Lesson Plan for Data Analysis and Probability
5th Grade

Objectives:
1.) Determine probability of events occurring in familiar contexts or experiments.
   PASS Standard 5.2.a

2.) Analyze data to create and interpret tables and graphs.
   PASS Standard 5.1.a

3.) Determine range, mode, median, mean of a set of data.
   PASS Standard 5.1.e

Materials:

Set of Unit cubes (12 for each student)
Game Board of “All Aboard”
Set of 2 dice per group
Data Collection Sheet
Graphing Sheet
How Many Ways? Sheet
Pre Test
Post Test

Time:

I took 4 – 6 days to complete this plan. You probably complete it in less, but I wanted to allow plenty of time for them to reflect and explore.

Procedure:

Goal: first person to sail their boats to the dock, wins.
Directions: Students are given 12 cubes for their boats and asked to place them “out to sea” on the “All Aboard” Game sheet. *They can put them in one slot or spread them out among all the slots. *No other directions should be given at this time.
Roll two dice. The sum of the two dice will indicate which boat you will move from being “out to sea” to getting to the dock. *A two and a six would result in 8, so a ship in the 8 slot could dock.
Students should recognize a strategy in a few rolls, seeing that a ship in the number 1 slot will never move. *The first day we played a couple of rounds before using the data collection worksheet. The students then play in their groups of three and record the number of times each sum was rolled. The student who sailed all of their ships to dock first wins.
We made journals, and the students wrote in them their observations of the game strategy.

Day 2:
Before starting, the students and teacher discussed which of the sums were rolled the most by each team in Game 1. We played Games 2 & 3, tallying each sum as they went. After everyone finishes, describe the steps involved in graphing the rolls on their bar graph worksheet. Let them each complete their graphs, and then journal observations.

Day 3:
Discuss and introduce simple probability using examples from the data collection worksheet. Analyze the rolls that should be rolled the most. Also, discuss range, mode, median, and mean. Play, tally and graph game 4.
Then, on a sheet of notebook paper figure the range, mode, median, and mean of all four games.

**Day 4:**
Discuss strategies, probability, and range, mode, median, and mean. Fill in “How Many Ways?” worksheet and answer questions on the bottom.

**Day 5:**
Post test on tables, probability, mean, mode, median, and range. Journal on probability.

**Reflection:**

a) I did not plan on taking three days on this lesson, but I was pleased with the results. The students enjoyed playing, and strategizing. I placed a learner from each modality in each of the groups. That really seemed to work well because there was a visual learner who could tell just by looking how to do things, the auditory learner seemed to help the others by explaining how they heard it, and of course there was plenty of action for a fifth grade kinesthetic learner to do.

b) The students were not pleased with the pretest however, they did not seem to mind the post test. I felt they should have done better on the post test, but this class does not seem to ever test well. I would spend more time making sure they knew the definitions and applications on range, median, mode and mean.

c) Most kids responded well to the journal activity. I think I will continue using writing in the geometry unit. They are not real clear in their writing quite yet, but I think they will get better as we include the journal more.

**Technology:**
I used the dice on the smart board to show the first several rolls, I used the smart board to display any discussions about range, mode, median, and mean.
As well as to show graphing, probability discussion, etc. I did not save the pages, because we were using as part of discussion sessions. I use the smart board in place of the chalkboard most of the time.