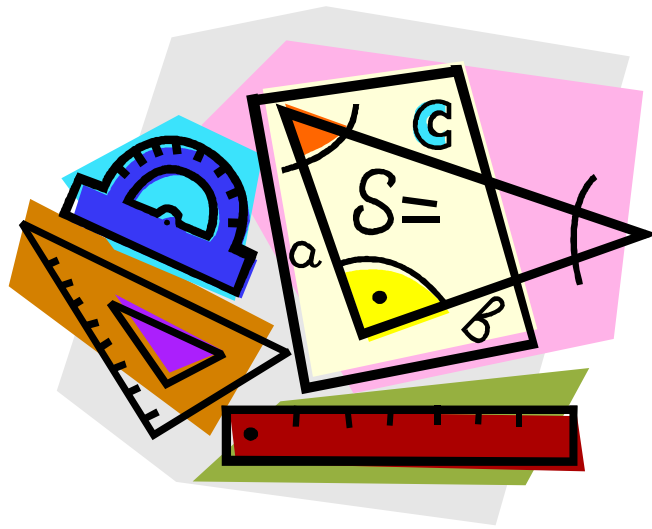# Geometry Prerequisite Packet

2015

Name: _____

Dear Geometry Students,

Within this packet you will find mathematical concepts and skills learned in Algebra I Honors. These concepts need to be reviewed and practiced throughout the summer. The completion of this review packet is very important and essential for your success in Geometry. These Algebra skills are used frequently throughout this course.

The Geometry prerequisite packet is due the first day of school. It is the decision of the Geometry teacher if the packet is graded, but you are encouraged to complete it.

The Geometry prerequisite is broken into specific concepts. *Some* sections have worked out examples followed by problems for you to complete. Be sure to complete each numbered exercise included in this packet. Below are a few websites you may wish to visit for additional examples and support.

 Algebra Help: http://www.algebrahelp.com/
Geometry: http://www.*khan*academy.org/

Results from the summer prerequisite work will help guide skill and concept reinforcement lessons that will take place the first few weeks of school.
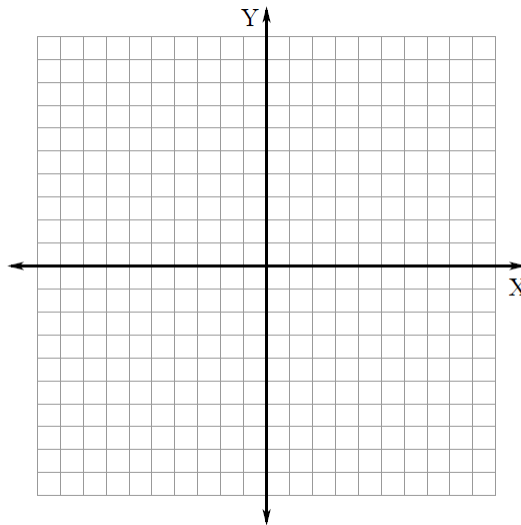
Have a nice summer,

George W. Carver Middle School
Mathematics Department

A) The Coordinate Plane

Plot the ordered pair in the coordinate plane. Then identify which quadrant the point is located in on the space provided.

1)   Quad:_____

2)   Quad:_____

3)   Quad:_____

4)   Quad:_____

B) The Slope of a Line

To find the slope of a line between two points   and   use the formula:

_____

Example: Let   and   ). The slope of the line passing through these points is

_____   _____   ____

The slope of this line is   2.

Try these:
Find the slope of the line passing through the given points.

5)   6)

7) (8)

C) Writing an Equation of a Line

There are three forms to write the equation of a line:

Slope-intercept form →   where m is slope and b is the y-intercept

Point-slope form →   where   is a point on the line and m is slope

Standard form → Ax This is where you rearrange an equation in slope-intercept form so that the x and y terms are on the same side of the equation.

Write the equation of the line using the given information.

