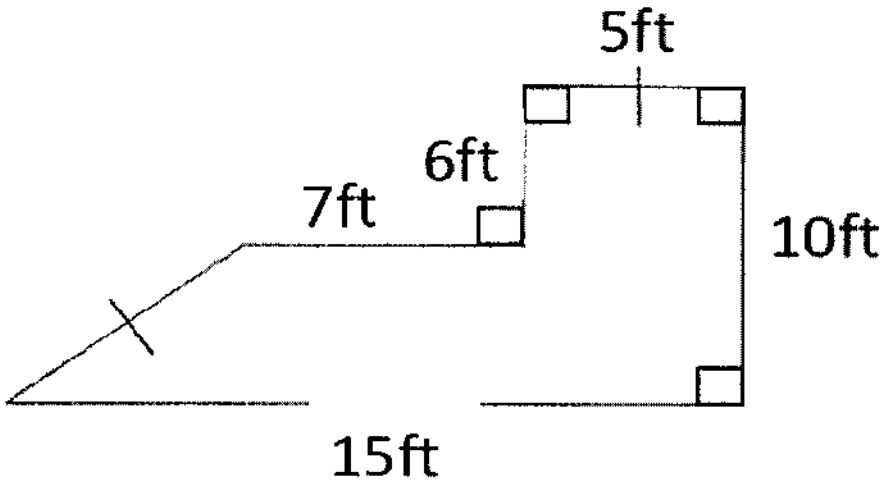
3. Which way will Anthony build the pen to include the most area?

Problem #2

Anthony has a patio in his backward that needs new pavers. He wants to purchase new pavers himself in order to save some money. Help Anthony figure out the area of his patio and how much the new pavers will cost him.

- Use the Legos to make up this composite figure with your group. *(Hint: one of the figures may not be in the carrier, so you need to use your imagination for this figure).*

- Trace the outline of the composite figure on the whiteboard table tops or mats. Count the area of the Legos for this composite figure. _____



What shapes are used to make up this composite figure? _____

What are the areas of these shapes? _____

How can we find the total area of Anthony's patio without using the Legos? _____

What is the total area of the patio? _____

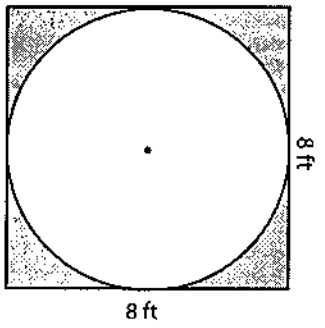
If the pavers cost $2.25 per square foot, how much will his pavers cost? (Be sure to include 8.625% tax)? *(Please show work below)* _____

Name : _____ Score : _____

Area - Compound Shapes

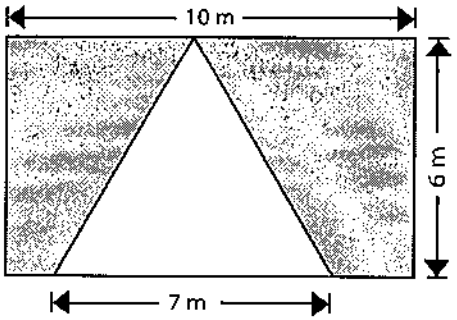
Find the area of shaded region. Round the answer to 2 decimal places if necessary.

1)



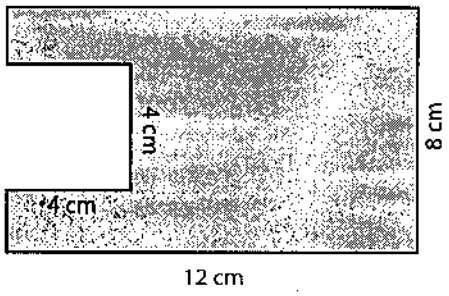
Area = _____

2)



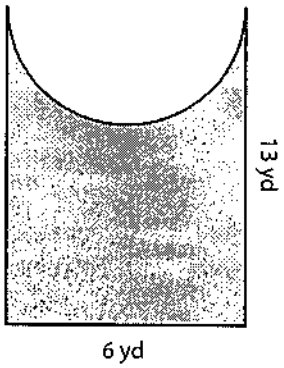
Area = _____

3)



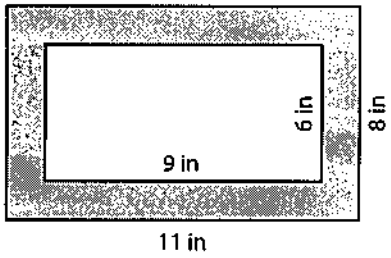
Area = _____

4)



