Unit Plan – Lesson #2

Objective:
Students will become familiar with Desmos (an online graphing calculator). They will be in groups of two and use Desmos to determine the characteristics of a horizontal line, linear, quadratic and cubic function.

Outcome:
Outcome: FM30.7
Demonstrate understanding of the representation and analysis of data using: polynomial functions of degree ≤ 3

Indicators:
a. Analyze the graphs of polynomial functions and report on the characteristics of those graphs.
c. Develop, generalize, explain, and apply strategies for determining the characteristics of polynomial functions from their equations.

Materials/Advanced Preparation:
Book the laptop carts/Ipads/computer lab in advance to have them for class. If that does not work out, let students use their cell phones (one phone per group).
Create and print the handouts.
Assuming there is a SmartBoard in the class and can project a laptop screen on the board.

Presentation:	**Classroom Management:**
Set: Introduction to Desmos. Ask students if they have ever used or heard of Desmos. Show students a video of an introduction to Desmos and a video of an introduction to using sliders on Desmos. Intro video: https://www.youtube.com/watch?v=MS5fMPAgmtk Slider video: https://www.youtube.com/watch?v=9MChp2P0vMA	**Set:** Get laptops/Ipads before class starts. Or go to the computer lab with students. Remind students of computer lab/laptop rules.
Development: Once students are in pairs, everyone grab a laptop. Students will go to the class Edmodo and download the handout for today. Instruct students to go to Desmos.com and click on start graphing. Have Desmos projected on the board from a computer so that students can visually see what to do as well as hearing instructions verbally from the teacher. Help students get set up with Part a by guiding them	**Development:** Students will get into pairs (if there are an odd number of students, then one group of three). Pairs can be made before hand if you want specific students to work together and/or specific students that you don't want to work together.

<table>
<tr>
<td>through the following:
- Where to put the equation
- How to create a slider
- How to use the slider

Let students go on from there to discover all there is to surrounding polynomials with a degree less than three.

Once all of the pairs are done the activity, go through all of the charts. If there is not enough time to go through it all, that is fine, finish it the next class.

<u>Closure:</u>
If there is not enough time for an exit note, make it an entrance slip at the start of the next class. There is also a google survey to be completed to check for student understanding.</td>
<td>Monitor the students by walking around the classroom while they are doing the activity. If there are multiple pairs that are struggling with a specific part, demonstrate that part at the front of the classroom.

Ask the class for the answers for the charts. If students have different answers for some parts, ask those students why they think they are right. After some discussion, go to the board and demonstrate on Desmos what the correct answer is and discuss why this is.

<u>Closure:</u>
Make sure that all students complete hand in the exit note/entrance slip.

Have students put the Ipads/laptops away correctly.</td>
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<tr>
<td colspan="2"><u>Assessment:</u>
Exit Note: Students will be given the following equation: and will have to determine the characteristics (leading coefficient, degree, number of x-intercepts, the y-intercept, the end behavior, number of turning points, domain and the range. Students will hand this in at the end of class. This will give me a chance to see if students understand the concepts we did in class. This is not for marks.

A google survey will be done as formative assessments to see if students are understanding the concepts. This is not for marks.

Give students time to work on an in class assignment. If there is not enough time at the end of class, give students time to work on the assignment during class next day. Or tell students to have one or two questions done for next day. This will be a hand in assignment for marks.</td>
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<tr>
<td colspan="2"><u>Barriers:</u>
Students might have trouble using Desmos.
If multiple pairs are having trouble with using Desmos, go through it with the entire class at the front of the room to demonstrate how to use Desmos.
Students might not remember information from their previous classes (linear and quadratic functions).
Use guiding questions to help students remember these concepts. Ex: What does the word linear mean? Do you recall what a parabola is?</td>
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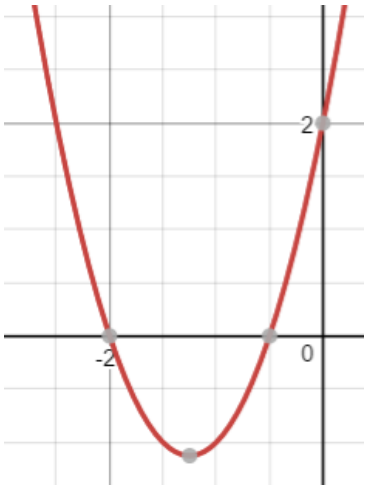
Students may have trouble applying the new concepts
Tell students to look back through their notes from the previous day. If that doesn't help, give examples demonstrating the definitions to students.

Exit Note/Entrance slip: Name:



Degree:

The x-intercept(s):

The y-intercept:

The end behavior:

Domain:

Range:

Number of turning points:

Please hand in when you are done!