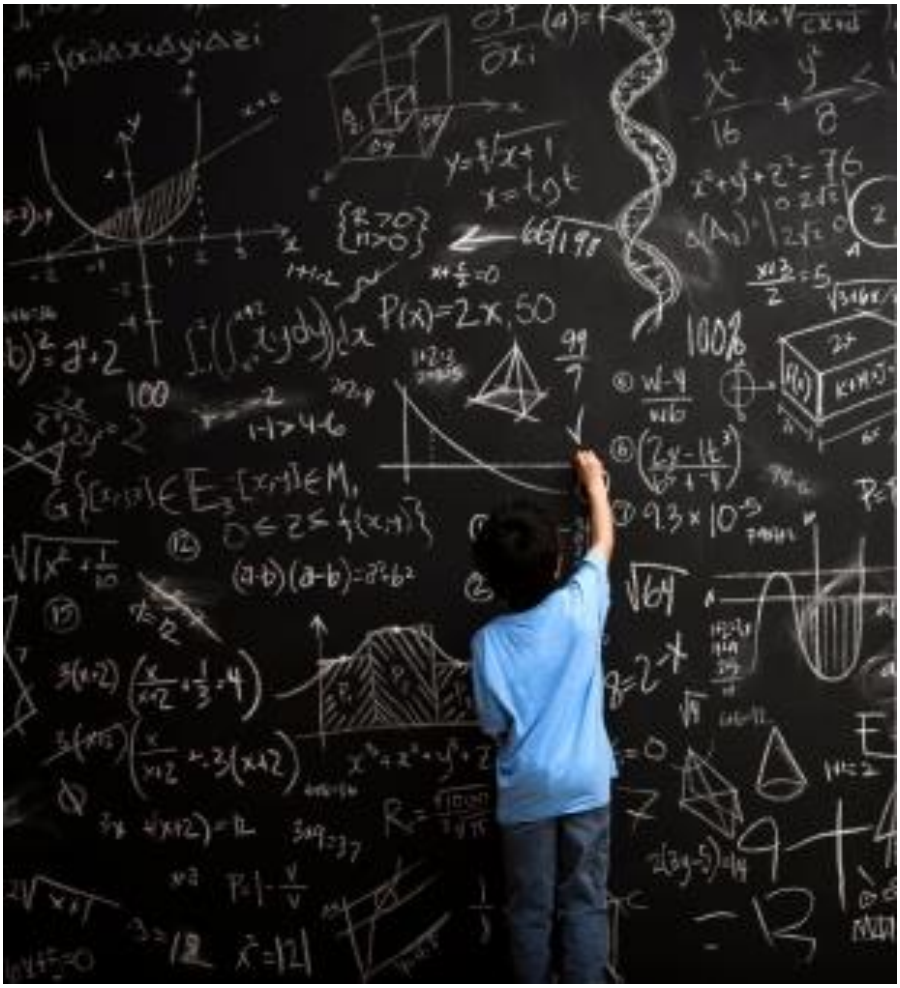
Algebra 2 (Q1)



"**Do not worry about your difficulties in Mathematics. I can assure you mine are still greater.” – Albert Einstein**

Essential understanding

Continuing from Algebra I, you will discover techniques to easily solve seemingly complex and difficult equations. We will review many of the concepts previously seen, and refine them to account for the nuances presents in society. In doing so, you will begin to understand the complexities of daily life and the extent in which Mathematics can both describe the present and predict the future.

Overview:

During this quarter, you will review many of the concepts introduced at the end of Algebra I, such as solving for variables, linear equations, and linear systems. The focus will shift from technique to applications, as you gain a higher level of fluency in the algebraic concepts presented. As you explore the content, try to examine how some of these techniques can apply to aspects of the world around you.

General Guidelines:

Lessons will be given in class. You will have multiple mini lessons throughout the week. If you are struggling with a concept, it is your responsibility to review the lessons and ask questions. I will answer any questions you have during the lesson but after that we will follow the "three before me" principle. You must ask three of your peers before you ask me for help

Individual/Group Work – 40% of your grade is based on completing the assignments leading up to the bi-weekly assessment. **All assignments listed are given the same weight.** Use the work period to ask for help from your peers and teacher. **You will submit your notebooks at the end of every other week (Friday), bookmarked at the most current individual work assignment. You must show work to receive full credit.** You may turn in your notebook ahead of time if you finish the assignments early.

Quizzes/Assessments – Quizzes/Assessments make up 30% of your grade and you must complete each quiz/assessment on the date it is scheduled. **Remember: you can always use your notebook on quizzes and exams.** You must make at least 70% to "pass" the quiz/assessment. If you do not pass a quiz, you may retest using a similar exam during my tutoring hours. You may also correct quizzes for half the remaining credit. If you choose to correct, you must attempt corrections for every missed problem.

Final Assessment – The final will make up 30% of your grade. You will not be able to make up the final exam. That is why it is important that you record the notes from the lessons and you do the suggested homework assignments. Practice the concepts to master them. **Your final project is also a part of your final assessment grade.**

Late Work – You will only be able to make up work where you have an **excused absence**, and will be given extra days equal to the number of classes missed. You will not be able to make up Socratic seminars. If you need an extension, you must fill out a petition form and email both myself and your parents with your reasoning!

Materials:

Math Journal: I encourage use of your math journal during lessons and work time. I advise you to use your math journal to take notes during lessons and to work on assignments. Make sure it is neat and organized. Any and all important information from the lessons should be kept in this journal.

Three Prong Folder/Binder: For organizational purposes, please bring a folder or binder in to file supplementary material and worksheets which may be handed out over the course of this quarter. Quizzes and assessments will be handed out on loose paper, so it is extremely important to hold onto them for review.

