Linear Equations, How Can I Tell?

Teacher Notes

Tennessee State Standards

SPI 0806.3.5 Determine the slope of a line from an equation, two given points, a table of a graph.

Introduction

Graphing calculators create visual models of the algebraic equation, so that the students can readily see that the equation represents something. Graphing calculators allow the students to create graphs quickly, so there is time to ask questions, “What if...” or “What happens is I do this...?”

Class Arrangement

Students can work in groups or they can work individually.

Materials Needed

Graphing Calculator

Overhead Calculator or TI-Nspire Teacher

Procedure

1. Go to Graph
2. Enter the equation **y= 3x + 5**
3. Hit the graph button

4. Ask the class to look and the slope of the line and where it crosses the y-axis.
5. Graph **y = 3x – 5** (Leave y = 3x + 5 on screen)
6. What are the differences and similarities in the two graphs?
7. Now graph **y = -3x + 5**
8. Discuss the graph of this line compared with the first two lines.
9. Ask the class what we need to enter into the calculator to create a graph that is parallel to the last line, **y = -3x +5?**
10. Graph the suggestions from the students to see which suggestion was the correct solution.
11. Using the TI-Nspire teacher calculator, enter the following equations and then graph: **y= .5x + 7** and **y= .5x -7.** You can also discuss how to write the slope in other forms.
12. Discuss what is the same about the two equations and what is different.
13. Ask the class what two equations they need to enter into the calculator to get intersecting parallel lines with the same Y-intercept. Let the class practice and then check to see who has come up with the correct solution.
14. Now put a graph on the Teacher calculator and ask the class to figure out which of the following equations is shown on the calculator????

Y= -3x + 4

Y= -3x – 4

Y= 3x +4

Y= 3x -4

15. Add to the graph:

Y= 3x +8

Y= 3x – 8

Y= -3x +8

Y= -3x – 8

16. Let the students investigate different graphs on the calculator. Pick different students to show their graphs, and then let the class determine the slope and y-intercept and write the equations of the lines.

Closure

After completing this exercise, the class should have a better understanding of the slope of a line, the y-intercept and also how the slope is used to create parallel lines.