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

   \[
   \frac{2}{5} = \frac{4}{10} \\
   \frac{1}{5} + \frac{1}{5} = \left(\frac{1}{10} + \frac{1}{10}\right) + \left(\frac{1}{10} + \frac{1}{10}\right) = \frac{4}{10} \\
   \left(\frac{1}{10} + \frac{1}{10}\right) + \left(\frac{1}{10} + \frac{1}{10}\right) = \left(2 \times \frac{1}{10}\right) + \left(2 \times \frac{1}{10}\right) = \frac{4}{10} \\
   \frac{2}{5} = 4 \times \frac{1}{10} = \frac{4}{10}
   \]

   b. Eighths

   \[
   \frac{2}{4} = \frac{4}{8} \\
   \frac{1}{4} + \frac{1}{4} = \left(\frac{1}{8} + \frac{1}{8}\right) + \left(\frac{1}{8} + \frac{1}{8}\right) = \frac{4}{8} \\
   \left(\frac{1}{8} + \frac{1}{8}\right) + \left(\frac{1}{8} + \frac{1}{8}\right) = \left(2 \times \frac{1}{8}\right) + \left(2 \times \frac{1}{8}\right) = \frac{4}{8} \\
   \frac{2}{4} = 4 \times \frac{1}{8} = \frac{4}{8}
   \]

   c. Fifteenths

   \[
   \frac{4}{5} = \frac{12}{15} \\
   \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \left(\frac{1}{15} + \frac{1}{15} + \frac{1}{15}\right) + \left(\frac{1}{15} + \frac{1}{15} + \frac{1}{15}\right) + \left(\frac{1}{15} + \frac{1}{15} + \frac{1}{15}\right) + \left(\frac{1}{15} + \frac{1}{15} + \frac{1}{15}\right) + \left(\frac{1}{15} + \frac{1}{15} + \frac{1}{15}\right) = \left(3 \times \frac{1}{15}\right) + \left(3 \times \frac{1}{15}\right) + \left(3 \times \frac{1}{15}\right) = \frac{12}{15} \\
   \frac{4}{5} = 12 \times \frac{1}{15} = \frac{12}{15}
   \]
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. \[ \frac{2}{3} = \frac{4}{6} \]
\[
\frac{1}{3} + \frac{1}{3} = \left( \frac{1}{6} + \frac{1}{6} \right) + \left( \frac{1}{6} + \frac{1}{6} \right) = \frac{4}{6}
\]
\[
\frac{1}{6} + \frac{1}{6} + \left( \frac{1}{6} + \frac{1}{6} \right) = 2 \times \frac{1}{6} + 2 \times \frac{1}{6} = \frac{4}{6}
\]
\[
\frac{2}{3} = 4 \times \frac{1}{6} = \frac{4}{6}
\]

b. \[ \frac{4}{5} = \frac{8}{10} \]
\[
\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = \left( \frac{1}{10} + \frac{1}{10} \right) + \left( \frac{1}{10} + \frac{1}{10} \right) + \left( \frac{1}{10} + \frac{1}{10} \right) = \frac{8}{10}
\]
\[
\frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} = 2 \times \frac{1}{10} + 2 \times \frac{1}{10} = \frac{8}{10}
\]
\[
\frac{4}{5} = 8 \times \frac{1}{10} = \frac{8}{10}
\]

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.)

\[ \frac{2}{5} = \frac{4}{10} \]
\[
\frac{1}{5} + \frac{1}{5} = \left( \frac{1}{10} + \frac{1}{10} \right) + \left( \frac{1}{10} + \frac{1}{10} \right) = \frac{4}{10}
\]
\[
\left( \frac{1}{10} + \frac{1}{10} \right) + \left( \frac{1}{10} + \frac{1}{10} \right) = 2 \times \frac{1}{10} + 2 \times \frac{1}{10} = \frac{4}{10}
\]
\[
\frac{2}{5} = 4 \times \frac{1}{10} = \frac{4}{10}
\]