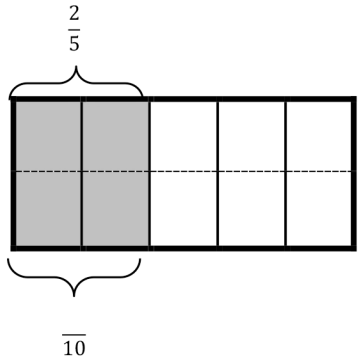
Name _____ Date _____

1. Each rectangle represents 1. Draw horizontal lines to decompose each rectangle into the fractional units as indicated. Use the model to give the shaded area as a sum and as a product of unit fractions. Use parentheses to show the relationship between the number sentences. The first one has been partially done for you.

a. Tenths



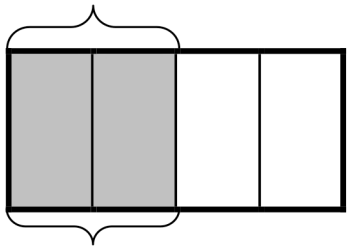
$$\frac{2}{5} = \frac{4}{\quad}$$

$$\frac{}{5} + \frac{}{5} = \left(\frac{1}{10} + \frac{1}{10}\right) + \left(\frac{1}{10} + \frac{1}{10}\right) = \frac{4}{\quad}$$

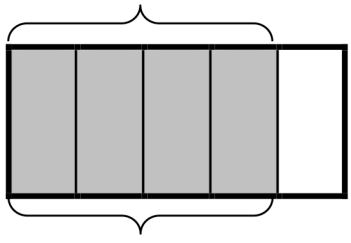
$$\left(\frac{1}{10} + \frac{1}{10}\right) + \left(\frac{1}{10} + \frac{1}{10}\right) = \left(2 \times \frac{}{\quad}\right) + \left(2 \times \frac{}{\quad}\right) = \frac{4}{\quad}$$

$$\frac{2}{5} = 4 \times \frac{}{\quad} = \frac{4}{\quad}$$

b. Eighths



c. Fifteenths



2. Draw area models to show the decompositions represented by the number sentences below. Express each as a sum and product of unit fractions. Use parentheses to show the relationship between the number sentences.

   a. $\frac{2}{3} = \frac{4}{6}$

   b. $\frac{4}{5} = \frac{8}{10}$

3. Step 1: Draw an area model for a fraction with units of thirds, fourths, or fifths.

   Step 2: Shade in more than one fractional unit.

   Step 3: Partition the area model again to find an equivalent fraction.

   Step 4: Write the equivalent fractions as a number sentence. (If you have written a number sentence like this one already in this homework, start over.)

Answer Key

1. a. 4, 10, 1, 1, 10 , $\frac{1}{10}$, $\frac{1}{10}$, 10, $\frac{1}{10}$, 10

   b. Decomposed horizontally to show eighths; $\frac{1}{4}+\frac{1}{4}=\left(\frac{1}{8}+\frac{1}{8}\right)+\left(\frac{1}{8}+\frac{1}{8}\right)=\frac{4}{8},\left(\frac{1}{8}+\frac{1}{8}\right)+\left(\frac{1}{8}+\frac{1}{8}\right)=$
   $\left(2\times\frac{1}{8}\right)+\left(2\times\frac{1}{8}\right)=\frac{4}{8},\frac{2}{4}=4\times\frac{1}{8}=\frac{4}{8}$

   c. Decomposed horizontally to show fifteenths; $\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}=\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+$
   $\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)=\frac{12}{15};\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)+$
   $\left(\frac{1}{15}+\frac{1}{15}+\frac{1}{15}\right)=\left(3\times\frac{1}{15}\right)+\left(3\times\frac{1}{15}\right)+\left(3\times\frac{1}{15}\right)+\left(3\times\frac{1}{15}\right)=\frac{12}{15},\frac{4}{5}=12\times\frac{1}{15}=\frac{12}{15}$

2. a. Area model shows $\frac{2}{3}=\frac{4}{6};\frac{1}{3}+\frac{1}{3}=\left(\frac{1}{6}+\frac{1}{6}\right)+\left(\frac{1}{6}+\frac{1}{6}\right)=\frac{4}{6},\left(\frac{1}{6}+\frac{1}{6}\right)+\left(\frac{1}{6}+\frac{1}{6}\right)=\left(2\times\frac{1}{6}\right)+$

   b. $\left(2\times\frac{1}{6}\right)=\frac{4}{6},\frac{2}{3}=4\times\frac{1}{6}=\frac{4}{6}$

   c. Area model shows $\frac{4}{5}=\frac{8}{10};\frac{1}{5}+\frac{1}{5}+\frac{1}{5}+\frac{1}{5}=\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)=\frac{8}{10},$

   d. $\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)+\left(\frac{1}{10}+\frac{1}{10}\right)=\left(2\times\frac{1}{10}\right)+\left(2\times\frac{1}{10}\right)+\left(2\times\frac{1}{10}\right)+$

   e. $\left(2\times\frac{1}{10}\right)=\frac{8}{10},\frac{4}{5}=6\times\frac{1}{10}=\frac{6}{10}$

3. Answers will vary.