NAME:_____ Math 7.2, Period 5

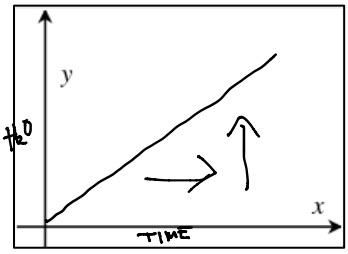
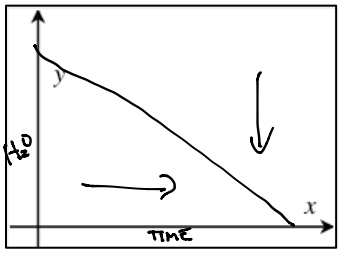
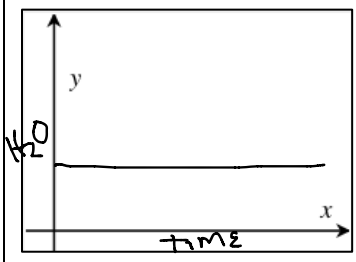
Mr. Rogove Date:_____

Learning Objective: We will analyze graphs and tell stories, and sketch graphs based on stories told. (Lesson 59)

Concept Development:

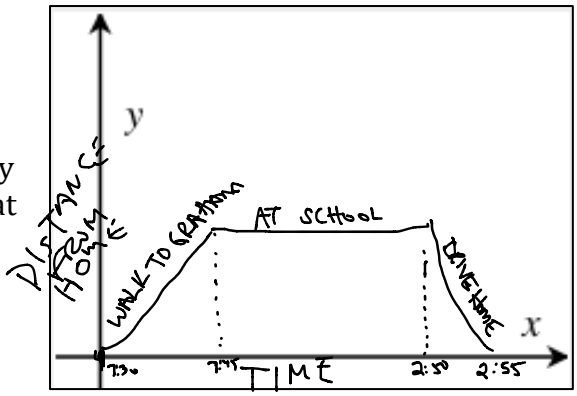
Functions are either increasing, decreasing or constant.

Focus **Linear Functions have a CONSTANT RATE OF CHANGE** straight lines!

Increasing	Decreasing	Constant
		
A linear function whose graph has a positive slope is said to be **increasing**.	A linear function whose graph has a negative slope is said to be **decreasing**.	A linear function whose graph has a zero slope is said to be **constant**.
Water is filling in a bathtub	Water is draining from a bathtub	Water is in a bathtub

A **piecewise function** is a function where the rate changes based on the interval.

Example: Chloe walked to school in 15 minutes at 7:30AM, stayed there all day until 2:50 and then got a ride home that took 5 minutes.



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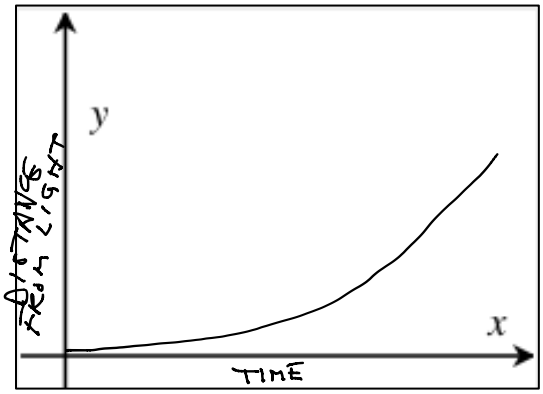
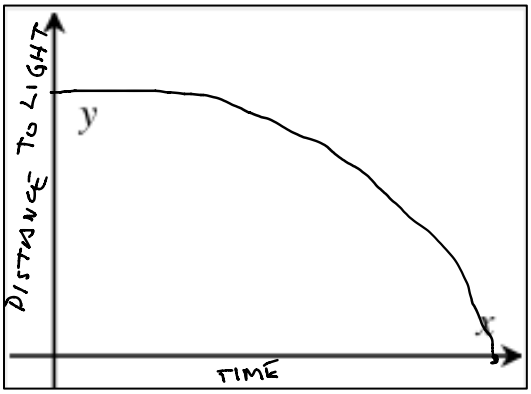
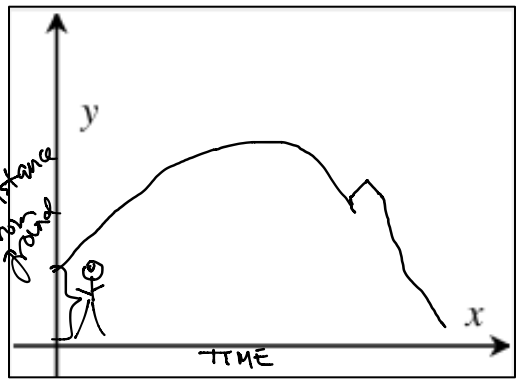
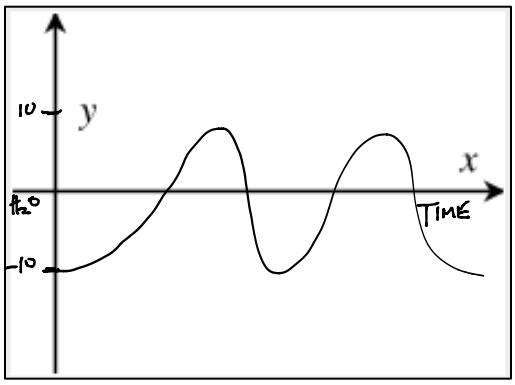
Non Linear Functions have a VARIABLE RATE OF CHANGE

