FUNCTIONS

Name: Paula Wood

Grade Level/Subject: Algebra I

Topic: Functions

Objectives (P.A.S.S.): Students will use relations and functions to model number relationships.

1. Relations and Functions
   a. Distinguish between linear and nonlinear data. (2.1.a)
   b. Distinguish between relations and functions. (2.1.b)
   c. Identify dependent and independent variables, domain and range. (2.1.c)
   d. Evaluate a function using tables, equations, or graphs. (2.1.d)

Instruction:

1. Introduction

   The video “Air Coasters” from the Future Channel will be used to start the lesson and introduce the students to functions. After the video we will discuss how the students think this video will or does relate to functions. At this point they probably do not know much about functions, so this discussion will give you insight to previous knowledge.

2. Instructional process

   Day 1: PowerPoint presentation “Functions” with video “Air Coasters”: Begin the presentation using the video as a starting point for the discussion. Introduce the coordinate plane and the corresponding vocabulary (on ‘notes’ handout). Discuss each term using the book definition and having students create their own definitions. Be sure each student fills out the ‘notes’ handout. Also discuss scatter plots, what they represent, positive correlation, negative correlation, and no correlation.

   Day 2: Monster Car Madness

   The students will work in groups of two to complete the activity and may choose their car. As a class, discuss the activity set up and how to collect the data. The class will be collecting the data on the carpet in the hallway. After each group finishes, pick up the tape from the floor, share the data with your partner and other members of the class, and plot all data. (The results of the activity will be used later in class)

   Day 3: Introduce functions. Define terms using handout. Be sure each student fills out the ‘notes’ handout. Also discuss the vertical line test. Discuss examples in class. Assignment: Worksheet

   Day 4: Using the scatter plots from day 2, determine whether the Monster Car Madness activity resulted in a function.

   Day 5: Prep Pumpkin Carving activity.
Day 6: Prep Photographic Functions Activity by using the Smart Board file “Functions in Architecture”.

Day 7: Assessment (Post-Test)

Note: The results of the Monster Car Madness Activity, Pumpkin Carving, and Photographic Functions will be used throughout the year to introduce graphing, types of functions, etc.

3. Closure

In closing the lessons, we will relate the information back to our overall objectives discussing what part or parts of the activities would represent functions, variables (independent and dependent), the domain and range, and how this information could be expressed in tables, in equations, and as graphs. View and discuss the video “Air Coasters” again to close the lesson.

Assessment

Final Test: normal paper pencil test with problems
Photographic Functions
Pumpkin Carving
Worksheets

Modifications/Accommodations

Students work in pairs which helps the students that have difficulty deciding what to do, interpreting the directions, hearing, English itself, etc. Whatever the problem I believe a partner helps.

I have a hearing impaired student in this class. Therefore, I make sure they are always seated so they can see me speak directly or I move to them (during the completion of an activity for example) to they can see me speak. They also have a student “helper” who just checks on them periodically to make sure they are getting all of the notes down. I also position myself so that I am able to see their work during class discussions.

The Pumpkin Carving activity may have to be altered by helping them to decide what points they should use and to reinforce plotting the coordinates. This is done by spending one on one time with the student.

Reflection

The handouts work well! They allow students to break down the meanings given in the textbook into their own words. They definitely remember things better in their own words. This also helps us to look at vocabulary in general tying math to English.

Also by starting the study of functions by reviewing what they pretty well already had down (day 1) and then moving directly to the Monster Car Madness to collect data and use what they indicated they already knew on day 1 helped us to move easily into the new information. We did have some trouble applying the information we were using in class to other examples when I would bring them in, such as miles per gallon, miles per hour, etc.
I think it helped to use the Functions in Architecture presentation to get them to see the “graphs/functions” that appear around them every day. I know we do not usually think about things like a slide as being a function, but in reality it is in form. My students have all traditionally had a difficult time relating to graphs/functions.

The Monster Car Madness activity needs to be tweaked and the carpeted floor is not the best surface on which to run the cars. A tile floor or the gym floor might have given better results.

The Pumpkin Carving activity had to be tweaked in progress. The original idea was definitely too confusing (maybe not too hard – but too confusing) and needed to be changed quickly. The final idea of graphing the faces I am very happy with as it will move easily into graphing linear functions, parabolas, etc.

For now I will leave things they way they are and try the same format for the lesson next year, but tweak the individual activity to better fit the needs of the class and the individual students.