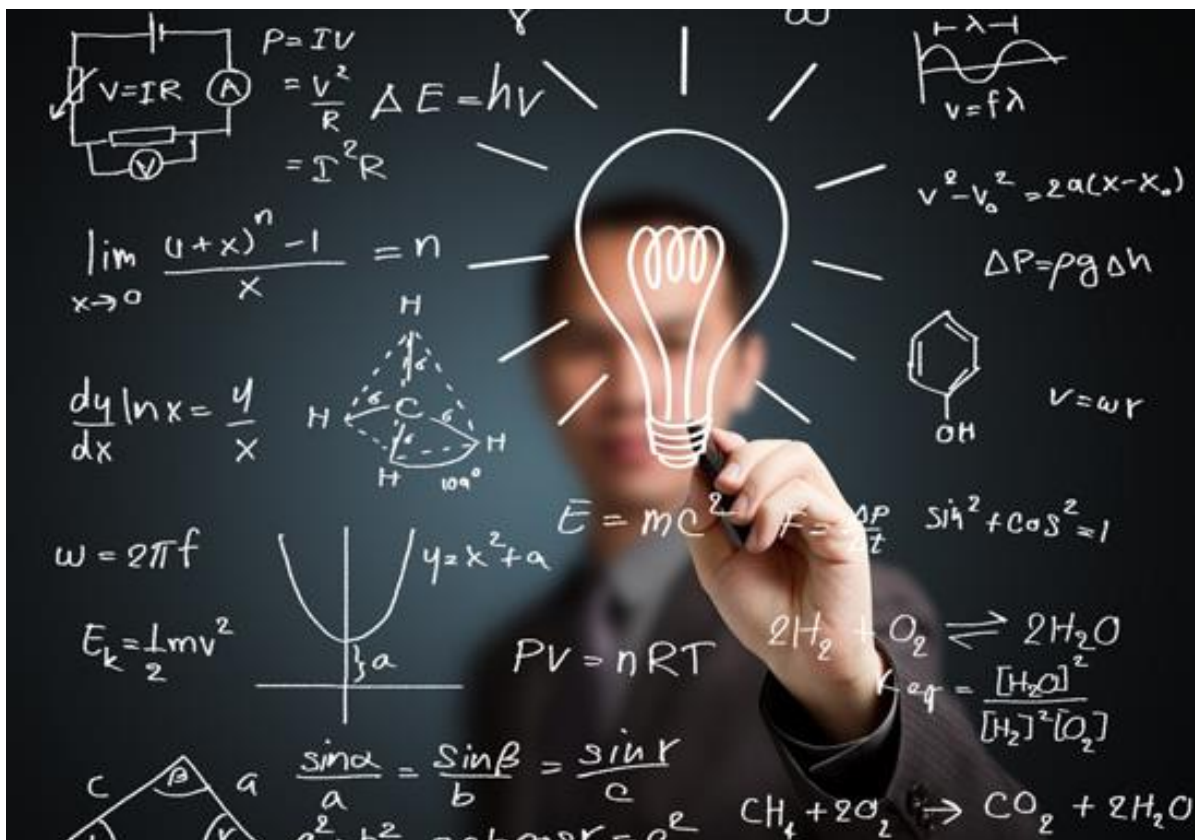


Algebra 1 (Q1)



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

Essential understanding

Throughout your education in Mathematics, you have gathered many of the most important tools in the toolbox of number fluency. Using skills such as order of operations and fractions, you will begin to generalize specific mathematical expressions to fit a range of scenarios. In addition, you will be able to extrapolate trends and predict the future given only a small amount of information. As you explore the concepts presented in Algebra I, think about how they may pertain to analyzing situations in your daily life.

Overview:

This curriculum emphasizes a multi-representational approach to algebra. Of these include concepts, results, problems being expressed graphically, analytically, and verbally, performance of operations with real numbers, application of properties of real numbers, and reasoning with real numbers. As you study each family of functions, you will learn to represent them in multiple ways- as verbal descriptions, equations, tables and graphs. We will derive solutions based on logic and hands-on inquire based studies that are intended to give you a strong base in all mathematics. You will also learn to model real-world situations using functions in to solve problems arising from those situations.

