

# **Eureka Math**

**Grade 4**

**Module 5**

**Lessons 1-5**

**Fraction Equivalence, Ordering and  
Operations**

**You can access videos for these  
lessons on the SCSD Website**

**Learning at Home Link**

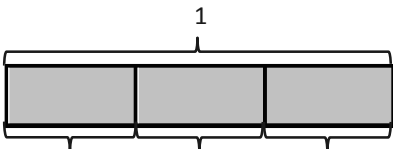


Name \_\_\_\_\_

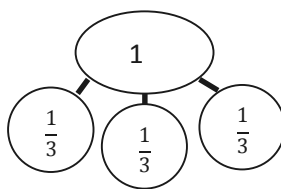
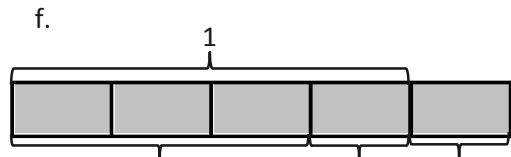
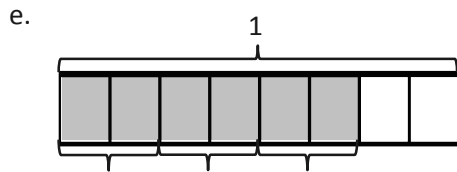
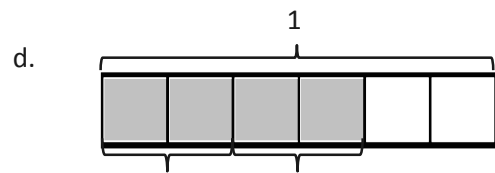
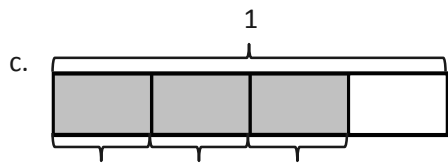
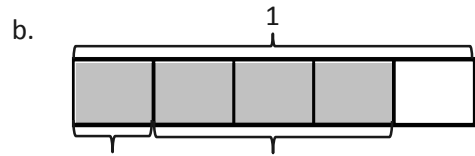
Date \_\_\_\_\_

1. Draw a number bond, and write the number sentence to match each tape diagram. The first one is done for you.

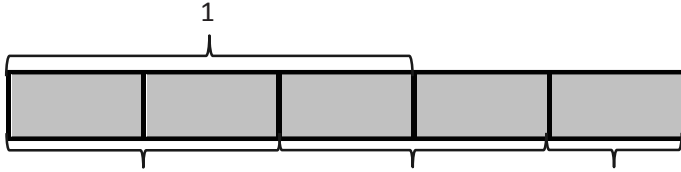
a.



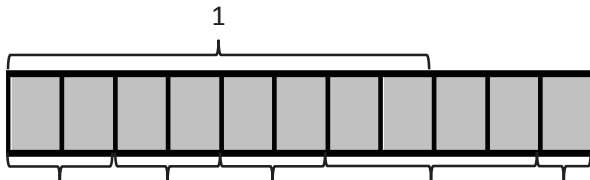
$1 = \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$

g.



h.



2. Draw and label tape diagrams to model each decomposition.

a.  $1 = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$

b.  $\frac{4}{5} = \frac{1}{5} + \frac{2}{5} + \frac{1}{5}$

c.  $\frac{7}{8} = \frac{3}{8} + \frac{3}{8} + \frac{1}{8}$

d.  $\frac{11}{8} = \frac{7}{8} + \frac{1}{8} + \frac{3}{8}$

e.  $\frac{12}{10} = \frac{6}{10} + \frac{4}{10} + \frac{2}{10}$

f.  $\frac{15}{12} = \frac{8}{12} + \frac{3}{12} + \frac{4}{12}$

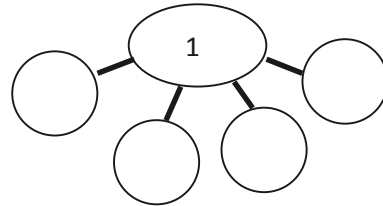
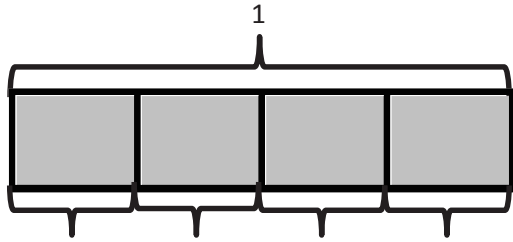
g.  $1\frac{2}{3} = 1 + \frac{2}{3}$

h.  $1\frac{5}{8} = 1 + \frac{1}{8} + \frac{1}{8} + \frac{3}{8}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Complete the number bond, and write the number sentence to match the tape diagram.



