EUREKA MATH PUSD

A Story of Units

Pleasanton UNIFIED SCHOOL DISTRICT Mathematics Curriculum

GRADE 4 • MODULE 5

Fraction Equivalence, Ordering, and Operations

Problem Sets

Video tutorials: http://bit.ly/eurekapusd
Info for parents: http://bit.ly/pusdmath

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GRADE 4 • MODULE 5

Fraction Equivalence, Ordering, and Operations

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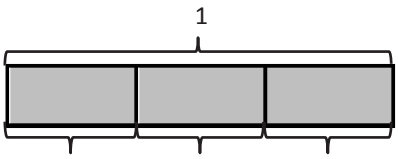
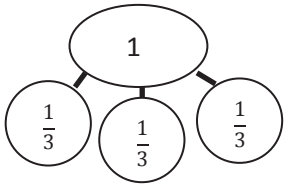
Name _____ Date _____

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

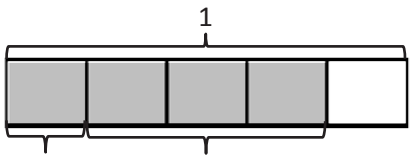
a.



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



b.



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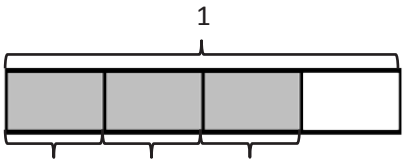

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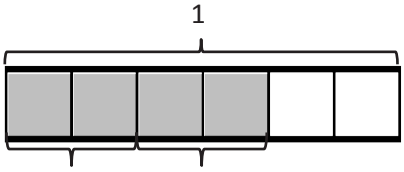
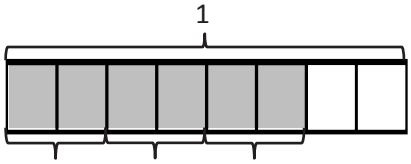
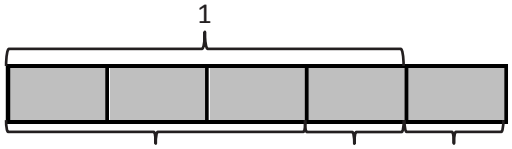


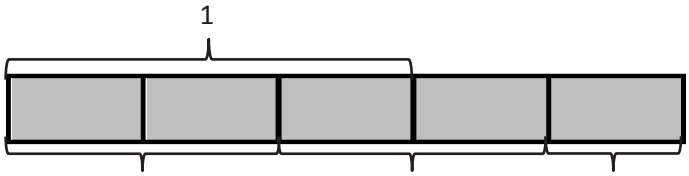
e.



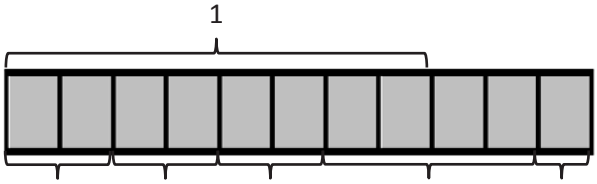
f.



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

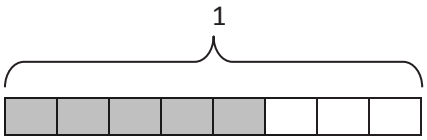
g. $1\frac{2}{3} = 1 + \frac{2}{3}$

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

Name _____ Date _____

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



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

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. $\frac{5}{3}$

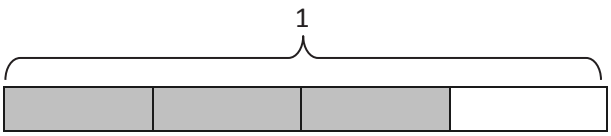
   c. $\frac{7}{5}$

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

Name _____ Date _____

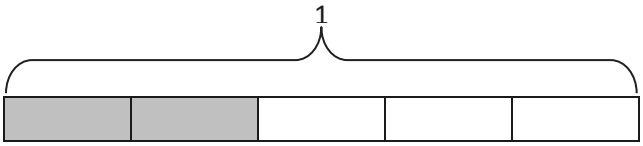
1. Decompose each fraction modeled by a tape diagram as a sum of unit fractions. Write the equivalent multiplication sentence. The first one has been done for you.

a.