9.   Slope is - 3, passes through the point   in slope-intercept form.

10.   Passes through the given points.

      a)   and   slope-intercept form

      b)   and   point-slope form

11.   <u>Parallel</u> to the line   3, containing the point   in slope-intercept form

12. Perpendicular to   – and passing through   standard form.

D) Solving Equations in One Variable

Solve for the variable.

13)   14)

15)   16)

17)

18) –

19) —

20) — —

E) Simplifying Exponents

Properties of Exponents				
Ex:	—	**Ex:** —		
Ex:	$\left(-\right)$ —	**Ex:** $\left(-\right)$ —	—	**Ex:** — —
Ex:		—	**Ex:** —	

Simplify each expression.

21)

22)

23)

24) —

F) Simplifying Radical Expressions

EXAMPLES You can use properties of radicals to simplify radical expressions.

a. $\sqrt{28} = \sqrt{4 \cdot 7}$ Factor using perfect square factor.

$\qquad\quad = \sqrt{4} \cdot \sqrt{7}$ Use product property.

$\qquad\quad = 2\sqrt{7}$ Remove perfect square factor from radicand.

b. $\sqrt{\dfrac{16}{3}} = \dfrac{\sqrt{16}}{\sqrt{3}}$ Use quotient property.

$\qquad\quad = \dfrac{4}{\sqrt{3}}$ Remove perfect square factor from radicand.

$\qquad\quad = \dfrac{4}{\sqrt{3}} \cdot \dfrac{\sqrt{3}}{\sqrt{3}}$ Multiply by a value of 1: $\dfrac{\sqrt{3}}{\sqrt{3}} = 1$.

$\qquad\quad = \dfrac{4\sqrt{3}}{3}$ Simplify.

Simplify each expression.

25) $\sqrt{144}$

26) $-\sqrt{25}$

27) $\sqrt{45}$

28) $\sqrt{}$

29) $3\sqrt{5}\ \ 2\sqrt{6}$

30) $\sqrt{}$

G) Solving Systems of Equations

There are 3 methods used to solve a system of linear equations in two variables: **graphing, substitution method, and elimination method.**

Solve the system using either the substitution method or elimination method.

31)

32) $2x - 3y = -3$
$\qquad x + 6y = -9$

33) $7x + 8y = 24$
$\quad x - 8y = 8$

34) $x + 3y = 9$
$\quad 4x - 2y = -6$

H) Solving Quadratic Equations

Quadratic Formula

The solutions of   can be found using the formula:

$$\frac{\sqrt{b}}{}$$

Example: Solve

$$\frac{\pm\sqrt{(}}{} \quad - \quad \text{and} \quad \pm\sqrt{36} \quad \pm\sqrt{1}$$

$$\frac{}{} \quad \frac{}{}$$

Solutions:

Try these:
Solve the quadratic equation using the Quadratic Formula

35)

36)

37)

38)

Multiplying Binomials

FOIL PATTERN In using the distributive property for multiplying two binomials, you may have noticed the following pattern. Multiply the First, Outer, Inner, and Last terms. Then combine like terms. This pattern is called the **FOIL pattern**.

Product of **First terms** Product of **Outer terms** Product of **Inner terms** Product of **Last terms**

$(3x + 4)(x + 5) = 3x^2 + 15x + 4x + 20$

$= 3x^2 + 19x + 20$ Combine like terms.

Factoring Quadratic Trinomials (Reverse FOIL)

if   and

Example: because   and

Find the product.

39)   40)   41)

Factor the expression

42)   43)

44)   45)

J) Geometry and Spatial Reasoning

Determine the area <u>and</u> perimeter of the figure described

46) Rectangle with length 4.6 cm and width 3.8 cm

47) Square with sides of length 7mm

48) Triangle with base 12 ft. long and a height of 8.4 ft.

Use the given information to determine each answer.

49) Area and circumference of a circle with radius 6 in.

50) Area and circumference of a circle with diameter 16 in.

51) Circumference of a circle with radius 9 cm.

52) Circumference of a circle with area 16π square centimeters.