

## Graphing Functions

Name: Lisa Booth

Date: 12.1.08

Subject: Algebra I

Approximate Time: 55 minutes

Objective:

The Student Will...

1. *graph* functions on a calculator. (2c: DOK 1)
2. *identify* patterns between functions and graphs. (2c: DOK 2)

Materials:

Teacher: Overhead/Overhead Calculator/Promethean Board

Student: Pencil/Paper/Calculator/Activote

Bell-Ringer:

Complete the table for  $y = x^2 + 1$

X	Y
-2	
-1	
0	
1	
2	

Set:

1. TTW ask how students identify different sports.
2. TTW show different pictures of balls (tennis, baseball, football, soccer, etc.), and have students name the sport.
3. TTW explain that graphs and functions are the same way. We can identify the type of graph when given a function and *visa versa*.
4. TTW have a student read the objectives from the board.

Procedure:

1. TTW model graphing on the calculator using the overhead.
  1. Turn the calculator on
  2. Press the Y= button
  3. Enter in the function
  4. Press Graph
  5. TTW discuss how to view/change the window as necessary
2. TT&SW graph the following functions together,
  1.  $y = 3x - 6$
  2.  $y = x^2 + 4x$
  3.  $y = |2x|$
  4.  $y = x^3 - 4$
  5. TT&SW discuss what the different graphs look like. *Want to students to notice that the graphs have different shapes.*

3. TSW graph 5 constant functions on the calculator and sketch the graphs on a piece of paper.
  1. TTW ask students to sketch their graphs on the board while monitoring class.
  2. TT&SW discuss any patterns they see with the equations and graphs.
  3. *All functions are constants, the graphs are all horizontal lines.*
4. TSW repeat part 3 using linear, quadratic, cubic, and absolute value functions.
  1. Linear – *All functions have an  $x$  in them, the graphs are all slanted lines*
  2. Quadratic – *All functions have an  $x^2$  in them, the graphs are all U shaped.*
  3. Cubic – *All the functions have an  $x^3$  in them, the graphs all have a zig-zag in them.*
  4. Absolute value – *All the functions have  $| |$  in them, the graphs are all V shaped.*

Closure:

1. TTW have a student read the objectives from the board.
2. TT&SW discuss the different trends they found.
3. TSW identify 10 functions using their Activotes.
4. TTW introduce the next lesson: *We can do more than identify the type of function from a graph, we can write the function based on where the graph is located. We will be writing functions from graphs tomorrow.*

Assessment:

Objective: *graph* functions on a calculator.

Informal: TTW monitor (M) as students are graphing functions in class (C).

Formal: TTW collect student sketches (M) of the different functions (C) and check them for accuracy.

The grade will be recorded in the grade book (D).

Objective: *identify* patterns between functions and graphs.

Informal: TTW observe, and listen (M) as students discuss the trends they find between graphs (C).

Formal: TSW take a 10 question Activote quiz (M) at the end of class to check if they can identify functions by looking at the graph (C). The grade will be recorded and entered in the grade book (D).