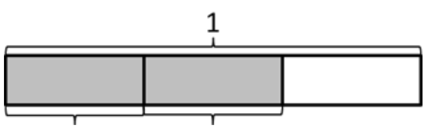
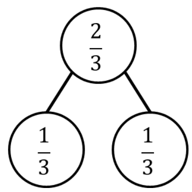
Name ____ Date ______________________

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

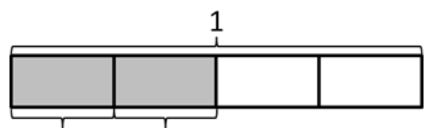
a.



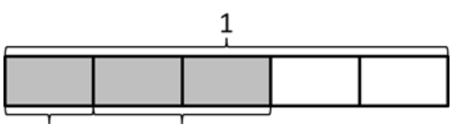
$\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$



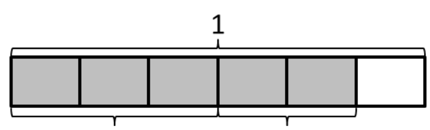
b.



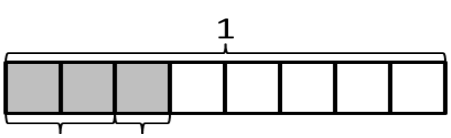
c.



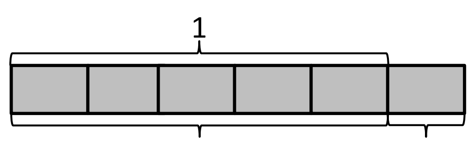
d.



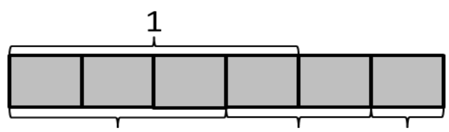
e.



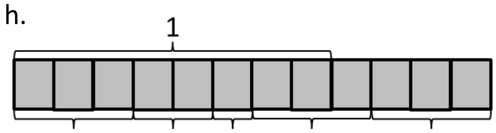
f.



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

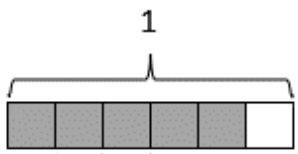
e. $1\frac{1}{4} = 1 + \frac{1}{4}$

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.)

   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. $\frac{5}{4}$

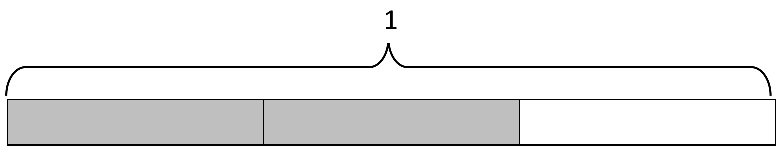
   c. $\frac{6}{5}$

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

Name ____ Date ______________________

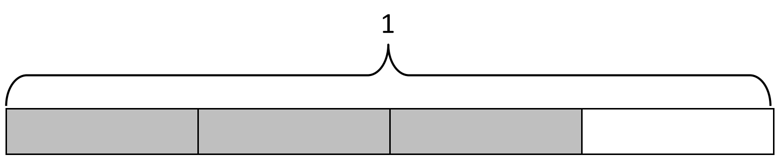
1. Decompose each fraction modeled by a tape diagram as a sum of unit fractions. Write the equivalent multiplication sentence. The first one has been done for you.

a.

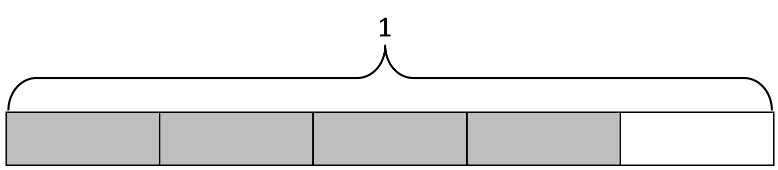


$\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$ $\frac{2}{3} = 2 \times \frac{1}{3}$

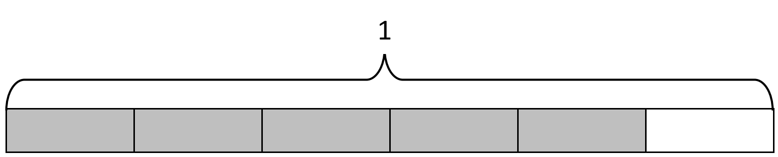
b.



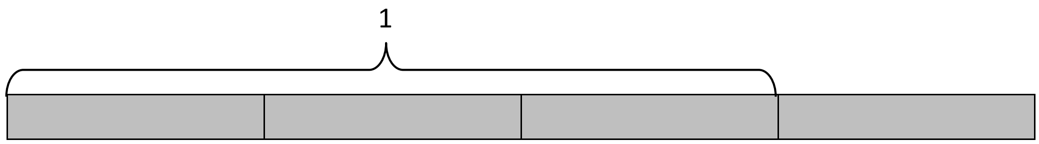
c.

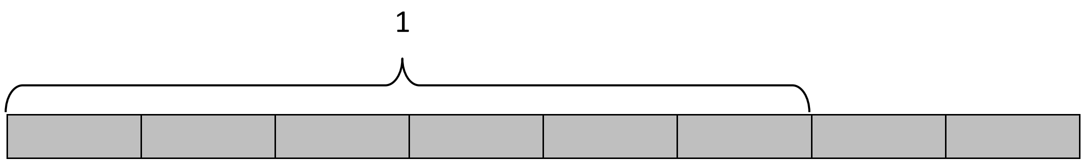


d.



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. $\frac{5}{9}$

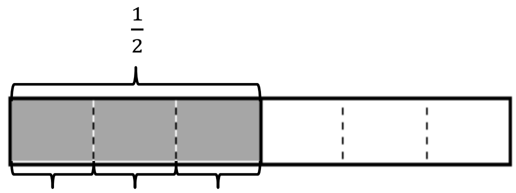
   d. $\frac{8}{5}$

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

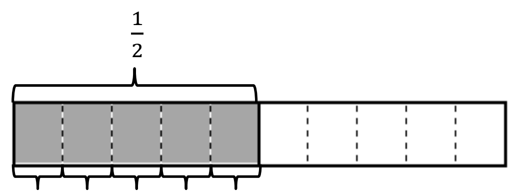
Name ____ Date ______________________

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.

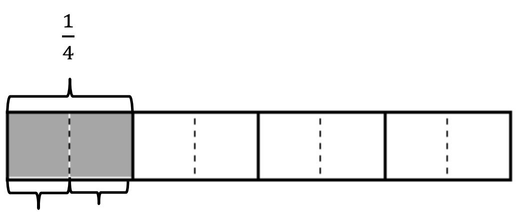


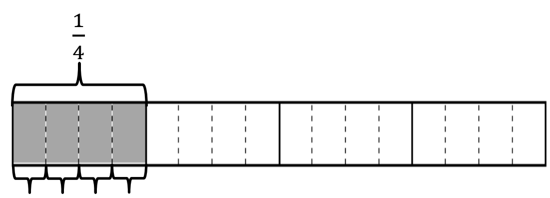
$\frac{1}{2} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$



$\frac{1}{2} = \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10}$

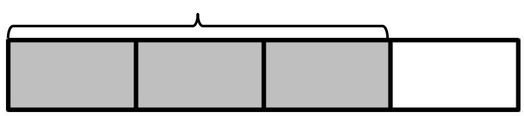
b.

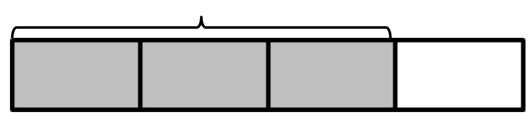




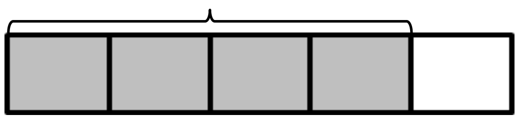
2. The total length of each tape diagram represents 1. Decompose the shaded fractions as the sum of smaller unit fractions in at least two different ways.

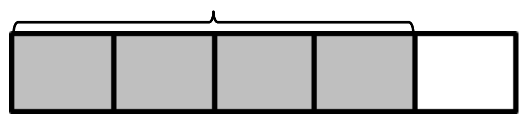
a.



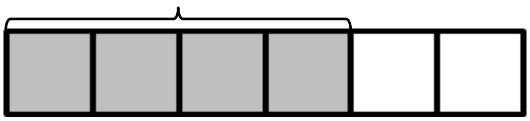


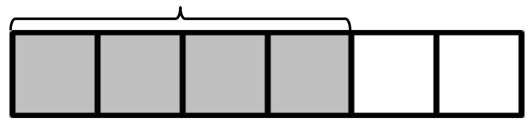
b.





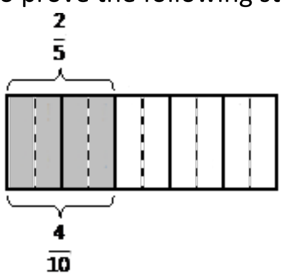
c.





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.

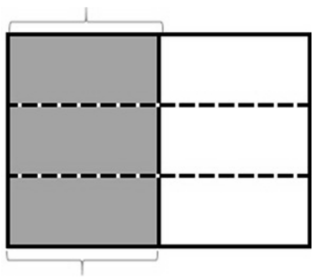
5. Show that $\frac{2}{3}$ is equivalent to $\frac{8}{12}$ using a tape diagram and a number sentence.

