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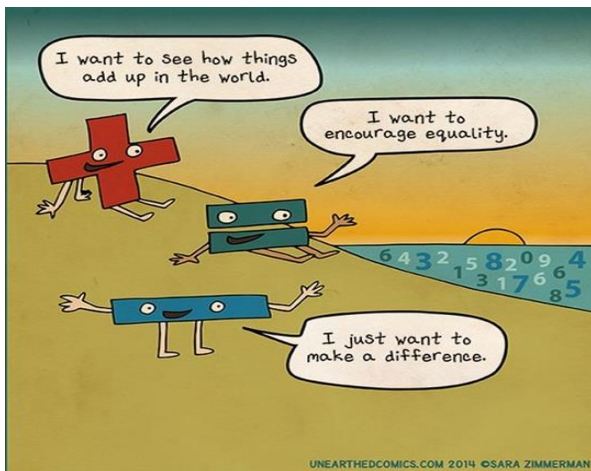
Algebra I

Chapter 1: Functions

Teacher: **Mrs. Victoria Bernales**Contact: victoria@silveroakmontessori.orgZoom link: <https://zoom.us/j/4972414613?pwd=c0x2Qy9ieHlTdjlVldwN3FFa0tLZz09>

OR

(Zoom Meeting ID: 497 241 4613 Passcode: Bernales)



“I am here for a purpose and that purpose is to grow into a mountain, not to shrink to a grain of sand. Henceforth will I apply ALL my efforts to become the highest mountain of all and I will strain my potential until it cries for mercy.” --- Og Mandino

Essential Understanding:

- ✓ Functions are single-valued mappings from one set— the domain of the function—to another—its range.
- ✓ Functions apply to a wide range of situations. They do not have to be described by any specific expressions or follow a regular pattern. They apply to cases other than those of “continuous variation.” For example, sequences are functions.
- ✓ Functions can be represented in various ways, including through algebraic means (e.g., equations), graphs, word descriptions, and tables.

Overview:

Welcome to Algebra I! In middle school math, you may have worked on relationships between two quantities that could be graphed with a straight line. In this lesson, you will explore nonlinear functions and learn how to describe a function completely. You will observe the shapes and behaviors of several different nonlinear functions. Also, you will learn to share your mathematical knowledge with a study team as you work together to solve problems.

Guiding Question:

As you work through this chapter, ask yourself: Can I identify important quantities in situations and describe their relationships using graphs?

Lessons:**Content Lesson Themes**

- ___ Investigating the Growth of Patterns
- ___ Investigating the Graphs of Quadratic Functions
- ___ Describing a Graph
- ___ Cube Root and Absolute Value Functions
- ___ Function Machines and Functions
- ___ Domain and Range

Assignments**9/24-9/25:****___ 1) Class Orientation:**

- Getting to know each other
- Class Expectations (virtual and in-person)
- Class Routines (warm-up, exit ticket, individual work, etc.)
- Study Guide
- CPM e-book and other resources
- Materials needed during class
- Collaborative Learning Expectations
- Productive and Respectful Talk
- Grading System
- Tips for Success: What you need to survive and thrive in high school math
- ETC...ETC...

9/27-9/28**___ 2) Continuation of class orientation**

Get-It-Together-Activities; mobile puzzles

8/31-9/4:**Learning Objectives:**

- ✓ Recall multiple representations of a linear function and various composite functions with my team.
- ✓ Collect and analyze data with tables and graphs.
- ✓ Interpret different mathematical relationships (direct, inverse, joint, exponential)

___ 1) Group Activity (1.1.1): How can I work with my team to figure out? (20 minutes*)

___ Problems: 1-1, 1-2, 1-3

___ 2) Individual Work (1.1.1): (20 minutes)**

___ Problems: 1-4 to 1-8

- Due Date: Wed, 9/2 (for Monday/ Thursday classes)
Thurs, 9/3 (for Tuesday/Friday classes)

___ 3) Group Activity (1.1.2): How does it grow? (20 minutes)

___ Problems: 1-9 to 1-12

___ 4) Individual Work (1.1.2): (20 minutes)**

___ Lesson Notes: Families of Functions

___ Problems: 1-13 to 1-22 (pick two questions/letters per problem only)

- Due Date: Tues, 9/8 (for Monday/ Thursday classes)
Tues, 9/8 (for Tuesday/Friday classes)

9/8-9/11:**Learning Objectives:**

- ✓ Describe a parabola, using its intercepts, minima, maxima, vertex, symmetry, and whether it is positively or negatively oriented.
- ✓ Write a summary statements describing the graph of $y = \sqrt{x}$.
- ✓ Generate a list of questions that will facilitate future functions investigations.
- ✓ Define a function.

___ 5) Group Activity (1.1.3): What do I know about parabola?**Group Activity (1.2.1): How can I describe a graph?**

___ Problems: 1-23, 1-24, 1-30, 1-31

___ 6) Individual Work (1.1.3; 1.2.1):

___ Problems: 1-25 to 1-29, 1-32, 1-42

- Due Date: Mon, 9/14 (for Monday/ Thursday classes)
Thurs, 9/10 (for Tuesday/Friday classes)

___ 7) Group Activity (1.2.3): What is the function?

Group Activity (1.2.4): Can I predict the output?

