Using Ratios to Taste the Rainbow

Lesson Plan

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Goal: At the end of the activity, the students will know that the actual ratio of colored skittles is not what the Mars company claims. They will also be able to calculate different ratios and percentages associated with the number of colored skittles given to their group.

Grade and Course: Math 7th grade

KY Standards: **MA-7-NPO-S-RP1**
Students will compute percentages and use percentages in proportional reasoning.
MA-7-NPO-S-RP2
Students will determine and solve proportions in real-world and mathematical situations.
MA-7-NPO-S-RP3
Students will develop proportional reasoning and apply to real-world and mathematical problems (e.g., rates, scaling, similarity).
MA-07-1.4.1
Students will apply ratios and proportional reasoning to solve real-world problems (e.g., percents, sales tax, discounts, rate).
MA-7-NPO-U-4
Students will understand that proportional reasoning is a tool for modeling and solving problems encountered in everyday situations.
MA-7-DAP-S-CD1
Students will make predictions, draw conclusions and verify results from statistical data and probability experiments.

Objectives:

Resources/materials needed: 15 bags of 25 skittles (1 for each pair), worksheets, smartboard/whiteboard

Description of Plan: **First have the students do the following bell ringer: Write out a step by step method for changing the fraction 1/8 to a percent. Write it so that a fourth grader could repeat your steps and get the same answer. Then go over the two different methods for finding a percent using student participation.**

Second, hand out the worksheet to each pair of students. For my students, I made sure to stress that we would stop doing the activity if anyone was off task or playing with the Skittles in an inappropriate manner.

Next, hand out the Skittles, stressing to the students not to open the bags until you say to. Then have them read aloud number one (choose a volunteer). Have them estimate what the ratios would be for number two (you may have to lead them through this). Then tell them to count up the colored Skittles and record their answers in number 3. Then have them bag up the Skittles again, and collect them.

Tell them they will be able to eat the skittles at the end of class, provided they are behaved.

Have them do 4-6 on their own. Then choose a group's numbers to use, and go over how it is supposed to be done. Have them read the different answers for number 6 critiquing how simple the process is. Then have them complete number 7.

Discuss number 8 as a class. There should be some interesting answers.

Have them complete the rest of the worksheet. Choose another group's data to use. Go through 9-13 with this data set. Make the students answer the questions, and tell how they arrived at this answer. Then go through and write on the board the individual group's questions. Have the class answer the questions. Go through as many questions as you can with the time you have.

Then, if your students were behaved, pass the Skittles out again, being careful to give each group the bag they originally had. Turn on your smart board and have the class play a ratio game: http://www.bbc.co.uk/skillswise/numbers/wholenumbers/ratioandproportion/ratio/game.shtml

Lesson Source: An adaptation from Rossman and Chance (2000), Workshop Statistics: Discovery with Data, 2nd Edition.
gk12.uark.edu/lessons/skittle%20math.doc

Instructional Mode: Worksheets, Smartboard/Web, Whiteboard

Date Given: **Nov.19th** **Estimated Time**: 1.5 hours

Date Submitted to Algebra^3: Nov.26th

Skittles Activity

Names of group members:
Group Number on your Skittles bag:

1. The Skittles company claim that there are the same amount of each color in each bag of Skittles. I have divided a large bag of Skittles into several smaller bags for you. Make sure not to eat the Skittles before finishing the activity. You will be given permission to do so if the class as a whole has behaved, and after the activity is completely finished.
2. First, estimate the following proportions/ratios:

    a. Red Skittles to Total Skittles:

    b. Green Skittles to Total Skittles:

    c. Yellow Skittles to Total Skittles:

    d. Purple Skittles to Total Skittles:

    e. Orange Skittles to Total Skittles:

3. Count the number of Skittles in your bag, and how many of each color are in your bag. Record the numbers here:

    Total number of Skittles:

    Number of Orange Skittles:

    Number of Yellow Skittles:

    Number of Green Skittles:

    Number of Purple Skittles:

    Number of Red Skittles:

4. What is the ratio of orange Skittles to total number of Skittles?

5. Figure out the proportion of orange Skittles out of 100.

    $\frac{\text{Number of orange Skittles}}{\text{Total Number of Skittles}} = \frac{\quad}{\quad} = \frac{\quad}{100}$

6. What steps did you go through to get the number of orange Skittles out of 100?

There may be a different way to figure out the number of orange Skittles out of 100. Write the example here:

7. Repeat steps 2 and 3 with all of the Skittles. What proportions do you get? Record your answers in this chart:

Color of Skittles	Number of Skittles	Fraction (Ratio)	Reduced Fraction (Ratio)	Percent
Red				
Green				
Yellow				
Purple				
Orange				

8. Is the proportion you just calculated the same as what you predicted? Why do you think this is?

9. If you had three bags of Skittles, exactly like the one you just had, how many green skittles would there be? What would be the unreduced fraction/ratio? The reduced fraction/ratio?

10. What is the ratio of the total skittles in one bag to the number of red skittles?

11. How many purple Skittles would there be in 20 bags? How many total skittles would there be in 20 bags?

12. What percentage of Skittles are red and green?

13. What percentage of Skittles are not yellow?

14. Please make a bar chart of your data:

20					
19					
18					
17					
16					
15					
14					
13					
12					
11					
10					
9					
8					
7					
6					
5					
4					
3					
2					
1					
	Green	***Orange***	***Purple***	***Red***	***Yellow***

15. Write two questions that you would like the class to answer. The questions should be like numbers 9-13. Make the questions reasonable so they can be answered by your classmates.

Question 1:

Question 2: