

# Algebra 1

## Chapter 1

### Section 1-6

#### Concepts

- Multiplicative Inverses - Two numbers that, when multiplied, their product is one
- Reciprocal - To find reciprocal of a fraction, exchange the numerator and the denominator

$$\frac{3}{7} \text{ and } \frac{7}{3}$$

$$\frac{17}{1} \text{ and } \frac{1}{17}$$

## Multiplication Rules by Sign

When multiplying...	The product sign is...
Two positive numbers	Positive
Two negative numbers → "They cancel out"	Positive
One positive number and one negative number	Negative

## Division Rules by Sign

When dividing...	The quotient sign is...
Two positive numbers	Positive
Two negative numbers	Positive
One positive number and one negative number	Negative

## Multiplying Fractions

$$\frac{10}{11} \cdot \frac{12}{11} = \frac{120}{121}$$

$$-\frac{7}{8} \cdot \frac{2}{5} = \frac{-14}{40} \div 2$$

$$-\frac{7}{20}$$

$$-\frac{6}{7} \cdot \frac{9}{77} = \frac{-54}{77}$$

## Dividing Fractions

Flip & multiply

$$\frac{3}{11} \div \frac{1}{3}$$

$$\frac{3}{11} \cdot \frac{3}{1} = \frac{9}{11}$$

$$\frac{10}{7} \div \frac{4}{1}$$

$$\frac{10}{7} \cdot \frac{1}{4} = \frac{10}{28} \div 2$$

$$\frac{5}{14}$$

## Dividing and Substitution

Divide  $\frac{x}{y} \dots \rightarrow x \div y$

When  $x = \frac{2}{3}$  and  $y = \frac{1}{5}$

$$\frac{2}{3} \div \frac{1}{5}$$

$$\frac{2}{3} \cdot \frac{5}{1} = \frac{10}{33}$$

When  $x = 5$  and  $y = \frac{1}{5}$

$$5 \div \frac{1}{5}$$

$$5 \cdot 5 = 25$$

Stacy was driving her brand new white Chevy Camero convertible on Highway 63. She traveled 20 miles in 15 minutes. What was her average speed in miles per hour?

$$\frac{20 \text{ miles}}{15 \text{ min}} \cdot 4 = \frac{80 \text{ mile}}{60 \text{ min}} = \frac{80 \text{ miles}}{1 \text{ hr}}$$

It takes two cans of tuna to make a tuna salad recipe that will serve seven people. How many cans are needed to make enough tuna salad to serve 21 people? 28 people? 3 people?

$$\begin{array}{l} \frac{2 \text{ cans}}{7 \text{ people}} = \frac{6 \text{ cans}}{21 \text{ people}} \\ \downarrow \cdot 3 \\ \frac{2 \text{ cans}}{7 \text{ people}} = \frac{8 \text{ cans}}{28 \text{ people}} \\ \downarrow \cdot 4 \\ \frac{2 \text{ cans}}{7 \text{ people}} = \frac{1 \text{ can}}{3.5 \text{ people}} \\ \downarrow \div 2 \end{array}$$