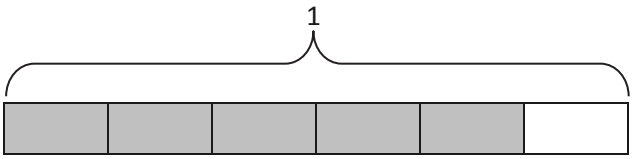


$\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ $\frac{3}{4} = 3 \times \frac{1}{4}$

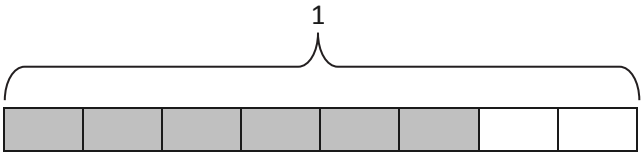
b.



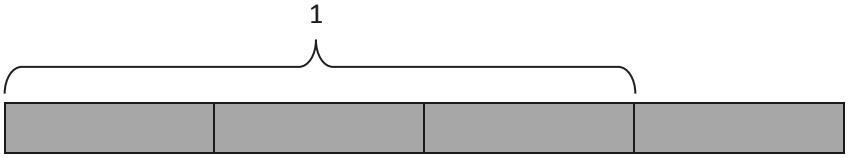
c.



d.

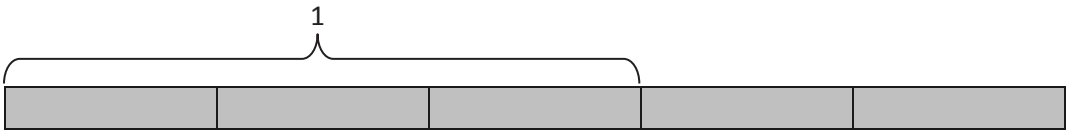


e.

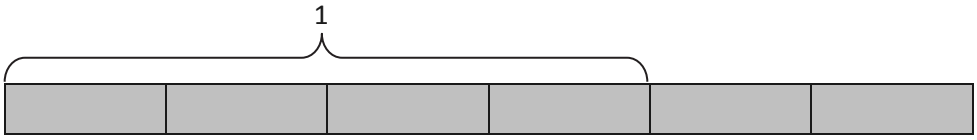


2. Write the following fractions greater than 1 as the sum of two products.

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. $\frac{7}{9}$

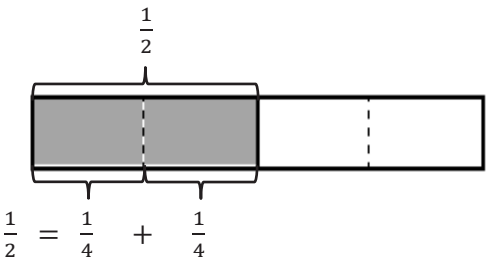
d. $\frac{7}{4}$

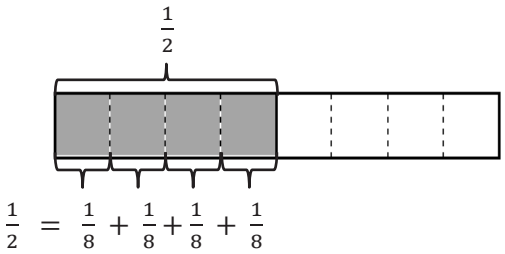
e. $\frac{7}{6}$

Name _____ Date _____

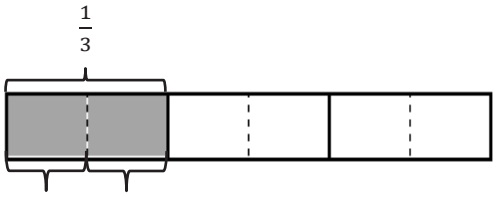
1. The total length of each tape diagram represents 1. Decompose the shaded unit fractions as the sum of smaller unit fractions in at least two different ways. The first one has been done for you.

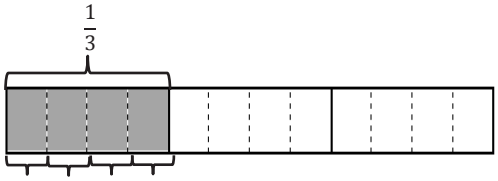
a.



