

INCOMING GEOMETRY  
SUMMER MATH PACKET  
2017-2018

NAME: \_\_\_\_\_

The problems in this packet are designed to help you review topics from previous mathematics courses that are important to your success in Geometry. Please do each problem and show the work needed to arrive at your answer. Use a calculator ONLY where indicated. Bring the packet with you to your Geometry class on the first day of school. The completed packet will count as a quiz score for the first marking period.

It is advisable that you complete the math packet a little at a time throughout the summer.

You may use Khan Academy for assistance.

**SHOW ALL WORK.** Identify final answers clearly.

## PART 1: Linear Equations and Inequalities

**1 – 10: Solve the equation**

1.  $2(x-5) = 14$

2.  $4.2x + 6.4 = 40$

3.  $(3x+2) - 2(x+4) = 7$

4.  $\frac{2}{3}x + 5 = 21$

5.  $\frac{2}{3} = \frac{x}{18}$

6.  $\frac{x+1}{5} = \frac{4x}{15}$

7.  $\frac{8+x}{2} = 10$

8.  $\frac{3}{y+2} = \frac{2}{y}$

9.  $x + 2x + (2x+15) = 180$

10.  $104 = \frac{1}{2}[(360-x) - x]$

11 – 13: Solve the inequalities

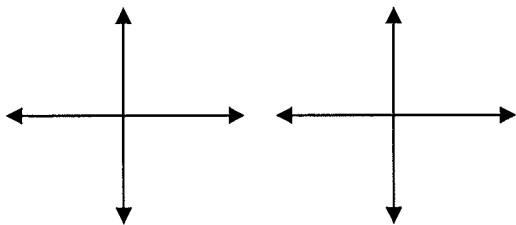
11.  $8(x-3) \geq 96$

12.  $3-x < -2$

13.  $2-10x \geq 22$

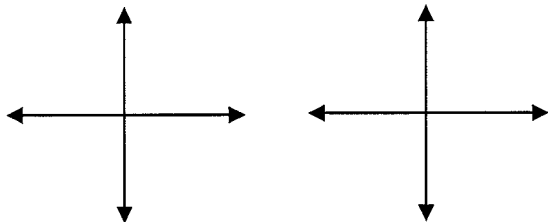
PART 2: Graphing Linear Equations

14. Sketch a line with the appropriate slope.



Positive

Negative



Zero

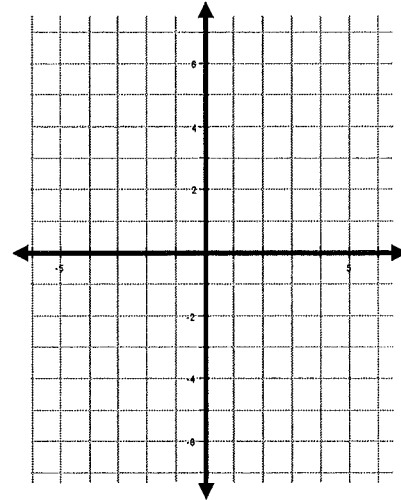
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15 – 16: Plot and label the points. Draw the line that passes between them. Calculate the slope using the slope formula.

The slope of the line between  $A(x_1, y_1)$  and

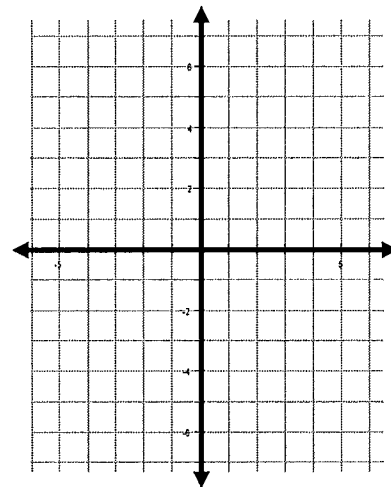
$B(x_2, y_2)$  is:  $m = \frac{y_2 - y_1}{x_2 - x_1}$