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. 3 rows

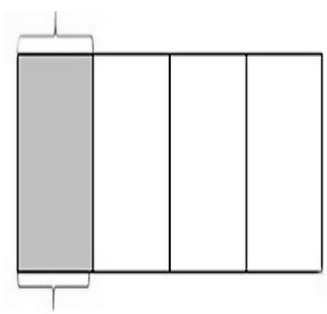


$$\frac{1}{2} = \frac{3}{\_\_}$$

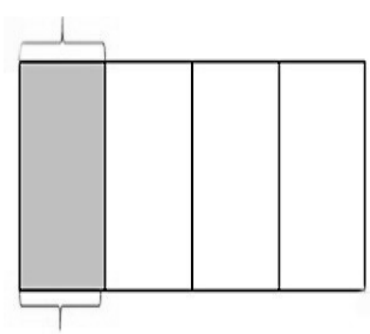
$$\frac{1}{2} = \frac{1}{6} + \_\_ + \_\_ = \frac{3}{6}$$

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

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

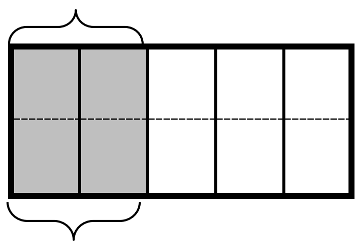
f. $\frac{1}{5} = \frac{3}{15}$

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

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



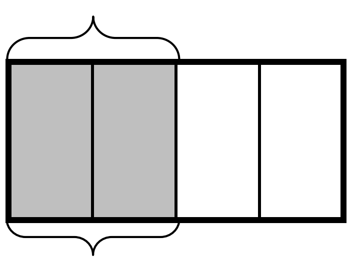
$$\frac{2}{5} = \frac{4}{\ }$$

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

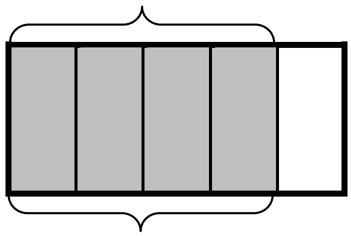
$$\left(\frac{1}{10} + \frac{1}{10}\right) + \left(\frac{1}{10} + \frac{1}{10}\right) = \left(2 \times \frac{\ }{\ }\right) + \left(2 \times \frac{\ }{\ }\right) = \frac{4}{\ }$$

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

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.

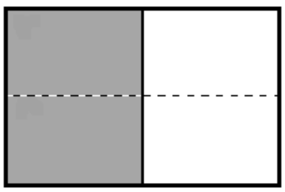
   Step 4: Write the equivalent fractions as a number sentence. (If you have written a number sentence like this one already in this Homework, start over.)

Name ____ Date ____________________

Each rectangle represents 1.

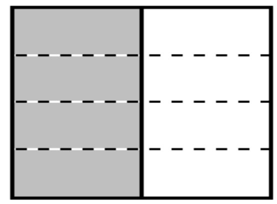
1. The shaded unit fractions have been decomposed into smaller units. Express the equivalent fractions in a number sentence using multiplication. The first one has been done for you.

a.

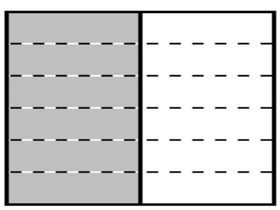


$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

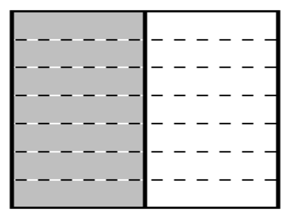
b.



c.



d.



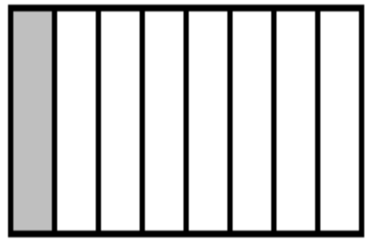
2. Decompose the shaded fractions into smaller units using the area models. Express the equivalent fractions in a number sentence using multiplication.

a.

b.

c.

d.



3. Draw three different area models to represent 1 fourth by shading.
   Decompose the shaded fraction into (a) eighths, (b) twelfths, and (c) sixteenths.
   Use multiplication to show how each fraction is equivalent to 1 fourth.

   a.

   b.

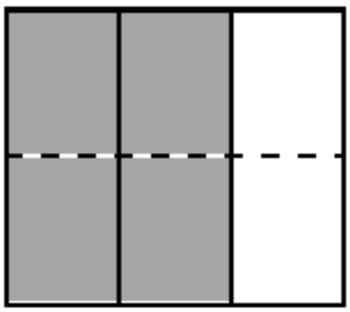
   c.

Name ____ Date ______________________

Each rectangle represents 1.

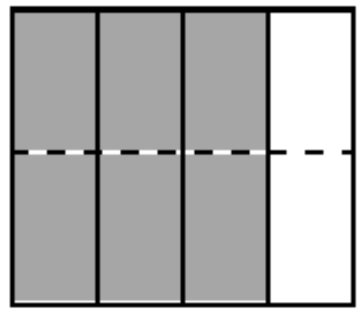
1. The shaded fractions have been decomposed into smaller units. Express the equivalent fractions in a number sentence using multiplication. The first one has been done for you.

a.

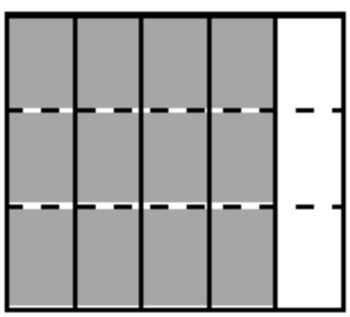


$$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

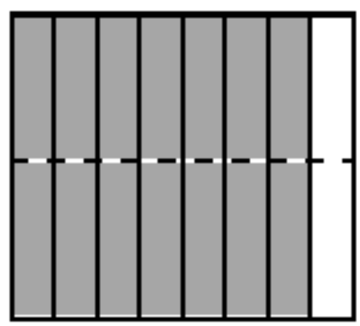
b.



c.



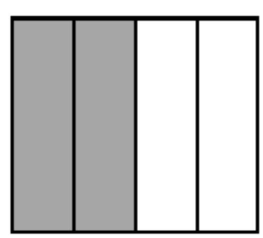
d.



2. Decompose both shaded fractions into twelfths. Express the equivalent fractions in a number sentence using multiplication.

a.

b.



3. Draw area models to prove that the following number sentences are true.

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

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

c. $\frac{5}{7} = \frac{10}{14}$

d. $\frac{3}{6} = \frac{9}{18}$

4. Use multiplication to create an equivalent fraction for each fraction below.

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

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

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

d. $\frac{10}{8}$

5. Determine which of the following are true number sentences. Correct those that are false by changing the right-hand side of the number sentence.

a. $\frac{2}{3} = \frac{4}{9}$

b. $\frac{5}{6} = \frac{10}{12}$

c. $\frac{3}{5} = \frac{6}{15}$

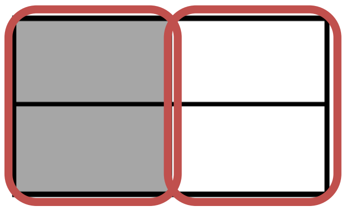
d. $\frac{7}{4} = \frac{21}{12}$

Name ____ Date ______________________

Each rectangle represents 1.

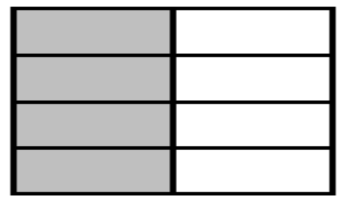
1. Compose the shaded fractions into larger fractional units. Express the equivalent fractions in a number sentence using division. The first one has been done for you.

a.

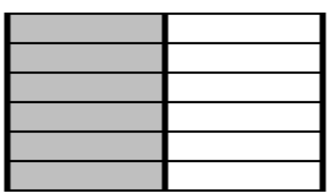


$$\frac{2}{4} = \frac{2 \div 2}{4 \div 2} = \frac{1}{2}$$

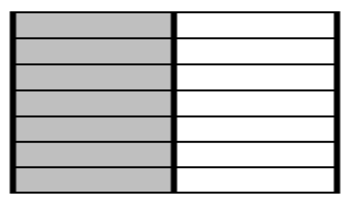
b



c.

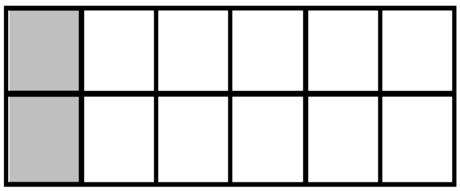


d.

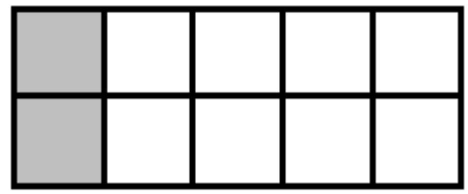


2. Compose the shaded fractions into larger fractional units. Express the equivalent fractions in a number sentence using division.

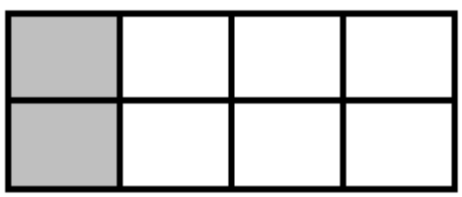
a.



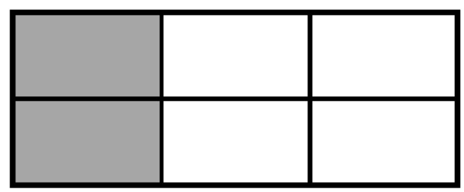
b.



c.



d.



e. What happened to the size of the fractional units when you composed the fraction?

f. What happened to the total number of units in the whole when you composed the fraction?

3. a. In the first area model, show 4 eighths. In the second area model, show 6 twelfths. Show how both fractions can be composed, or renamed, as the same unit fraction.

   b. Express the equivalent fractions in a number sentence using division.

