

## “Every Graph Tells A Story”

**Lesson Plan By:** Kelly R. Plank

**Lesson:** Graphing and Graph Representation

**Length:** 30 minutes

**Class Intended:** 7<sup>th</sup> Grade Mathematics

### **Academic Standards: Standard 3 Algebra and Functions**

Students express quantitative relationships using algebraic terminology, expressions, equations, inequalities, and graphs.

**7.3.8** Draw the graph of a line given the slope and one point on the line, or two points on the line.

**7.3.10** Identify and describe situations with constant or varying rates of change and know that a constant rate of change describes a linear function.

### **Performance Objectives:**

All students, will be able to write out a linear equation and answer any questions that pertain to the graph on the homework worksheet with a score of 85% or higher.

### **Assessment:**

The first assessment is done by looking for participation of students. All students will be cutting out circles, drawing, and writing on the circles.

The second assessment is turning in their homework assignment on time from the previous day. If they do not have it, it will be a noon detention.

The final assessment will be by the homework assignment.

### **Advanced Preparation by Teacher:**

- Create the warm-up problems for the students to do at the beginning of class.
- Have specific examples or types of problems that I want to show to make sure that students grasp it.
- Create a homework worksheet and answer key.
- Look over the homework problems to help foresee any problems or questions that might arise.

### **Procedure:**

#### **Introduction/Motivation:**

When the students enter the classroom there will be a warm-up on the projector. That way the students will remain busy while I start the attendance and such. The problems will be over supplementary, complementary, and vertical angles. I am still trying to permanently engrain it into their brains before the writing prompt.

**Step-by-Step Plan:**

1. After the warm up is over I will have everyone get out the homework worksheet. The students will trade their worksheet with someone else to grade. I will put the answers up on the overhead. Once the grading is done the homework will be passed up to be collected.
2. I will start off the class by putting up a graph on the overhead. I will give them a minute to look at it and the labels. Then I will ask
  - a. What do you think this graph means? (Evaluation)
  - b. What is being shown to you? (Evaluation)For this particular graph you may notice that as  $x$  increases, so does the graph.
3. Would you guys agree with me if I said that it represented plant growth? (Synthesis) When I first measured my plant it was 3 centimeters tall. Then every day after that I measured it was 2 centimeters taller.
  - a. Does that seem logical to you? (Evaluation)
4. This graph is a special one. When the ordered pairs are graphed and they form a straight line (like in this one) it is called a linear equation. When writing a linear equation it will be similar to writing out equations that we did on Monday.
5. Let's try writing out a linear equation together. Let's say that John jogs every day. He knows that so far he has jogged a total of 15 miles. He jogs exactly 3 miles every day.
  - a. How many total miles will he have tomorrow, the next day, and the day after that? (Application)
  - b. What patterns do you notice? (Evaluation)
6. So each day another 3 miles is added to the 15. That can be shown as  $y = 3x + 15$ . The  $x$  is the number of days that is has been since he had his 15 miles. If in 6 more days he wanted to know his total miles, just plug in 6 for  $x$  and solve.
7. On your paper, graph  $(0, 15)$ ,  $(1, 18)$ , and  $(2, 21)$ . These represent the first three days of jogging. As you connect the lines you notice that the graph is a straight line.
  - a. How many miles would John run in 15 days? (Application)
  - b. How many days do you think that John started running? (Comprehension)

**Closure:**

When looking to create a linear equation we first need to find out where we are starting at. That is the number that will be added in. Then, we need to look for a constant pattern. Whatever that constant number is, it will be multiplied by  $x$ . Put your boards away on the way to get the homework. Homework is to be completed by the beginning of next class period.

**Adaptations/Enrichment:**

There are none for this lesson.

**Self-Reflection:**

- Was the concept of linear equations something they could easily grasp?
- Did it help covering how to write equations out before?
- Did they have troubles seeing patterns for the equation?
- Were students willing to participate?