

## **Informal 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-GN-01 2-D Figures; Graphing Linear Equations** – To be given after completion of Unit 1.
- MA-GN-02 Angle Relationships; Congruent Figures** – To be given after completion of Unit 3.
- MA-GN-03 3-D Figures; Congruent Figures** – To be given after completion of Unit 5.
- MA-GN-04 Trigonometry** – To be given after completion of Unit 7.

Enter the percent score for each student in Power Grade after each assessment.

1. (30 pts) Draw a rectangle below. Label the base 12 inches and the height 5 inches. What is the area of this rectangle? (Label)

Now draw a diagonal in the above rectangle (a line segment connecting one corner to it's opposite corner). Shade one of the triangles. What is the area of this triangle? (Label)

What is the formula for the area of any rectangle?

What is the formula for the area of any triangle?

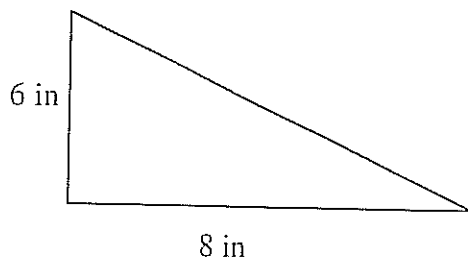
How does the diagram you made above show the relationship between these two formulas.

What is the perimeter of the above rectangle? (Label)

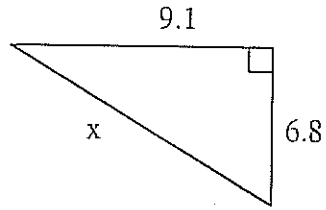
2. (15 pts) What is the area of the right triangle below. (Label) \_\_\_\_\_

Find the length of the hypotenuse. (Show the equation & label.)

What is the perimeter of the triangle? (Label)

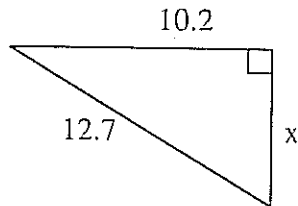


3. (10 pts) Find the length of the missing side to the nearest tenth. Show the equation.



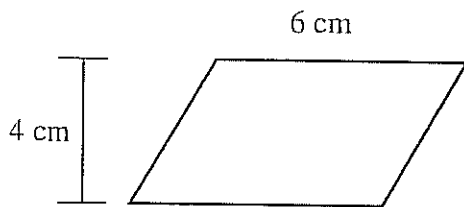
Does this answer make sense? Explain.

4. (10 pts) Find the length of the missing side to the nearest tenth. Show the equation.

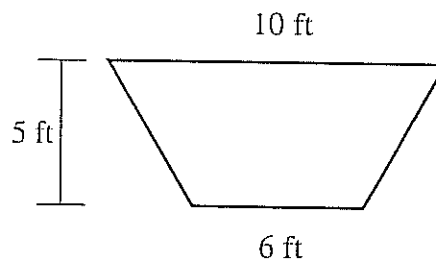


Does this answer make sense? Explain.

5. (10 pts) Find the area of each figure and label.

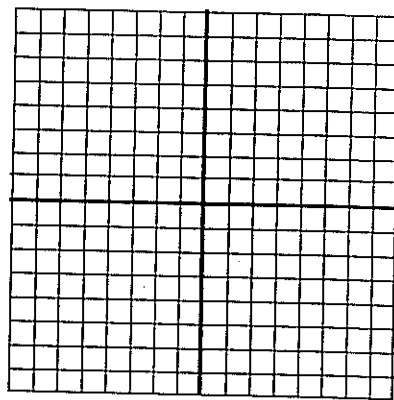


Area = \_\_\_\_\_



Area = \_\_\_\_\_

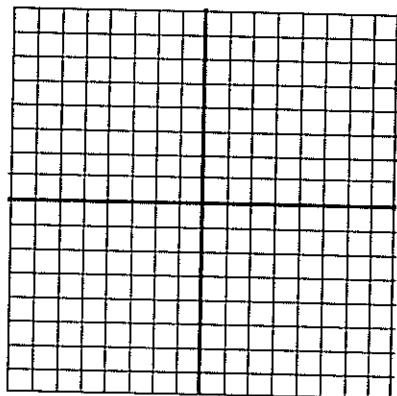
6. (10 pts) Graph the following equation:  $y = 2x - 4$



7. (15 pts) Plot (3,1) and (6,2).