___ Problems: 1-53 to 1-56; 1-62 to 1-64

___ 8) Individual Work (1.2.3-4):

___ Lesson Notes: Functions, Domain and Range

___ Problems: 1-57 to 1-61; 1-65; 1-66 to 1-70 (pick two questions to answer for each problem)

- Due Date: Mon, 9/16 (for Monday/ Thursday classes)
Mon, 9/14 (for Tuesday/Friday classes)

9/14-9/17:**Learning Objective:**

- ✓ Describe the domain and range of a given function by examining an equation or graph.

___ 9) Group Activity (1.2.5): What can go in? What can come out?

___ Problems: 1-71 to 1-77

___ 10) Individual Work (1.2.5):

___ Problems: 1-78 to 1-82

- Due Date: Mon, 9/21 (for Monday/ Thursday classes)
Thurs, 9/17 (for Tuesday/Friday classes)

___ Prepare for a short quiz next class on Chapter 1.

9/17-9/21**ASSESSMENT:**

___ Mini Project: What have I learned? (details will be given in class and uploaded on Schoology)

___ Short written quiz on Chapter 1

Resources/Links:

Textbook: Algebra 1 Core Connections- College Preparatory Math (CPM)

E-book: <https://enroll.cpm.org/> Enrollment PIN:

CPM e-book help: <https://studenthelp.cpm.org/m/1039/l/95045-cpm-student-ebook-tour-video>

CPM Homework link: <https://homeworkadmin.cpm.org/cpm-homework/homework/category/CC/textbook/CCA>

CPM Desmos Graphing calculator and other e-math tools: <https://studenthelp.cpm.org/m/cca/l/569920-desmos-graphing-calculator>

CPM Parent Support: <https://cpm.org/parent-support>

Other Resources: <https://www.khanacademy.org/math/algebra>

<https://curriculum.illustrativemathematics.org/HS/teachers/1/4/1/preparation.html>

Addendum: *Class Expectations, Routines, and Procedures*

Class Expectations

- Each student is expected to:
 - attend classes **everyday, on time and be well-prepared**;
 - participate actively** during class discussions and activities;
 - show **grace and courtesy** to everyone;
 - submit **neat and well-prepared** requirements at the **proper time**;
 - be **responsible** in making up for missed lessons, activities or assessments.
- Adhere to the in-person and virtual class expectations as stipulated in the family handbook and which were discussed during the first community (school wide) meeting.
- Ask questions when in doubt or when instructions are not clear to you.

Warm Up/Exit Ticket:

- Warm Up:
 - In your notebook, write/copy your learning objective for the week and do the warm-up on the board or screen.
 - If you don't know the answer, write down ANYTHING you know related to the concept.
 - Submit work (take a picture/save and upload on the assigned slot in Schoology).
 - Completion should take no longer than 10 minutes after class begins.
- Exit Ticket:
 - Completed during the last five minutes of class
 - Metacognitive questions (thinking about the way you think), math problem, etc.
 - Be sure to answer in complete sentences and show all work needed.
 - Submit work (take a picture/save and upload on the assigned slot in Schoology).
 - Wait for the teacher to dismiss the class and/or check your exit ticket before you leave the classroom.

Group Work/Group Activities: (* usually 20-30 minutes during 1st class hour)

- Collaborative Learning Expectations
 - T together, work to answer questions.
 - E Explain and give reasons.
 - A Ask questions and share ideas.
 - M Members of your team are your first source.
 - S Smarter together than apart.

- General Team Roles:
 - Resource Manager – get supplies for your team and make sure that your team cleans up; make sure that everyone has shared all ideas and help the team decide when it needs outside help; call the teacher over for team questions.
 - Facilitator – get your team started by having someone read the task aloud; check that everyone understands what to work on, make sure that everyone understands your team’s answer before you move on.
 - Recorder/Reporter - make sure that each team member can see the work that the team is discussing; make sure that the team agrees about how to explain your ideas and each person has time to write their answer; make sure that each member of your team is able to share ideas.
 - Task Manager – make sure that no one talks outside your team or do other stuff other than what is assigned; help your team on task and talking about Math; listen for statement and reasons.

- Productive and Respectful Talk
 - Be sure to show grace and courtesy during group work always. Please read “Productive and Respectful Talk” hand-out for some start up phrases and suggestions.

- While the group is responsible for holding each other accountable, I will be keeping track of who is participating while observing your work!

Individual Work: (usually 20 minutes during the 1st class hour and extends to the 2nd class hour as needed)**

- At most two components after each class session:
 - a. Video Lessons: Take notes on procedures not addressed during class
 - Will be posted as a material in Schoology
 - Make sure you follow along! Anything on the videos is fair game for assessments
 - b. Problem Sets: Complete the problems found in the relevant section of the CPM e-book
 - Proper responses either have work shown or context for the answer
 - Graphs are neatly created with important parts labeled
- If you are struggling, start the question or work and ask me about it during class.
- Late work will NOT be accepted.

Absence Policy:

- **Group Work:** You are still responsible for it even if you have an excused absence. See the study guide for the specific problems you need to complete.
- **Individual Work:** You may receive a one-class extension on the homework assigned the day you were gone.
- Check in with me immediately after school to receive credit for make-up work.

Tips for Success:

- If you are struggling with the content, see me sooner rather than later.
- Read the “Are you ready for high school Mathematics?” hand-out for some tips on the BASICS (what you need to survive) and BEYOND (what you need to thrive?) for high school math which will be uploaded in Schoology.
- Take advantage of the homework help and parent support on CPM. See links provided in the study guide.

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