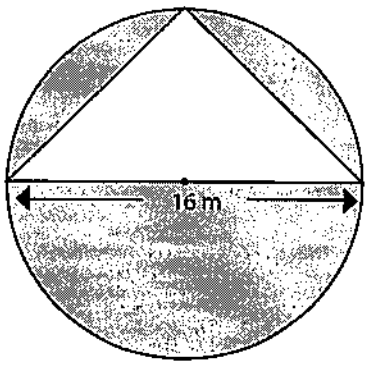
Area = _____

5)



Area = _____

6)



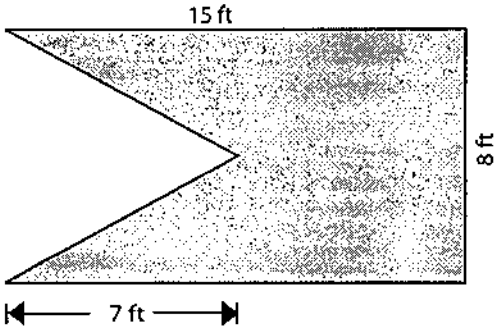
Area = _____

Name : _____ Score : _____

Area - Compound Shapes

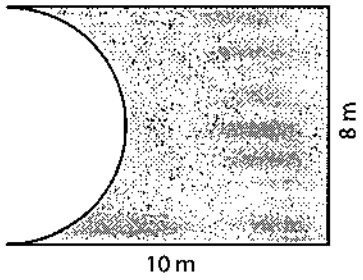
Find the area of shaded region. Round the answer to 2 decimal places if necessary.

1)



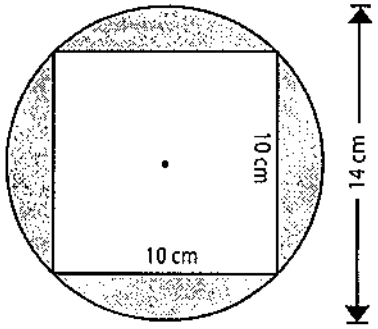
Area = _____

2)



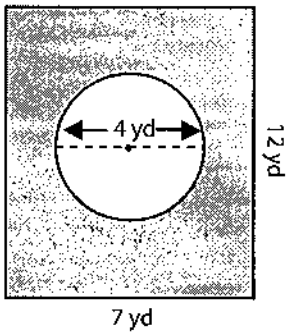
Area = _____

3)



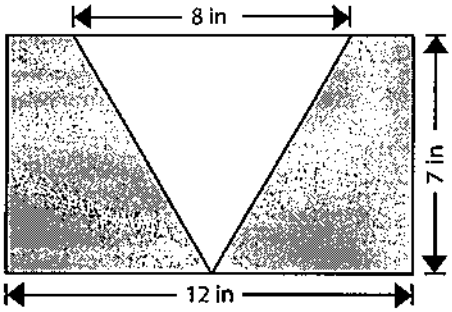
Area = _____

4)



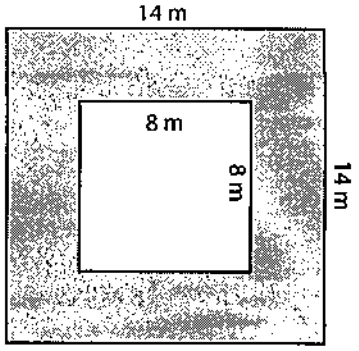
Area = _____

5)



Area = _____

6)



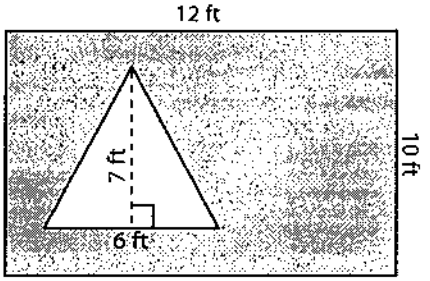
Area = _____

Name : _____ Score : _____

Area - Compound Shapes

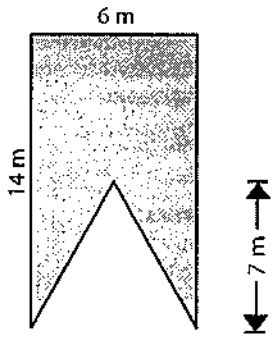
Find the area of shaded region. Round the answer to 2 decimal places if necessary.