What is the slope of the line that goes through these points? \_\_\_\_\_

What is the distance between these points? (Show your equation). \_\_\_\_\_




1. (15 pts) Look at the following figures and answer the questions below. (Only count the small squares like the one to the right), 

Fig. 1



Fig. 2

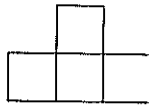


Fig. 3

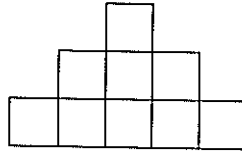


Fig. 4

a) Draw Figure 4 in the space provided.

b) Complete the table.

Figure #	Number of Squares
1	
2	
3	
4	

c) Study the table. How many squares would be in the 7<sup>th</sup> figure? Explain how you know this.

2. (15 pts) Look at the following number sequence, and answer the questions.

1, 4, 7, 10, .....

a) What would be the 5<sup>th</sup>, 6<sup>th</sup>, and 7<sup>th</sup> numbers in the sequence? \_\_\_\_\_, \_\_\_\_\_, \_\_\_\_\_

b) Describe the pattern in the sequence.

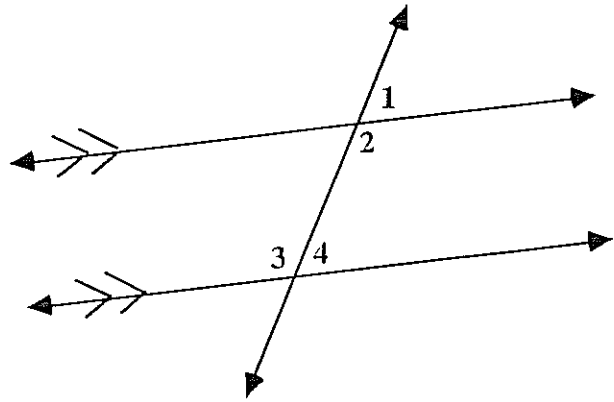
c) If  $n$  is a number in the sequence, what would be the next number? \_\_\_\_\_

3. (15 pts) In the figure at right,  $m\angle 1$  is  $60^\circ$ .

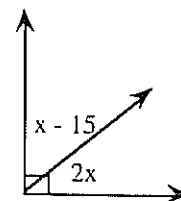
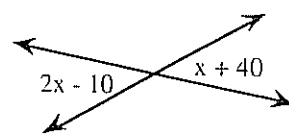
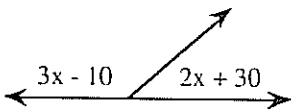
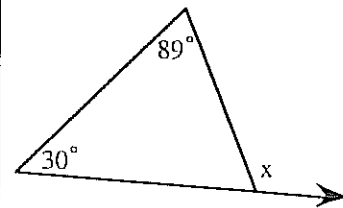
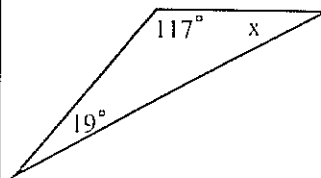
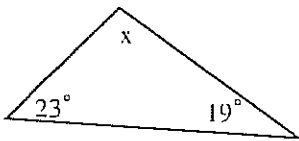
a) What is the  $m\angle 2$ ? **Explain** your reasoning.

b) What is the  $m\angle 3$ ? **Explain** your reasoning.

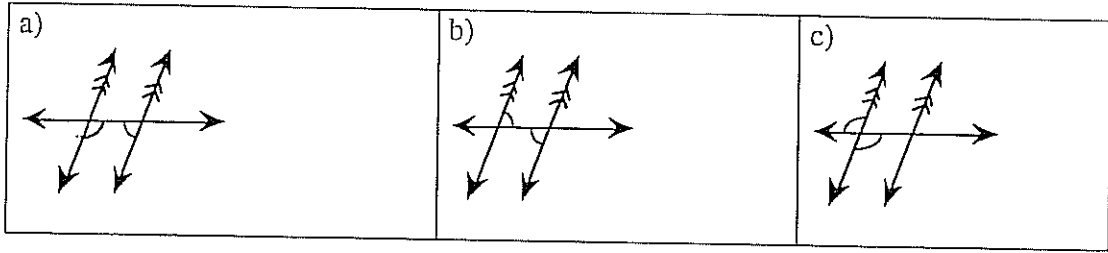
c) What is the  $m\angle 4$ ? **Explain** your reasoning.



4.(30pts) For each diagram find the value of  $x$ . Show your work!



5. (15pts) Identify the kinds of angles in each diagram and state whether the angles are equal or supplementary.



