

## Geometry DSPA - General Guidelines

The district assessments in this booklet will be given following these guidelines:

Calculators can be used on all DSPA's.

- MA-GM-01 2-Dimensional Figures & Graphing Linear Equations** - To be given after completion of Unit 1.
- MA-GM-02 Angle Relationships and Pattern Development** - To be given after completion of Unit 3.
- MA-GM-03 3-Dimensional Figures and Congruent Figures** - To be given after completion of Unit 5.
- MA-GM-04 Trigonometry** - To be given after completion of Unit 7.
- MA-GM-05 Similarity and Polygons** - To be given after completion of the first half of Unit 8 (S1-S50) and all of Unit 9.
- MA-GM-06 Circles** - To be given after completion of the first portion of Unit 10 (CS1-CS67)

Enter the **PERCENT** score for each student in PowerGrade after each assessment.

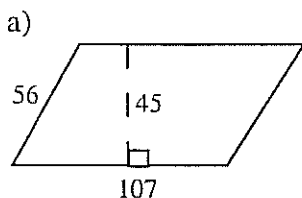
1) (20 Points) Draw a rectangle and label the base 8 inches and the height 5 inches.

What is the area of this rectangle. (Remember to label your answer).

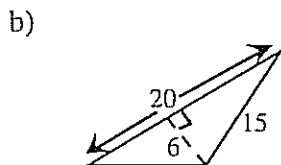
Now draw a diagonal in the rectangle (a line segment from one corner to the opposite corner). What is the area of one of the triangles that is formed?

State the equation to find the area of a rectangle. \_\_\_\_\_ Now state the equation to find the area of a triangle. \_\_\_\_\_ How does the figure you drew above help you understand the relationship between the two formulas?

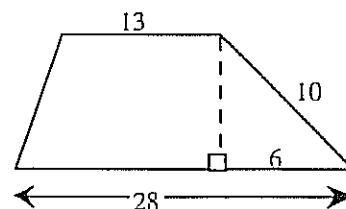
2) (15 pts.) Find the area of each of these figures. (Find the missing height in the 3<sup>rd</sup> figure first!)



A = \_\_\_\_\_

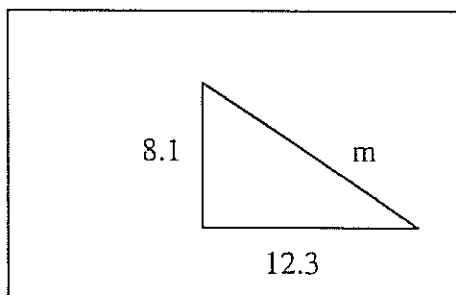
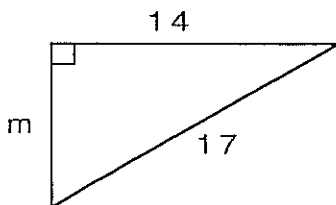


A = \_\_\_\_\_



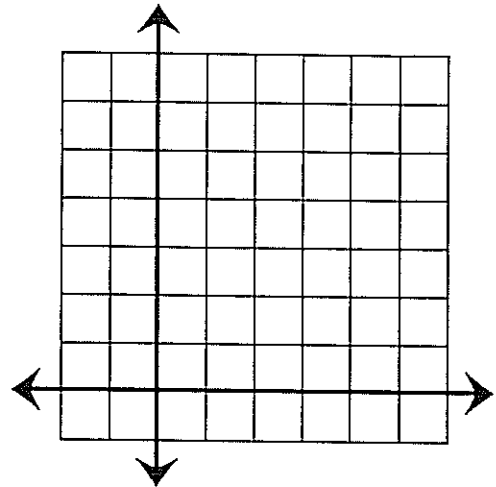
A = \_\_\_\_\_

3) (20 pts.) Use the Pythagorean Theorem to find the **length** of side **m** in each of the following triangles. Show all work. Round your answer to nearest tenth.



4) (25pts.) **Graph** the points A(1, 2) and B(4, 6) and draw the segment between them.