4. a. In the first area model, show 4 eighths. In the second area model, show 8 sixteenths. Show how both fractions can be composed, or renamed, as the same unit fraction.

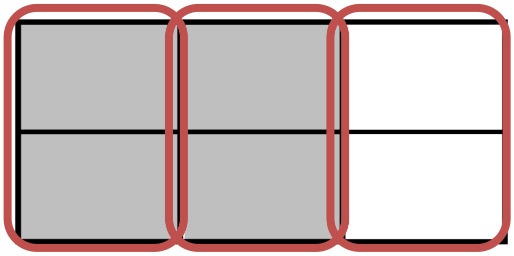
   b. Express the equivalent fractions in a number sentence using division.

Name ____ Date ______________________

Each rectangle represents 1.

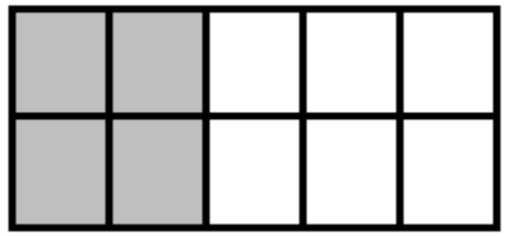
1. Compose the shaded fraction into larger fractional units. Express the equivalent fractions in a number sentence using division. The first one has been done for you.

a.

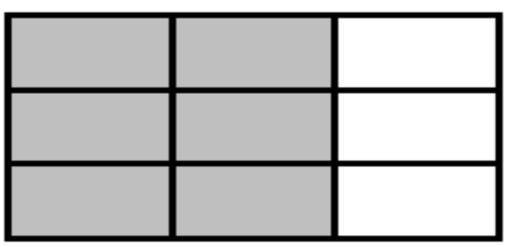


$$\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

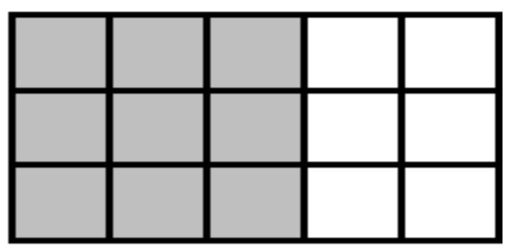
b.



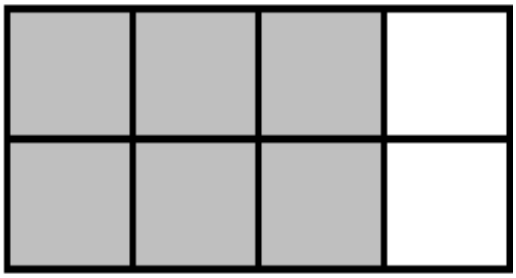
c.

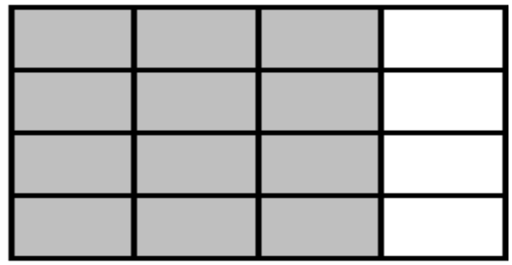


d.



2. Compose the shaded fractions into larger fractional units. Express the equivalent fractions in a number sentence using division.

a. 

b. 

3. Draw an area model to represent each number sentence below.

a. $\frac{6}{15} = \frac{6 \div 3}{15 \div 3} = \frac{2}{5}$

b. $\frac{6}{18} = \frac{6 \div 3}{18 \div 3} = \frac{2}{6}$

4. Use division to rename each fraction given below. Draw a model if that helps you. See if you can use the largest common factor.

   a. $\frac{6}{12}$

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

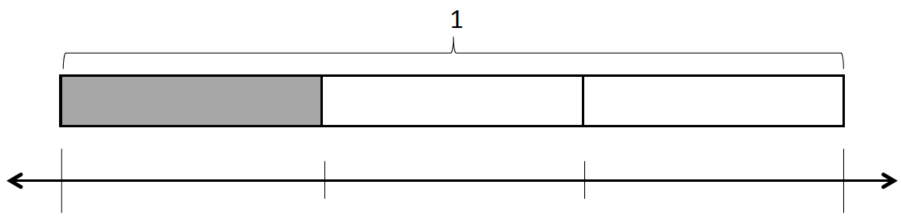
   c. $\frac{8}{12}$

   d. $\frac{12}{18}$

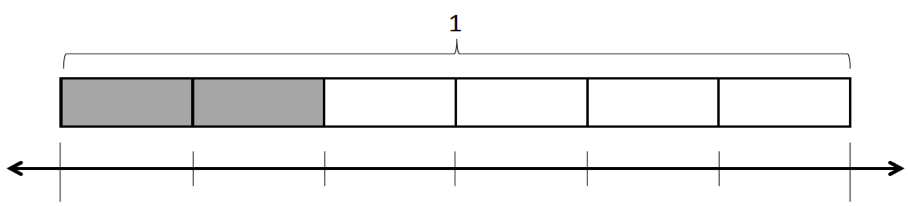
Name ____ Date ______________________

1. Label each number line with the fractions shown on the tape diagram. Circle the fraction that labels the point on the number line that also names the shaded part of the tape diagram.

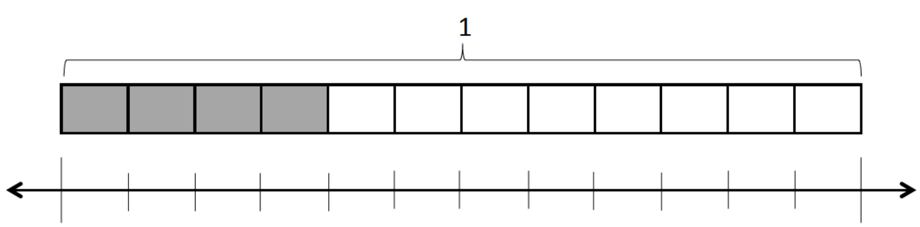
a.



b.



c.

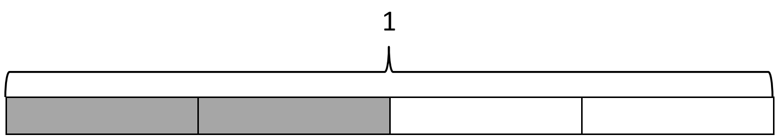


2. Write number sentences using multiplication to show:
   a. The fraction represented in 1(a) is equivalent to the fraction represented in 1(b).

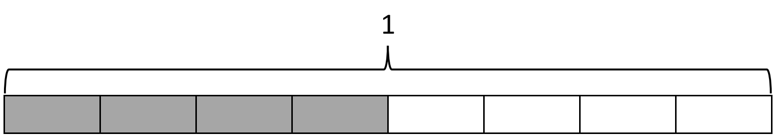
   b. The fraction represented in 1(a) is equivalent to the fraction represented in 1(c).

3. Use each shaded tape diagram below as a ruler to draw a number line. Mark each number line with the fractional units shown on the tape diagram, and circle the fraction that labels the point on the number line that also names the shaded part of the tape diagram.

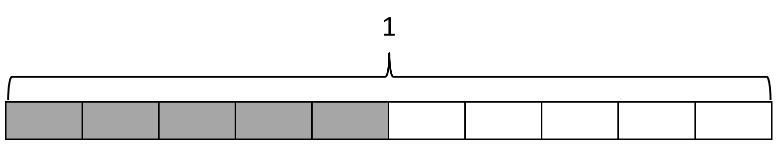
   a.



   b.



   c.



4. Write a number sentence using division to show the fraction represented in 3(a) is equivalent to the fraction represented in 3(b).

5. a. Partition a number line from 0 to 1 into fourths. Decompose $\frac{3}{4}$ into 6 equal lengths.

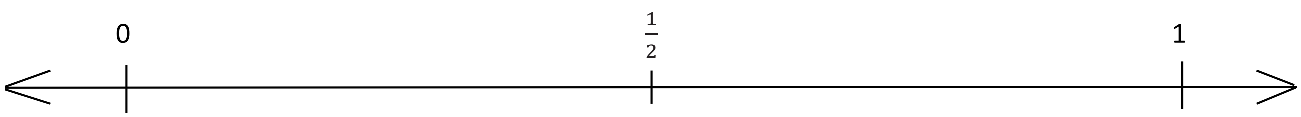
   b. Write a number sentence using multiplication to show what fraction represented on the number line is equivalent to $\frac{3}{4}$.

   c. Write a number sentence using division to show what fraction represented on the number line is equivalent to $\frac{3}{4}$.

Name ____ Date ____________________

1. a. Plot the following points on the number line without measuring.

i. $\frac{2}{3}$ ii. $\frac{1}{6}$ iii. $\frac{4}{10}$

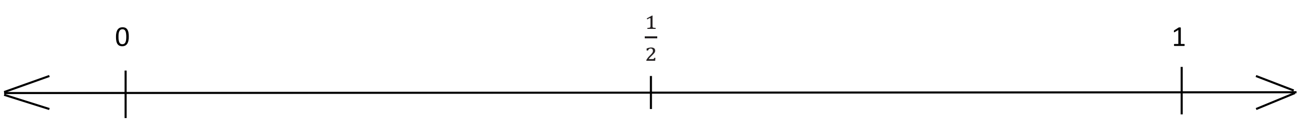


b. Use the number line in Part (a) to compare the fractions by writing >, <, or = on the lines.

i. $\frac{2}{3}$ ________ $\frac{1}{2}$ ii. $\frac{4}{10}$ ________ $\frac{1}{6}$

2. a. Plot the following points on the number line without measuring.

i. $\frac{5}{12}$ ii. $\frac{3}{4}$ iii. $\frac{2}{6}$



b. Select two fractions from Part (a), and use the given number line to compare them by writing >, <, or =.

c. Explain how you plotted the points in Part (a).