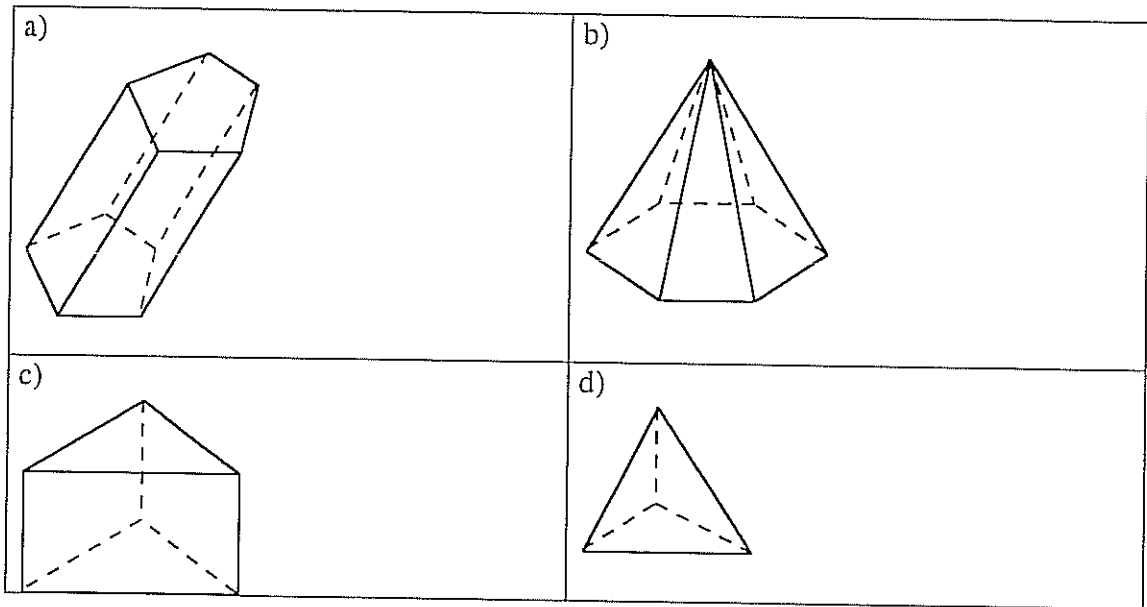
- a) Kinds of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_
- b) Kinds of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_
- c) Kinds of angles: \_\_\_\_\_ Equal or Supplementary: \_\_\_\_\_

6. (10 pts) Draw a pair of angles that satisfy the following conditions.

a) adjacent and complementary

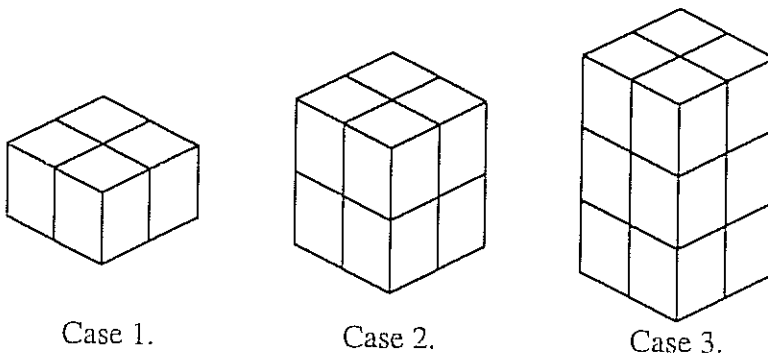
b) vertical and acute

1.(20pts) **Shade** the base(s) of these solids. Then match each solid to its correct name by placing an a, b, c, or d in the appropriate blank.



- \_\_\_\_\_ Triangular-based prism
- \_\_\_\_\_ Pentagonal-based prism
- \_\_\_\_\_ Hexagonal-based pyramid
- \_\_\_\_\_ Triangular-based pyramid (also called a tetrahedron)

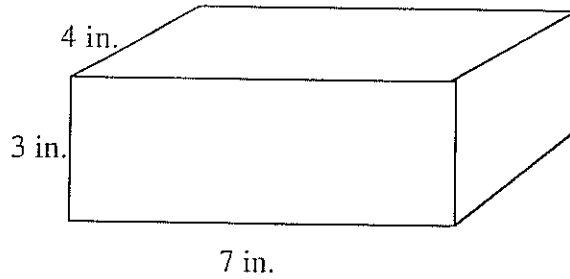
2.(10pts) Consider the cases below.



- a) If the pattern continues, what will be the height of the solid in Case 10? Explain.
- b) What is volume of the solid in Case 10? (Label your answer).



