Fraction Word Problems:
− *Subtracting* with *Unlike Denominators*

When you subtract fractions with unlike denominators, first you need to make the denominators equal.
Example:

$$\frac{3}{4} \quad - \quad \frac{1}{5} \leftarrow \text{numerator}$$
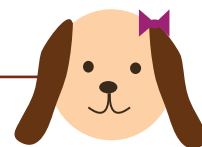$$\leftarrow \text{denominator}$$

1. **Multiply each fraction by the other fraction's denominator.**

- **Multiply both the numerator and the denominator of** $\frac{3}{4}$ **by 5.** $\quad \frac{3}{4} \times \frac{5}{5} = \frac{15}{20} \leftarrow \text{denominator}$
  Notice that now the denominator is equal to 20.

  (Remember: any number over itself is equal to 1! Since we multiplied by the equivalent of 1, $\frac{3}{4}$ is equal to $\frac{15}{20}$.)

- **Multiply both the numerator and the denominator of** $\frac{1}{5}$ **by 4.** $\quad \frac{1}{5} \times \frac{4}{4} = \frac{4}{20} \leftarrow \text{denominator}$
  Notice that now the denominator is equal to 20.

2. **Now you have** $\frac{15}{20}$ **and** $\frac{4}{20}$. **Subtract them.** $\qquad \frac{15}{20} - \frac{4}{20} = \frac{11}{20}$

Solve the word problems by subtracting fractions.

The puppy is $\frac{5}{6}$ **of a foot tall and the kitten is** $\frac{2}{5}$ **of a foot tall. How much taller is the puppy than the kitten?**

1. **Multiply each fraction by the other fraction's denominator.**

Multiply $\frac{5}{6}$ by $\frac{5}{5}$. $\quad \mathbf{\frac{5}{6} \times \frac{5}{5}} = \boxed{\frac{25}{30}}$ Multiply $\frac{2}{5}$ by $\frac{6}{6}$. $\quad \mathbf{\frac{2}{5} \times \frac{6}{6}} = \boxed{\frac{12}{30}}$

2. **Now you have** $\boxed{\frac{25}{30}}$ **and** $\boxed{\frac{12}{30}}$ 3. **Subtract them.** $\quad \boxed{\frac{25}{30}} - \boxed{\frac{12}{30}} = \boxed{\frac{13}{30}}$

Read the question below and use another piece of paper to find the answer. Show your work.

The puppy ate $\frac{3}{4}$ **of a carton of milk and the kitten ate** $\frac{5}{7}$ **of a carton of milk.**

How much more did the puppy eat?   The puppy drank $\frac{1}{28}$ more milk than the kitten.