Summer Skills Packet   NAME_____
Algebra 2 and Alg2/Trigonometry

1.1 Apply Properties of Real Numbers

1. 18 + (-25) = _____

2. $\left(-\frac{1}{2}\right) \times \left(-\frac{4}{3}\right) =$ _____

3. What is the difference between a daily low temperature of -5°F and a daily high temperature of 18°F?

Use the distributive property to rewrite the expression

4. 7(4a – 8)

5. -9(5x – 9y)

6. 3x(2x +5y)

6. Jill has enough money for a total of 32 table decorations and wall decorations. If *n* is the number of table decorations, write an expression for the number of wall decorations she can buy.

7. Graph the real numbers $\sqrt{13}$, $-\frac{12}{7}$, -2.8 on a number line.

_____

8. Identify the property illustrated by the statement
    a. 19(6 + 8) = 19(6) + 19(8)   _____
    b. 250 x 1 = 250   _____
    c. 8 + (2 +3) = (8 +2) + 3   _____

1.2 Evaluate and Simplify Algebraic Expressions

Simplify the expression

1. $11z^2 - z – 12z^2 + z$

2. -6(m - 9) + 14m – 20

3. 5(w + 6) - 9(w - 4)

Evaluate the following

4. 10m + 32, when m = -5

5. $\dfrac{x + y}{x - 2y}$, when x=3 and y=5

6. $-2x^2$ - 5x + 21, when x = -3

7. 12 + $(8 - n)^2$, when n=5

1.3: Solve Linear Equations

1.   7x - 3 = -x +13

2. 7 - 8x = -9 - 10x

3. 9 - $\dfrac{4}{5}$x = -23

4. 6(2x − 4) = 3(-x + 7) +9x

5. You are selling cakes at a bake sale for $6.75 each. You spend $86 to buy ingredients and supplies. There is no charge to have a table at the sale. Write an expression that shows your profit from selling *n* cakes. Then find the profit if you sell 25 cakes.

6. You can type 7 pages in 2 hours, and your classmate can type 8 pages in 3 hours. If you have two computers and can work at the same time, how long will it take the two of you to type a 37 page paper?

Lesson 1.4: Rewrite Formulas and Equations

1. Solve $V = \pi r^2 h$ for h.

2. Solve $V = \pi r^2 h$ for r

3. Solve $3y - xy = 21$ for y.

4. Solve $a^2 + b^2 = c^2$ for b

5. Solve $5x + 2y = 8$ for y. Then find the value of y when x = -8.

6. Solve $V = \frac{1}{3}Bh$ for h. Then find h if V=176cm³ B=40 cm².

Lesson 1.5: Problems Solving Strategies and Models

1. The driving distance between Boston, Massachusetts, and Cleveland Ohio is about 660 miles. If you drive this trip in 12 hours and 20 minutes, then what is your average speed?

2. You are hanging three pictures on a wall in your home that is 16 feet wide. The widths of the three pictures are 2 feet, 3 feet, and 4 feet. You want the space between the pictures to be the same, and for the space to the left and right of the group of pictures to each be 6 inches more than the space between adjacent pictures. How should you position the pictures?

3. Your long-distance telephone plan charges 8 cents per minute for weekdays, daytime calls and 5 cents per minute for night and weekend calls. If you made a total of 220 minutes of long-distance calls during one billing cycle and your bill was $13.16, not including taxes and fees. How many minutes of night and weekend calls did you make?
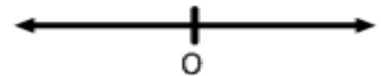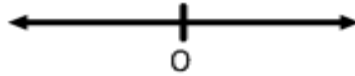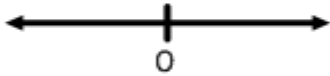
Lesson 1.6:   Solve Linear Inequalities

Solve the inequality. Then graph the solution.

1. $5x - 8 \leq 7$
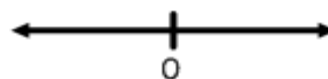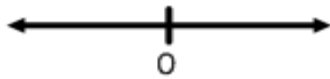
2. $4x - 7 \leq 12x + 9$

3. $2x + 8 < 0$ or $3x + 5 > 11$

4. $2(x-4) > -4x + 6$

5. $4x - 5 \leq 4(x + 2)$

Lesson 2.1:   Represent Relations and Functions

Identify Domain and Range of the following and determine if it is a function.

1. (2,3), (-4,1), (0,-2) D:_____   R:_____   Function: YES   NO

2. Input   Output

D:_____   R:_____   Function: YES   NO

3. (-1,-1), (2,5), (4,8), (-5,-9), (-1,-5)   D:_____   R:_____   Function: YES   NO

Tell whether the following function is linear or not. Then evaluate the function for the given value of x.

5. $f(x) = -x^2 + 3$, evaluate $x = -2$

6. $g(x) = -2x + 2$, evaluate $x = 3$

Lesson 2.2: Find Slope and Rate of Change

Find the slope of the line passing through the points. Then tell whether the line rises, falls, is horizontal or vertical.

