

# GLENELG HIGH SCHOOL

## *Geometry*

Summer Pre-View Packet

### **DUE THE FIRST WEEK OF SCHOOL**

The problems in this packet are designed to help you review topics from previous mathematics courses that are important to your success in

*Geometry.*

Show all work that leads you to each solution on separate sheets of paper. You may use your notes from previous mathematics courses to help you. Additional copies of this packet may be obtained from the Main Office in your school or printed from the school's website.

ALL work should be completed and ready to turn in on the FIRST WEEK of school. This packet will count as part of your first quarter grade.

**ENJOY YOUR SUMMER!! WE ARE LOOKING  
FORWARD TO SEEING YOU IN THE FALL.**

Student Name: \_\_\_\_\_

School: \_\_\_\_\_

Date: \_\_\_\_\_

**HSA ALGEBRA/DATA ANALYSIS  
FORMULAS**

<b>Equations of a Line</b>
Standard Form: $Ax + By = C$ where A and B are not both zero
Slope-Intercept Form: $y = mx + b$ or $y = b + mx$ where $m$ = slope and $b$ = y-intercept
Point-Slope Form: $y - y_1 = m(x - x_1)$ where $m$ = slope, $(x_1, y_1)$ = point on line

<b>Slope Formula</b>
Let $(x_1, y_1)$ and $(x_2, y_2)$ be two points in the plane.
slope = $\frac{y_2 - y_1}{x_2 - x_1}$ where $x_2 \neq x_1$

## Algebra Review A Geometric Approach

This unit contains a review of several algebra topics. Each section contains a warm-up of basic algebraic skills and then applications of geometry problems which require the use of those skills.

To help students be ready for Geometry, it is important that you complete this packet.

- a. Simplifying Polynomial Expression.
  - o Combining Like Terms
  - o Distributive Property
- b. Solving Linear Equations
- c. Rules of Exponents
- d. Binomial Multiplication
  - o Multiplying 2 Binomials
  - o Squaring a Binomial
- e. Factoring
  - o Factoring Expressions
  - o Solve by Factoring
- f. Radicals
  - o Simplifying Radical Expressions
  - o Applying the Quadratic Formula
- g. Graphing Lines

## A. Simplifying Polynomial Expressions

### I. Combining Like Terms

Warm-Up: Simplify each expression

1.  $5y^2 + 8y - 3y^2 + 5 - 10y + 6$

2.  $3(x^3 + 4x^2 - 7x + 1)$

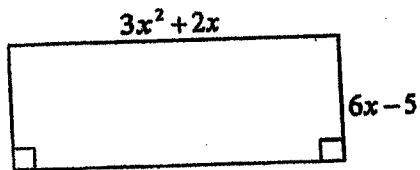
3.  $2(4x^2 - 3x) - 6(5x^2 + 3x + 1)$

4.  $4x - (3y + 6) + 2$

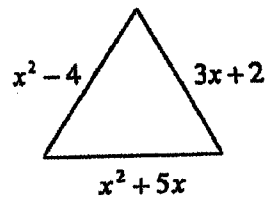
Applications:

Write an expression, in simplified form, for the perimeter of each figure:

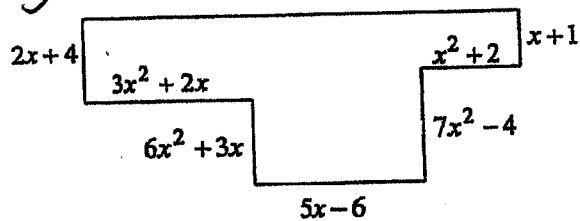
1.



2.



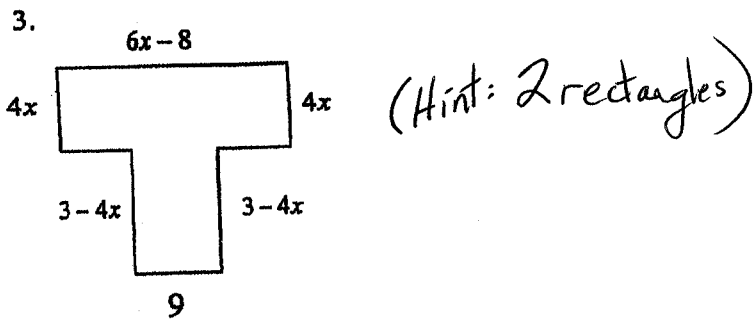
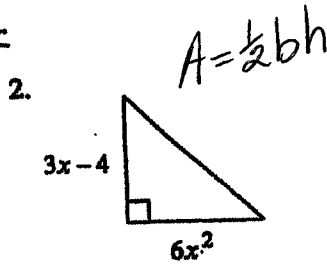
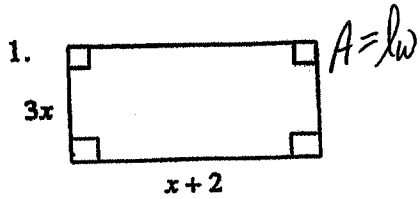
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4. You are putting a border around your room. Your room is  $3x + 4$  feet long and  $6x - 2$  feet wide. The door is  $2x + 1$  feet wide. Find the length of the border needed to do the room not including the door.

