Unit 11 Multiplying and Dividing Fractions

1. **Multiplication**
   A. Multiply numerators
   B. Multiply denominators

You want to save one-half of your 2 candy bars for later. How much should you save?

$\frac{1}{2} \times 2$

$\frac{1}{2} \times \frac{2}{1} = \frac{1 \times 2}{2 \times 1} = \frac{2}{2}$ Reduce

$\frac{2 \div 2}{2 \div 2} = \frac{1}{1} = 1$ candy bar

Note: The word "of " often implies multiplication.

You want to save one-third of your 3 dimes. How much should you save?
Can you guess the answer?_____

$\frac{1}{3} \times \frac{3}{10} = \frac{1 \times 3}{3 \times 10} = \frac{3}{30}$ Reduce

$\frac{3 \div 3}{30 \div 3} = \frac{1}{10}$ or 1 dime

2. **Division**
   A. Invert (flip) the divisor (what you are dividing by).
   B. Multiply the resulting fractions.

Note: Canceling, like reducing, is the division of a number into both a numerator and denominator. It is allowed within one fraction and whenever two or more fractions are being multiplied. Canceling simplifies calculations.

How many $\frac{1}{2}$ foot bookcase shelves can be cut from a 6-foot board?

$6 \div \frac{1}{2}$

$\frac{6}{1} \div \frac{1}{2}$

Invert and multiply

$\frac{6}{1} \times \frac{2}{1} = 12$ shelves

Note: Always reduce final answers to their lowest terms.

What is two-tenths divided by one-one hundredth?

$\frac{2}{10} \div \frac{1}{100}$

Invert and multiply

$= \frac{2}{\cancel{10}_{1}} \times \frac{\cancel{100}^{10}}{1}$

$= \frac{2 \times 10}{1 \times 1}$

$= \frac{20}{1}$

$= 20$