3.(20pts) A "Kleenex" box, which is a rectangular prism, has dimensions as shown below:



a) Find the Surface Area of the 'Kleenex' box and label. Show your sub-problems.

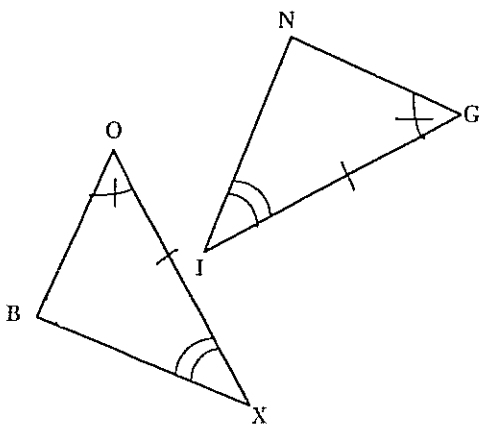
Surface Area = \_\_\_\_\_

b) Find the Volume of the 'Kleenex' box and label.

Volume = \_\_\_\_\_

4.(20pts) 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.) NOTE: These are not drawn to scale!

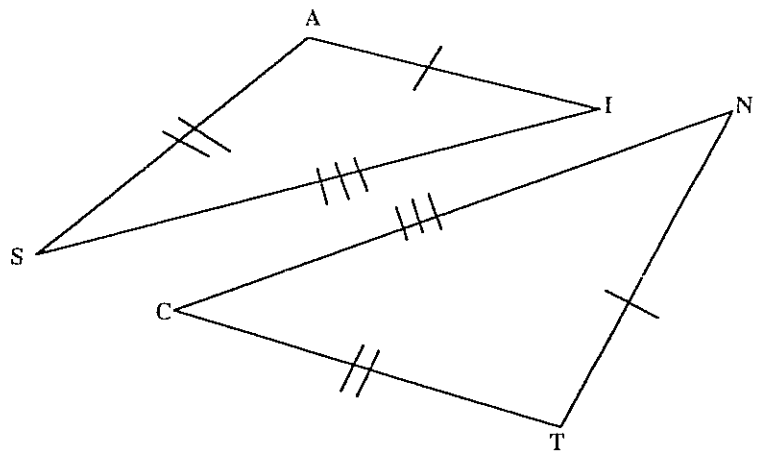
a)



$\triangle BOX \cong \triangle$  \_\_\_\_\_

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

b)



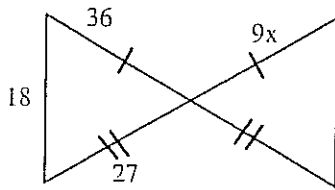
$\triangle SAI \cong \triangle$  \_\_\_\_\_

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

5.(10pts) Explain what it means for two figures to be congruent.

6. (10pts) Draw a pair of congruent triangles,  $\triangle ABC$  and  $\triangle XYZ$ , and label. Show they are congruent using the SAS property by marking some of the sides and angles appropriately.

7. (10 pts) Find the value of  $x$ . Show your equation.