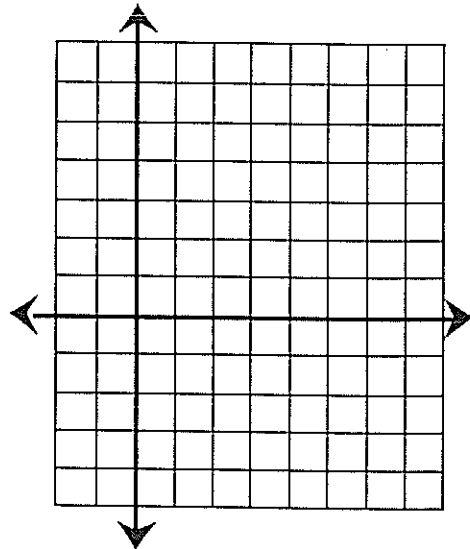
- a) Draw the **slope triangle** and find the slope.
- b) Find the **area** of the slope triangle.
- c) Find AB. (Distance from A to B). Use the Pythagorean Theorem.
- d) What is the **perimeter** of the triangle?



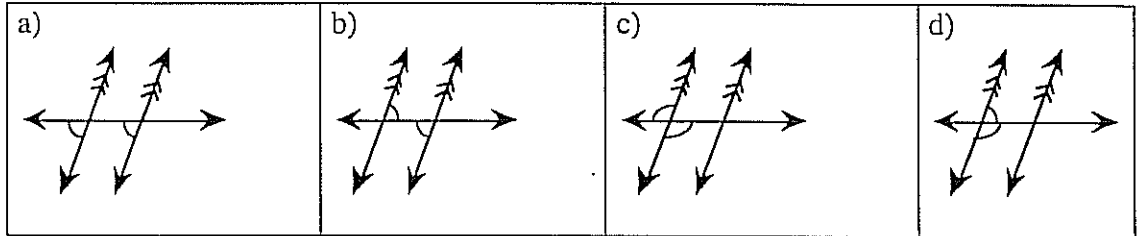
5) (20pts.) **Fill in** the chart for each equation.

EQUATION	SLOPE	Y-INTERCEPT
$y = \frac{1}{2}x - 4$		
$y = -x + 5$		

**Graph** the two equations on this grid, and then find the **Area** of the triangle bounded by the two lines and the y-axis.



- 1) Identify the kinds of angles in each diagram and state whether the angles are equal or supplementary. (20 pts.)



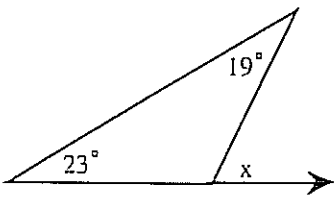
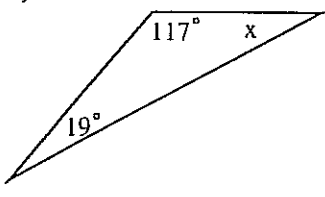
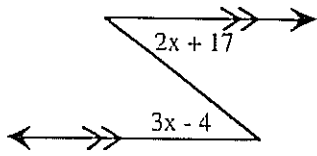
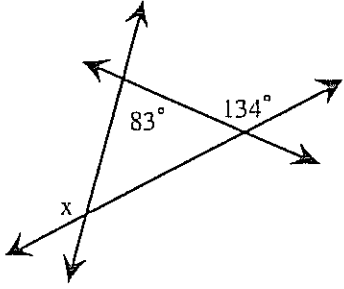
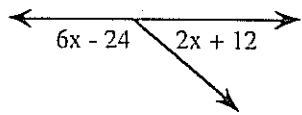
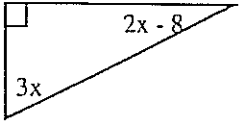
Put your answers below:

- a) Kind of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_
- b) Kind of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_
- c) Kind of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_
- d) Kind of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_

- 2) If possible, draw a **pair of angles** that satisfy each condition. If such a figure is impossible, show and/or explain why. (20 pts.)

<p>a) supplementary and equal</p>	<p>b) vertical and adjacent</p>
<p>c) adjacent and complementary</p>	<p>d) vertical and acute</p>

3) For each diagram find the value of  $x$ . Either show your work or include an explanation. (30 pts.)

