

Name: _____

Geometry 2017

Summer Math Packet for students entering Geometry

Over the summer to better prepare you for the challenges of Geometry next year, we have put together some worksheets for you to complete over the summer. The packet will be due the first day back to school in the fall.

The worksheets will cover the following topics:

- 1 – Order of Operations
- 2 – Solving Linear Equations
- 3 – Graphing and Writing Linear Equations
- 4 – Substituting into Formulas
- 5 – Combining Like Terms, the Distributive Property and Polynomials
- 6 – Factoring
- 7 – Solving Quadratic Equations
- 8 – Systems of Equations
- 9 – Area and Perimeter
- 10 – Visualize
- 11 – Word Problems

Completing this packet:

- ✓ Assignments will be passed in on the **FIRST** day of school and will count towards your homework grade for Quarter 1.
- ✓ You will be **TESTED** on this information during the first week of school.
- ✓ All of this information will relate to Geometry. It is imperative that you know each concept to be successful during the class.
- ✓ For each individual problem you should:
 - Read Directions
 - Show ALL work
 - Leave answers as **REDUCED FRACTIONS**. No decimal answers should be given!
 - **NO WORK=NO CREDIT!**

Good Luck! We hope you have a wonderful summer! See you in the fall!!

1. Order of Operations Simplify the following problems using the order of operations. PEMDAS

a) $-5^2 - 12 \div 3(2) - 4^2$	b) $28 \div [(8)(3) - (2)(5)]$	c) $\frac{18}{\frac{2}{3}} - 5^2$
Answer: _____	Answer: _____	Answer: _____
d) $[12 \div 3 \times 2] - 6$	e) $(-3)^2 + (-2)^3 - 1^{37} + 18^0$	f) $5 - 3(2 + 5) - 6$
Answer: _____	Answer: _____	Answer: _____

2. Solving Linear Equations Solve for x.

a. $8x + 5 = -3$	b. $\frac{2}{3}x - 4 = -6$	c. $\frac{2}{3}x - \frac{4}{5} = -6$
Answer: _____	Answer: _____	Answer: _____
d. $-3 + \frac{2}{5}x = 5$	e. $5(2 - x) = 4 - 2(x - 3)$	f. $5x - 7 = 12x + 14$
Answer: _____	Answer: _____	Answer: _____

g. $\frac{1}{2}(x-2) = \frac{3}{7}x$

Answer: _____

h. $x-8 = 4-2(x-3)$

Answer: _____

i. $7-2(x+8) = 9+3x-5$

Answer: _____

j. $5x = \frac{3}{7}$

Answer: _____

k. $12 = \frac{8}{x}$

Answer: _____

l. $5 = \frac{x}{7}$

Answer: _____

3. Graphing and Writing Linear Equations Using Slope and y-intercepts

3a. Write the equation of the line. Using the given information, write the equation of the line in slope intercept form! (Hint: $y=mx+b$)

a.) slope = $\frac{1}{2}$; (6,-3)

b.) slope = $-\frac{1}{2}$; passes through (-6,5).

c.) slope = -4; (-2,-6)

d.) slope = $\frac{3}{2}$; passes through (-2,-4)

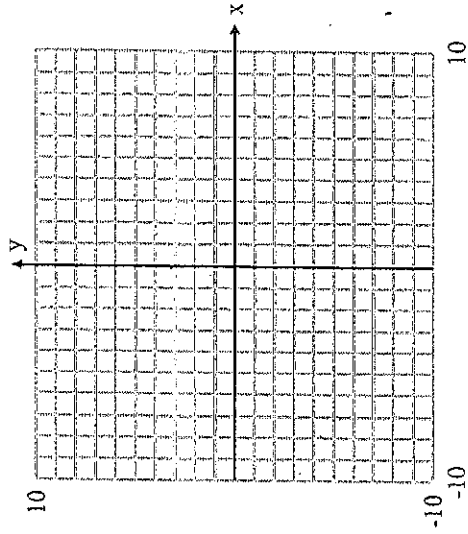
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3b. Graphing. Find the slope and y-intercept of each equation or set of coordinates and graph it.