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. **Homework Assignments Are Recommended Problems For Learning (and are required to pass this class).** It is recommended that you do the assignments or similar math problems for you to understand and retain the concepts. 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
- ___ Expressions, Equations, Functions
- ___ Properties of Real Numbers

Logistical Lessons

- ___ Reading a Study Guide
- ___ Color/Subject Groups
- ___ Google Classroom
- ___ Mind Maps (Vocabulary)
- ___ Formatting/Submitting Assignments

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, fraction, numerator, denominator, lowest common multiple, reciprocal, order of operations** (do one of the below).
 - a. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.

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

___ **4) Problem Sets:** Everyone should complete the following:

___ a. Add/Subtract/Multiply/Divide Integers Worksheet

___ b. Lowest Common Multiple Worksheet

DUE: Friday, September 1st

___ c. Add/Subtract Fractions with unlike denominators Worksheet

___ d. Multiply/Divide Fractions Worksheet

OR

___ e. Order of Operations with Fractions

DUE: Friday, September 8th

___ **5) Group Activity:** Participate in the “Dice Game” activity with your color group.

___ **6)** Using two problems from either **(5c)**, **(5d)**, or **(5e)**, work with your color group to explain step-by-step how to solve them using the vocabulary terms presented in **(2)**. You may not include any numbers in your explanations.

___ **7) ASSESSMENT: Fractions (Friday, September 8)**

Guiding question 2:

“It’s not the beauty of a building you should look at; it’s the construction of the foundation that will stand the test of time.” -David Allan Coe

How can you apply Coe’s quote above in the process of practicing foundational math skills? In what ways have you already found this to be true?

___ **8) Vocabulary: variable, algebraic expression, power, base, exponent, rate, solution, formula, function, domain, range** (do one of the below).

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

b. 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. 1.1: Evaluate Expressions (p.5 #'s 3 through 33 odds)
- ___ b. 1.2: Apply Order of Operations (p.10 #'s 3 through 17 odds)
- ___ c. 1.3: Write Expressions (p.18 #'s 3 through 25 odds)
- ___ d. 1.5: Use a Problem-Solving Plan (p.31 #'s 3 through 11 odds)
- ___ e. 1.6: Represent Functions as Rules and Tables (p.38 #'s 3 through 17 odds)

___ **10) Mini Group Project:** In your Algebra I group, complete the following tasks:

- ___ a. Read through “1.5: Use a Problem-Solving Plan” and write down the solution presented in Example 2.
- ___ b. Create your own word problem, and present it in one of the following ways:
 - i. Act the word problem out in a 2-3 minute skit.
 - ii. Create a drawing which accurately describes the created word problem.
 - iii. Write a poem/one page short story.

This project should include the step-by-step solution using the Problem Solving Plan you learned in **(10a)**.

___ **11) ASSESSMENT: Expressions, Equations, and Functions**
(Friday, September 22)

Guiding question 3:

How can you use your knowledge of the language of Mathematics to explain real life situations?

___ **12) Vocabulary: whole number, integer, rational number, absolute value, multiplicative identity, distributive property, like terms, coefficient, reciprocal, multiplicative inverse, mean** (do one of the below).

- a. Create a mind-map with connections, a story, or a drawing with captions that shows the connections between the above terms.
- b. 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. 1.7: Represent Functions as Graphs (p.46 #'s 3 through 11 odds)

- ___ b. 2.1: Use Integers and Rational Numbers (p.67 #'s 5 through 33 odds)
- ___ c. 2.2: Add Real Numbers (p.77 #'s 13 through 23 odds)
- ___ d. 2.3: Subtract Real Numbers (p.82 #'s 11 through 21 odds)
- ___ e. 2.4: Multiply Real Numbers (p.91 #'s 9-17 odds, 29-39 odds)
- ___ f. 2.5: Apply the Distributive Property (p.99 #'s 5 through 31 odds, 41, 42)

DUE: Friday, October 6th

___ **14) ASSESSMENT: Properties of Real Numbers (Friday, October 6th)**

___ **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!

- ___ g. 2.6: Divide Real Numbers (p.106 #'s 11 through 29 odds, 33, 35)
- ___ h. 2.7: Find Square Roots and Compare Real Numbers (p.113 #'s 3-27 odds)

DUE: Friday, October 20th

FINAL ASSESSMENT Week of October 16th:

- ___ **16) 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 me details.
- ___ **17) Fractions, Chapter 1 and 2 Final Assessment (Friday, October 20th)**

Links:

The Origins of Algebra

http://www.khanacademy.org/math/algebra/introduction-to-algebra/overview_hist_alg/v/origins-of-algebra