15.  $A(0,3)$  and  $B(6,1)$



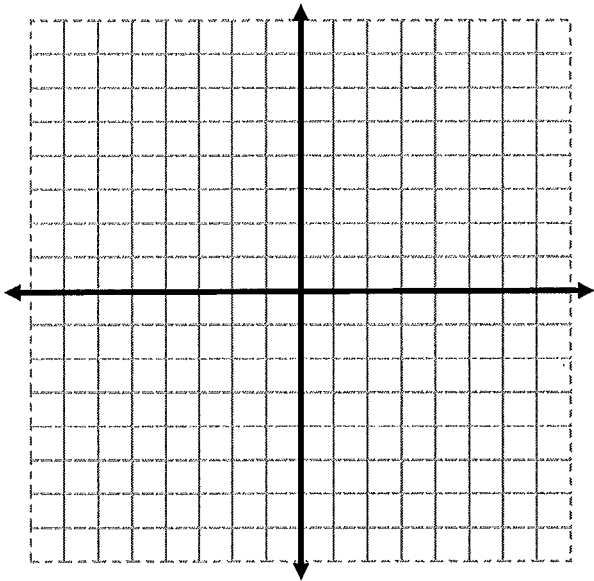
16.  $A(3, 2)$  and  $B(-1, -6)$  ; draw  $\overleftrightarrow{AB}$ .  
 $C(-4, -2)$   $D(-5, -4)$  ; draw  $\overleftrightarrow{CD}$

Calculate the slopes and explain if the lines are parallel or not.

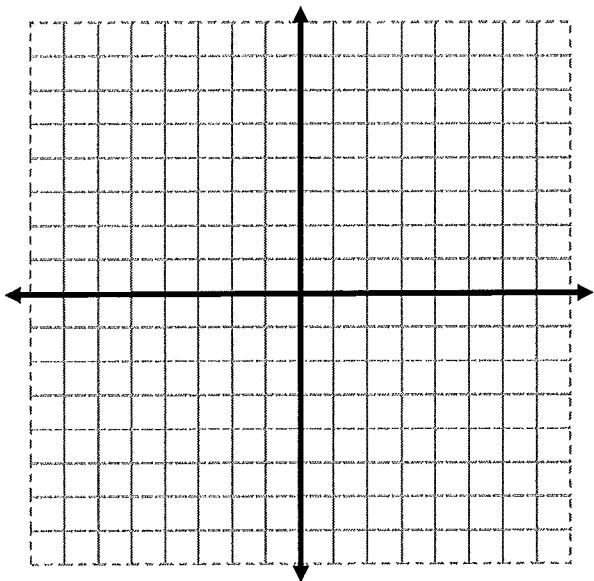


17 – 19: Rewrite each equation in slope-intercept form,  $y = mx + b$ . Identify the slope,  $m$ , and the  $y$ -intercept,  $b$ . Then graph.