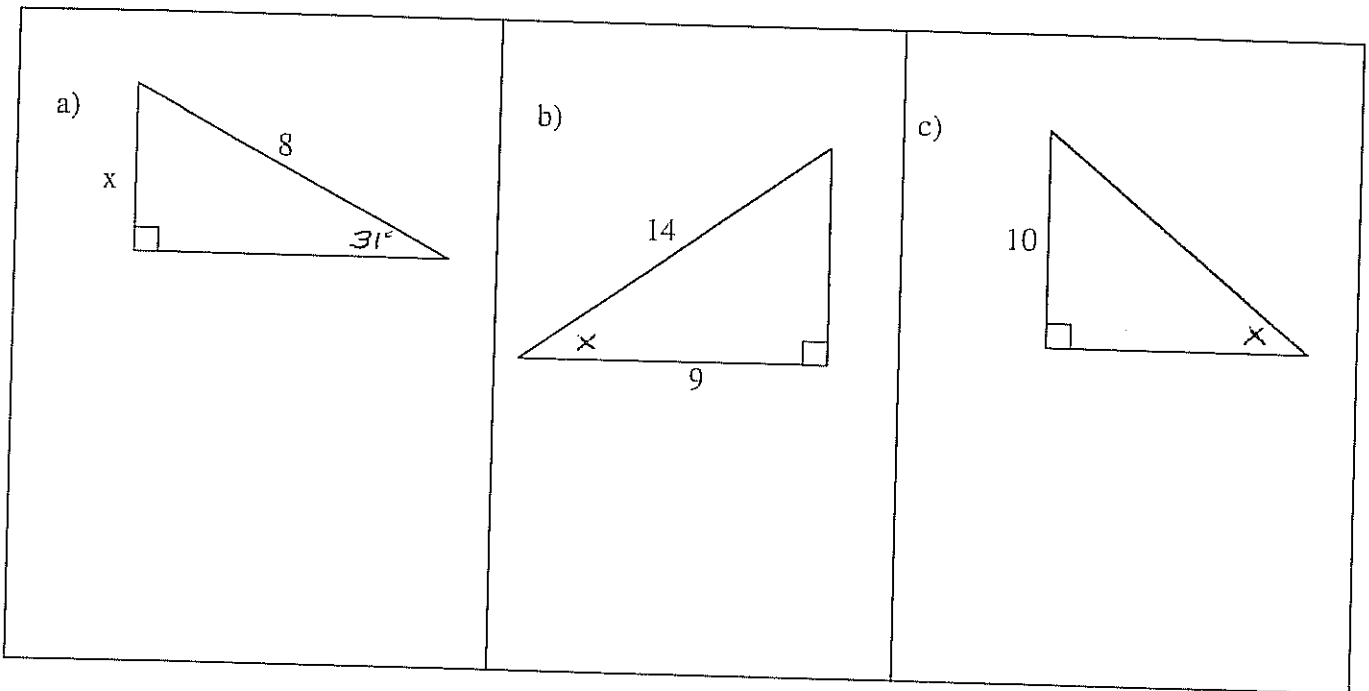
1. (12 pts) Using the words **opposite**, **adjacent**, and **hypotenuse**, complete the following trigonometric ratios.

sin =

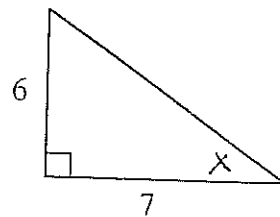
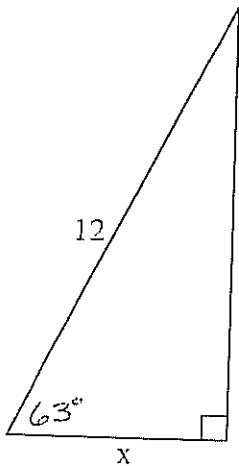
cos =

tan =

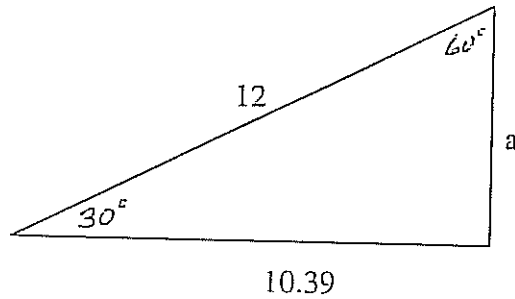
2. (30 pts) Write the **EQUATION** that will solve for  $x$  in two of the three right triangles. Which triangle cannot be solved? **Explain**. (DO NOT SOLVE ANY OF THE TRIANGLES).



3. (20 pts) Solve for  $x$  on each right triangle to the nearest tenth. Show the equations you use.

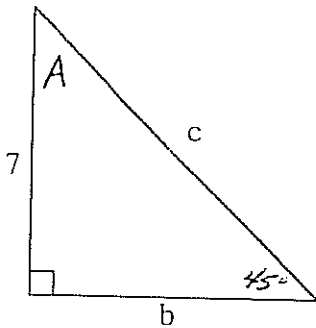


4. (10 pts) Use the Pythagorean Theorem to find the length of side  $a$  on the triangle below. Show the equation you use. Round to the nearest whole number.



5. (10 pts) Explain a different way to find the length of side  $a$  on the above triangle without using the Pythagorean Theorem. (Hint: Look at the measure of the angles.)

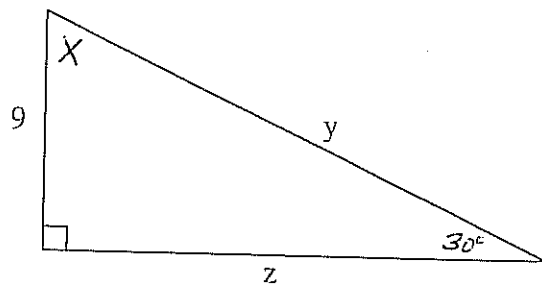
6. (18 pts) Use your understanding of 'special right triangles' to solve each of the following. Do not use a calculator.



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

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

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



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

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

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