WEEK 3: NUMBER - RATIONAL NUMBERS

Creating Integers

Find a positive integer so that when you multiply 0.20 by that integer, the product is an integer. What is the smallest positive integer that will "work"? What are the smallest positive integers that will work for other decimals such as 0.05, 1.25, 0.375, 0.444..., , 0.142857?

Compare your answers with the fraction equivalents of 0.20, 0.05, 1.25, 0.375, 0.444.... and, 0.142857? Describe how a fraction equivalent can be determined from a decimal number.

Extensions
Will this method work for all decimal numbers?

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<th><strong>GPS</strong></th>
<th><strong>As seen in Problem Exploration</strong></th>
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<tr>
<td><strong>M6N1.</strong> Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and percents using these concepts to solve problems. a. Use factors and multiples. e. Use fractions, decimals, and percents interchangeably. f. Solve problems involving fractions, decimals, and percents and justify the process.</td>
<td>a. The student can look at multiples of the decimals to find the first integer value easily especially if a spreadsheet is used. e. The student is converting decimals to fractions (therefore, “interchanging” them). f. In order to solve the problem, the student uses fractions and decimals.</td>
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<tr>
<td><strong>M7N1.</strong> Students will understand the meaning of positive and negative numbers including rational numbers and will compute with them. b. Compare and order rational numbers including repeating decimals. d. Solve problems using rational numbers.</td>
<td>b. If using a spreadsheet program, the student can put the numbers in ascending or descending order, which allows the student to compare the rational numbers. d. This investigation involves solving a problem that uses rational numbers.</td>
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**The Salesman and the Eggs**

An egg salesman was asked how many eggs he had sold that day. He replied, "My first customer said, 'I'll buy half your eggs and half an egg more.' My second and third customers said the same thing. When I had filled all three orders I was sold out and I did not have to break a single egg all day." How many eggs had he sold in all?

**Extensions**
What if the customers bought one-third of the eggs and one-third an egg more? How many eggs would be sold in all?

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| **M6N1.** Students will understand the meaning of the four arithmetic operations as related to positive rational numbers and percents using these concepts to solve problems.  
  d. Multiply and divide fractions and mixed numbers.  
  e. Use fractions, decimals, and percents interchangeably,  
  f. Solve problems involving fractions, decimals, and percents and justify the process. | d. You are taking half the eggs, so you can multiply the number of eggs you think he started with by 1/2.  
  e. Some students may find it helpful to work this problem using decimals and in order to do so, must first convert the fraction to a decimal.  
  f. In solving this investigation, the student uses fractions and decimals. |
| **M7N1.** Students will understand the meaning of positive and negative numbers including rational numbers and will compute with them.  
  c. Add, subtract, multiply and divide positive and negative rational numbers.  
  d. Solve problems using rational numbers. | c. Students may find themselves adding fractions of eggs. A discussion should ensue as to why they really should not be adding fractions of eggs.  
  d. In solving this investigation, the student uses rational numbers. |