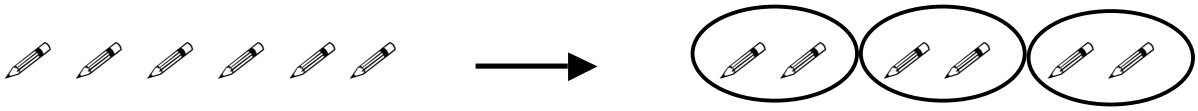
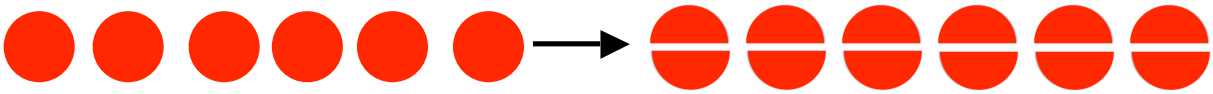
PROBLEM SOLVED
MAKING SENSE OF MATHEMATICS

Division with Fractions
Another Approach

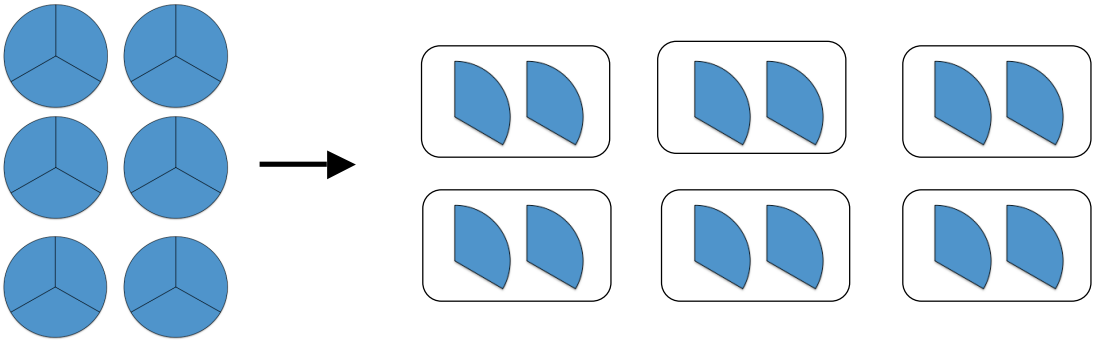
Perhaps you remember the rule "invert and multiply" when dividing fractions. In order to understand why you invert and multiply, you must first understand the concept of division. Let's start with a situation using whole numbers. Tony bought a package of six new pens. He has two pens of each color. How many different colors are there? You know the total number of pens (6) and the size of each group (2). You want to find the number of groups. You can ask, "How many twos are there in six?" to solve the problem.



When dividing with fractions the same concept applies. Consider six divided into halves or 6 ÷ ½. You can ask yourself, "How many halves are in six?" There are 12 halves in six.



Consider six divided by two thirds or 6 ÷ 2/3. You can ask yourself, "How many two thirds are in six?" There are nine.



Here is how you would find the answer to this problem using the traditional algorithm:

Multiply by the reciprocal. $6 \div \frac{2}{3} = 6 \times \frac{3}{2}$

Multiply by three to find the number of thirds in six, giving you 18. $6 \times \frac{3}{2} = \frac{18}{2}$

Divide by two because each group contains two thirds. $\frac{18}{2} = 9$

Multiplying by three and dividing by two is the same as inverting the divisor and multiplying.

MakingSense