2. Draw and label tape diagrams to model each number sentence.

a.  $1 = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

b.  $\frac{5}{6} = \frac{2}{6} + \frac{2}{6} + \frac{1}{6}$

Name \_\_\_\_\_

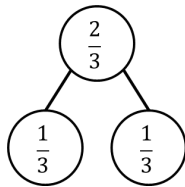
Date \_\_\_\_\_

1. Draw a number bond, and write the number sentence to match each tape diagram. The first one is done for you.

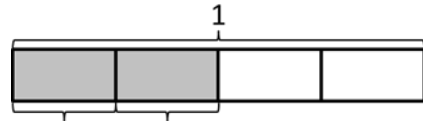
a.



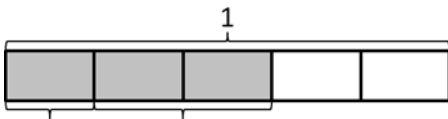
$$\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$$



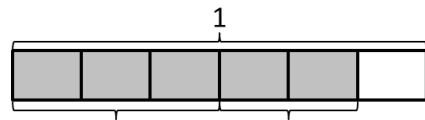
b.



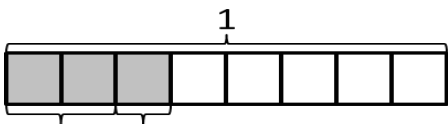
c.



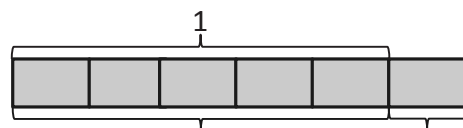
d.



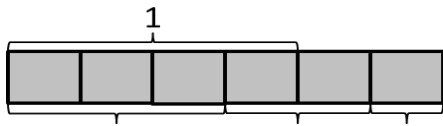
e.



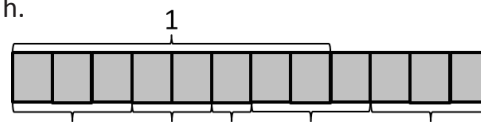
f.



g.



h.



2. Draw and label tape diagrams to match each number sentence.

a.  $\frac{5}{8} = \frac{2}{8} + \frac{2}{8} + \frac{1}{8}$

b.  $\frac{12}{8} = \frac{6}{8} + \frac{2}{8} + \frac{4}{8}$

c.  $\frac{11}{10} = \frac{5}{10} + \frac{5}{10} + \frac{1}{10}$

d.  $\frac{13}{12} = \frac{7}{12} + \frac{1}{12} + \frac{5}{12}$

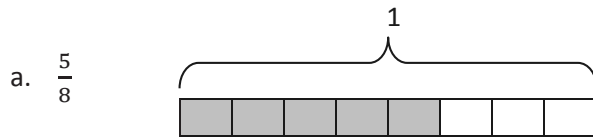
e.  $1\frac{1}{4} = 1 + \frac{1}{4}$

f.  $1\frac{2}{7} = 1 + \frac{2}{7}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Step 1: Draw and shade a tape diagram of the given fraction.  
 Step 2: Record the decomposition as a sum of unit fractions.  
 Step 3: Record the decomposition of the fraction two more ways.  
 (The first one has been done for you.)



$$\frac{5}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

$$\frac{5}{8} = \frac{2}{8} + \frac{2}{8} + \frac{1}{8}$$

$$\frac{5}{8} = \frac{2}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$$

b.  $\frac{9}{10}$

c.  $\frac{3}{2}$



2. Step 1: Draw and shade a tape diagram of the given fraction.  
Step 2: Record the decomposition of the fraction in three different ways using number sentences.

a.  $\frac{7}{8}$

b.  $\frac{5}{3}$

c.  $\frac{7}{5}$

d.  $1\frac{1}{3}$

Name \_\_\_\_\_

Date \_\_\_\_\_

Step 1: Draw and shade a tape diagram of the given fraction.

Step 2: Record the decomposition of the fraction in three different ways using number sentences.