<p>a)</p> 	<p>b)</p> 	<p>c)</p> 
<p>d)</p> 	<p>e)</p> 	<p>f)</p> 

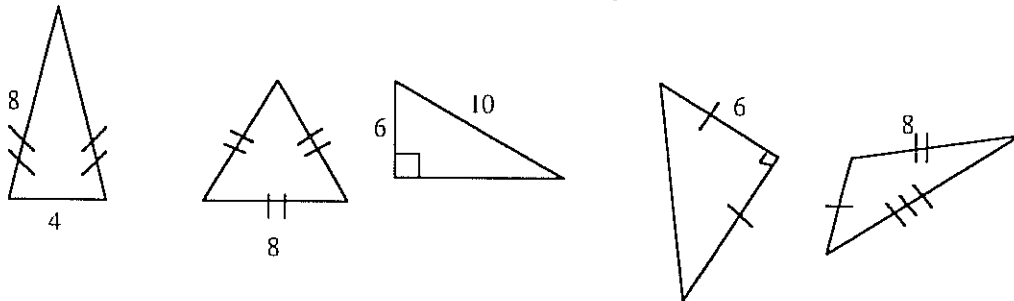
4) (15 pts.) Consider the pattern: 33 29 25 21

a) What are the **next two** numbers? **Explain** how you know.

b) If -47 is the 21st number, what is the 22nd?

c) What number would follow "n" in this pattern?

5) (15 pts.) These triangles are placed into a bag.



(Hint: First use the Pythagorean Theorem to help you find the lengths of the sides on the 3<sup>rd</sup> and 4<sup>th</sup> triangle).

If you reach into the bag and pull out one triangle at random, what is the **probability** that:

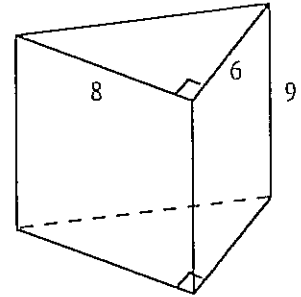
a) the triangle is **scalene**?

b) the triangle is **isosceles**?

c) at least one side of the triangle is exactly 8 units long?

1. (10pt) Find the volume of the figure. Then find the total surface area.  
Show your work.

Volume: \_\_\_\_\_

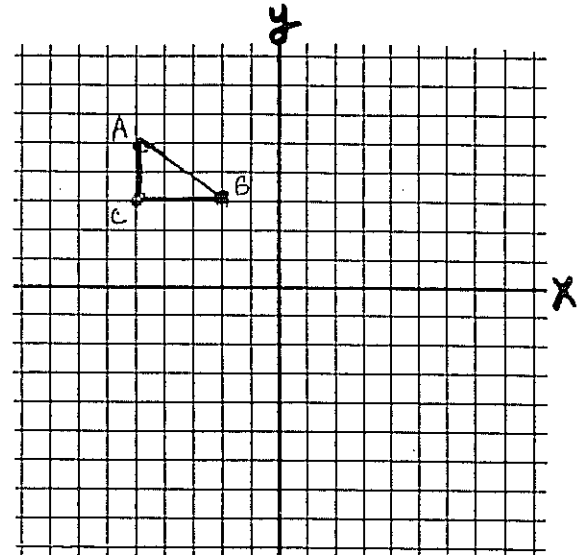


Surface Area: \_\_\_\_\_

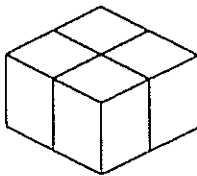
(Hint: First use the Pythagorean Theorem)

2. (10 pts) Reflect (flip)  $\triangle ABC$  over the y-axis, and label it  $\triangle A'B'C'$ .

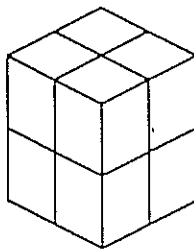
Now translate (slide) the original triangle ( $\triangle ABC$ ) 8 units down, and 4 units to the right. Label this  $\triangle A''B''C''$ .



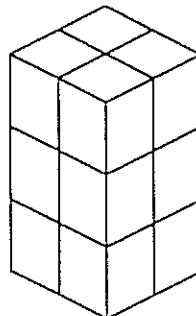
3. (15pt) Consider the cases below. Label your answers.



Case 1.



Case 2.