Problem/Work

Graph

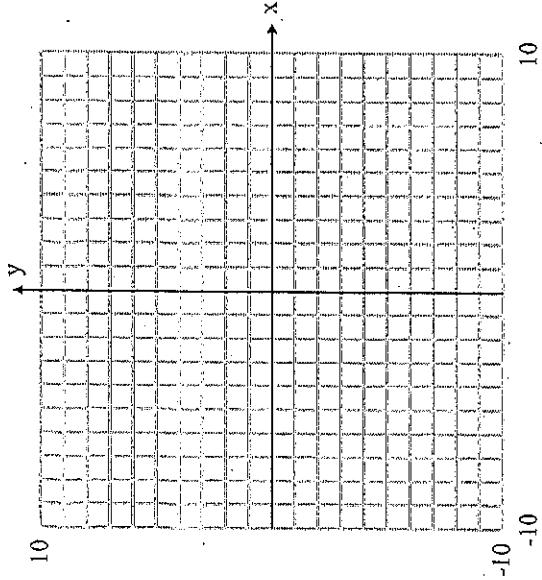
a) $y = x - 2$



slope: _____

y-intercept: _____

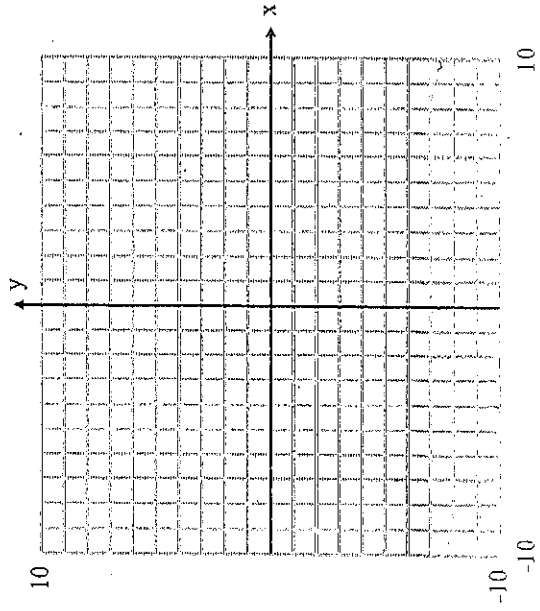
b) $y - 4 = \frac{2}{3}(x + 6)$



slope: _____

y-intercept: _____

c) $2y + 2x = -10$



slope: _____

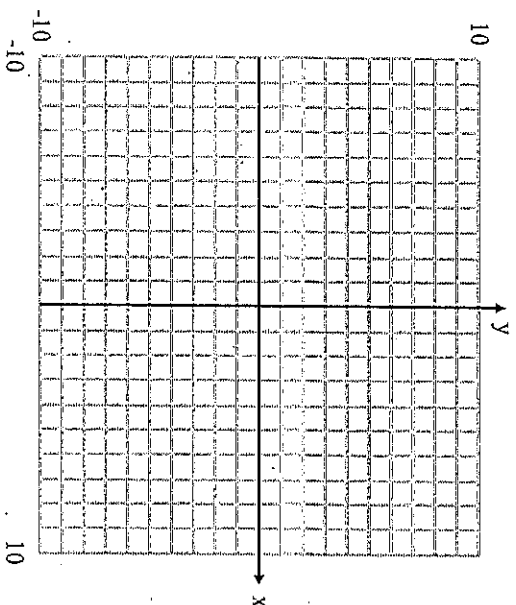
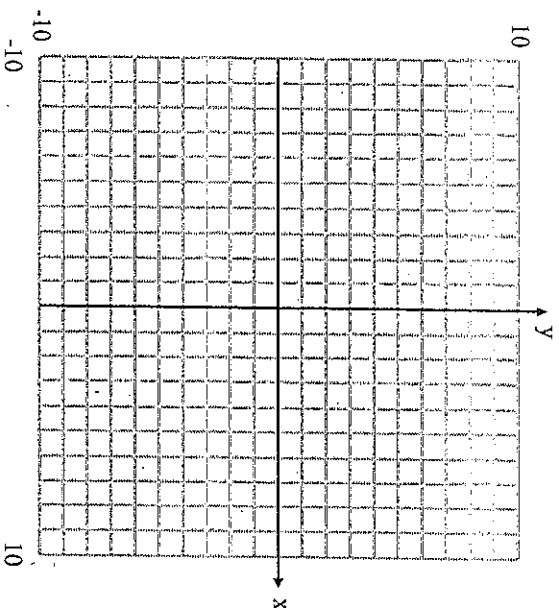
y-intercept: _____

