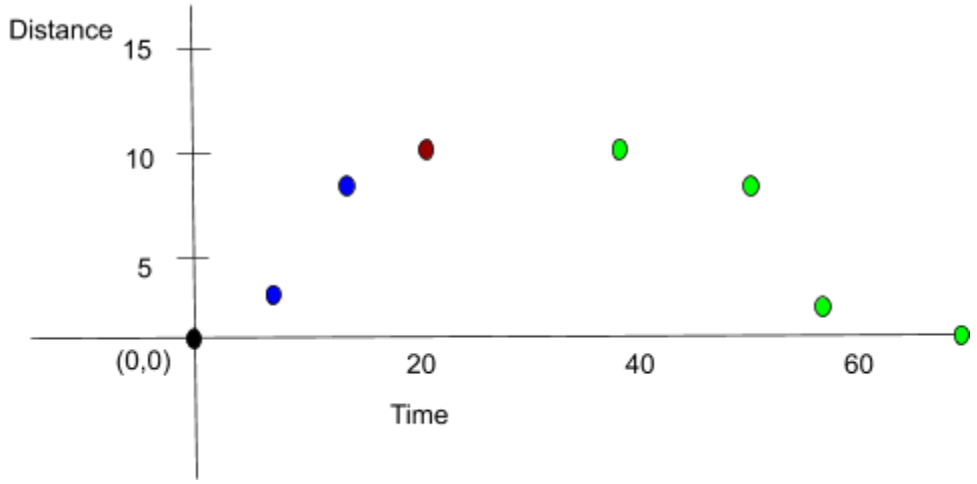
Name: _____ Period: _____ Date: _____

Show it, Say it, Sketch it, Find it : Qualitative features of functions and graphs **Math 8**

Today we are going to practice describing features of graphs and investigating how graphs look on a coordinate plane. All of these graphs are functions or a combination of functions. You do not need to write an equation for the graph, but you do need to describe the features and what it looks like.

On the blank graph below, sketch a line that describes the distance of my car over time and answer the questions. Take your time and read through the steps carefully.
The x-axis is time. The y-axis is the distance from home.



- *My car is parked at my house. This is distance 0. If we start at time 0 and my car has not moved, place a point at (0,0) to show where my car starts*

- *To get to the store, I have to get in my car and start driving. Don't worry about how fast I drive, but imagine that over time I drive away from my house.*

    - *As time increases, what happens to my distance?* _____

- *Sketch a line that starts at (0,0) and connects to the first blue dot. Then sketch a line from that blue dot to the next blue dot.*
    - *My car's distance is still increasing, it is getting farther from my house. Why is it steeper?*_____

- *Now draw a line from the blue to the red dot.*
    - *This is where my car stops and I park it.*
    - *How far is the car from the house?*_____

- *Now sketch a line from the red dot to the green dot*
    - *What kind of line is this?* _____
    - *What does this mean about my car?*

_____

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- *Connect the green dots in order and describe what is happening in the graph*
    - *What is the maximum of the graph?* _____
    - *What is a minimum of the graph ?*_____
    - *What does the minimum mean for my car?* _____

Make a list of words that help you describe the graph: (Work with your group)

Why did the drive home appear slightly different than the drive to the store?

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Game Instructions: Show it, Say it, Sketch it, Find it

1. Get into groups of 3-4 students.
2. Have a separate pile of graph cards upside down.
3. Spread the rest of the cards on the desk.
4. Each player picks a role for the first round:
    a. ACTOR, WORDSMITH, SKETCH ARTIST
    (The Wordsmith and Sketch Artist can work together to describe the graph, but the sketch artist is responsible for drawing the graph)
5. Actor picks a graph card and does not show it to anyone!
6. Actor must act out the graph with his/her body. You can purely act it out or add words to describe a situation like driving to school, but DO NOT use the math words to describe the shape of the graph. That is the job of the WORD SMITH!
7. Wordsmith and Sketch Artist can shout out ideas to each other to get feedback from the actor. Things like: “It’s increasing!” or “You stopped, that’s constant!”
8. The Sketch Artist tries to sketch the graph by using the actor's clues and the descriptions.
9. Once the sketch artist is done, the wordsmith looks through the description cards and tries to find the best match. The sketch artist uses his/her own sketch to find the best matching graph.
10. The actor reveals the graph and the group lays the 3 cards in a line.
11. Keep rows of matches and sketches on a separate desk. If you need to use a card for later to adjust your matches, that’s ok.
12. Discuss whether the answer is correct.
13. Rotate roles. Then play again!

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Reflection Questions and Practice

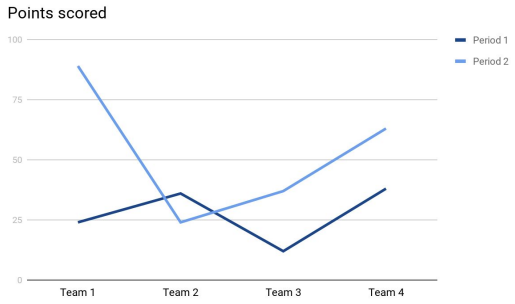
1. What was your favorite role? Why?

2. Which graph was the easiest for you to guess or act out? Why?

3. What descriptive words did you use the most?

4. Describe how you know what the maximum of a graph is

5. Circle the minimum of the following graphs



Note to designer - This graph was found in the google doc menu “Insert → chart → line” You can recreate something similar?

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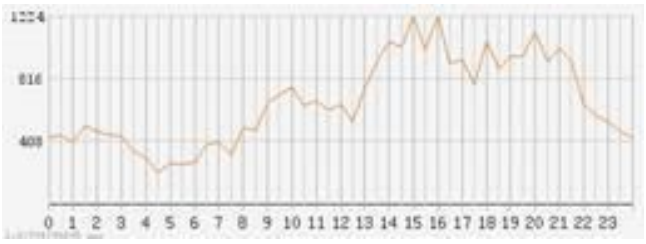
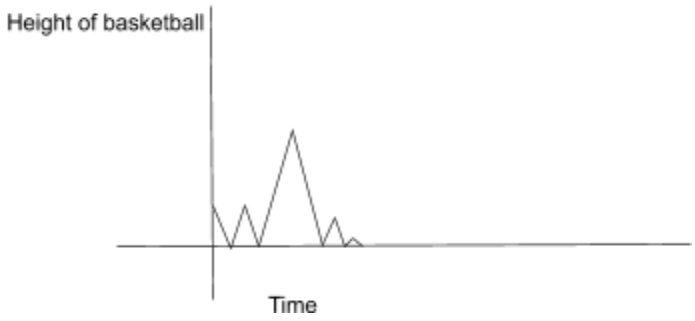
6. Circle the maximum points of the following graph



7. Highlight the parts that are increasing in the following graph



8. Highlight where the graph is decreasing