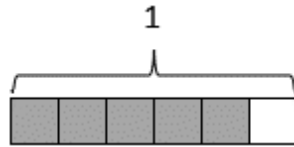
$$\frac{4}{7}$$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Step 1: Draw and shade a tape diagram of the given fraction.  
 Step 2: Record the decomposition as a sum of unit fractions.  
 Step 3: Record the decomposition of the fraction two more ways.  
 (The first one has been done for you.)

a.  $\frac{5}{6}$



$$\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$$

$$\frac{5}{6} = \frac{2}{6} + \frac{2}{6} + \frac{1}{6}$$

$$\frac{5}{6} = \frac{1}{6} + \frac{4}{6}$$

b.  $\frac{6}{8}$

c.  $\frac{7}{10}$

2. Step 1: Draw and shade a tape diagram of the given fraction.  
Step 2: Record the decomposition of the fraction in three different ways using number sentences.

a.  $\frac{10}{12}$

b.  $\frac{5}{4}$

c.  $\frac{6}{5}$

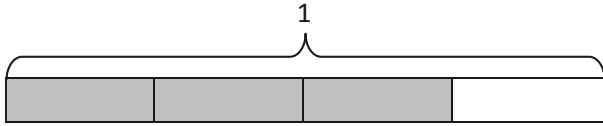
d.  $1\frac{1}{4}$

Name \_\_\_\_\_

Date \_\_\_\_\_

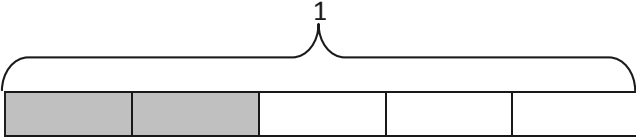
1. Decompose each fraction modeled by a tape diagram as a sum of unit fractions. Write the equivalent multiplication sentence. The first one has been done for you.

a.

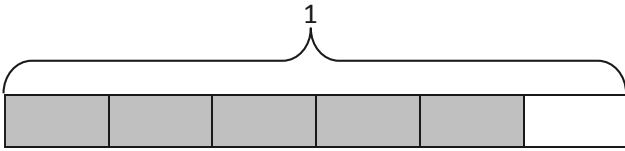


$$\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4} \quad \frac{3}{4} = 3 \times \frac{1}{4}$$

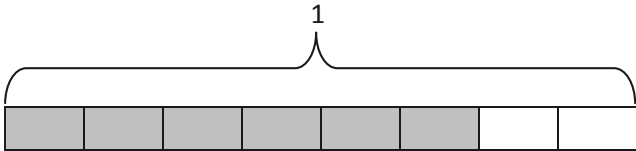
b.



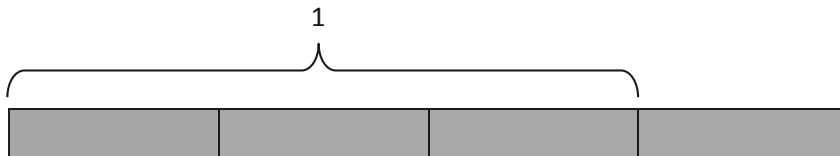
c.



d.

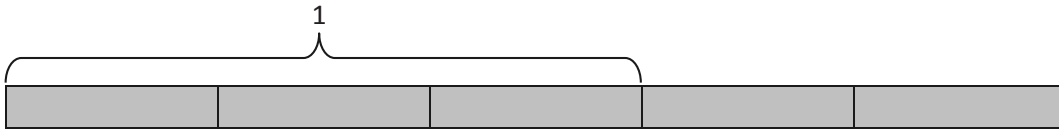


e.

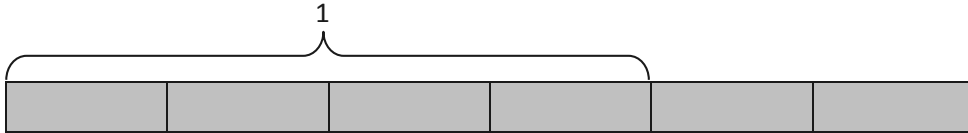


2. Write the following fractions greater than 1 as the sum of two products.

a.



b.



3. Draw a tape diagram, and record the given fraction's decomposition into unit fractions as a multiplication sentence.

a.  $\frac{4}{5}$

b.  $\frac{5}{8}$

c.  $\frac{7}{9}$

d.  $\frac{7}{4}$

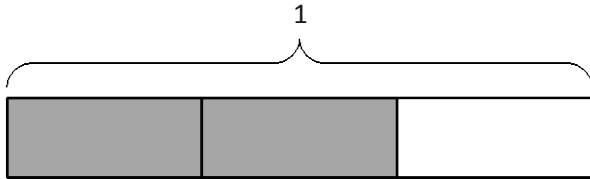
e.  $\frac{7}{6}$

Name \_\_\_\_\_

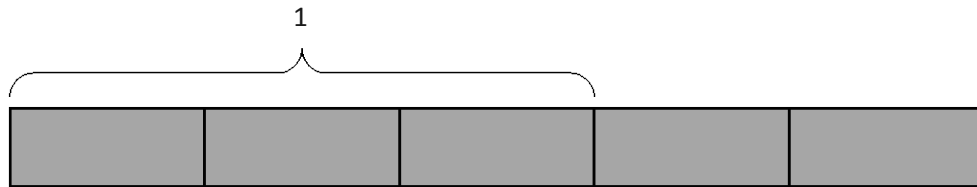
Date \_\_\_\_\_

1. Decompose each fraction modeled by a tape diagram as a sum of unit fractions. Write the equivalent multiplication sentence.

a.



b.