1)



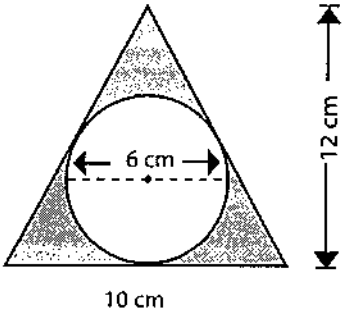
Area = _____

2)



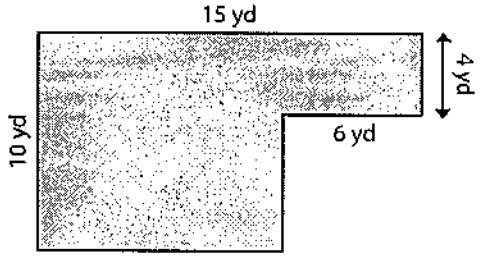
Area = _____

3)



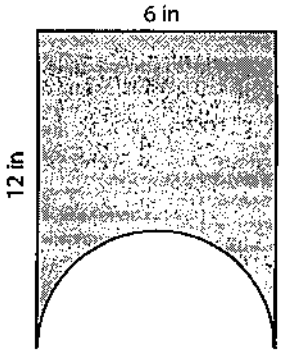
Area = _____

4)



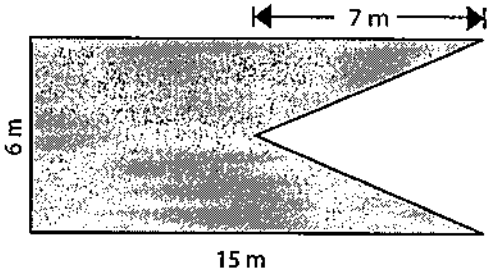
Area = _____

5)



Area = _____

6)



Area = _____

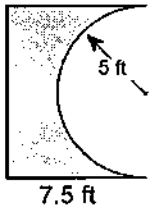
Name : _____ Score : _____

Teacher : _____ Date : _____

Compound Shapes

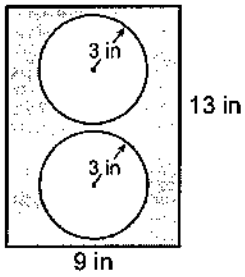
Find the area of each figure, round your answer to one decimal place if necessary.

1)



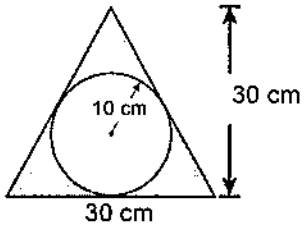
Area: _____

2)



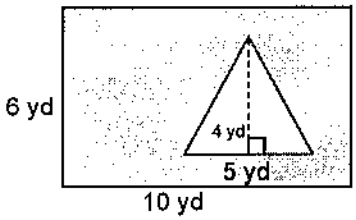
Area: _____

3)



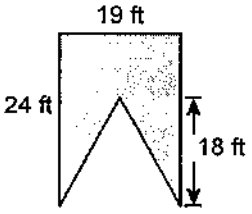
Area: _____

4)



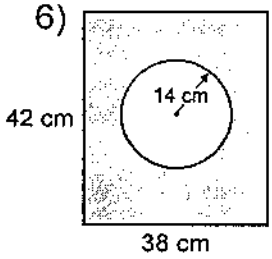
Area: _____

5)



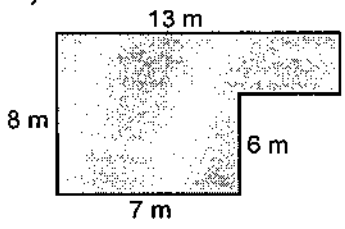
Area: _____

6)



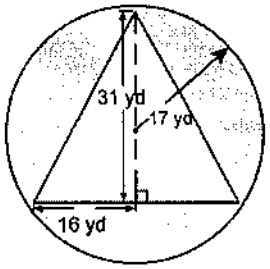
Area: _____

7)



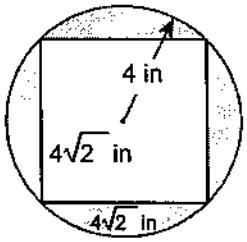
Area: _____

8)



Area: _____

9)



Area: _____

***Name:*_____**

Challenge!

Find the Area!