1. (-3,5) (5,-2)

2. (7,8) (-8,8)

3. (-4,-3) (7,1)

Tell whether the lines are parallel, perpendicular or neither

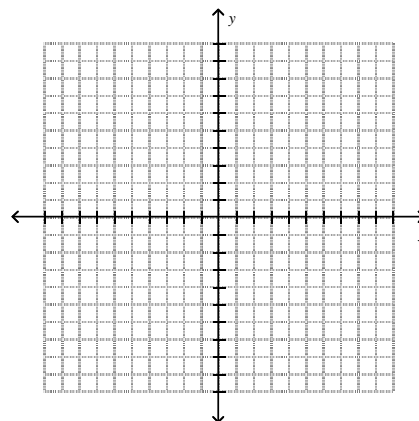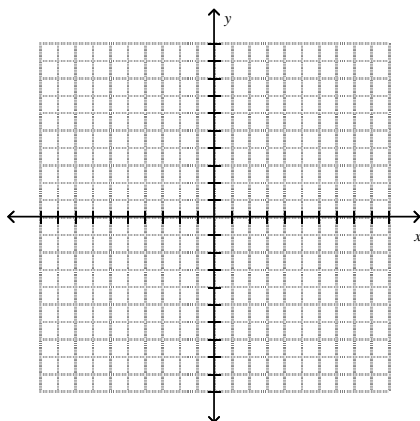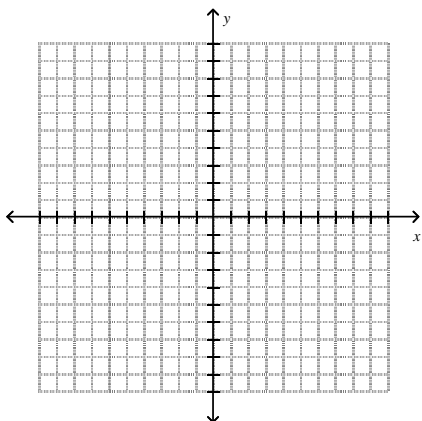4. Line 1: Through (5, -1) and (6, -2)
    Line 2: Through (-2, 3) and (4, 8)

5. Line 1: Through (-9, 3) and (0, 4)
   Line 2: Through (3, -4) and (2, 5)

Lesson 2.3: Graph Equations of Lines

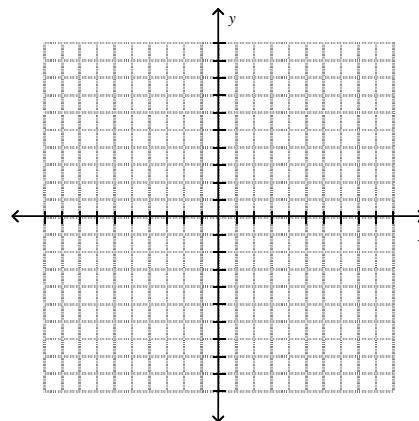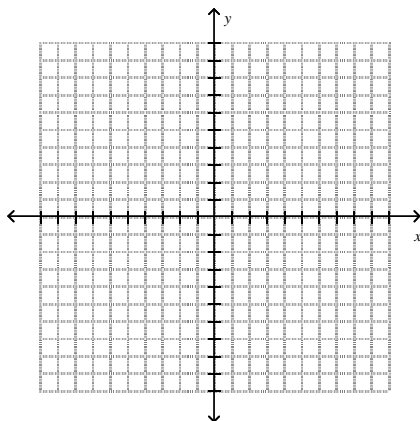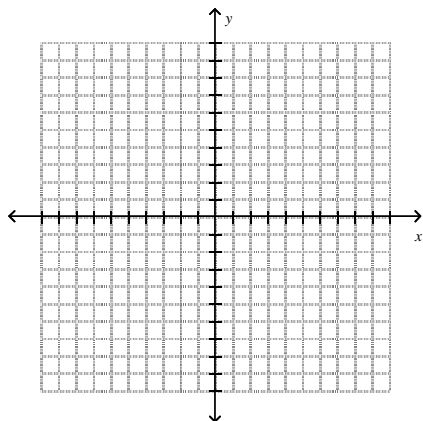1) $y = \dfrac{1}{2}x - 4$

2) $y = -3x + 4$

3) $3x - 6y = 18$

Use the x- and y-intercepts.

4) $-2x + 3y = 9$

5) $2x - 6y = 12$

6) $y = \dfrac{2}{3}x - 4$

Lesson 2.4: Write Equations of Lines

Write the equation of the line using the given information. Solve for y regardless of the method used!

<u>Use Slope-Intercept Form</u>

1) m = − 1, (4, 6)   2) slope: 0, (− 6, 2)   3) $(-7,0),(-9,3)$

<u>Use Point-Slope Form</u>

4) $(1,3),(7,4)$ 5) $(-2,3),(-2,-5)$ 6) $m = \frac{1}{2},(-4,5)$
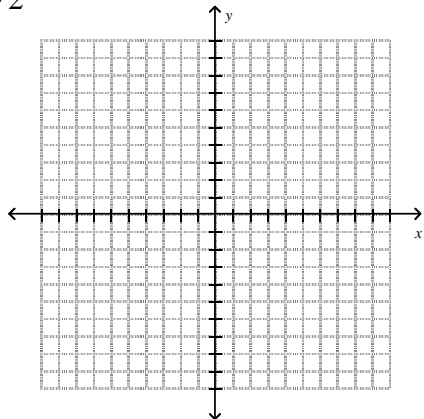
7) Write an equation of the line <u>parallel</u> to the line $y = 2x - 5$ and passes through the point $(-4,8)$.

8) Write an equation of the line <u>perpendicular</u> to the line $2x - 5y = 10$ and passes through the point $(-5,7)$.

Lesson 2.8: Linear Inequalities in 2 Variable

1) $y < 3x - 2$

2) $3x + 2y \geq 8$