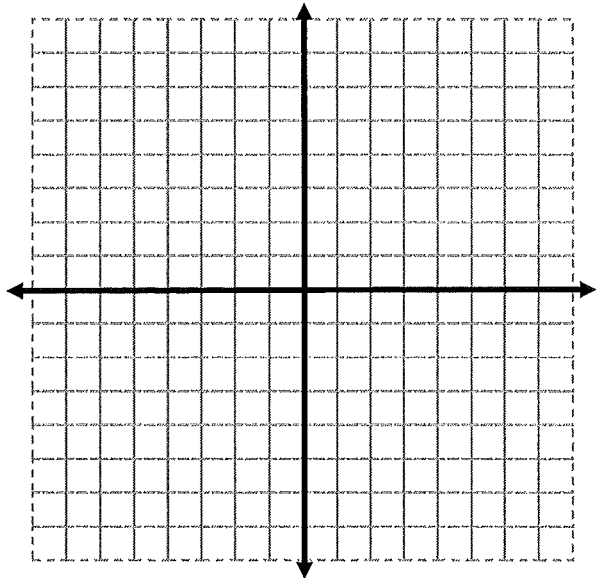
17.  $x + y = 6$



18.  $4x + 2y = 8$

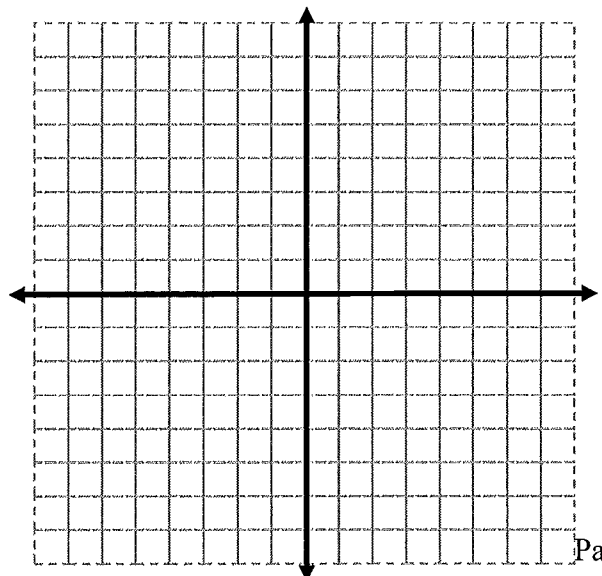


19.  $2x - 6y = 12$



20. Graph both equations. Identify the point of intersection

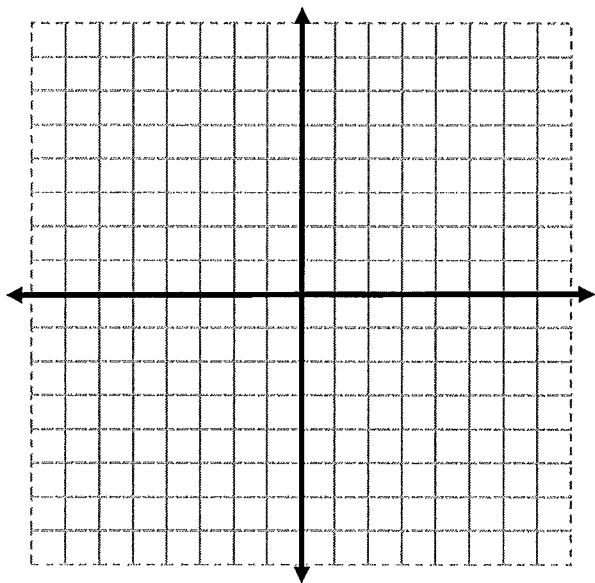
$4x + 2y = 14$      $-4x + 3y = -9$



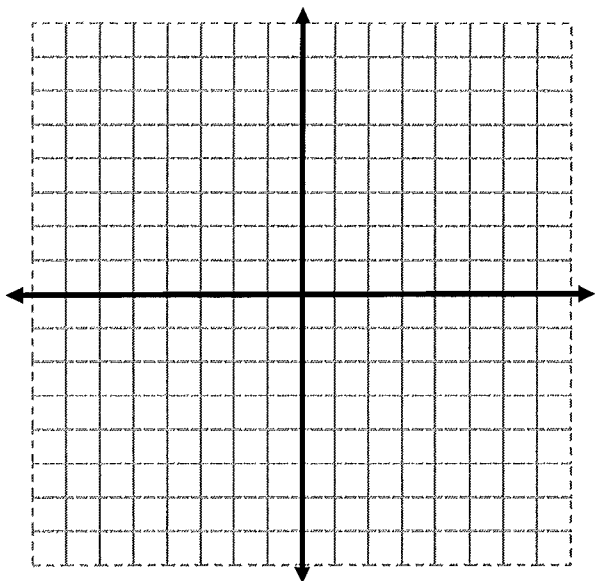
**21 – 22: Find the x and y intercepts of the equation. Plot the intercepts and graph the line.**