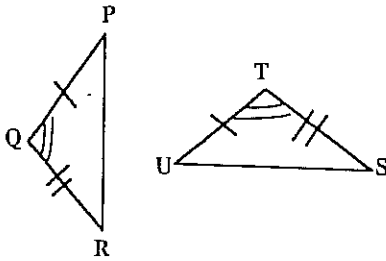


Case 3.

- If the pattern continues, what will be the height of the solid in Case 10? Explain.
- What is volume of the solid in Case 10? Explain.
- What is the total surface area of the solid in Case 10? Show your work.

4.(20pt) For each pair of triangles, decide whether or not they are congruent. If they are congruent, write the congruent statement ( $\triangle ABC \cong \triangle \dots$ ) and the property that gives congruence (SSS, etc. ). The figures are not drawn to scale.

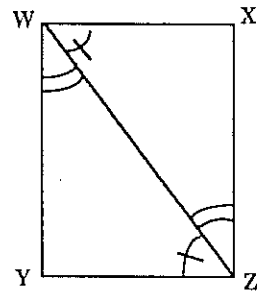
a)



$\triangle PQR =$  \_\_\_\_\_

Property: \_\_\_\_\_

b)

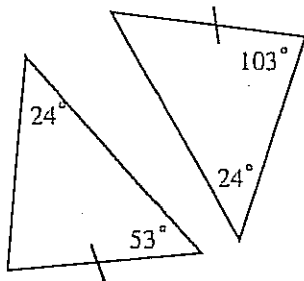


$\triangle WXZ =$  \_\_\_\_\_

Property: \_\_\_\_\_

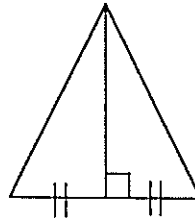
5.(15pts) State the triangle congruence property (SSS, etc.) that makes the pair of triangles congruent.

a)



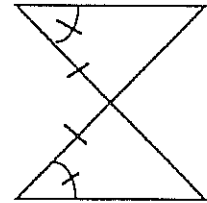
Property: \_\_\_\_\_

b)



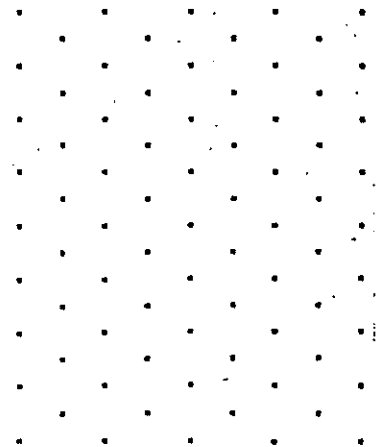
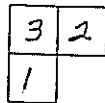
Property: \_\_\_\_\_

c)



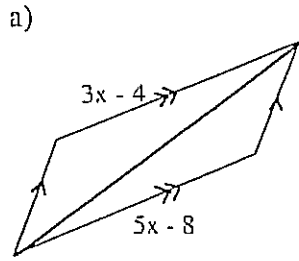
Property: \_\_\_\_\_

6. (5 pts) Draw a cube stack for the following mat plan.

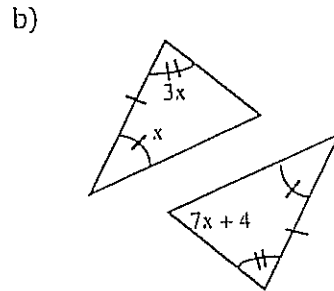




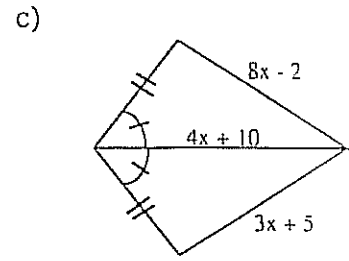
7.(15pt) Use the information given to solve for  $x$ . Justify any statements you write completely (name the congruence property). Show your work.