d) $x=6$

slope: _____

y-intercept: _____

e) $(-6,-8)$ $(3,-8)$



slope: _____

y-intercept: _____

4. Substituting into Formulas

Substitute the given values into the formula to solve for the indicated variables.

	Answer		Answer
a. $A = \pi r^2$ $r = 5$ in (solve for A)		b. $A = \pi r^2$ $A = 36\pi$ (find the diameter)	
c. $p = 2(l+w)$ $p = 148$, $l = 36$ (solve for w)		d. $C = 2\pi r$ $C = 48\pi$ (solve for r)	

5. Combining Like Terms, the Distribute Property and Polynomials

Simplify the following expressions.

	Answer	Answer
a. $5x + 8 - 3x$		b. $2x - 5y + 8 - 7y + 5x$
c. $6(4x + 7) - 3(2x - 5)$		d. $12 - (3 - 4x) - 5(2x - 1)$
e. $2x^2(x^3 - 5x^2) + 4x^4$		f. $3n(5 - 2n^2)$
g. $(2x+5) + (4x-7)$		h. $(3x - 4) - (-5x + 8)$
i. $(4x^2 + 6x - 7) + (5x^2 - 7x - 9)$		j. $(16x^2 - 4x - 10) - (12x^2 - 4x + 1)$
k. $3x^2 + 9x - 7x^2 + 12 - x^2 - 16x$		l. $(2x + 9)^2$
m. $(3x - 4)(2x + 9)$		n. $(x + 2)(x^2 - 3x + 4)$

6. Factoring.

Factor the following. Use guess and check, factor by grouping, magic number, etc... Whatever works for you!!

Example: $x^2 + 10x + 21 = (x + 7)(x + 3)$ Example: $12x^2 - 13x - 14 = (4x - 7)(3x + 2)$

	Answer	Answer
a. $x^2 + 5x + 6$		b. $x^2 + 4x - 5$
c. $x^2 + 9x - 22$		d. $x^2 - 7x + 6$
e. $6x^2 + 13x - 28$		f. $2x^2 + x - 3$
g. $6x^2 - 5x - 21$		h. $8x^2 - 2x - 3$
i. $x^2 - 16$		j. $x^2 - 25$

7. Solve each of the following. Show all work.

	Answer		Answer
a) $x^2 + 8x + 7 = 0$		b) $4x^2 - 3x - 1 = 0$	
c) $x^2 - 8x + 15 = 0$		d) $12x^2 - 5x - 2 = 0$	
e) $3x^2 - 33x = 0$		f) $6x^2 - 20x = 0$	
g) $x^2 - 25 = 0$		h) $x^2 - 81 = 0$	
i) $5x^2 + 3x - 2 = 0$		j) $6x^2 + x = 1$	

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

k) $2x^2 - 5x - 1 = 0$

l) $2x^2 + 7x + 1 = 0$

m) $7x^2 + 6x - 3 = 0$

n) $4x^2 + 4x - 1 = 0$

8. Systems of equations. Show all work. Solve for x & y.

	Answer
<p>a) $y = -4x + 2$ $3y + 2x = -1$</p>	
<p>b) $4x + 2y = 34$ $10x - 4y = -5$</p>	
<p>c) $y = 3x - 14$ $y - x = 10$</p>	
<p>d) $y = 5x + 9$ $y + 3x = -7$</p>	