3. Compare the fractions given below by writing > or < on the lines.
Give a brief explanation for each answer referring to the benchmark of 0, $\frac{1}{2}$, and 1.

a. $\frac{1}{2}$ ________ $\frac{1}{4}$

b. $\frac{6}{8}$ ________ $\frac{1}{2}$

c. $\frac{3}{4}$ ________ $\frac{3}{5}$

d. $\frac{4}{6}$ ________ $\frac{9}{12}$

e. $\frac{2}{3}$ ________ $\frac{1}{4}$

f. $\frac{4}{5}$ ________ $\frac{8}{12}$

g. $\frac{1}{3}$ ________ $\frac{3}{6}$

h. $\frac{7}{8}$ ________ $\frac{3}{5}$

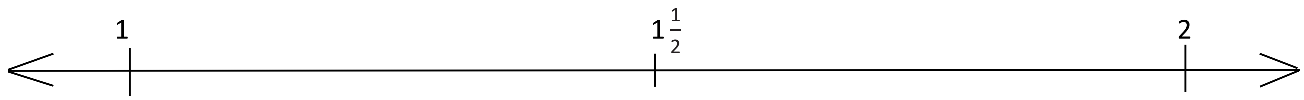
i. $\frac{51}{100}$ ________ $\frac{5}{10}$

j. $\frac{8}{14}$ ________ $\frac{49}{100}$

Name ____ Date ______________________

1. Place the following fractions on the number line given.

   a. $\frac{3}{2}$ b. $\frac{9}{5}$ c. $\frac{14}{10}$

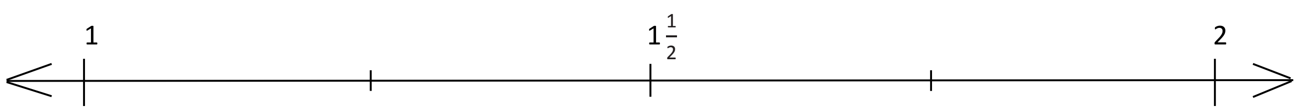


2. Use the number line in Problem 1 to compare the fractions by writing >, <, or = on the lines.

   a. $1\frac{1}{6}$ ________ $1\frac{4}{12}$ b. $1\frac{1}{2}$ ________ $1\frac{4}{5}$

3. Place the following fractions on the number line given.

   a. $\frac{12}{9}$ b. $\frac{6}{5}$ c. $\frac{18}{15}$



4. Use the number line in Problem 3 to explain the reasoning you used when determining whether $\frac{12}{9}$ or $\frac{18}{15}$ was greater.

5. Compare the fractions given below by writing > or < on the lines. Give a brief explanation for each answer referring to benchmarks.

a. $\frac{2}{5}$ ________ $\frac{6}{8}$

b. $\frac{6}{10}$ ________ $\frac{5}{6}$

c. $\frac{6}{4}$ ________ $\frac{7}{8}$

d. $\frac{1}{4}$ ________ $\frac{8}{12}$

e. $\frac{14}{12}$ ________ $\frac{11}{6}$

f. $\frac{8}{9}$ ________ $\frac{3}{2}$

g. $\frac{7}{8}$ ________ $\frac{11}{10}$

h. $\frac{3}{4}$ ________ $\frac{4}{3}$

i. $\frac{3}{8}$ ________ $\frac{3}{2}$

j. $\frac{9}{6}$ ________ $\frac{16}{12}$

Name ______________________________ Date ________________

1. Compare the pairs of fractions by reasoning about the size of the units. Use >, <, or =.

   a. 1 third _____ 1 sixth

   b. 2 halves _____ 2 thirds

   c. 2 fourths _____ 2 sixths

   d. 5 eighths _____ 5 tenths

2. Compare by reasoning about the following pairs of fractions with the same or related numerators. Use >, <, or =. Explain your thinking using words, pictures, or numbers. Problem 2(b) has been done for you.

   a. $\frac{3}{6}$ ________ $\frac{3}{7}$

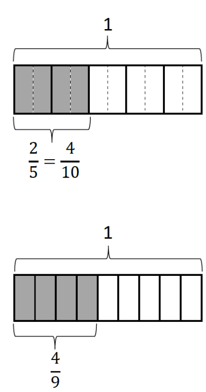
   b. $\frac{2}{5} < \frac{4}{9}$

   because $\frac{2}{5} = \frac{4}{10}$

   4 tenths is less

   than 4 ninths because

   tenths are smaller than ninths.



   c. $\frac{3}{11}$ ________ $\frac{3}{13}$

   d. $\frac{5}{7}$ ________ $\frac{10}{13}$

3. Draw two tape diagrams to model each pair of the following fractions with related denominators. Use >, <, or = to compare.

   a. $\frac{3}{4}$ ________ $\frac{7}{12}$

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

   c. $1\frac{4}{10}$ ________ $1\frac{3}{5}$

4. Draw one number line to model each pair of fractions with related denominators. Use >, <, or = to compare.

a. $\frac{3}{4}$ ________ $\frac{5}{8}$

b. $\frac{11}{12}$ ________ $\frac{3}{4}$

c. $\frac{4}{5}$ ________ $\frac{7}{10}$

d. $\frac{8}{9}$ ________ $\frac{2}{3}$

5. Compare each pair of fractions using >, <, or =. Draw a model if you choose to.

a. $\frac{1}{7}$ ________ $\frac{2}{7}$

b. $\frac{5}{7}$ ________ $\frac{11}{14}$

c. $\frac{7}{10}$ ________ $\frac{3}{5}$

d. $\frac{2}{3}$ ________ $\frac{9}{15}$

e. $\frac{3}{4}$ ________ $\frac{9}{12}$

f. $\frac{5}{3}$ ________ $\frac{5}{2}$

6. Simon claims $\frac{4}{9}$ is greater than $\frac{1}{3}$. Ted thinks $\frac{4}{9}$ is less than $\frac{1}{3}$. Who is correct? Support your answer with a picture.

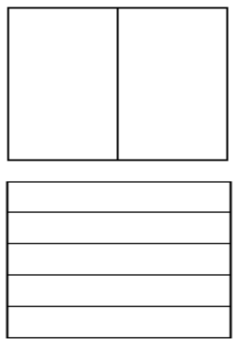
Name ______________________________ Date ____________________

1. Draw an area model for each pair of fractions, and use it to compare the two fractions by writing >, <, or = on the line. The first two have been partially done for you. Each rectangle represents 1.

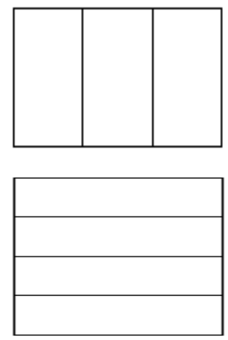
a. $\frac{1}{2}$ ____<____ $\frac{3}{5}$

$\frac{1\times5}{2\times5}=\frac{5}{10}$ $\frac{3\times2}{5\times2}=\frac{6}{10}$

$\frac{5}{10}<\frac{6}{10}$, so $\frac{1}{2}<\frac{3}{5}$



b. $\frac{2}{3}$ __________ $\frac{3}{4}$



c. $\frac{4}{6}$ __________ $\frac{5}{8}$

d. $\frac{2}{7}$ __________ $\frac{3}{5}$

e. $\frac{4}{6}$ __________ $\frac{6}{9}$

f. $\frac{4}{5}$ __________ $\frac{5}{6}$

2. Rename the fractions, as needed, using multiplication in order to compare each pair of fractions by writing >, <, or =.

a. $\frac{2}{3}$ ________ $\frac{2}{4}$

b. $\frac{4}{7}$ ________ $\frac{1}{2}$

c. $\frac{5}{4}$ ________ $\frac{9}{8}$

d. $\frac{8}{12}$ ________ $\frac{5}{8}$

3. Use any method to compare the fractions. Record your answer using >, <, or =.

a. $\frac{8}{9}$ ________ $\frac{2}{3}$

b. $\frac{4}{7}$ ________ $\frac{4}{5}$

c. $\frac{3}{2}$ ________ $\frac{9}{6}$

d. $\frac{11}{7}$ ________ $\frac{5}{3}$

4. Explain which method you prefer using to compare fractions. Provide an example using words, pictures, or numbers.

Name ____ Date ______________________

1. Solve.

a. 3 sixths – 2 sixths = _______________

b. 5 tenths – 3 tenths = _______________

c. 3 fourths – 2 fourths = _______________

d. 5 thirds – 2 thirds = _______________

2. Solve.

a. $\frac{3}{5} - \frac{2}{5}$

b. $\frac{7}{9} - \frac{3}{9}$

c. $\frac{7}{12} - \frac{3}{12}$

d. $\frac{6}{6} - \frac{4}{6}$

e. $\frac{5}{3} - \frac{2}{3}$

f. $\frac{7}{4} - \frac{5}{4}$

3. Solve. Use a number bond to decompose the difference. Record your final answer as a mixed number. Problem (a) has been completed for you.

a. $\frac{12}{6} - \frac{3}{6} = \frac{9}{6} \quad = 1\frac{3}{6}$

$\frac{6}{6}$ $\frac{3}{6}$

b. $\frac{17}{8} - \frac{6}{8}$

c. $\frac{9}{5} - \frac{3}{5}$

d. $\frac{11}{4} - \frac{6}{4}$

e. $\frac{10}{7} - \frac{2}{7}$

f. $\frac{21}{10} - \frac{9}{10}$

4. Solve. Write the sum in unit form.

 a. 4 fifths + 2 fifths = _______________

 b. 5 eighths + 2 eighths = _______________

5. Solve.

 a. $\frac{3}{11} + \frac{6}{11}$

 b. $\frac{3}{10} + \frac{6}{10}$

6. Solve. Use a number bond to decompose the sum. Record your final answer as a mixed number.

 a. $\frac{3}{4} + \frac{3}{4}$

 b. $\frac{8}{12} + \frac{6}{12}$

 c. $\frac{5}{8} + \frac{7}{8}$

 d. $\frac{8}{10} + \frac{5}{10}$

 e. $\frac{3}{5} + \frac{6}{5}$

 f. $\frac{4}{3} + \frac{2}{3}$

7. Solve. Use a number line to model your answer.

 a. $\frac{11}{9} - \frac{5}{9}$

 b. $\frac{13}{12} + \frac{4}{12}$

Name ____ Date ______________________

1. Use the following three fractions to write two subtraction and two addition number sentences.

a. $\frac{5}{6}, \frac{4}{6}, \frac{9}{6}$	b. $\frac{5}{9}, \frac{13}{9}, \frac{8}{9}$

2. Solve. Model each subtraction problem with a number line, and solve by both counting up and subtracting.

a. $1 - \frac{5}{8}$

b. $1 - \frac{2}{5}$

c. $1\frac{3}{6} - \frac{5}{6}$

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

e. $1\frac{1}{3} - \frac{2}{3}$

f. $1\frac{1}{5} - \frac{2}{5}$

3. Find the difference in two ways. Use number bonds to decompose the total. Part (a) has been completed for you.

a. $1\frac{2}{5} - \frac{4}{5}$

$\frac{5}{5}$ $\frac{2}{5}$

$\frac{5}{5} + \frac{2}{5} = \frac{7}{5}$

$\frac{7}{5} - \frac{4}{5} = \frac{3}{5}$

$\frac{5}{5} - \frac{4}{5} = \frac{1}{5}$

$\frac{1}{5} + \frac{2}{5} = \frac{3}{5}$

b. $1\frac{3}{8} - \frac{7}{8}$

c. $1\frac{1}{4} - \frac{3}{4}$

d. $1\frac{2}{7} - \frac{5}{7}$

e. $1\frac{3}{10} - \frac{7}{10}$

Name ____ Date ______________________

1. Show one way to solve each problem. Express sums and differences as a mixed number when possible. Use number bonds when it helps you. Part (a) is partially completed.

a. $\frac{1}{3} + \frac{2}{3} + \frac{1}{3}$ $= \frac{3}{3} + \frac{1}{3} = 1 + \frac{1}{3}$ = ________	b. $\frac{5}{8} + \frac{5}{8} + \frac{3}{8}$	c. $\frac{4}{6} + \frac{6}{6} + \frac{1}{6}$
d. $1\frac{2}{12} - \frac{2}{12} - \frac{1}{12}$	e. $\frac{5}{7} + \frac{1}{7} + \frac{4}{7}$	f. $\frac{4}{10} + \frac{7}{10} + \frac{9}{10}$
g. $1 - \frac{3}{10} - \frac{1}{10}$	h. $1\frac{3}{5} - \frac{4}{5} - \frac{1}{5}$	i. $\frac{10}{15} + \frac{7}{15} + \frac{12}{15} + \frac{1}{15}$

2. Bonnie used two different strategies to solve $\frac{5}{10} + \frac{4}{10} + \frac{3}{10}$.

Bonnie's First Strategy

$$\frac{5}{10} + \frac{4}{10} + \frac{3}{10} = \frac{9}{10} + \frac{3}{10} = \frac{10}{10} + \frac{2}{10} = 1\frac{2}{10}$$

$\frac{1}{10}$ $\frac{2}{10}$

Bonnie's Second Strategy

$$\frac{5}{10} + \frac{4}{10} + \frac{3}{10} = \frac{12}{10} = 1 + \frac{2}{10} = 1\frac{2}{10}$$

$\frac{10}{10}$ $\frac{2}{10}$

Which strategy do you like best? Why?

3. You gave one solution for each part of Problem 1. Now, for each problem indicated below, give a different solution method.

1(b) $\frac{5}{8} + \frac{5}{8} + \frac{3}{8}$

1(e) $\frac{5}{7} + \frac{1}{7} + \frac{4}{7}$

1(h) $1\frac{3}{5} - \frac{4}{5} - \frac{1}{5}$

Name ____ Date ____________________

Use the RDW process to solve.

1. Isla walked $\frac{3}{4}$ mile each way to and from school on Wednesday. How many miles did Isla walk that day?

2. Zach spent $\frac{2}{3}$ hour reading on Friday and $1\frac{1}{3}$ hours reading on Saturday. How much more time did he read on Saturday than on Friday?

3. Mrs. Cashmore bought a large melon. She cut a piece that weighed $1\frac{1}{8}$ pounds and gave it to her neighbor. The remaining piece of melon weighed $\frac{6}{8}$ pound. How much did the whole melon weigh?

4. Ally's little sister wanted to help her make some oatmeal cookies. First, she put $\frac{5}{8}$ cup of oatmeal in the bowl. Next, she added another $\frac{5}{8}$ cup of oatmeal. Finally, she added another $\frac{5}{8}$ cup of oatmeal. How much oatmeal did she put in the bowl?

5. Marcia baked 2 pans of brownies. Her family ate $1\frac{5}{6}$ pans. What fraction of a pan of brownies was left?

6. Joanie wrote a letter that was $1\frac{1}{4}$ pages long. Katie wrote a letter that was $\frac{3}{4}$ page shorter than Joanie's letter. How long was Katie's letter?

Name ____ Date ______________________

1. Use a tape diagram to represent each addend. Decompose one of the tape diagrams to make like units. Then, write the complete number sentence.

a. $\frac{1}{3} + \frac{1}{6}$

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

c. $\frac{3}{4} + \frac{1}{8}$

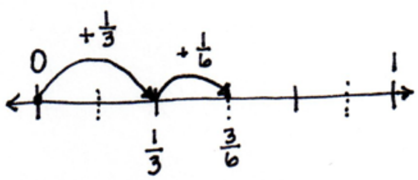
d. $\frac{1}{4} + \frac{5}{12}$

e. $\frac{3}{8} + \frac{1}{2}$

f. $\frac{3}{5} + \frac{3}{10}$

2. Estimate to determine if the sum is between 0 and 1 or 1 and 2. Draw a number line to model the addition. Then, write a complete number sentence. The first one has been completed for you.

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



b. $\frac{3}{5}+\frac{7}{10}$

c. $\frac{5}{12}+\frac{1}{4}$

d. $\frac{3}{4}+\frac{5}{8}$

e. $\frac{7}{8}+\frac{3}{4}$

f. $\frac{1}{6}+\frac{5}{3}$

3. Solve the following addition problem without drawing a model. Show your work.

$$\frac{5}{6}+\frac{1}{3}$$

Name ______________________________ Date ________________

1. Draw a tape diagram to represent each addend. Decompose one of the tape diagrams to make like units. Then, write a complete number sentence. Use a number bond to write each sum as a mixed number.

a. $\frac{7}{8} + \frac{1}{4}$

b. $\frac{4}{8} + \frac{2}{4}$

c. $\frac{4}{6} + \frac{1}{2}$

d. $\frac{3}{5} + \frac{8}{10}$

2. Draw a number line to model the addition. Then, write a complete number sentence. Use a number bond to write each sum as a mixed number.

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

b. $\frac{3}{4} + \frac{3}{8}$

c. $\frac{4}{10} + \frac{4}{5}$

d. $\frac{1}{3} + \frac{5}{6}$

3. Solve. Write the sum as a mixed number. Draw a model if needed.

a. $\frac{1}{2} + \frac{6}{8}$

b. $\frac{7}{8} + \frac{3}{4}$

c. $\frac{5}{6} + \frac{1}{3}$

d. $\frac{9}{10} + \frac{2}{5}$

e. $\frac{4}{12} + \frac{3}{4}$

f. $\frac{1}{2} + \frac{5}{6}$

g. $\frac{3}{12} + \frac{5}{6}$

h. $\frac{7}{10} + \frac{4}{5}$

Name ______________________________ Date ____________________

1. Draw a tape diagram to match each number sentence. Then, complete the number sentence.

   a. $2 + \frac{1}{4} =$ ________
   b. $3 + \frac{2}{3} =$ ________

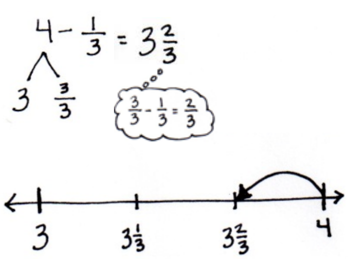
   c. $2 - \frac{1}{5} =$ ________
   d. $3 - \frac{3}{4} =$ ________

2. Use the following three numbers to write two subtraction and two addition number sentences.

   a. $4,\ 4\frac{5}{8},\ \frac{5}{8}$
   b. $\frac{2}{7},\ 5\frac{5}{7},\ 6$

3. Solve using a number bond. Draw a number line to represent each number sentence. The first one has been done for you.

   a. $4 - \frac{1}{3} =$ $3\frac{2}{3}$
   b. $8 - \frac{5}{6} =$ ________



c. $7 - \frac{4}{5} =$ ________

d. $3 - \frac{3}{10} =$ ________

4. Complete the subtraction sentences using number bonds.

a. $6 - \frac{1}{4} =$ ________

b. $7 - \frac{2}{10} =$ ________

c. $5 - \frac{5}{6} =$ ________

d. $6 - \frac{6}{8} =$ ________

e. $3 - \frac{7}{8} =$ ________

f. $26 - \frac{7}{10} =$ ________

Name ____ Date ______________________

1. Circle any fractions that are equivalent to a whole number. Record the whole number below the fraction.

   a. Count by 1 fourths. Start at 0 fourths. Stop at 6 fourths.

   $\frac{0}{4}$, $\frac{1}{4}$,

   0

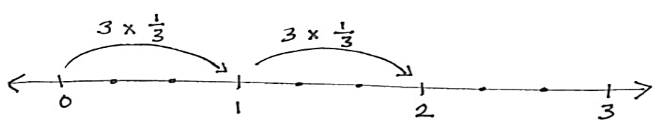
   b. Count by 1 sixths. Start at 0 sixths. Stop at 14 sixths.

2. Use parentheses to show how to make ones in the following number sentence.

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

3. Multiply, as shown below. Draw a number line to support your answer.

   a. $6 \times \frac{1}{3}$



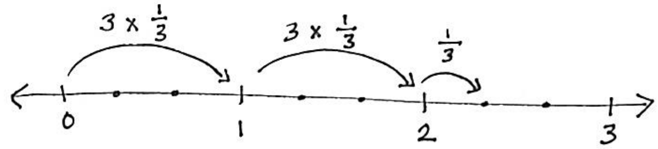
$$6 \times \frac{1}{3} = 2 \times \frac{3}{3} = 2$$

   b. $10 \times \frac{1}{2}$

   c. $8 \times \frac{1}{4}$

4. Multiply, as shown below. Write the product as a mixed number. Draw a number line to support your answer.

   a. 7 copies of 1 third



$$7 \times \frac{1}{3} = \left(2 \times \frac{3}{3}\right) + \frac{1}{3} = 2 + \frac{1}{3} = 2\frac{1}{3}$$

   b. 7 copies of 1 fourth

   c. 11 groups of 1 fifth

   d. $7 \times \frac{1}{2}$

   e. $9 \times \frac{1}{5}$

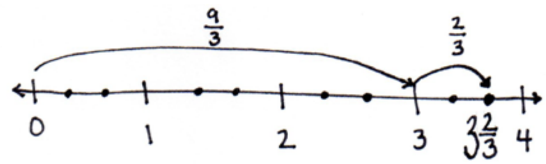
Name ______________________________ Date ______________

1. Rename each fraction as a mixed number by decomposing it into two parts as shown below. Model the decomposition with a number line and a number bond.

a. $\frac{11}{3}$

$$\frac{11}{3} = \frac{9}{3} + \frac{2}{3} = 3 + \frac{2}{3} = 3\frac{2}{3}$$

$\frac{9}{3}$ $\frac{2}{3}$



b. $\frac{13}{4}$

c. $\frac{16}{5}$

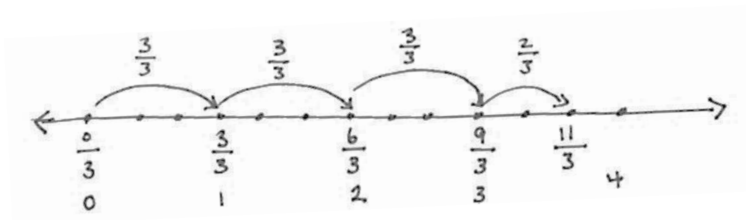
d. $\frac{15}{2}$

e. $\frac{17}{3}$

2. Convert each fraction to a mixed number. Show your work as in the example. Model with a number line.

a. $\frac{11}{3}$

$$\frac{11}{3} = \frac{3 \times 3}{3} + \frac{2}{3} = 3 + \frac{2}{3} = 3\frac{2}{3}$$



b. $\frac{13}{2}$

c. $\frac{18}{4}$

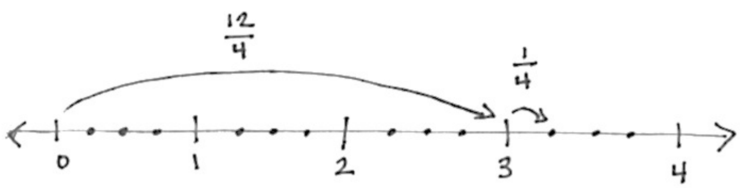
3. Convert each fraction to a mixed number.

a. $\frac{14}{3}$ =	b. $\frac{17}{4}$ =	c. $\frac{27}{5}$ =
d. $\frac{28}{6}$ =	e. $\frac{23}{7}$ =	f. $\frac{37}{8}$ =
g. $\frac{51}{9}$ =	h. $\frac{74}{10}$ =	i. $\frac{45}{12}$ =

Name ____ Date ______________________

1. Convert each mixed number to a fraction greater than 1. Draw a number line to model your work.

a. $3\frac{1}{4}$



$3\frac{1}{4} = 3 + \frac{1}{4} = \frac{12}{4} + \frac{1}{4} = \frac{13}{4}$

b. $4\frac{2}{5}$

c. $5\frac{3}{8}$

d. $3\frac{7}{10}$

e. $6\frac{2}{9}$

2. Convert each mixed number to a fraction greater than 1. Show your work as in the example.
(Note: $3 \times \frac{4}{4} = \frac{3 \times 4}{4}$.)

a. $3\frac{3}{4}$

$3\frac{3}{4} = 3 + \frac{3}{4} = \left(3 \times \frac{4}{4}\right) + \frac{3}{4} = \frac{12}{4} + \frac{3}{4} = \frac{15}{4}$

b. $5\frac{2}{3}$

c. $4\frac{1}{5}$

d. $3\frac{7}{8}$

3. Convert each mixed number to a fraction greater than 1.

a. $2\frac{1}{3}$	b. $2\frac{3}{4}$	c. $3\frac{2}{5}$
d. $3\frac{1}{6}$	e. $4\frac{5}{12}$	f. $4\frac{2}{5}$
g. $4\frac{1}{10}$	h. $5\frac{1}{5}$	i. $5\frac{5}{6}$
j. $6\frac{1}{4}$	k. $7\frac{1}{2}$	l. $7\frac{11}{12}$

Name ____ Date ______________________

1. a. Plot the following points on the number line without measuring.

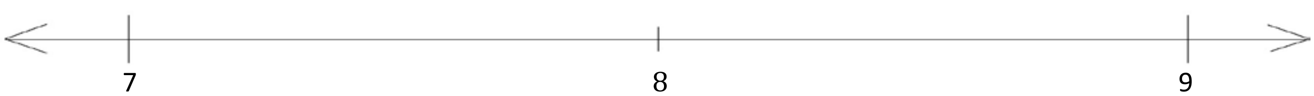
   i. $2\frac{1}{6}$ ii. $3\frac{3}{4}$ iii. $\frac{33}{9}$

   b. Use the number line in Problem 1(a) to compare the fractions by writing >, <, or =.

   i. $\frac{33}{9}$ __________ $2\frac{1}{6}$ ii. $\frac{33}{9}$ __________ $3\frac{3}{4}$

2. a. Plot the following points on the number line without measuring.

   i. $\frac{65}{8}$ ii. $8\frac{5}{6}$ iii. $\frac{29}{4}$



   b. Compare the following by writing >, <, or =.

   i. $8\frac{5}{6}$ __________ $\frac{65}{8}$ ii. $\frac{29}{4}$ ________ $\frac{65}{8}$

   c. Explain how you plotted the points in Problem 2(a).

3. Compare the fractions given below by writing >, <, or =. Give a brief explanation for each answer, referring to benchmark fractions.

a. $5\frac{1}{3}$ ____________ $5\frac{3}{4}$

b. $\frac{12}{4}$ ____________ $\frac{25}{8}$

c. $\frac{18}{6}$ ____________ $\frac{17}{4}$

d. $5\frac{3}{5}$ ____________ $5\frac{5}{10}$

e. $6\frac{3}{4}$ ____________ $6\frac{3}{5}$

f. $\frac{33}{6}$ ____________ $\frac{34}{7}$

g. $\frac{23}{10}$ ____________ $\frac{20}{8}$

h. $\frac{27}{12}$ ____________ $\frac{15}{6}$

i. $2\frac{49}{50}$ ____________ $2\frac{99}{100}$

j. $6\frac{5}{9}$ ____________ $6\frac{49}{100}$

Name ______________________________ Date ____________

1. Draw a tape diagram to model each comparison. Use >, <, or = to compare.

a. $2\frac{3}{4}$ ________ $2\frac{7}{8}$

b. $10\frac{2}{6}$ ________ $10\frac{1}{3}$

c. $5\frac{3}{8}$ ________ $5\frac{1}{4}$

d. $2\frac{5}{9}$ ________ $\frac{21}{3}$

2. Use an area model to make like units. Then, use >, <, or = to compare.

a. $2\frac{4}{5}$ ________ $\frac{11}{4}$

b. $2\frac{3}{5}$ ________ $2\frac{2}{3}$

3. Compare each pair of fractions using >, <, or = using any strategy.

a. $6\frac{1}{2}$ _______ $6\frac{3}{8}$

b. $7\frac{5}{6}$ _______ $7\frac{11}{12}$

c. $3\frac{6}{10}$ _______ $3\frac{2}{5}$

d. $2\frac{2}{5}$ _______ $2\frac{8}{15}$

e. $\frac{10}{3}$ _______ $\frac{10}{4}$

f. $\frac{12}{4}$ _______ $\frac{10}{3}$

g. $\frac{38}{9}$ _______ $4\frac{2}{12}$

h. $\frac{23}{4}$ _______ $5\frac{2}{3}$

i. $\frac{30}{8}$ _______ $3\frac{7}{12}$

j. $10\frac{3}{4}$ _______ $10\frac{4}{6}$

Name ______________________________ Date ______________

1. A group of students measured the lengths of their shoes. The measurements are shown in the table. Make a line plot to display the data.