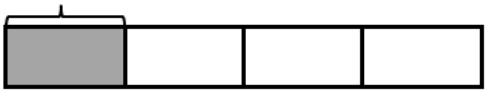


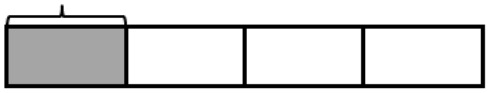
b.



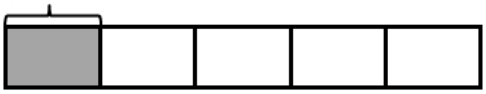


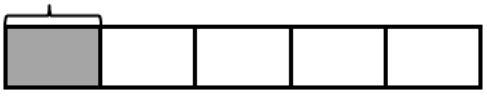
c.





d.

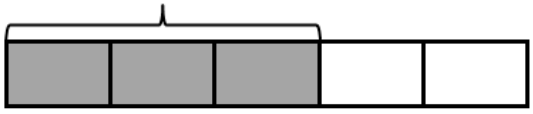


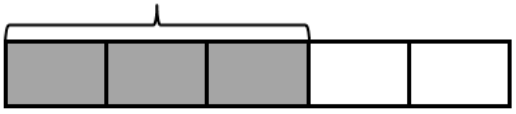


2. The total length of each tape diagram represents 1. Decompose the shaded fractions as the sum of smaller unit fractions in at least two different ways.

a.

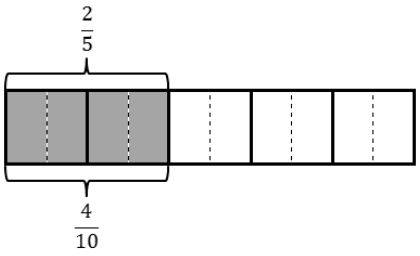
b.





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

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



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.

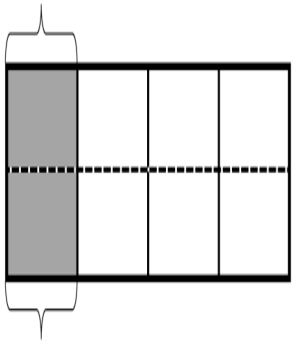
5. Show that $\frac{2}{3}$ is equivalent to $\frac{6}{9}$ using a tape diagram and a number sentence.

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

Name _____ 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

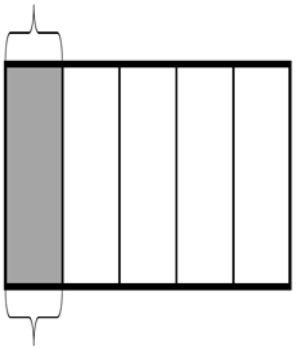


$\frac{1}{4} = \frac{2}{\quad}$

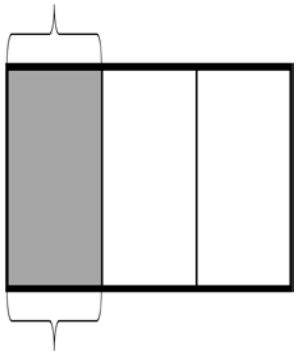
$\frac{1}{4} = \frac{1}{8} + \frac{\quad}{\quad} = \frac{\quad}{\quad}$

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

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

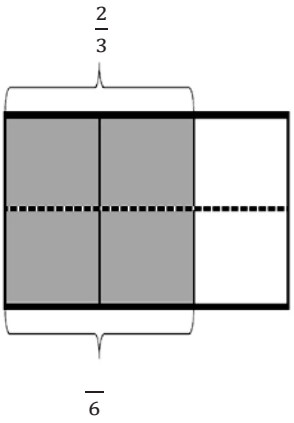
f. $\frac{1}{4} = \frac{3}{12}$

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

Name _____ Date _____

1. 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. Sixths



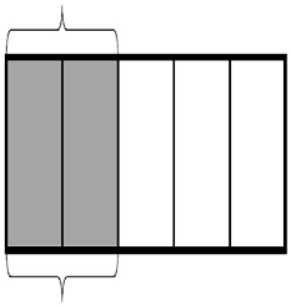
$$\frac{2}{3} = \frac{4}{\_}$$

$$\frac{1}{3} + \frac{1}{3} = \left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{6} + \frac{1}{6}\right) = \frac{4}{\_}$$