Remember: to find the x intercept, let  $y = 0$   
to find the y intercept, let  $x = 0$

21.  $6x - 3y = 12$



22.  $25x + 10y = 50$



**23 – 29: Write the equation of the line in slope-intercept form using the given information**

Follow these steps:

1: identify the slope (if necessary- use the slope formula)

2: identify the y intercept (if necessary- substitute the slope and the coordinates of one of the points into  $y = mx + b$ . solve for b)

3: use the results of the first two steps to write the equation

23. slope =  $\frac{3}{4}$ ; y intercept is  $(0, -5)$

24. slope =  $-3$ ; passes through  $(4, -3)$

25. slope =  $\frac{2}{3}$ ; passes through  $(-3, 5)$

26. passes through  $(2, -3)$  and  $(5, -9)$

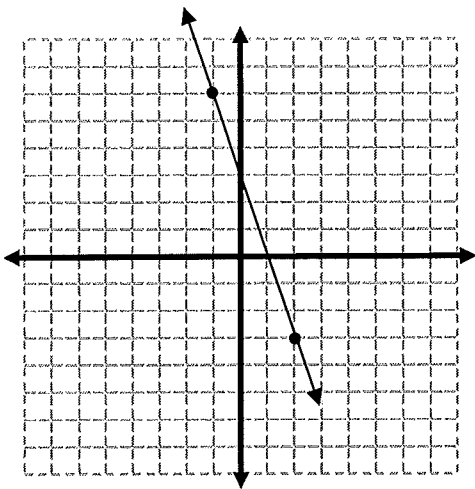
27. passes through  $(-5, 3)$  and  $(7, 9)$

PART 3: Linear Systems

30 – 35: Solve each system of equations using the method of your choice (substitution or combination)

30.  $x + y = 12$   
 $x - y = 2$

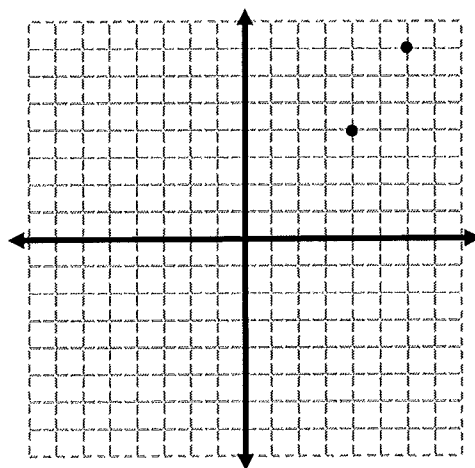
28. Write the equation of the line in the graph



31.  $2x + y = 5$   
 $2x = 14$

29. Sketch the line that passes through the two points. Write the equation of the line.

32.  $4x + 3y = 13$   
 $y = -x + 4$



33.  $4x + 2y = 4$   
 $6x + 2y = 8$

PART 4: Quadratic Equations, Polynomials, and Radicals

**36 – 39: Simplify the expressions by using the distributive property**

36.  $(x+11)^2$

37.  $(3x-4)^2$

34.  $\frac{1}{3}x + y = \frac{5}{3}$   
 $5x - y = 1$

38.  $5x(2x-4y+9)$

39.  $-3x(x^2 + 2x - 7)$

**40 – 41: Solve the equation by taking the square root of both sides (there are two solutions!)**

35.  $2x - 3y = 6$   
 $6x - 9y = 9$

40.  $2x^2 = 50$

41.  $5^2 + b^2 = 13^2$

**42 – 45: Solve by factoring**

Example:

$$x^2 + 5x = -6 \quad \text{original equation}$$

$$x^2 + 5x + 6 = 0 \quad \text{put in standard form}$$

$$(x+3)(x+2) = 0 \quad \text{factor}$$

$$x+3=0 \quad \text{or} \quad x+2=0 \quad \text{zero product property}$$

$$x=-3 \quad \text{or} \quad x=-2 \quad \text{two solutions}$$

42.  $x^2 + 6x + 8 = 0$

43.  $x^2 + 5x + 6 = -x^2 - 3x$

44.  $3x^2 + 7x - 8 = -10$

45.  $2x^2 - 4x + 2 = 0$

**46 -47: Solve by using the quadratic formula:**

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

(Use a calculator to estimate answers to the nearest hundredth)