II. Distributive Property.

Write an expression, in simplified form, for the area.



## B. Solving Linear Equations

Solve for the variable.

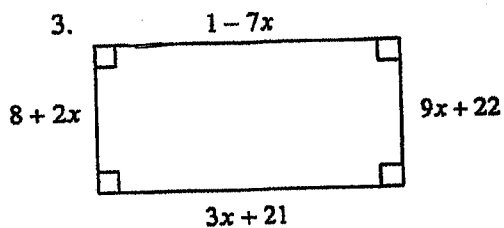
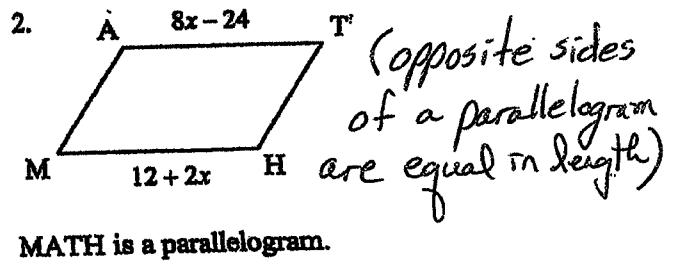
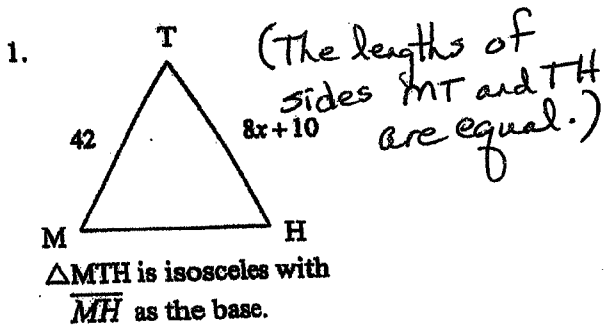
1.  $3x - 4 = 17$

2.  $81 = 6 - 5x$

3.  $2x + 7 = 6x - 21$

4.  $(3x - 4) = 2(4x + 16)$

I. Problems: Solve for the variable.



### C. Exponent Rules

Warm-up: Simplify.

1.  $x^5 x^{12}$

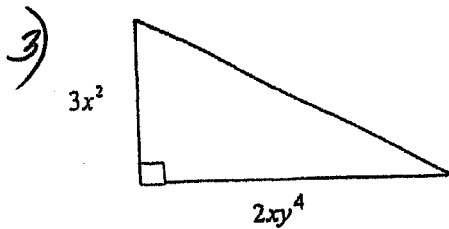
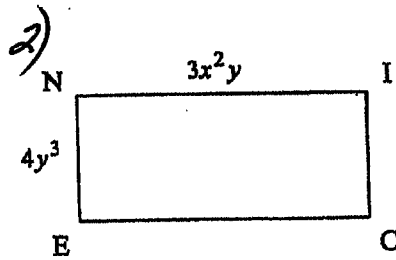
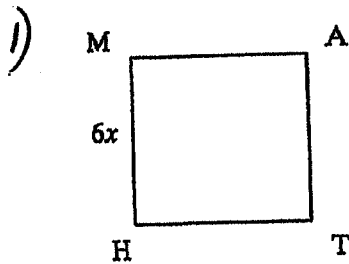
2.  $(x^2 y^3)^4$

3.  $\frac{6x^8 y^4}{3x^3 y^9}$

4.  $(6x^{21} y^{13})^0$

### PROBLEMS:

For problems 1-3, find an expression for the area of the figure. Answers must be simplified.



### D. Binomial Multiplication

Warm-up: Simplify

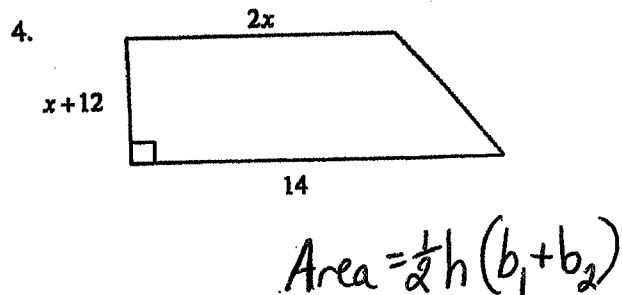
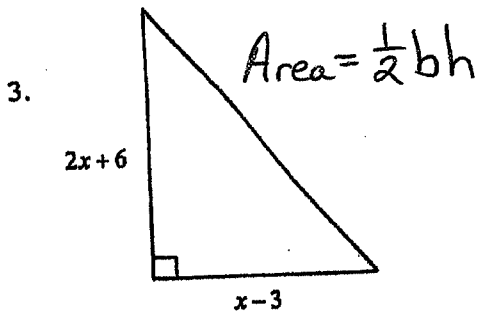
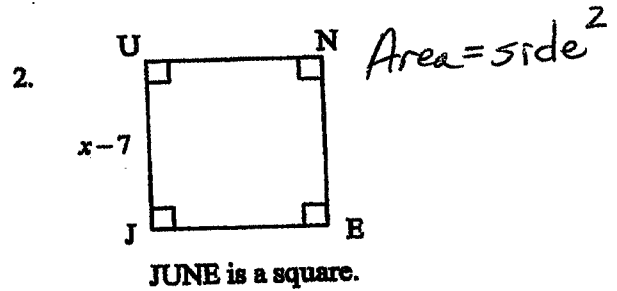
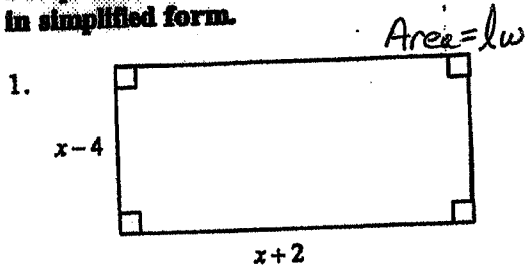
1.  $(x+2)(x+5)$