9. Area and Perimeter.

Square..... $A=s^2$

Rectangle..... $A=bh$

Parallelogram..... $A=bh$

Triangle..... $A=\frac{1}{2}bh$

Trapezoid..... $A=\frac{1}{2}h(b_1+b_2)$

Circle..... $A=\pi r^2$

Circle..... $C=2\pi r$ or πd

Perimeter = sum of the lengths of each side

Rectangular Prism:

$LA = 2wh + 2lh$

$SA = 2wh + 2lh + 2lw$

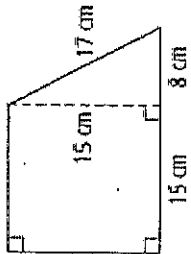
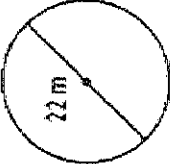
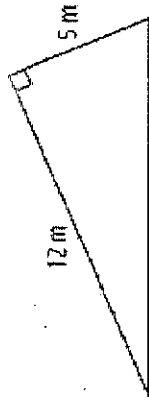
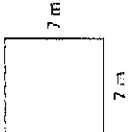
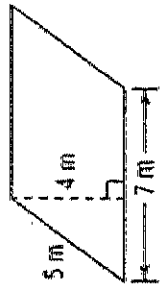
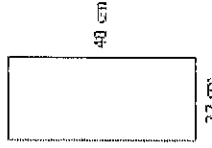
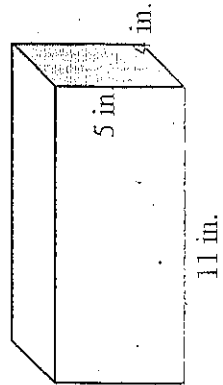
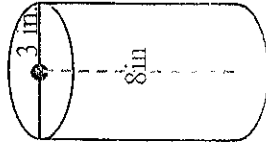
$V = lwh$

Cylinder:

$LA = 2\pi rh$

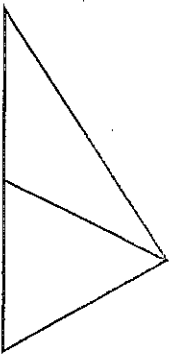
$SA = 2\pi r^2 + 2\pi rh$

$V = \pi r^2 h$

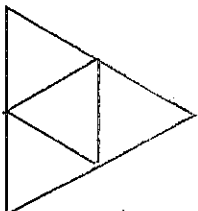
Problem	Answer	Problem	Answer
<p>A.</p> 	<p>Area = _____</p> <p>Perimeter = _____</p>	<p>D.</p> 	<p>Area = _____</p> <p>Circumference = _____</p>
<p>B.</p> 	<p>Area = _____</p> <p>Perimeter = _____</p>	<p>E.</p> 	<p>Area = _____</p> <p>Perimeter = _____</p>
<p>C.</p> 	<p>Area = _____</p> <p>Perimeter = _____</p>	<p>F.</p> 	<p>Area = _____</p> <p>Perimeter = _____</p>
	<p>Lateral Area = _____</p> <p>Surface Area = _____</p> <p>Volume = _____</p>		<p>Lateral Area = _____</p> <p>Surface Area = _____</p> <p>Volume = _____</p>

10. Visualize.

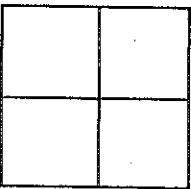
How many triangles are in the following figure?



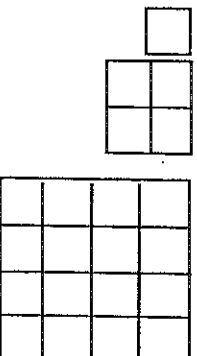
How many triangles are in the following figure?



How many rectangles are in the following figure?
(Hint: A square is a rectangle!)



What does the next figure in the pattern look like?



Can you describe the pattern?

11. WORD PROBLEMS

- 1) A tow truck company charges a basic rate of \$12 for a tow plus \$1.50 for each mile that it is towing a car. If the total bill for one car's towing was \$52.50, how many miles was the car towed? Define a variable and write an equation for each situation. Then solve.
- 2) The length of a rectangle is triple the width. An equation that models the area of the rectangle is $3x^2=108$ where x is the width of the rectangle in ft. What are the length and the width of the rectangle?