46.  $x^2 - 3x + 1 = 0$

47.  $5x^2 + 2x - 2 = 0$



**48 – 51: Simplify the radical expression  
(Do not estimate with a calculator)**

Example:

$$\sqrt{24} = \sqrt{4} \cdot \sqrt{6} = 2\sqrt{6}$$

48.  $\sqrt{32}$

49.  $2\sqrt{75}$

50.  $(4\sqrt{3})^2$

51.  $(5\sqrt{6})(3\sqrt{3})$

**52 – 53: Simplify by rationalizing the denominator**

Example:

$$\frac{15}{\sqrt{5}} = \frac{15}{\sqrt{5}} \cdot \frac{\sqrt{5}}{\sqrt{5}} = \frac{15\sqrt{5}}{5} = 3\sqrt{5}$$

52.  $\frac{15}{\sqrt{3}}$

53.  $\frac{40}{\sqrt{2}}$

**PART 5: Geometry and Applications**

54. Given triangle ABC:  $m\angle A = 65^\circ$ ,  
 $m\angle B = n^\circ$ ,  $m\angle C = (4n)^\circ$ . Find the measure of  
each angle. (Remember, the sum of the three  
angles of a triangle equals  $180^\circ$ )

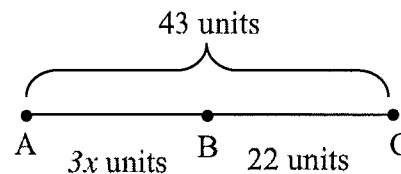
Equation: \_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_

$$m\angle A = 65^\circ$$

$$m\angle B = \underline{\hspace{2cm}}$$

$$m\angle C = \underline{\hspace{2cm}}$$

55. The length of line segment AC is 43 units.  
Segment AB is  $3x$  and segment BC is 22. What is  
the length of segment AB? What is the value of  
 $x$ ?

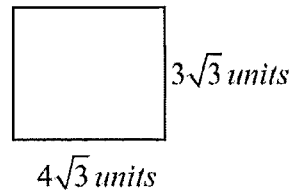


**56 – 59: Sketch the given figure and label its dimensions. Find the area and perimeter.**

56. A rectangle with length 3.6 cm and  
width 4.2 cm

57. A square with a side length of 9 mm.

62. Find the area of the rectangle



58. Find the circumference and area of a circle with a radius of 4 in. (use 3.14 for pi and round answers to the nearest tenth of a unit)

63. **Answer in complete sentences where appropriate. Show all your work to receive full credit.**

Square Deal Pizza offers square pizza that is 15 inches long on each side. A cheese pizza costs \$9.00.

Roundoff Pizza offers circular pizza that is 16 inches in diameter. A cheese pizza at Roundoff costs \$8.75.

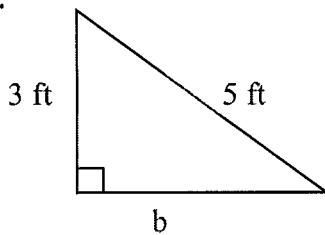
- Which restaurant's pizza is bigger? Justify your answer using words, symbols, or both.

- Which restaurant's pizza is a better buy? Justify your answer using words, symbols, or both.

59. Find the area of a triangle with base length of 10 cm and a height of 8 cm.

**60 – 61: Use the Pythagorean theorem ( $c^2 = a^2 + b^2$ ) to find the missing side length in the triangle.**

60.



61.