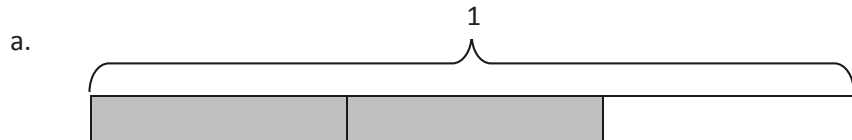
2. Draw a tape diagram, and record the given fraction's decomposition into unit fractions as a multiplication sentence.

$$\frac{6}{9}$$

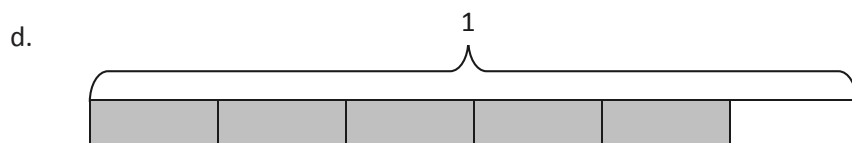
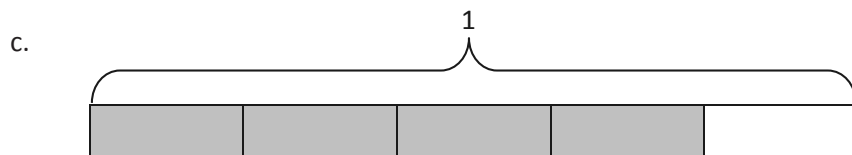
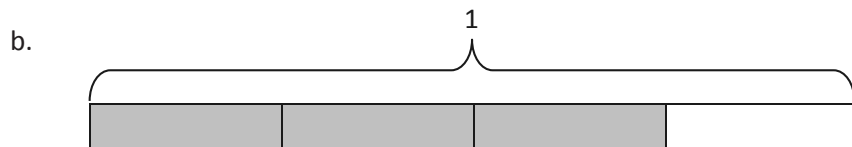
Name \_\_\_\_\_

Date \_\_\_\_\_

1. Decompose each fraction modeled by a tape diagram as a sum of unit fractions. Write the equivalent multiplication sentence. The first one has been done for you.



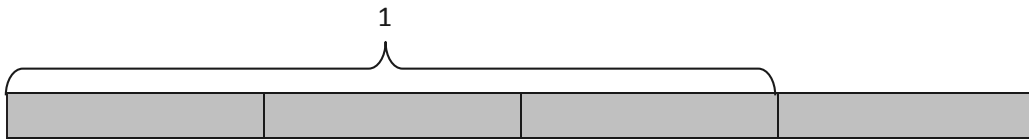
$$\frac{2}{3} = \frac{1}{3} + \frac{1}{3} \quad \frac{2}{3} = 2 \times \frac{1}{3}$$



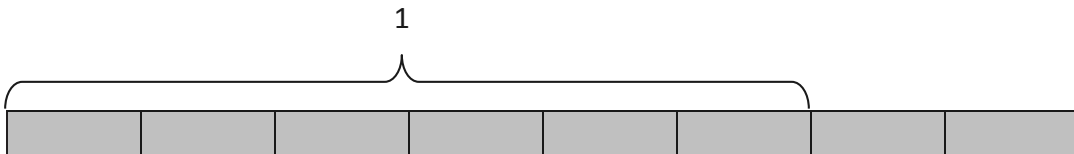


2. Write the following fractions greater than 1 as the sum of two products.

a.



b.