Calculators: Calculators will not be necessary for this class and thus, **will not** be permitted during the class hour.

Lessons:

Content Lesson Themes

____ Arithmetic/Fractions

____ Equations and Inequalities

____ Linear Equations and Functions

____ Linear Systems

Logistical Lessons

____ Reading a Study Guide

____ Color/Subject Groups

____ Google Classroom

____ Mind Maps (Vocabulary)

____ Formatting/Submitting Problem Sets

Guiding question 1:

What is Mathematics?

____ ***1)*** Read the first two pages of the study guide and mark it up. Be sure to highlight/ underline information you find important, as well as any parts which are confusing.

____ ***2) Individual Work*:** Mathematics is one of many skills that we inherently use in our daily lives. Without realizing it, you are intuitively calculating amazing and complex situations at any given moment. Whether it's estimating the strength and direction you throw a basketball to make a three pointer or the ways you move your body to the rhythm of a beat, you are living mathematics. For your first project, **gather two images that represent yourself and briefly explain how they are related to mathematics.**

____ ***3)*** Vocabulary: **algebra, integer, rational number, irrational number, whole number, integer, fraction, reciprocal, linear equation, absolute value, variable** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***4)*** **Problem Sets:** You will find the problems in the textbooks located in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set for full credit.

____ a. Order of Operations with Fractions

____ b. 1.1: Apply Properties of Real Numbers (p.6 #'s 11 through 29 odds)

____ c. 1.2: Evaluate/Simplify Algebraic Expressions (p.13 #'s 5 through 35 every 3rd)

DUE: Friday, September 1st

____ d. 1.3: Solve Linear Equations (p.21 #'s 3 through 53 every 3rd)

____ e. 1.4: Rewrite Formulas and Equations (p.30 #'s 3 through 10 all)

____ f. 1.7 Solve Absolute Value Equations/Inequalities (p.55 #'s 9 through 31, 43 through 62 every 3rd)

DUE: Friday, September 8th

____ ***5)*** **Group Activity:** Participate in the "Dice Game" activity with your color group.

____ ***6)*** Using one problem from the problem-solving section of "1.5: Use Problem Solving Strategies and Models," work with your color group to explain step-by-step how to solve it using any of the vocabulary terms presented in (**2**). You may not include any numbers in your explanations. You must use a question from (26-33) of this section.

____ ***7)*** ***ASSESSMENT:*** Fractions, Equations and Inequalities

(Friday, September 8)

Guiding question 2:

How can you use rates of change to find linear models? For example, using average rate of change to model distance traveled as a function of time.

____ ***8)*** Vocabulary: **domain, range, linear function, slope, rate of change, parallel, perpendicular, x/y-intercept, standard form, slope-intercept form, point-slope form** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***9) Problem Sets:*** You will find the problems in the textbooks located in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set for full credit.

____ a. 2.1: Represent Relations/Functions (p.76 #'s 3 through 35 odds)

____ b. 2.2: Find Slope/Rate of Change (p.86 #'s 3 through 27 odds)

____ c. 2.3: Graph Equations of Lines (p.93 #'s 9 through 39 odds)

____ d. 2.4: Write Equations of Lines (p.101 #'s 3 through 25 odds)

____ ***10) Mini Group Project: Modeling Shoelace Length*** With your Algebra II group, follow the guidelines on the worksheet provided in class to find a linear equation of the optimal shoelace length for any given shoe size.

____ ***11)*** ***ASSESSMENT:*** Linear Equations/Functions (2.1-2.4)

(Friday, September 22)

____ ***12)*** Vocabulary: **direct variation, constant of variation, scatter plot, positive/negative correlation, correlation coefficient, vertex, transformation** (do one of the below).

a. Write the words, their definitions, and an example for each of the above terms in your notebook.

b. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

c. Create vocabulary cards of the above terms. Be sure to include an example for each.

____ ***13) Problem Sets:*** You will find the problems in the textbooks located in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set for full credit.

____ a. 2.5: Model Direct Variation (p.109 #'s 3 through 31 odds)

____ b. 2.6: Draw Scatter Plots/Best Fitting Lines (p.117 #'s 3 through 15 odds)

____ c. 2.7: Use Absolute Value Functions/Transformation (p.127 #'s 3 through 25 odds)

____ d. 2.8: Graph Linear Inequalities in Two Variables (p.135 #'s 3 through 27 odds)

____ ***14)*** ***ASSESSMENT:*** Linear Equations/Functions (2.5-2.8)

(Friday October 6th)

Guiding question 3:

How can you identify and organize situations where you may have to account for multiple variables?

____ ***15) Problem Sets:*** You will find the problems in the textbooks located in the classroom **OR** in the pdf form on Google Classroom. You must complete the whole set for full credit.

___ a. 3.1: Solve Linear Systems by Graphing (p.156 #'s 1 through 13 odds)

____ b. 3.2: Solve Linear Systems Algebraically (p.164 #'s 3 through 25 odds)

DUE: Friday, October 20th

____ **16)** Using one problem from the problem-solving section of "3.2: Solve Linear Systems Algebraically," work with your Algebra II group to explain step-by-step how to solve it. You may not include any numbers in your explanations. You must use a question from (55-63) of this section.

FINAL ASSESSMENT Week of October 16th:

____ ***17) Final Project:*** History of Math. You will be assigned a mathematician and will be expected to create a presentation on their historical significance with your color group. See the handout and rubric for more details.

____ ***18)*** Fractions, Chapter 1 and 2, 3.1, 3.2 Final Assessment **(Friday, October 20th)**