

Richard Montgomery High School
Department of Mathematics

Summer Math Packet

for students entering

Two-year Algebra 2

Name: _____

Date: _____

This packet must be completed and ready to turn in to your new math teacher on the first day of school. It will be graded and you will be quizzed on the material in this packet within the first week of school.

You may work with a classmate or a peer. You may use textbooks or other sources to help you complete the packet, however, each student must submit their own packet, and each student is responsible for understanding the material contained in the packet. We encourage you to use online help such as Kahn Academy, You Tube, Math is Fun and Flexbooks found on MCPS website. Link to Flexbooks for UNIT 1 is below. You may use calculators; however, make sure to show your work. Write your work on this packet, and make sure to show an appropriate amount of work for each question. If you need another sheet, you may attach it. This assignment is a review of skills you should have already learned. Thoroughly knowing these skills will help you be successful in your Algebra 2 class.

A suggested timeline is provided to help you pace yourself throughout the summer. It is the quality of your effort put into this work that is important. We want to make sure the material is fresh in your mind. There are a lot of problems, but we want you to be as prepared and as ready as possible for the upcoming challenges of your new math class. Also, take a look at the vocabulary page at the end. Have a GREAT SUMMER☺

<http://www.montgomeryschoolsmd.org/uploadedFiles/curriculum/math/high/algebra2/Algebra%20%20Unit%201%20cK12%20Flexbook%20links.pdf>

Suggested Timeline for Completing Two Year Algebra 2 Summer Packet

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

Week of:	Monday, July 24, 2017 – Friday, July 28, 2017	Problems 1-3
Week of:	Monday, July 31, 2017 – Friday, August 4, 2017	Problems 4-7
Week of:	Monday, August 7, 2017 – Friday, August 11, 2017	Problems 8-11
Week of:	Monday, August 14, 2017 – Friday, August 18, 2017	Problems 12-14
Week of:	Monday, August 21, 2017 – Friday, August 25, 2017	Problems 14-18

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

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

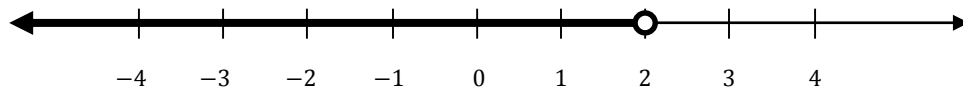
Zero-product property: If $a \cdot b = 0$, then $a = 0$ or $b = 0$

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. $C = \frac{5}{9}F + 160$

Show work

2. 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. $2x + 10 \leq 14$

Show work

3. 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.

Show work

4. Simplify the following:

A. $\sqrt{9} =$

B. $\sqrt{36} =$

5. Given b^x Circle the appropriate word to complete the sentence. Given “b” represents the Base/Exponent the “x” represents the Base/Exponent

6. Simplify the following:

A. $5^2 =$

B. $3(4)^2 =$

C. $6^3 =$

7. Simplify the following:

A. $x^2x^6 =$

B. $(x^3)^5 =$

8. Simplify the following:

Show work on each

A. $\frac{3}{4} + \frac{7}{4} =$

B. $\frac{2}{3} + \frac{5}{7} =$

C. $\frac{2}{5} \cdot \frac{3}{7} =$

9. Solve for x in the following linear equations.

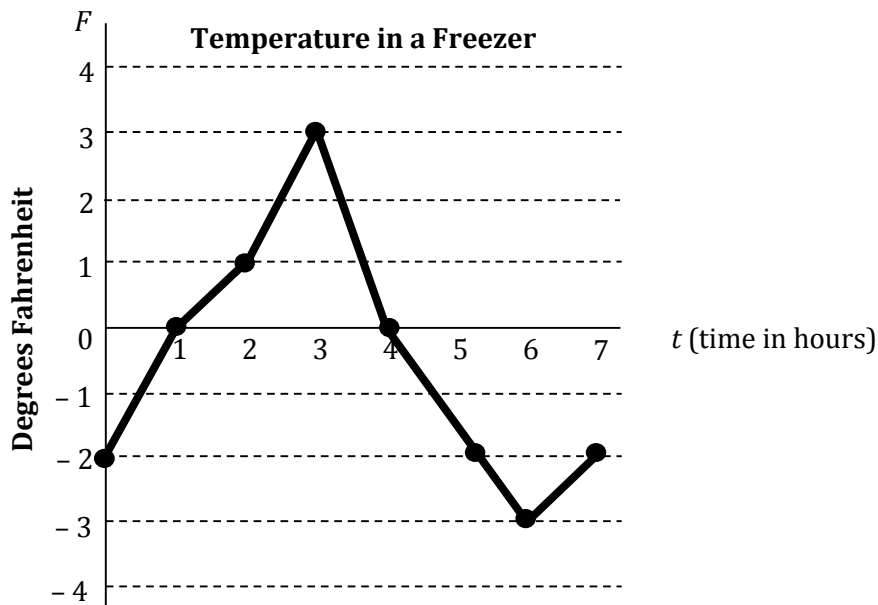
Show Work on each

A. $7x = 4x - 2$

B. $7y = 55 - 2x$

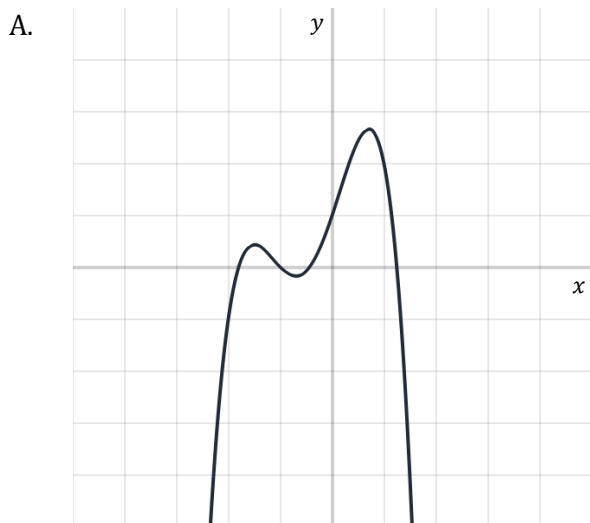
10. Given $y = mx + b$ Fill in the blanks: The m in the equation represents the _____ and the b in the equation represents the _____. The form $y = mx + b$ is call the _____ form.