3. Draw a tape diagram, and record the given fraction's decomposition into unit fractions as a multiplication sentence.

a.  $\frac{3}{5}$

b.  $\frac{3}{8}$

c.  $\frac{5}{9}$

d.  $\frac{8}{5}$

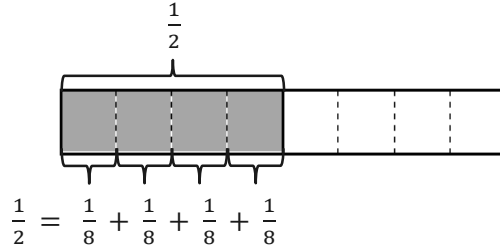
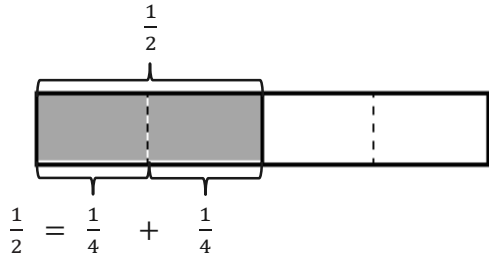
e.  $\frac{12}{4}$

Name \_\_\_\_\_

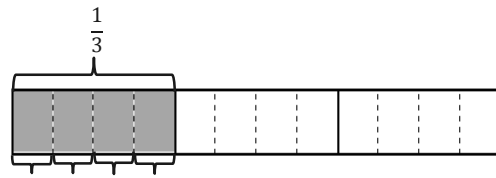
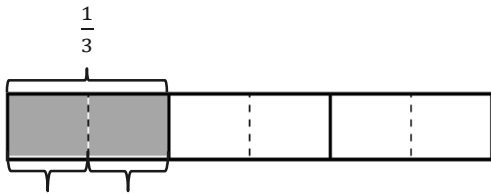
Date \_\_\_\_\_

1. The total length of each tape diagram represents 1. Decompose the shaded unit fractions as the sum of smaller unit fractions in at least two different ways. The first one has been done for you.

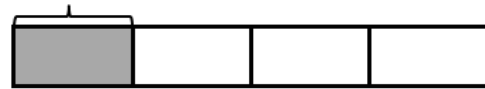
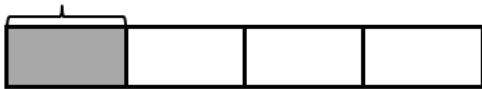
a.



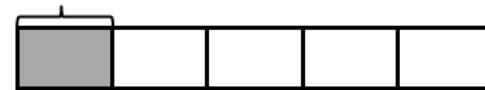
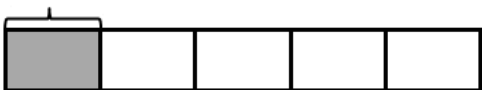
b.



c.



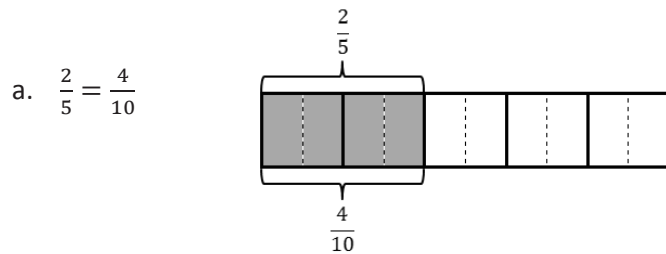
d.



2. The total length of each tape diagram represents 1. Decompose the shaded fractions as the sum of smaller unit fractions in at least two different ways.



3. Draw and label tape diagrams to prove the following statements. The first one has been done for you.



b.  $\frac{2}{6} = \frac{4}{12}$

c.  $\frac{3}{4} = \frac{6}{8}$

d.  $\frac{3}{4} = \frac{9}{12}$

4. Show that  $\frac{1}{2}$  is equivalent to  $\frac{4}{8}$  using a tape diagram and a number sentence.

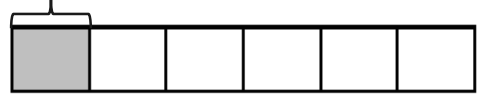
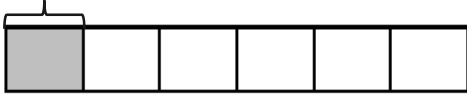
5. Show that  $\frac{2}{3}$  is equivalent to  $\frac{6}{9}$  using a tape diagram and a number sentence.

6. Show that  $\frac{4}{6}$  is equivalent to  $\frac{8}{12}$  using a tape diagram and a number sentence.

Name \_\_\_\_\_

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1. The total length of the tape diagram represents 1. Decompose the shaded unit fraction as the sum of smaller unit fractions in at least two different ways.



