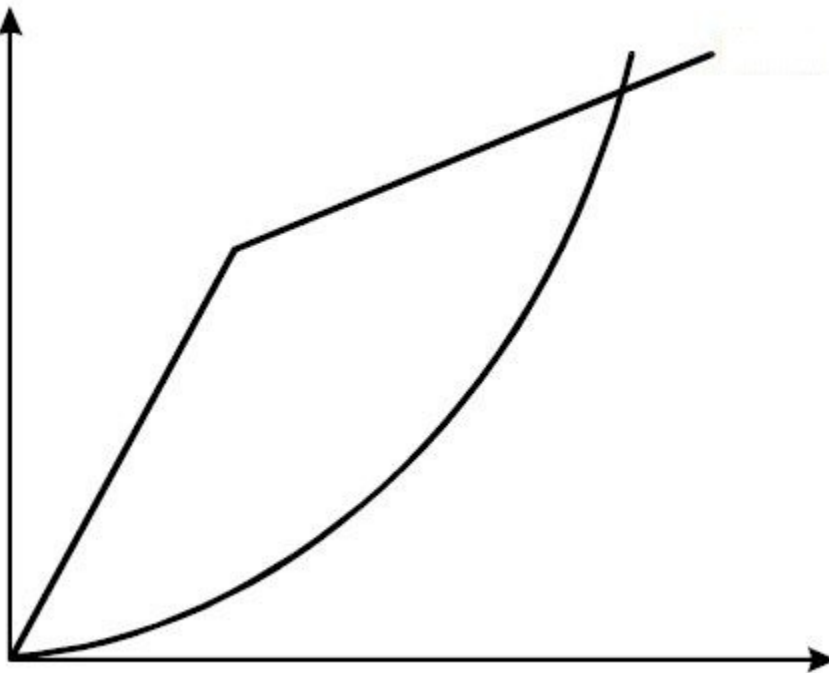


## Part I

### *"Writing to learn" Prompt*

In your groups, complete a story that can be described from this graph. Make sure you label the x-axis and y-axis and describe your reasoning.

This is how the story begins: One day, Jack decided that he was going on a jog in his neighborhood. On the same day Jessie was driving her car to to the store.



We are doing this in a unit in 7th grade about interpreting graphs. The students have been practicing labeling axes and titling graphs that were already described for them, but they have never made up a situation from the graph. Having students do this would help them be able to identify how a graph would look for a given situation so that they can interpret graphs better. This prompt will allow the teacher to assess students' prior knowledge about graphs and give students the opportunity to share their ideas with one another. Working on this prompt will equip students in creating more stories that could describe graphs, i.e being able to read and interpret different kinds of graphs.

## Linear Equations Lesson Plan

### Standards:

- 7.EE.3. Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.
- 7.EE.4. Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

### Procedures:

1. Divide students into groups of 3 or 4 (If there are English language learners in the class, try not to have more than one per group. This will help these students to identify English phrases or words that they may not be familiar with). Ask students to list as many English words or phrases can be represented as following mathematical symbols in 3 minutes.
  - a. =, +, -,  $\times$ ,  $\div$
2. Ask each of the groups to report their ideas and record these on the board.
  - a. If there are any discrepancies, open up a class discussion in order to determine whether or not this word was in fact a good fit.
  - b. Also, encourage students to try to come up with examples to defend their ideas if there is disagreement.
3. Next, proceed onto the examples and during the class discussion have students see if any of their words are present in the following examples. If their words were not seen in the example, have students try to identify the keywords that identify mathematical symbols.
  - a. Problem 1: At a concert, Natalie purchased three t-shirts and a concert program that cost \$15. She spent \$90 total. What was the cost of a single t-shirt if they all had the same price?
    - i. Keywords: and means +, three t-shirts means 3 times a variable, total means =, etc.
    - ii. Ask students what we are trying to find? (the cost of one t-shirt). This will be our variable.
  - b. Problem 2: Phoebe is reading for her history test. She still needs to read 35 pages after reading for 10 minutes and 5 pages after reading for 50 minutes. How many pages did she have read after half an hour?
    - i. Keywords: Half an hour means 30 minutes
    - ii. Reasoning behind Problem 2: This problem leads students to recognize wording flaws because they are not given the information about Phoebe reading in half an hour and they are not told that she is reading at a linear pace. Students can discuss as a class or in their groups about the flaws and the questions which will bring up some important ideas about what is in a story problem and what important information students need to solve.

4. After students have seen a few examples and have solved for them, they will be asked to make their own word problems given an equation. They will work in their groups for the remaining time of the class period.
5. Equations for students to make word problems from:
  - $2x+8=15$
  - $(4n+2)-10=60$
  - $3g+15=9$
6. As an extension, if students have finished before class is done, have students come up with multiple word problems for the same equations.

Assessment/Evaluation Plan:

1. As the groups are working together in groups, assess students by noting if they are able to come up with multiple words for each symbol.
2. Collect the word problems that the students have made when the class is done. Grade the word problems based on if they actually would end up with the given equation, if they are clear, and if they are succinct.