

# DHS Summer Packet

## Two Year Algebra 2



## Suggested Timeline for Completing Two Year Algebra 2 Summer Packet

*Estimated Time to Complete – 1/2 Hour Per Week*

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Week of:	Monday, July 20, 2015 – Friday, July 24, 2015	<b>Problems 1-5</b>
Week of:	Monday, July 27, 2015 – Friday, July 31, 2015	<b>Problems 6 -7</b>
Week of:	Monday, August 3, 2015 – Friday, August 7, 2015	<b>Problems 8-9</b>
Week of:	Monday, August 10, 2015 – Friday, August 14, 2015	<b>Problems 10-11</b>
Week of:	Monday, August 17, 2015 – Friday, August 21, 2015	<b>Problems 12-13</b>

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### Formulas

*Formulas you should be familiar with.*

**Slope of a line containing two points  $(x_1, y_1)$  and  $(x_2, y_2)$ :**  $\frac{y_2 - y_1}{x_2 - x_1}$

### Equations of Lines

Slope-Intercept Form:  $y = mx + b$   
Point-Slope Form:  $y - y_1 = m(x - x_1)$   
Standard Form:  $Ax + By = C$

### Forms of quadratic functions

Vertex Form:  $f(x) = a(x - h)^2 + k$  *Axis of symmetry*  
 $x = h$   
Standard Form:  $f(x) = ax^2 + bx + c$   $x = -\frac{b}{2a}$

**Quadratic Formula:** If  $ax^2 + bx + c = 0$ , then  $x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

**Zero-product property:** If  $a \cdot b = 0$ , then  $a = 0$  or  $b = 0$

1. Gino knows that the formula for converting degrees Celsius ( $C$ ) to degrees Fahrenheit ( $F$ ) is  $F = \frac{9}{5}C + 32$ . He also knows how to transform an equation into an equivalent equation. Which of the following is correctly solved for  $C$ ?

A.  $C = \frac{5F-160}{9}$       B.  $C = 5F - \frac{160}{9}$       C.  $C = \frac{5F+160}{9}$       D.  $C = \frac{5}{9}F + 160$

2. Let  $a$  and  $b$  represent two numbers such that  $a > b$ . State whether each statement below is true or false. Justify your answer.

Statement	True or False?	Justification
$a + 8 > b + 8$		
$a - 7 > b - 7$		
$-7a > -7b$		
$\frac{a}{-10} < \frac{b}{-10}$		

3. Below is the solution to an inequality, represented graphically.



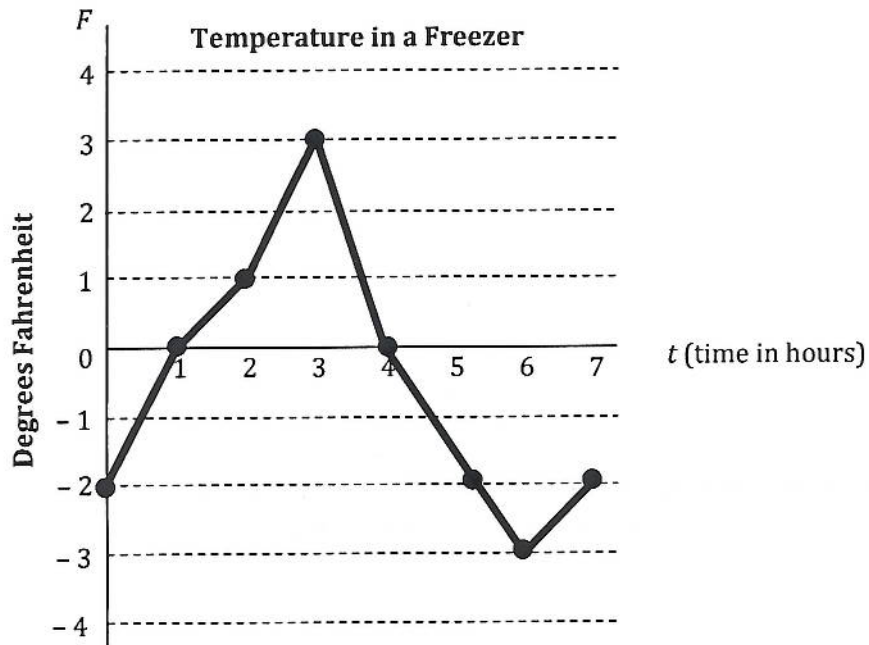
Which of the following inequalities has the solution graphed above?

A.  $-3x > 6$       B.  $-4x - 9 > -17$       C.  $2x + 10 \leq 14$

4. A rectangle has a length that is 6 inches longer than its width. If  $w$  represents, the width, write an expression, in terms of  $w$ , for the area of the rectangle.

5. Find the slope of the line that passes through  $(-5,1)$  and  $(7,-3)$ .

6. The graph below represents the temperature ( $F$ ) in degrees Fahrenheit inside of a freezer as a function of time. The variable  $t$  represents the time, in hours, since midnight.