Students	**Length of shoe (in inches)**
Collin	$8\frac{1}{2}$
Dickon	$7\frac{3}{4}$
Ben	$7\frac{1}{2}$
Martha	$7\frac{3}{4}$
Lilias	8
Susan	$8\frac{1}{2}$
Frances	$7\frac{3}{4}$
Mary	$8\frac{3}{4}$

2. Solve each problem.

   a. Who has a shoe length 1 inch longer than Dickon's?

   b. Who has a shoe length 1 inch shorter than Susan's?

c. How many quarter inches long is Martha's shoe length?

d. What is the difference, in inches, between Lilias's and Martha's shoe lengths?

e. Compare the shoe length of Ben and Frances using >, <, or =.

f. How many students had shoes that measured less than 8 inches?

g. How many students measured the length of their shoes?

h. Mr. Jones's shoe length was $\frac{25}{2}$ inches. Use >, <, or = to compare the length of Mr. Jones's shoe to the length of the longest student shoe length. Who had the longer shoe?

3. Using the information in the table and on the line plot, write a question you could solve by using the line plot. Solve.

Name ____ Date ______________________

1. Estimate each sum or difference to the nearest half or whole number by rounding. Explain your estimate using words or a number line.

   a. $3\frac{1}{10} + 1\frac{3}{4} \approx$ ________

   b. $2\frac{9}{10} + 4\frac{4}{5} \approx$ ________

   c. $9\frac{9}{10} - 5\frac{1}{5} \approx$ ________

   d. $4\frac{1}{9} - 1\frac{1}{10} \approx$ ________

   e. $6\frac{3}{12} + 5\frac{1}{9} \approx$ ________

2. Estimate each sum or difference to the nearest half or whole number by rounding. Explain your estimate using words or a number line.

   a. $\frac{16}{3} + \frac{17}{8} \approx$ ________

   b. $\frac{17}{3} - \frac{15}{4} \approx$ ________

   c. $\frac{57}{8} + \frac{26}{8} \approx$ ________

3. Gina's estimate for $7\frac{5}{8} - 2\frac{1}{2}$ was 5. Dominick's estimate was $5\frac{1}{2}$. Whose estimate do you think is closer to the actual difference? Explain.

4. Use benchmark numbers or mental math to estimate the sum or difference.

a. $10\frac{3}{4} + 12\frac{11}{12}$	b. $2\frac{7}{10} + 23\frac{3}{8}$
c. $15\frac{9}{12} - 8\frac{11}{12}$	d. $\frac{56}{7} - \frac{31}{8}$

Name ____ Date ______________________

1. Solve.

a. $4\frac{1}{3} + \frac{1}{3}$

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

c. $\frac{2}{6} + 3\frac{4}{6}$

d. $\frac{5}{8} + 7\frac{3}{8}$

2. Complete the number sentences.

a. $3\frac{5}{6}$ + _____ = 4	b. $5\frac{3}{7}$ + ____ = 6
c. 5 = $4\frac{1}{8}$ + _____	d. 15 = $14\frac{4}{12}$ +_____

3. Draw a number bond and the arrow way to show how to make one. Solve.

a. $2\frac{4}{5} + \frac{2}{5}$

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

$2\frac{4}{5} \xrightarrow{+\frac{1}{5}} 3 \xrightarrow{+\frac{1}{5}} 3\frac{1}{5}$

b. $3\frac{2}{3} + \frac{2}{3}$

c. $4\frac{4}{6} + \frac{5}{6}$

4. Solve.

a. $2\frac{3}{5} + \frac{3}{5}$	b. $3\frac{6}{8} + \frac{4}{8}$
c. $5\frac{4}{6} + \frac{3}{6}$	d. $\frac{7}{10} + 6\frac{6}{10}$
e. $\frac{5}{10} + 8\frac{9}{10}$	f. $7\frac{8}{12} + \frac{11}{12}$
g. $3\frac{90}{100} + \frac{58}{100}$	h. $\frac{60}{100} + 14\frac{79}{100}$

5. To solve $4\frac{8}{10} + \frac{3}{10}$, Carmen thought, "$4\frac{8}{10} + \frac{2}{10} = 5$, and $5 + \frac{1}{10} = 5\frac{1}{10}$."
Benny thought, "$4\frac{8}{10} + \frac{3}{10} = 4\frac{11}{10} = 4 + \frac{10}{10} + \frac{1}{10} = 5\frac{1}{10}$." Explain why Carmen and Benny are both right.

Name ______________________________ Date ____________________

1. Solve.

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

$2 \quad \frac{1}{3} \quad 1 \quad \frac{2}{3}$

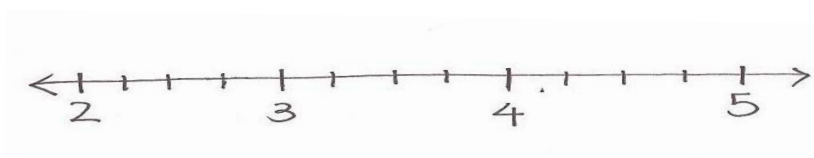
b. $2\frac{2}{5} + 2\frac{2}{5}$

c. $3\frac{3}{8} + 1\frac{5}{8}$

2. Solve. Use a number line to show your work.

a. $2\frac{2}{4} + 1\frac{3}{4} = 3 + \frac{5}{4} =$ ______

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



b. $3\frac{4}{6} + 2\frac{5}{6}$

c. $1\frac{9}{12} + 1\frac{7}{12}$

3. Solve. Use the arrow way to show how to make one.

a. $2\frac{3}{4} + 1\frac{3}{4} = 3\frac{3}{4} + \frac{3}{4} =$

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

$3\frac{3}{4} \xrightarrow{+\frac{1}{4}} 4 \longrightarrow$

b. $2\frac{7}{8} + 3\frac{4}{8}$

c. $1\frac{7}{9} + 4\frac{5}{9}$

4. Solve. Use whichever method you prefer.

a. $1\frac{4}{5} + 1\frac{3}{5}$

b. $3\frac{8}{10} + 1\frac{5}{10}$

c. $2\frac{5}{7} + 3\frac{6}{7}$

Name ____ Date ______________________

1. Subtract. Model with a number line or the arrow way.

a. $6\frac{3}{5} - \frac{1}{5}$

b. $4\frac{9}{12} - \frac{7}{12}$

c. $7\frac{1}{4} - \frac{3}{4}$

d. $8\frac{3}{8} - \frac{5}{8}$

2. Use decomposition to subtract the fractions. Model with a number line or the arrow way.

a. $2\frac{2}{5} - \frac{4}{5}$

$\frac{2}{5}$ $\frac{2}{5}$

b. $2\frac{1}{3} - \frac{2}{3}$

c. $4\frac{1}{6} - \frac{4}{6}$

d. $3\frac{3}{6} - \frac{5}{6}$

e. $9\frac{3}{8} - \frac{7}{8}$

f. $7\frac{1}{10} - \frac{6}{10}$

g. $10\frac{1}{8} - \frac{5}{8}$

h. $9\frac{4}{12} - \frac{7}{12}$

i. $11\frac{3}{5} - \frac{4}{5}$

j. $17\frac{1}{9} - \frac{5}{9}$

3. Decompose the total to subtract the fractions.

a. $4\frac{1}{8} - \frac{3}{8} = 3\frac{1}{8} + \frac{5}{8} = 3\frac{6}{8}$

$3\frac{1}{8}$ $\quad$ 1

b. $5\frac{2}{5} - \frac{3}{5}$

c. $7\frac{1}{8} - \frac{3}{8}$

d. $3\frac{3}{9} - \frac{4}{9}$

e. $6\frac{3}{10} - \frac{7}{10}$

f. $2\frac{5}{9} - \frac{8}{9}$

Name ____ Date ______________________

1. Write a related addition sentence. Subtract by counting on. Use a number line or the arrow way to help. The first one has been partially done for you.

   a. $3\frac{2}{5} - 1\frac{4}{5} =$ ____

   $1\frac{4}{5} +$ _____ $= 3\frac{2}{5}$

   b. $5\frac{3}{8} - 2\frac{5}{8}$

2. Subtract, as shown in Problem 2(a) below, by decomposing the fractional part of the number you are subtracting. Use a number line or the arrow way to help you.

   a. $4\frac{1}{5} - 1\frac{3}{5} = 3\frac{1}{5} - \frac{3}{5} = 2\frac{3}{5}$

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

   b. $4\frac{1}{7} - 2\frac{4}{7}$

   c. $5\frac{5}{12} - 3\frac{8}{12}$

3. Subtract, as shown in 3(a) below, by decomposing to take one out.

   a. $5\frac{5}{8} - 2\frac{7}{8} = 3\frac{5}{8} - \frac{7}{8} =$

   $2\frac{5}{8}$ $\quad 1$

   b. $4\frac{3}{12} - 3\frac{8}{12}$

   c. $9\frac{1}{10} - 6\frac{9}{10}$

4. Solve using any strategy.

   a. $6\frac{1}{9} - 4\frac{3}{9}$

   b. $5\frac{3}{10} - 3\frac{6}{10}$

   c. $8\frac{7}{12} - 5\frac{9}{12}$

   d. $7\frac{4}{100} - 2\frac{92}{100}$

Name ____ Date ______________________

1. Subtract.

   a. $5\frac{1}{4} - \frac{3}{4}$

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

   b. $6\frac{3}{8} - \frac{6}{8}$

   c. $7\frac{4}{6} - \frac{5}{6}$

2. Subtract the ones first.

   a. $4\frac{1}{5} - 1\frac{3}{5} = 3\frac{1}{5} - \frac{3}{5} = 2\frac{3}{5}$

   $2 \quad \frac{6}{5}$

   b. $4\frac{3}{6} - 2\frac{5}{6}$

c. $8\frac{3}{8} - 2\frac{5}{8}$

d. $13\frac{3}{10} - 8\frac{7}{10}$

3. Solve using any strategy.

a. $7\frac{3}{12} - 4\frac{9}{12}$

b. $9\frac{6}{10} - 5\frac{8}{10}$

c. $17\frac{2}{16} - 9\frac{7}{16}$

d. $12\frac{5}{100} - 8\frac{94}{100}$

Name ____ Date ______________________

1. Draw and label a tape diagram to show the following are true.

   a. 8 thirds = 4 × (2 thirds) = (4 × 2) thirds

   b. 15 eighths = 3 × (5 eighths) = (3 × 5) eighths

2. Write the expression in unit form to solve.

   a. $10 \times \frac{2}{5}$

   b. $3 \times \frac{5}{6}$

   c. $9 \times \frac{4}{9}$

   d. $7 \times \frac{3}{4}$

3. Solve.

a. $6 \times \frac{3}{4}$

b. $7 \times \frac{5}{8}$

c. $13 \times \frac{2}{3}$

d. $18 \times \frac{2}{3}$

e. $14 \times \frac{7}{10}$

f. $7 \times \frac{14}{100}$

4. Mrs. Smith bought some orange juice. Each member of her family drank $\frac{2}{3}$ cup for breakfast. There are five people in her family. How many cups of orange juice did they drink?