2. Draw a tape diagram to prove the following statement.

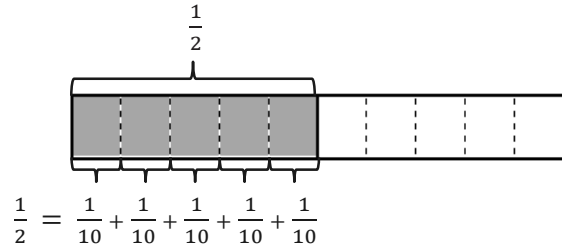
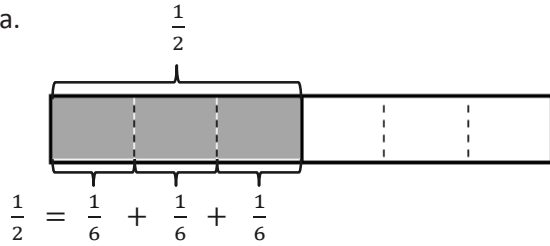
$$\frac{2}{3} = \frac{4}{6}$$

Name \_\_\_\_\_

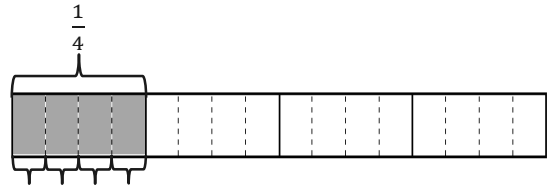
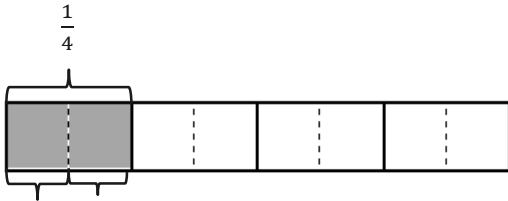
Date \_\_\_\_\_

1. The total length of each tape diagram represents 1. Decompose the shaded unit fractions as the sum of smaller unit fractions in at least two different ways. The first one has been done for you.

a.

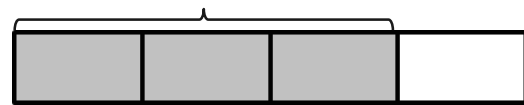


b.

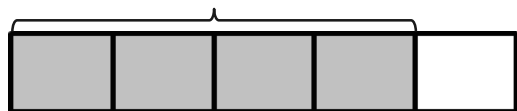


2. The total length of each tape diagram represents 1. Decompose the shaded fractions as the sum of smaller unit fractions in at least two different ways.

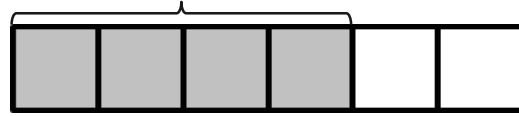
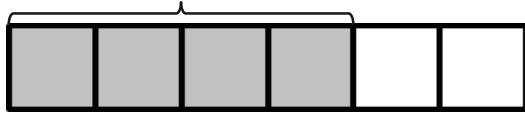
a.



b.

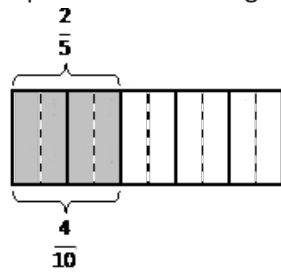


C.



3. Draw tape diagrams to prove the following statements. The first one has been done for you.

a.  $\frac{2}{5} = \frac{4}{10}$



b.  $\frac{3}{6} = \frac{6}{12}$

c.  $\frac{2}{6} = \frac{6}{18}$

d.  $\frac{3}{4} = \frac{12}{16}$

4. Show that  $\frac{1}{2}$  is equivalent to  $\frac{6}{12}$  using a tape diagram and a number sentence.

5. Show that  $\frac{2}{3}$  is equivalent to  $\frac{8}{12}$  using a tape diagram and a number sentence.

6. Show that  $\frac{4}{5}$  is equivalent to  $\frac{12}{15}$  using a tape diagram and a number sentence.

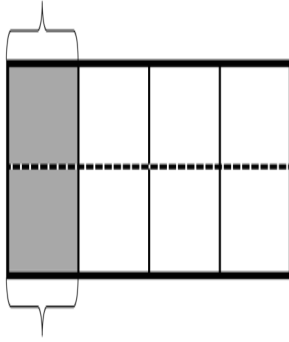


Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw horizontal lines to decompose each rectangle into the number of rows as indicated. Use the model to give the shaded area as both a sum of unit fractions and as a multiplication sentence.