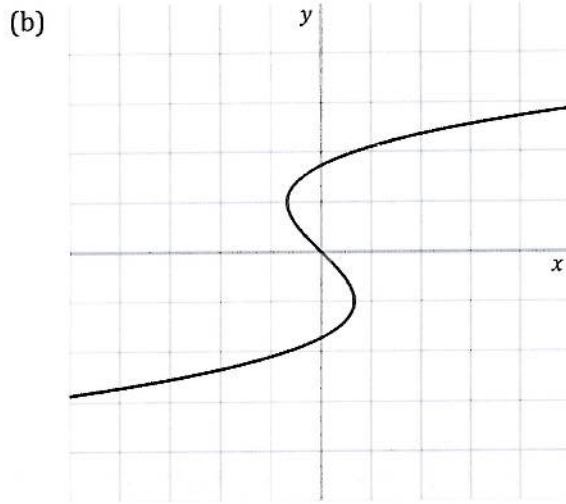


- (a) What is the domain of the function?
- (b) What is the range of the function?
- (c) What is the meaning of the  $F$ -intercept?
- (d) At what time  $t$  is the minimum temperature reached?
- (e) What does the statement  $F(5) = -2$  represent in the context of the situation?
7. Solve the following linear equations.

(a)  $7x = 4x - 2$

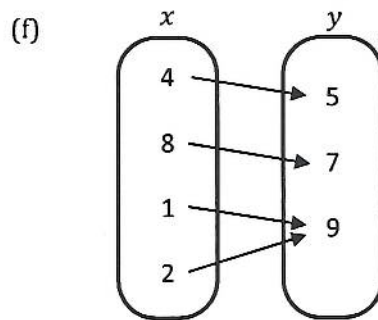
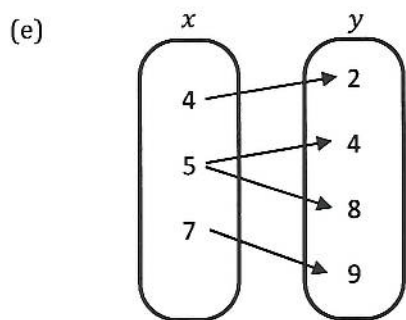
(b)  $7x + 19 = 55 - 2x$

8. For each relation below, determine whether or not the relation represents a function. Justify your answer.



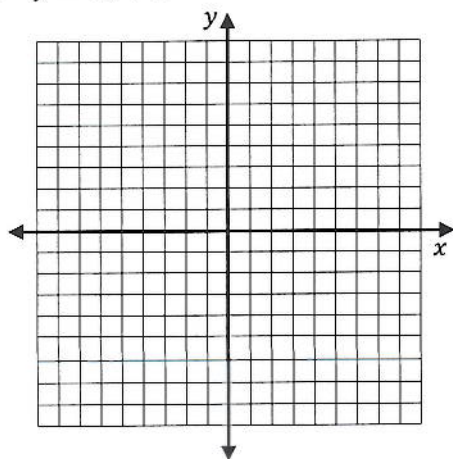
(c)  $\{(2, 7), (4, -7), (2, 12), (6, 11)\}$

(d)  $\{(4, 9), (6, 11), (11, 15), (10, 9)\}$

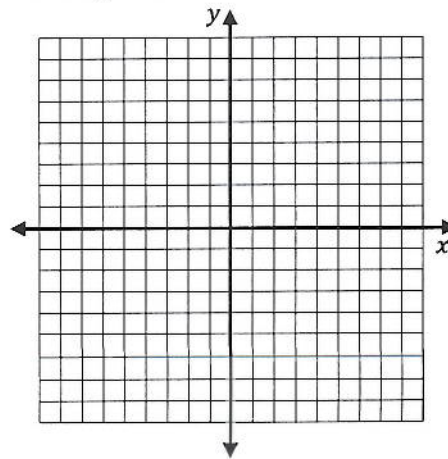


9. Graph the lines. Accurately plot and label at least 3 points on each graph.

(a)  $y = 3x + 1$



(b)  $3x + 2y = 6$



10. Completely simplify each of the following.

(a)  $(-3a^2 + 4a - 7) + (2a^2 - 7a + 8)$

(b)  $(39x^4 - 4x^3 + 2x^2 - x - 7) - (13x^4 + 3x^3 - 2x^2 - x + 8)$

(c)  $(y + 7)(y - 3)$

(d)  $(x + 12)(x - 12)$

(e)  $(p - 2)(3p + 2)$

11. Completely factor each of the following. (HINT: When factoring, first take out any common factors, then factor using the difference of squares method or some other method of factoring.)

(a)  $5x^2 - 20x$

(b)  $7x^3 - 21x^2$

(c)  $x^2 + 16x + 64$

(d)  $x^2 - 49$

(e)  $x^2 - x - 72$

(f)  $x^2 + 7x + 12$

(g)  $x^2 - 8x + 16$

(h)  $x^2 + 10x - 24$

12. Solve each of the following by factoring.

(a)  $(2x + 1)(x + 3) = 0$

(b)  $x^2 - 16 = 0$

(c)  $x^2 - 3x - 10 = 0$

(d)  $x^2 - 6x = 0$

13. Solve each of the following using the quadratic formula.

(a)  $2x^2 - 3x - 2 = 0$

(b)  $x^2 + 5x + 6 = 0$