Property: \_\_\_\_\_



Property: \_\_\_\_\_

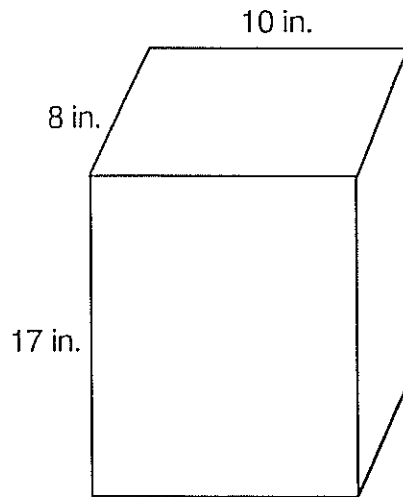


Property: \_\_\_\_\_

8. (10pt) Find the volume of the rectangular prism. Then find the total surface area. Show your work and label your answer.

Volume: \_\_\_\_\_

Surface Area: \_\_\_\_\_

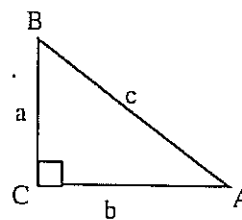


1.(15pts) Write the ratios for  $\triangle ABC$  using the letters a, b, and c.

a)  $\tan A =$

b)  $\cos A =$

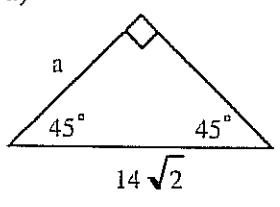
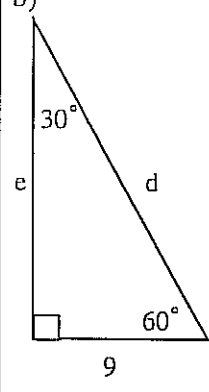
c)  $\sin A =$



2.(30pts) Use the Pythagorean Theorem, Law of Sines, or Trigonometric Ratios (sohcahtoa) to solve for the variable. Show your equation for each problem. Round lengths and angles to the nearest tenth.

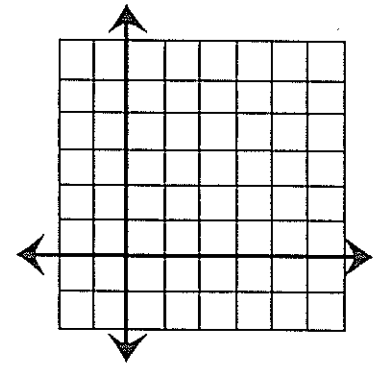
<p>a)</p>	<p>b)</p>	<p>c)</p>
<p>d)</p>	<p>e)</p>	<p>f)</p>

3.(15pts) Find the indicated length(s) in each of these triangles. You may express your answers in simple radical form or their decimal approximations.

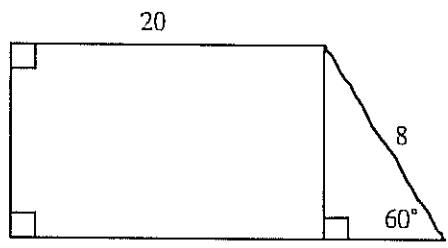
<p>a)</p>  <p style="margin-left: 40px;"><math>14\sqrt{2}</math></p> <p>a =</p>	<p>b)</p>  <p style="margin-left: 40px;">9</p> <p>d =</p> <p>e =</p>
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4.(15pts) Graph and **label** the points A(1, 1), B(5, 1), and C(5, 3). Draw  $\triangle ABC$ .

- a) Give the ratio for  $\tan A$ .  $\tan A =$
- b) What is the  $m\angle A$ ?  $m\angle A =$
- c) What is the slope of AC? Slope is \_\_\_\_\_



5.(10pts) Given the figure as marked, find its perimeter and area to the nearest tenth.



Area =

Perimeter =

6.(10pts) Wandela Krumbcracker is the director of safety at Waterworld. She needs to order a new guy wire for the tallest slide tower. One end of the wire is attached to the top of the tower and the other end to a stake in the ground that is 44' from the base of the tower. The wire makes a  $64^\circ$  angle with the flat ground. If she orders the wire **by the foot**, how much wire should she order? Draw a diagram, and use a trig ratio to solve this problem.