- a. 2 rows

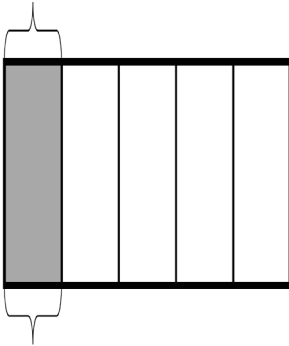


$$\frac{1}{4} = \frac{2}{\quad}$$

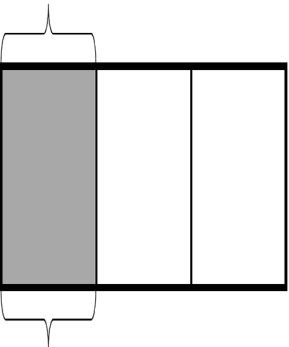
$$\frac{1}{4} = \frac{1}{8} + \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

$$\frac{1}{4} = 2 \times \frac{\quad}{\quad} = \frac{\quad}{\quad}$$

- b. 2 rows



- c. 4 rows



2. Draw area models to show the decompositions represented by the number sentences below. Represent the decomposition as a sum of unit fractions and as a multiplication sentence.

a.  $\frac{1}{2} = \frac{3}{6}$

b.  $\frac{1}{2} = \frac{4}{8}$

c.  $\frac{1}{2} = \frac{5}{10}$

d.  $\frac{1}{3} = \frac{2}{6}$

e.  $\frac{1}{3} = \frac{4}{12}$

f.  $\frac{1}{4} = \frac{3}{12}$

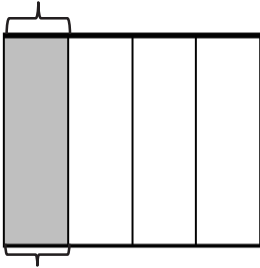
3. Explain why  $\frac{1}{12} + \frac{1}{12} + \frac{1}{12}$  is the same as  $\frac{1}{4}$ .

Name \_\_\_\_\_

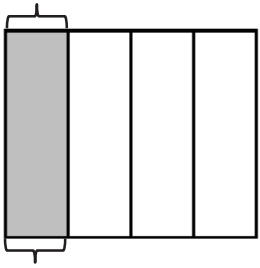
Date \_\_\_\_\_

1. Draw horizontal lines to decompose each rectangle into the number of rows as indicated. Use the model to give the shaded area as both a sum of unit fractions and as a multiplication sentence.

a. 2 rows



b. 3 rows



2. Draw an area model to show the decomposition represented by the number sentence below. Represent the decomposition as a sum of unit fractions and as a multiplication sentence.

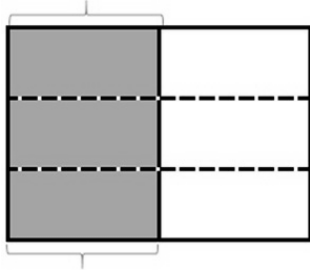
$$\frac{3}{5} = \frac{6}{10}$$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Draw horizontal lines to decompose each rectangle into the number of rows as indicated. Use the model to give the shaded area as both a sum of unit fractions and as a multiplication sentence.

- a. 3 rows

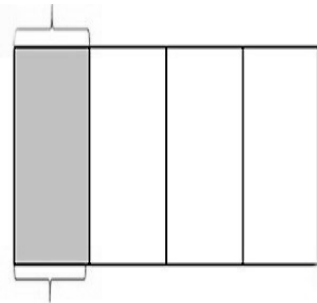


$$\frac{1}{2} = \frac{3}{6}$$

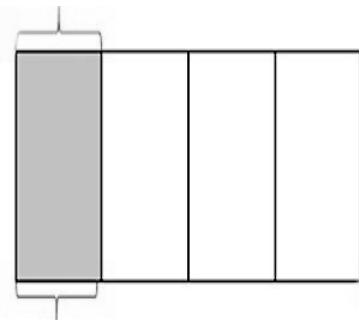
$$\frac{1}{2} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} = \frac{3}{6}$$

$$\frac{1}{2} = 3 \times \frac{1}{6} = \frac{3}{6}$$

- b. 2 rows



- c. 4 rows



2. Draw area models to show the decompositions represented by the number sentences below. Represent the decomposition as a sum of unit fractions and as a multiplication sentence.

a.  $\frac{1}{3} = \frac{2}{6}$

b.  $\frac{1}{3} = \frac{3}{9}$

c.  $\frac{1}{3} = \frac{4}{12}$

d.  $\frac{1}{3} = \frac{5}{15}$

e.  $\frac{1}{5} = \frac{2}{10}$

f.  $\frac{1}{5} = \frac{3}{15}$

3. Explain why  $\frac{1}{12} + \frac{1}{12} + \frac{1}{12} + \frac{1}{12}$  is the same as  $\frac{1}{3}$ .

## KEY CONCEPT OVERVIEW

Lessons 1 through 4 focus on understanding **place value** and representing numbers up to 1 million in different forms, including on a **place value chart**. The lessons emphasize that each place value is 10 times as much as the value of the place to its right.