11. 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.



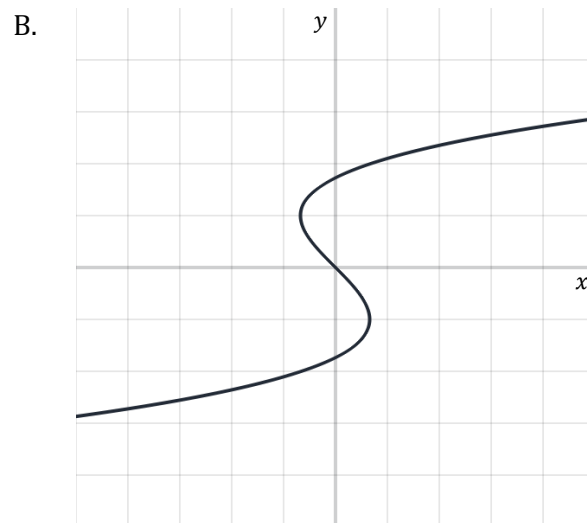
- A. What is the domain of the function?
- B. What is the range of the function?
- C. What is the meaning of the F -intercept?
- D. At what time t is the minimum temperature reached?
- E. What does the statement $F(5) = -2$ represent in the context of the situation?

12. For each relation below, determine whether or not the relation represents a function. Justify your answer. Also state the Domain and the Range.



Domain =

Range =



Domain =

Range =

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

Domain =

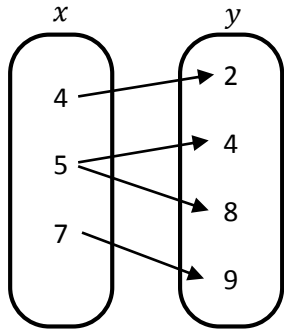
Range =

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

Domain =

Range =

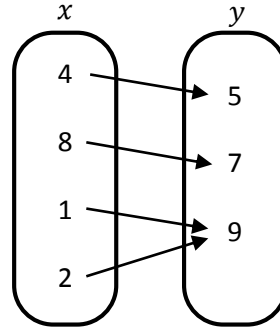
E.



Domain =

Range =

F.

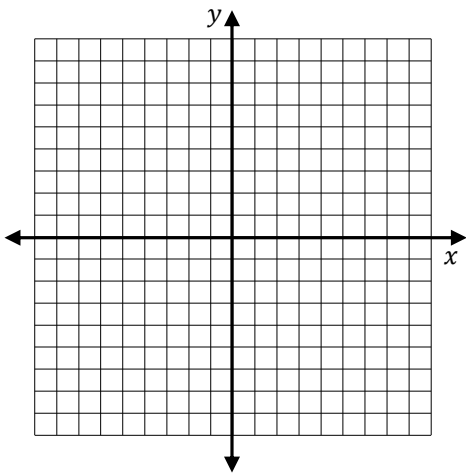


Domain =

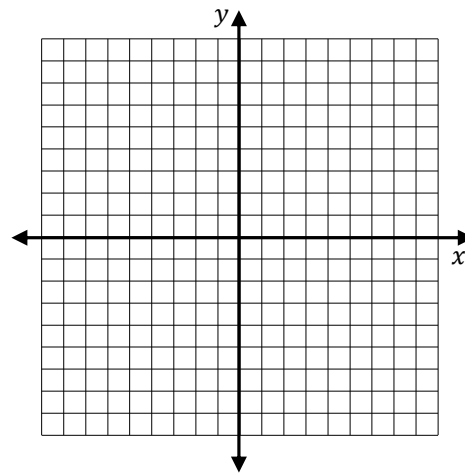
Range =

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

A. $y = 3x + 1$



B. $3x + 2y = 6$



14. Completely simplify each of the following.

Show Work on each

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

B. $(5x^2 - x - 7) - (2x^2 - 3x + 8)$

C. $(y + 7)(y - 3)$

D. $3x(x - 12)$

15. 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.)

Show Work on each

A. $5x^2 - 20x$

B. $x^2 + 16x + 64$

C. $x^2 + 10x - 24$

D. $x^2 - 49$

16. Find the roots of the equations below.

Show Work on each

A. $(2x + 1)(x + 3) = 0$

B. $x^2 - 16 = 0$

C. $x^2 - 3x - 10 = 0$

D. $x^2 - 6x = 0$

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

A. $2x^2 - 3x - 2 = 0$

B. $x^2 + 5x + 6 = 0$

Show Work (Use the quadratic formula from formula sheet)

18. Given the following function $f(x) = -3x^2 + 2x$

Show work

A. Find $f(0) =$

B. Find $f(3) =$

C. Find $f(a) =$

**Vocabulary to review – write
a brief description.**

Domain

exponent

Range

base

Inverse

variable

x-axis

numerator

y-axis

denominator

square root

reflection

cube root

dilation

radical equation

rotation

function

solutions

variable

inequality

factor

less than

slope

greater than

y-intercept

x-intercept

coordinate plane

zeros

roots