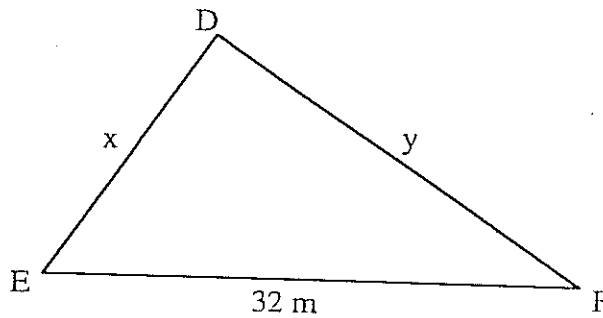
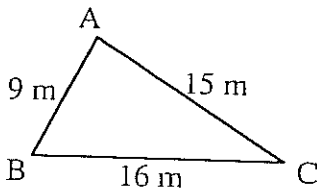
7.(5pts) Write a problem which will require the use of the cosine ratio to solve. It can either be a diagram or a word problem. Do **NOT** solve the problem.

1.(5pts) Define similar.

2.(10pts) True or False: Place a T or F in the following spaces.

- a) \_\_\_\_\_ Congruent figures are always similar.
- b) \_\_\_\_\_ If  $F \sim G$ , then  $F \cong G$ .
- c) \_\_\_\_\_ If  $F \sim G$  and  $G \sim H$ , then  $F \sim H$ .
- d) \_\_\_\_\_ All squares are parallelograms, rectangles, and quadrilaterals.
- e) \_\_\_\_\_ All rectangles are similar.

3. (20 pts.) Triangle ABC is similar to triangle DEF. Solve for the unknown sides. Either SHOW YOUR WORK or EXPLAIN how you solved the problem.



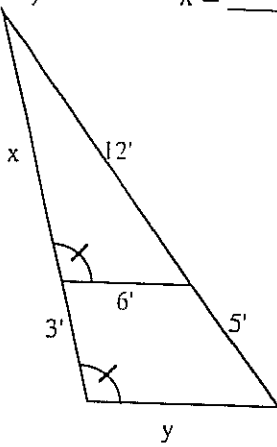
$x =$  \_\_\_\_\_

$y =$  \_\_\_\_\_

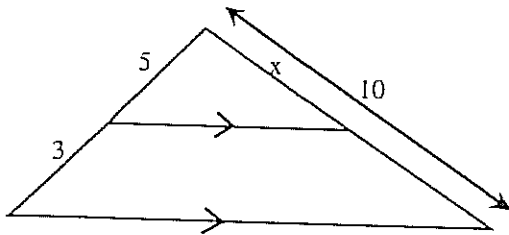
4.(10pts) A flagpole casts a 94' shadow. At the same moment, five feet tall Terry casts a 12' shadow. How tall is the flagpole? Be sure to include a diagram as part of your solution.

5. (10pts)

$x = \underline{\hspace{2cm}}$      $y = \underline{\hspace{2cm}}$  Find  $x$  and  $y$  to the nearest tenth. Show your work.



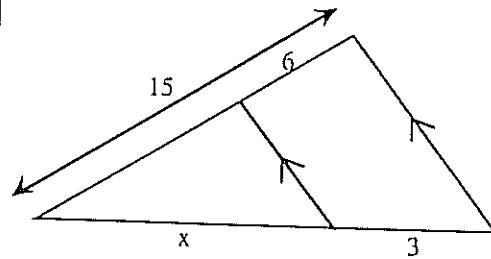
6. (5pts)



Show your equation and find  $x$ .

$x = \underline{\hspace{2cm}}$

7. (5pts)



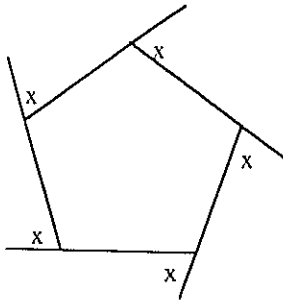
Show your equation and find  $x$ .

$x = \underline{\hspace{2cm}}$

8. (10pts) What is the sum of the measures of the interior angles of a 13-gon? Show your work.

9.(10pts) Solve for  $x$ . Show your work.

a)

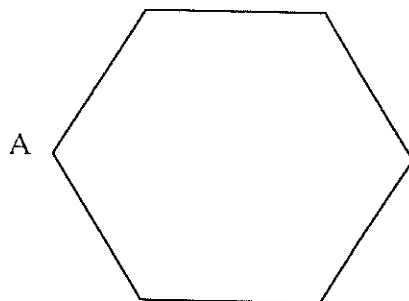


10.(10pts) Suppose you would like to draw a regular 72-gon.

a) What is the measure of each interior angle? Explain how you got this answer.

b) After you draw your 72-gon, if you measure all the exterior angles (one at each vertex), and add all of them together, what is the sum?