Name ____ Date ____________________

1. Draw a tape diagram to represent $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}$.

   Write a multiplication expression equal to $\frac{2}{3}+\frac{2}{3}+\frac{2}{3}+\frac{2}{3}$.

2. Draw a tape diagram to represent $\frac{7}{8}+\frac{7}{8}+\frac{7}{8}$.

   Write a multiplication expression equal to $\frac{7}{8}+\frac{7}{8}+\frac{7}{8}$.

3. Rewrite each repeated addition problem as a multiplication problem and solve. Express the result as a mixed number. The first one has been completed for you.

   a. $\frac{7}{5}+\frac{7}{5}+\frac{7}{5}+\frac{7}{5}=4\times\frac{7}{5}=\frac{4\times 7}{5}=\frac{28}{5}=5\frac{3}{5}$

   b. $\frac{7}{10}+\frac{7}{10}+\frac{7}{10}$

   c. $\frac{5}{12}+\frac{5}{12}+\frac{5}{12}+\frac{5}{12}+\frac{5}{12}+\frac{5}{12}$

   d. $\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}+\frac{3}{8}$

4. Solve using any method. Express your answers as whole or mixed numbers.

   a. $7\times\frac{2}{9}$

   b. $11\times\frac{2}{3}$

c. $40 \times \frac{2}{6}$

d. $24 \times \frac{5}{6}$

e. $23 \times \frac{3}{5}$

f. $34 \times \frac{2}{8}$

5. Coleton is playing with interlocking blocks that are each $\frac{3}{4}$ inch tall. He makes a tower 17 blocks tall. How tall is his tower in inches?

6. There were 11 players on Mr. Maiorani's softball team. They each ate $\frac{3}{8}$ of a pizza. How many pizzas did they eat?

7. A bricklayer places 12 bricks end to end along the entire outside length of a shed's wall. Each brick is $\frac{3}{4}$ foot long. How many feet long is that wall of the shed?

Name ____ Date ______________________

1. Draw tape diagrams to show two ways to represent 3 units of $5\frac{1}{12}$.

Write a multiplication expression to match each tape diagram.

2. Solve the following using the distributive property. The first one has been done for you. (As soon as you are ready, you may omit the step that is in line 2.)

a. $3 \times 6\frac{4}{5} = 3 \times \left(6 + \frac{4}{5}\right)$ $= (3 \times 6) + \left(3 \times \frac{4}{5}\right)$ $= 18 + \frac{12}{5}$ $= 18 + 2\frac{2}{5}$ $= 20\frac{2}{5}$	b. $5 \times 4\frac{1}{6}$
c. $6 \times 2\frac{3}{5}$	d. $2 \times 7\frac{3}{10}$

e. $8 \times 7\frac{1}{4}$	f. $3\frac{3}{8} \times 12$

3. Sara's street is $2\frac{3}{10}$ miles long. She ran the length of the street 6 times. How far did she run?

4. Kelly's new puppy weighed $4\frac{7}{10}$ pounds when she brought him home. Now, he weighs six times as much. How much does he weigh now?

Name ______________________________ Date ________________

1. Fill in the unknown factors.

   a. $8 \times 4\frac{4}{7} = (\_\_\_\_ \times 4) + (\_\_\_\_ \times \frac{4}{7})$

   b. $9 \times 7\frac{7}{10} = (9 \times \_\_\_\_) + (9 \times \_\_\_\_)$

2. Multiply. Use the distributive property.

   a. $6 \times 8\frac{2}{7}$

   b. $7\frac{3}{4} \times 9$

   c. $9 \times 8\frac{7}{9}$

   d. $25\frac{7}{8} \times 3$

e. $4 \times 20\frac{8}{12}$

f. $30\frac{3}{100} \times 12$

3. Brandon is cutting 9 boards for a woodworking project. Each board is $4\frac{5}{8}$ feet long. What is the total length of the boards?

4. Rocky the collie ate $3\frac{1}{4}$ cups of dog food each day for two weeks. How much dog food did Rocky eat in that time?

5. At the class party, each student will be given a container filled with $8\frac{5}{8}$ ounces of juice. There are 25 students in the class. How many ounces of juice does the teacher need to buy?

Name ____ Date _____________________

Use the RDW process to solve.

1. Ground turkey is sold in packages of $2\frac{1}{2}$ pounds. Dawn bought eight times as much turkey that is sold in 1 package for her son's birthday party. How many pounds of ground turkey did Dawn buy?

2. Trevor's stack of books is $7\frac{7}{8}$ inches tall. Rick's stack is 3 times as tall. What is the difference in the heights of their stacks of books?

3. It takes $8\frac{3}{4}$ yards of fabric to make one quilt. Gail needs three times as much fabric to make three quilts. She already has two yards of fabric. How many more yards of fabric does Gail need to buy in order to make three quilts?

4. Carol made punch. She used $12\frac{3}{8}$ cups of juice and then added three times as much ginger ale. Then, she added 1 cup of lemonade. How many cups of punch did her recipe make?

5. Brandon drove $72\frac{7}{10}$ miles on Monday. He drove 3 times as far on Tuesday. How far did he drive in the two days?

6. Mrs. Reiser used $9\frac{8}{10}$ gallons of gas this week. Mr. Reiser used five times as much gas as Mrs. Reiser used this week. If Mr. Reiser pays $3 for each gallon of gas, how much did Mr. Reiser pay for gas this week?

Name ____ Date ______________________

The chart to the right shows the total monthly rainfall for a city.

1. Use the data to create a line plot at the bottom of this page and to answer the following questions.

Month	Rainfall (in inches)
January	$2\frac{2}{8}$
February	$1\frac{3}{8}$
March	$2\frac{3}{8}$
April	$2\frac{5}{8}$
May	$4\frac{1}{4}$
June	$2\frac{1}{4}$
July	$3\frac{7}{8}$
August	$3\frac{1}{4}$
September	$1\frac{5}{8}$
October	$3\frac{2}{8}$
November	$1\frac{3}{4}$
December	$1\frac{5}{8}$

2. What is the difference in rainfall from the wettest and driest months?

3. How much more rain fell in May than in April?

4. What is the combined rainfall amount for the summer months of June, July, and August?

5. How much more rain fell in the summer months than the combined rainfall for the last 4 months of the year?

6. In which months did it rain twice as much as it rained in December?

7. Each inch of rain can produce ten times that many inches of snow. If all of the rainfall in January was in the form of snow, how many inches of snow fell in January?

Name ____ Date ______________________

1. Find the sums.

a. $\frac{0}{5}+\frac{1}{5}+\frac{2}{5}+\frac{3}{5}+\frac{4}{5}+\frac{5}{5}$

b. $\frac{0}{6}+\frac{1}{6}+\frac{2}{6}+\frac{3}{6}+\frac{4}{6}+\frac{5}{6}+\frac{6}{6}$

c. $\frac{0}{7}+\frac{1}{7}+\frac{2}{7}+\frac{3}{7}+\frac{4}{7}+\frac{5}{7}+\frac{6}{7}+\frac{7}{7}$

d. $\frac{0}{8}+\frac{1}{8}+\frac{2}{8}+\frac{3}{8}+\frac{4}{8}+\frac{5}{8}+\frac{6}{8}+\frac{7}{8}+\frac{8}{8}$

e. $\frac{0}{9}+\frac{1}{9}+\frac{2}{9}+\frac{3}{9}+\frac{4}{9}+\frac{5}{9}+\frac{6}{9}+\frac{7}{9}+\frac{8}{9}+\frac{9}{9}$

f. $\frac{0}{10}+\frac{1}{10}+\frac{2}{10}+\frac{3}{10}+\frac{4}{10}+\frac{5}{10}+\frac{6}{10}+\frac{7}{10}+\frac{8}{10}+\frac{9}{10}+\frac{10}{10}$

2. Describe a pattern you notice when adding the sums of fractions with even denominators as opposed to those with odd denominators.

3. How would the sums change if the addition started with the unit fraction rather than with 0?

4. Find the sums.

a. $\frac{0}{20} + \frac{1}{20} + \frac{2}{20} + \cdots + \frac{20}{20}$

b. $\frac{0}{35} + \frac{1}{35} + \frac{2}{35} + \cdots + \frac{35}{35}$

c. $\frac{0}{36} + \frac{1}{36} + \frac{2}{36} + \cdots + \frac{36}{36}$

d. $\frac{0}{75} + \frac{1}{75} + \frac{2}{75} + \cdots + \frac{75}{75}$

e. $\frac{0}{100} + \frac{1}{100} + \frac{2}{100} + \cdots + \frac{100}{100}$

f. $\frac{0}{99} + \frac{1}{99} + \frac{2}{99} + \cdots + \frac{99}{99}$

5. How can you apply this strategy to find the sum of all the whole numbers from 0 to 50? To 99?