Not straight line slope is changing

Increasing	Decreasing
	
When the stop light turned green, I sped up the car.	As I approached the stop light, I saw it was red, so I slowed down.

QUESTION: In the above situations, how is speed represented? SLOPE

Some non-linear functions will both increase and decrease based on the situation. Examples:

	
Stephen Curry hit a three point shot. Show how far the ball is from the ground as a function of time.	Dolphins jump out of the water and dive back down. Graph the dolphins distance from the water line as a function of time.

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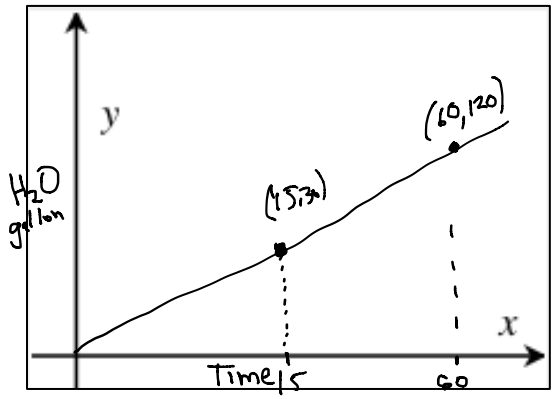
Guided Practice:

Steps for Graphing Functions Based on Qualitative Information

1. Read the scenario/story problem or study the graph very carefully.
2. Label your graph carefully and define your variables, or interpret the graph based on the story.

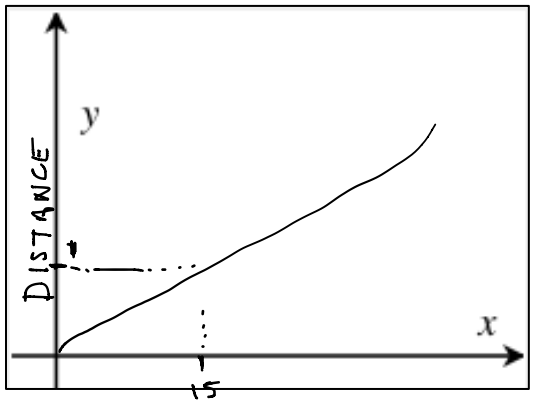
The amount of water in a bath tub is a function of the time that a faucet is on. A bathtub is filling with water at a constant rate of 2 gallons per minute. After 15 minutes have passed, there are 30 gallons in the tub.

linear!

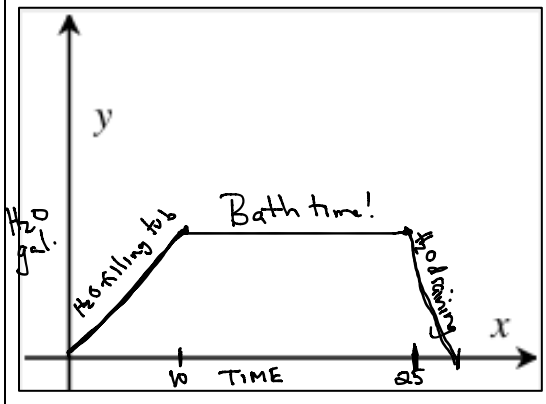


The distance a person is from home is a function of how many minutes they have walked away from home. Shannon begins walking away from home toward Graham at 7:00AM. In 45 minutes, she walks 3 miles.

