Paper Strip Model of Dividing Fractions

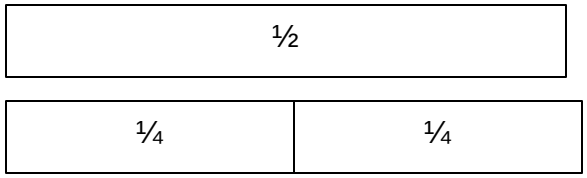
Objective: Students develop a conceptual understanding of division of fractions. It is important that students understand this concept so that if they forget the rule, they have this model in which to refer.

Materials: Strip of paper approximately 1" wide and 11" long

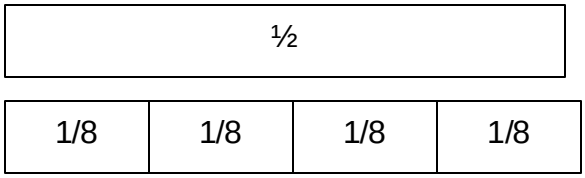
Instructions:

- As students follow along, the teacher is modeling.
- Have students fold and cut the following fractional parts from their strip of paper: ½, ¼, and 1/8

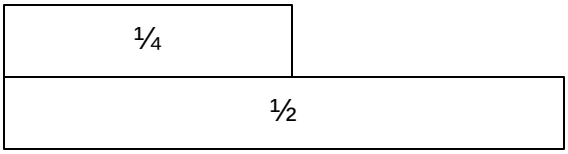
- Elicit from the students the meaning of division. (separating into equal size groups – For example: 8 ÷ 2 = 4 means how many groups of 2 can 8 be separated)
- Have students take the ½ and ¼ and determine how many groups of ¼ can ½ be separated. ½ ÷ ¼ = 2. There are 2 fourths in ½



- Pose the problems ½ ÷1/8 or how many 1/8 are there in ½. (4)



- To illustrate if division is commutative, have the students illustration ¼ ÷ ½ , or how many ½ are there in ¼. Only half of one-half will fit into ¼..



- Have students find how many 1/8 are there in ½, or ½ ÷ 1/8 (4)
- How many ½ are there in 1/8, or 1/8 ÷ ½ (1/4)
- How many 1/8 are there in ¼, or ¼ ÷ 1/8 (2), and
- How many ¼ are there in 1/8, or 1/8 ÷ ¼ (1/2)
- List all these solutions on the board and have students find the patterns.

½ ÷ ¼ = 2
¼ ÷ ½ = ½
½ ÷ 1/8 = 4
1/8 ÷ ½ = ¼
¼ ÷ 1/8 = 2
1/8 ÷ ¼ = ½

There are several methods used to divide fractions. The most common is the "invert and multiply" method.
Another method that is gaining popularity is the "finding a common denominator"

An example is: ½ ÷ ¼

$$\frac{2}{4} \div \frac{1}{4}$$

$$\frac{2-1}{4-4} = \frac{2}{1} = 2$$