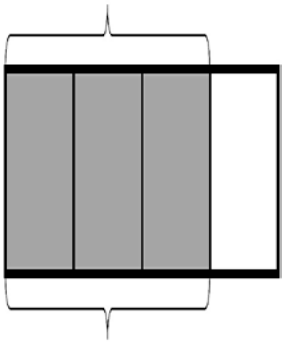
$$\left(\frac{1}{6} + \frac{1}{6}\right) + \left(\frac{1}{6} + \frac{1}{6}\right) = \left(2 \times \_\right) + \left(2 \times \_\right) = \frac{4}{\_}$$

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

b. Tenths



c. Twelfths



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

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

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.

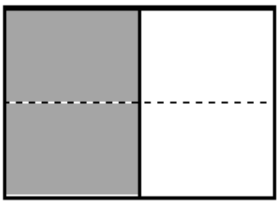
   Step 3: Partition the area model again to find an equivalent fraction.

   Step 4: Write the equivalent fractions as a number sentence. (If you've written a number sentence like this one already on this Problem Set, start over.)

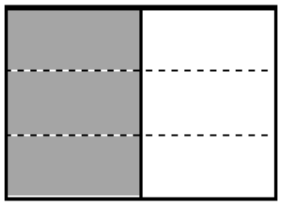
Name _____ Date _____

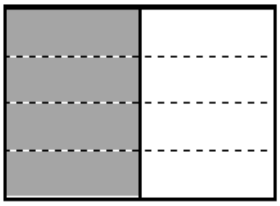
Each rectangle represents 1.

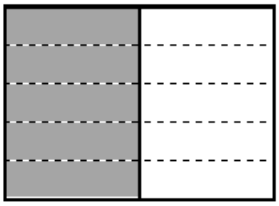
1. The shaded unit fractions have been decomposed into smaller units. Express the equivalent fractions in a number sentence using multiplication. The first one has been done for you.

a. 

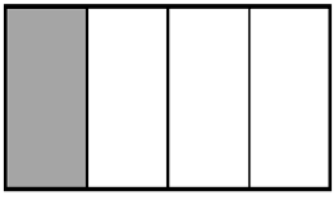
$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$

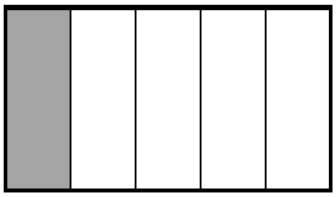
b. 

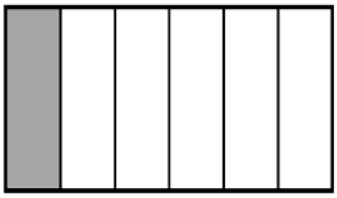
c. 

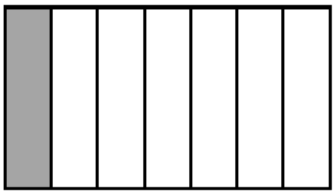
d. 

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. 

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

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

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

a.

b.

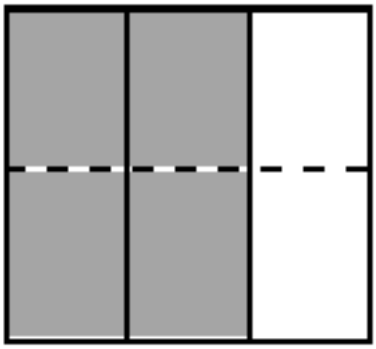
c.

Name _____ Date _____

Each rectangle represents 1.

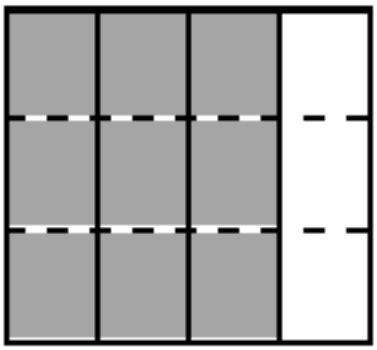
1. The shaded fractions have been decomposed into smaller units. Express the equivalent fractions in a number sentence using multiplication. The first one has been done for you.

a.