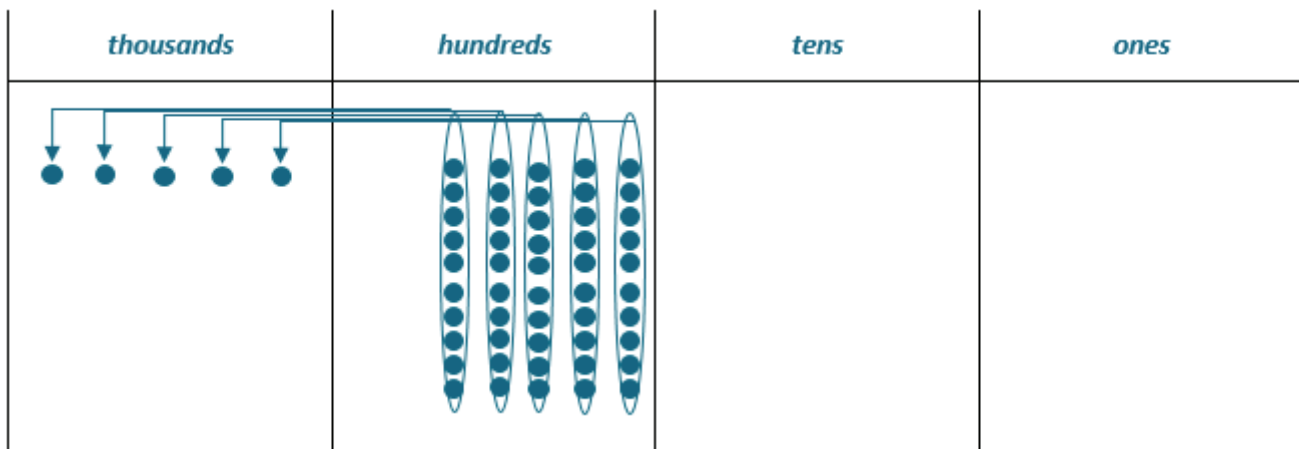
You can expect to see homework that asks your child to do the following:

- Label place value charts (up to millions), draw disks, and show regroupings (as shown in the sample problem below).
- Multiply and divide by 10 using the place value chart.
- Write numbers in the following forms:
  - Unit form (e.g., 4 thousands 3 hundreds 2 ones),
  - Standard form (e.g., 4,302),
  - Expanded form (e.g.,  $4,000 + 300 + 2$ ), and
  - Word form (e.g., four thousand, three hundred two).

## SAMPLE PROBLEM (From Lesson 1)

Label the place value chart. Fill in the blanks to make the **equation** true. Draw disks in the place value chart to show how you got your answer, using arrows to show any regrouping.

$$5 \text{ hundreds} \times 10 = \underline{50} \text{ hundreds} = \underline{5} \text{ thousands}$$



Additional sample problems with detailed answer steps are found in the *Eureka Math Homework Helpers* books. Learn more at [GreatMinds.org](http://GreatMinds.org).

**HOW YOU CAN HELP AT HOME**

- Support your child as he draws and labels a place value chart (up to millions). Ask him to say a large number (up to 1 million). Represent the number on the place value chart using cereal pieces for disks. Challenge each other to say the name of the number that was created, using the number forms previously listed.
- Ask your child to think of a number less than 1 million. See how many different ways she can represent the number in unit form (e.g., 2,345 as 23 hundreds 4 tens 5 ones; 2,345 ones; or 234 tens 5 ones). Writing the number within a place value chart might be helpful in this process.
- Challenge your child (and the rest of the family!) to skip-counting contests, going forward and backward, by threes, fours, sixes, sevens, eights, and nines (e.g., 0, 3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 27, 24, 21, 18, 15, 12, 9, 6, 3, 0). Take turns saying the numbers. First, you give a number. Then your child gives a number. Help each other to stay on track!

**TERMS**

**Equation:** A statement that two expressions are equal. For example,  $2,349 + 32,401 = \underline{\quad}$  or  $2,349 + 32,401 = 34,750$ .

**Place value:** The value of a given digit based on its position in a number. For example, the place value of the digit 2 in 235 is 200 (i.e., 2 hundreds).

**MODELS****Place Value Chart**

millions	hundred thousands	ten thousands	thousands	hundreds	tens	ones