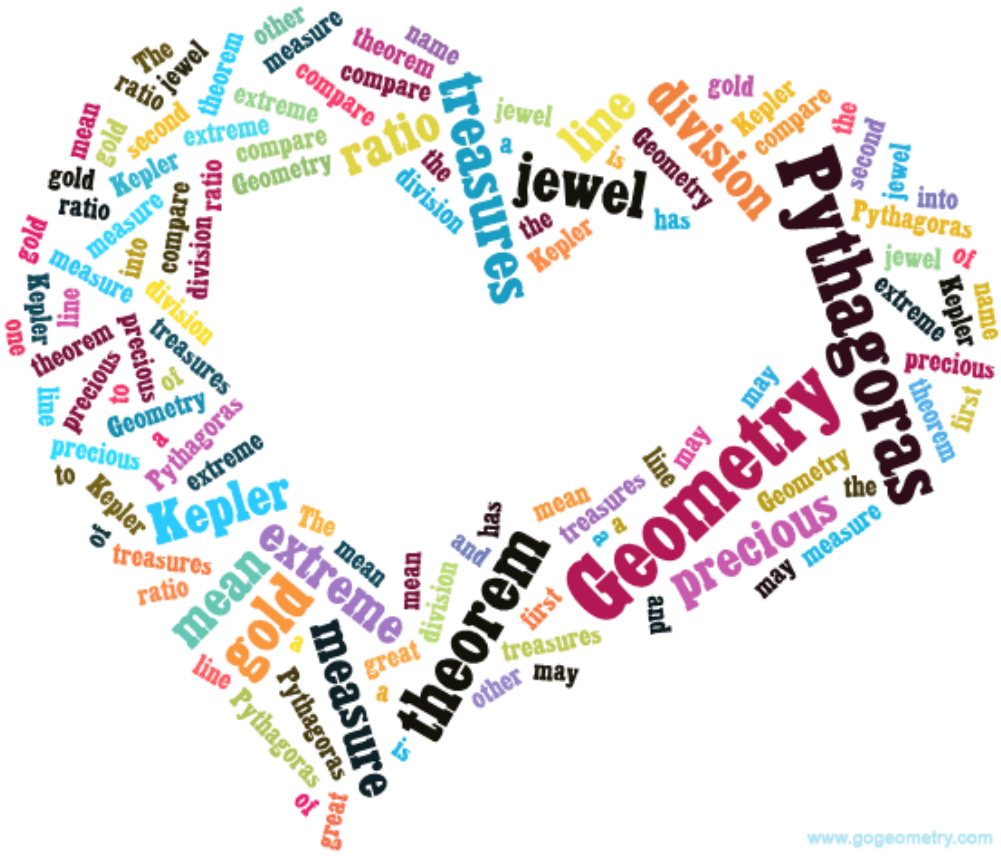
Geometry (Q1)



"I have never let my schooling interfere with my education" –Mark Twain

Essential understanding

In Geometry, the student takes a more philosophical approach to the Mathematics in which they have become familiar. Instead of manipulating values, the student questions the very foundations of Geometry and builds a repertoire of rules to further prove more complex ideas. In doing so, they realize that Mathematics is an ebb-and-flow framework of logically consistent guidelines.

Overview:

Geometry brings math to life with many real-life applications. Examples of mathematics in sports, engineering, and carpentry will be shown throughout this unit. Three key aspects of geometry that will be emphasized are measuring, reasoning, and applying geometrical ideas. As you explore the applications presented in this quarter, try to make connections between mathematics and 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

____ Basics of Geometry

____ Reasoning and Proof

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: **geometry, integer, rational number, fraction, numerator, denominator, lowest common multiple, reciprocal, order of operations** (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:** 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 (**4c**), (**4d**), or (**4e**), 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:

How can I describe an object's shape and orientation without using any images?

____ ***8)*** Vocabulary: **Point, Line, Plane, Segment, Ray, Congruent, Angle, Acute Angle, Right Angle, Obtuse Angle, Straight Angle, Segment/Angle Bisector, Vertical Angles, Complementary Angles, Supplementary Angles, Ruler, Protractor** (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. Include the definition and an example and/or image of each term.

____ ***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. 1.2: Points, Lines, and Planes (p.13 #'s 1 through 49 odds)

____ b. 1.3: Segments and Their Measures (p.21 #'s 1 through 35 odds)

____ c. 1.4: Angles and Their Measures (p. 29 #'s 1 through 41 odds)

____ d. 1.5: Segment and Angle Bisectors (p.39 #'s 17 through 49 every 3rd problem)

____ e. 1.6: Angle Pair Relationships (p.47 #'s 9 through 39 odds)

____ f. 1.7: Introduction to Perimeter, Circumference, Area (p.55 #'s 1 through 21 odds)

____ ***10) Practical Skills:*** Complete the "Acute and Obtuse Angles" worksheet. **DUE: 9/22**

____ ***11) Construction:*** Complete the following activities and write out the steps for future reference:

____ a. "Segment Bisector and Midpoint" (p.34)

____ b. "Angle Bisector" (p.36)

____ ***12) Mini Group Project:*** One of the most important lessons you should learn from Geometry is to be as particular as possible in showing steps, whether it be in calculations or the flow of logic. With your Geometry group, create a step-by-step explanation of making a peanut butter and jelly sandwich given a loaf of bread, a jar of peanut butter, a jar of jelly, and a knife. A random classmate will "present" your instructions. The instructions may be presented in words, images, or any other medium of your choosing.

____ ***13) ASSESSMENT:*** Basics of Geometry

(Friday, September 22)

Guiding question 3:

How does the logic of Mathematics parallel the logical steps of tasks in your daily life?

____ ***14)*** Vocabulary: **Conditional Statement, Converse, Inverse, Contrapositive, Biconditional Statement, Postulate, Theorem** (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.

____ ***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.

____ b. 2.1: Conditional Statements (p.75 #'s 9 through 27 odds)

____ c. 2.2: Biconditional Statements (p.83 #'s 21 through 37 odds)

____ d. 2.5: Proving Statements about Segments (p.104 #'s 1 through 17 odds)

____ e. 2.6: Proving Statements About Angles (p.112 #'s 7 through 23 odds)

____ f. Algebra Review (p.124 #'s 1 through 51 every 3rd)

DUE: Friday, October 6th

____ ***16)* *ASSESSMENT:* Reasoning and Proof (Friday, October 6th)**

____ ***17) Construction:*** Complete the activity below and record the steps for future reference:

____ a. "A Perpendicular to a Line" (p.130)

____ ***18) Flow Proofs:*** Using yarn and string provided, complete one of the options below:

____ a. Create a physical flow proof of example 1 of section 3.2 (p.136) **and** Theorem 3.1 (p.137).

____ b. Complete question 18 (p.139) (developing proof for Theorem 3.3) and create a physical flow proof.

Be sure to share/compare your proofs with your subject group for accuracy.

____ ***19) 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: Lines and Angles (p.132 #'s 11 through 31 odds)

____ b. 3.1 Mixed Review (p.134 #'s 47 through 61 odds)

____ c. 3.2: Proof and Perpendicular Lines (p.138 #'s 3 through 19 odds)

DUE: Friday, October 20th

FINAL ASSESSMENT Week of October 16th*:*

____ ***20) 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.

____ ***21)*** Fractions, Chapter 1 and 2 Final Assessment **(Friday, October 20th)**