11.(5 pts) Draw all the diagonals **from point A** in the hexagon below. Explain how you can find the sum of the interior angles of the hexagon by using the diagram you have created.

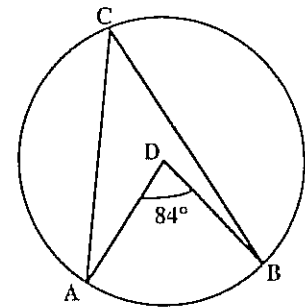


1.(21pts) Match the correct figure with the vocabulary term it represents. In each picture, C is the center of the circle.

_____	radius	A	B	C
_____	central angle			
_____	chord	D	E	F
_____	secant			
_____	secant			
_____	tangent			
_____	diameter	G		H
_____	inscribed angle			

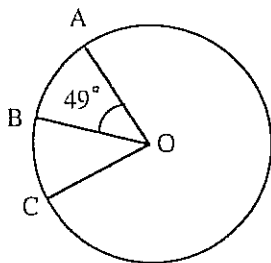
2.(25pts) In the circle at right, point D is the center.

- Name a central angle.
- Name an inscribed angle.
- What is  $m\widehat{AB}$ ?
- What is  $m\widehat{ACB}$ ?
- What is  $m\angle ACB$ ?



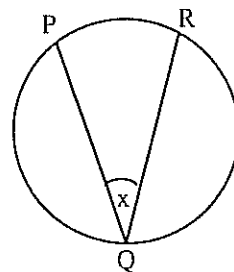
3.(15pts)

- a) Find the measure of  $\widehat{BC}$ . O is the center, and  $\angle AOC$  is a right angle.



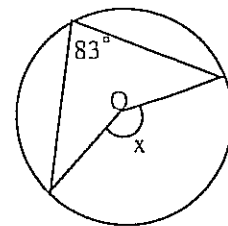
$m\widehat{BC} = \underline{\hspace{2cm}}$

- b) Find x if the measure of  $\widehat{PR}$  is  $43^\circ$ .



x = \_\_\_\_\_

- c) Find x. O is the center.



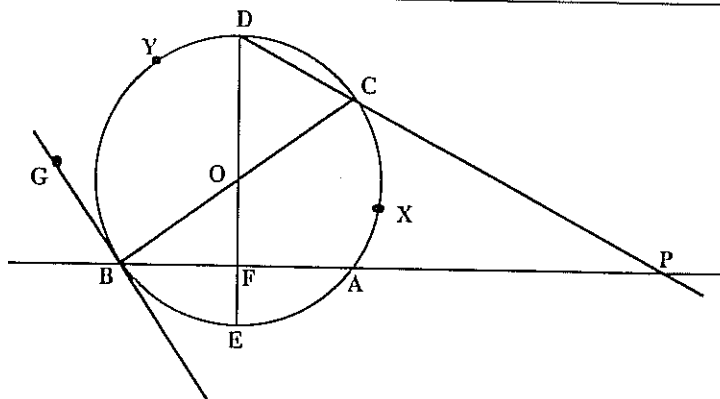
x = \_\_\_\_\_



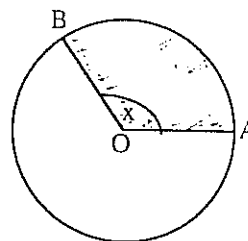
4.(20pts) In the figure,  $\overline{CB}$  and  $\overline{ED}$  are diameters,  $\overline{BG}$  is a tangent, and the measures of the following arcs are:

$\widehat{EA} = 78^\circ$ ,  $\widehat{AXC} = 26^\circ$ ,  
 $\widehat{BYD} = 104^\circ$ . Find the measures of the angles listed below.

- $\angle BOD$
- $\angle GBC$
- $\angle BCD$
- $\angle EDP$



5.(10 pts) Find the area of the sector if  $OA = 6$  and  $x = 120^\circ$ . Show your work.



6.(9pts) AB is the tangent to circle C. Find the measure of angle x.