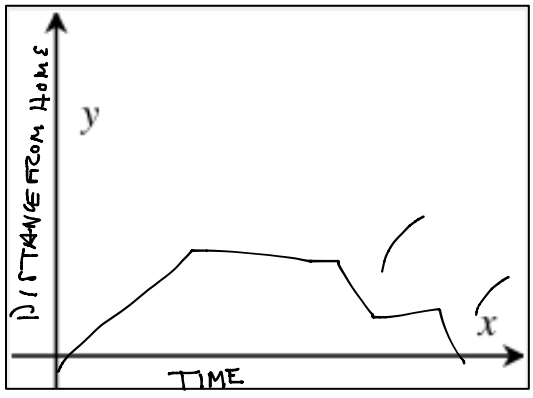
linear



A bathtub is filling at a constant rate of 2 gallons per minute. After 10 minutes, it has 20 gallons in it. After a 15 minute bath, the water drains out in 5 minutes.



Jessica gets a ride to school with her mom. The 2 mile trip takes 10 minutes. She arrives at school at 7:40AM. At 2:50, she walks home, but halfway home, she stops at Starbucks for a drink, and then continues on her way home.



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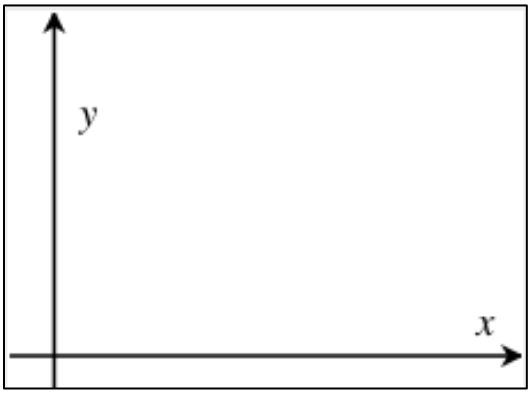
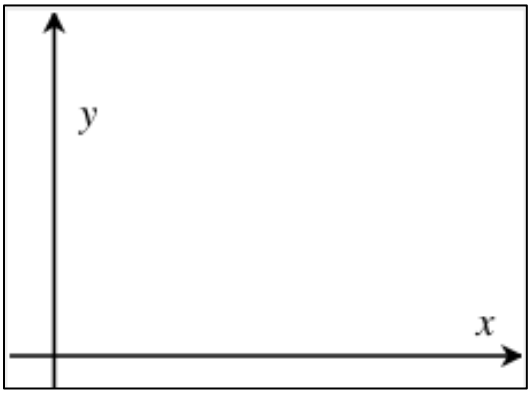
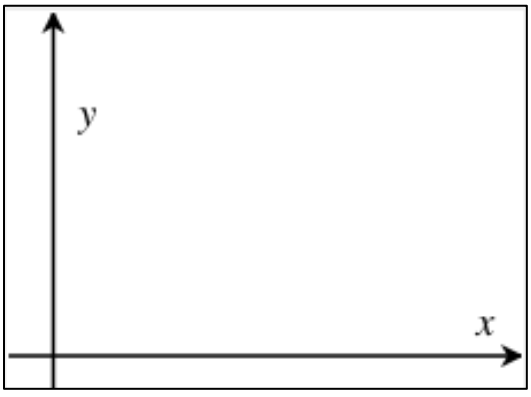
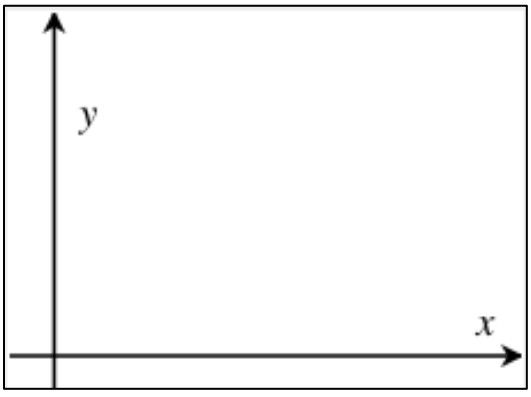
Independent Practice:

Ben is running on a rocky trail that is initially flat, but then leads to a steep mountain. Graph the total distance he runs as a function of time. 	Madison Bumgarner goes to the top of a 8-story building and throws a baseball straight out (not up) from the building. Graph the height of the baseball from the ground as a function of time. 
Graph your own story 	Graph your own story 

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Activating Prior Knowledge:

Maybe use Exit ticket from Lesson 3 as APK?

Closure:

Use Exit Tickets from Lesson 4 and 5.

Teacher Notes:

Map to Lesson 4, Mod 6, This maps loosely to Lesson 4 and 5.
Graphing Stories—after page 3. Do the following:
Water volume (linear), height of waist off the ground (adam poetzel), Distance from home plate, ponies in frame, height of waist off ground (Dan Meyer), Distance from camera (Adam Poetzel)
Also, work with Function Carnival.

Possibly have students do their own graphing stories??

Homework is from Lesson 5