2.  $(3x+1)(x-4)$

3.  $(x-5)(x+5)$

4.  $(x+6)^2$

For problems 1-4, write an expression for the area of each figure. Your answer should be in simplified form.



Solve by factoring

Substitute 0 for y and solve

1.  $y = (x+4)(x+4)$
2.  $y = (x-5)(x-2)$
3.  $y = x(x-12)$
4.  $y = (3x+6)(x-4)$
5.  $y = (2x-3)(3x-2)$

Solve by factoring

6.  $0 = x^2 + x - 20$
7.  $0 = x^2 - 4$
8.  $0 = x^2 + x - 12$
9.  $x^2 + 8x = 9$
10.  $x^2 - 5x = 6$
11.  $x^2 - 25 = 0$
12.  $3x^2 + 5x + 2 = 0$
13.  $x^2 - 8x = -16$
14.  $3x^2 + 8x + 4 = 0$
15. The area of a rectangle is 40 square centimeters. Find the value of x, if the sides are x and (x+6)
16. The area of a square is 16 square centimeters. Find the value of x, if the sides are all (x-4)

Simplify each expression.

16.  $\sqrt{36} + \sqrt{64}$

1.  $\sqrt{49}$

2.  $\sqrt{1}$

3.  $\sqrt{100}$

4.  $\sqrt{900}$

5.  $-\sqrt{64}$

6.  $-\sqrt{225}$

7.  $-\sqrt{10000}$

8.  $\sqrt{\frac{9}{16}}$

9.  $\sqrt{9^2}$

10.  $\sqrt{15^2}$

11.  $(\sqrt{11})^2$

12.  $(\sqrt{60})^2$

13.  $\sqrt{25} - \sqrt{16}$

14.  $\sqrt{25-16}$

15.  $\sqrt{36+64}$

## Apply the Quadratic Formula

$$ax^2 + bx + c = 0 \quad x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve each equation using the quadratic formula.

1.  $x^2 + 4x + 3 = 0$

2.  $x^2 - 7x + 10 = 0$

3.  $x^2 + 5x + 6 = 0$

4.  $x^2 - 3x - 4 = 0$

5.  $x^2 + 2x - 8 = 0$

6.  $x^2 - 5x + 2 = 0$

7.  $x^2 + 3x - 7 = 0$

8.  $2x^2 - 5x + 2 = 0$

9.  $2x^2 - 3x - 5 = 0$

10.  $3x^2 + 5x + 1 = 0$

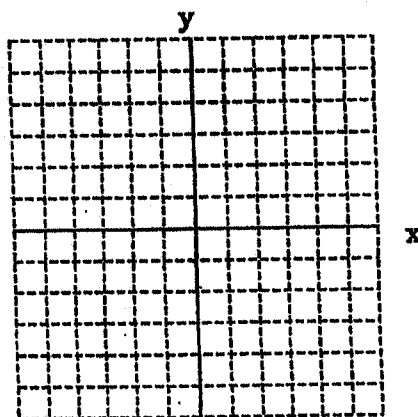
11.  $3x^2 - 2x - 8 = 0$

## G. Graphing Lines

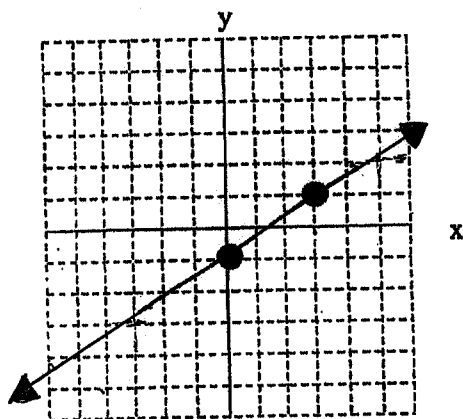
Warm-Up:

1. Determine the slope of line passing through  $(-2, 5)$  and  $(3, 2)$

2. Identify the slope and the  $y$ -intercept of  $y = 3x + 2$ . Then graph.



3. Write the equation of the line shown below.



4. Write  $2x - 7y = -14$  in slope-intercept form, then graph the line.