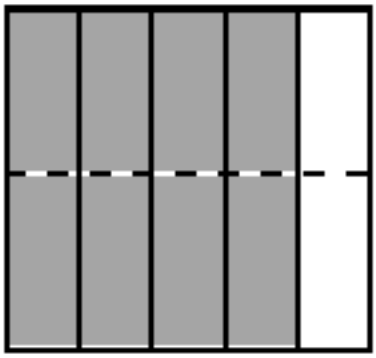


$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$

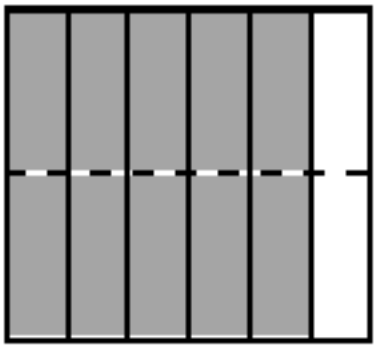
b.



c.

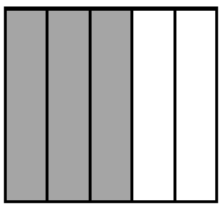


d.

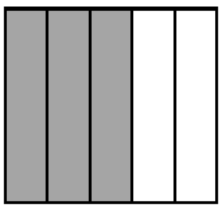


2. Decompose the shaded fractions into smaller units, as given below. Express the equivalent fractions in a number sentence using multiplication.

a. Decompose into tenths.



b. Decompose into fifteenths.



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

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

b. $\frac{2}{3} = \frac{8}{12}$

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

d. $\frac{4}{6} = \frac{8}{12}$

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

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

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

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

d. $\frac{12}{7}$

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. $\frac{4}{3} = \frac{8}{9}$

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

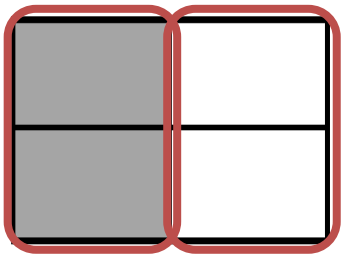
c. $\frac{4}{5} = \frac{12}{10}$

d. $\frac{4}{6} = \frac{12}{18}$

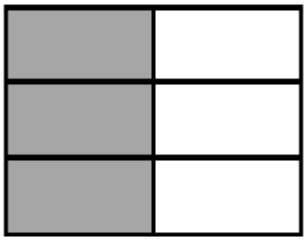
Name _____ Date _____

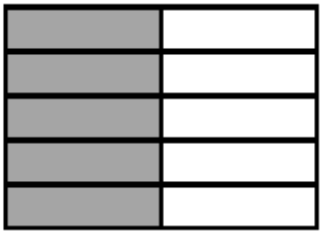
Each rectangle represents 1.

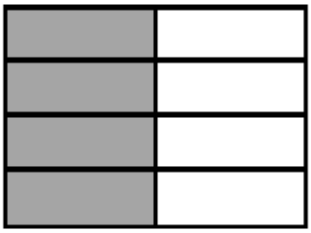
1. Compose the shaded fractions into larger fractional units. Express the equivalent fractions in a number sentence using division. The first one has been done for you.

a. 

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

b. 

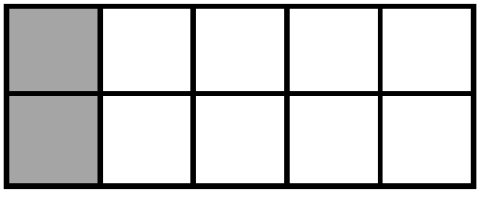
c. 

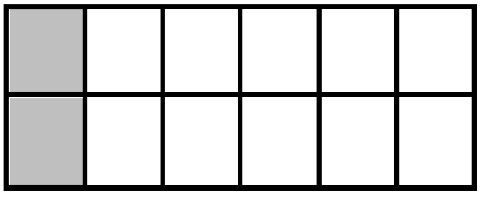
d. 

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

a. 

b. 

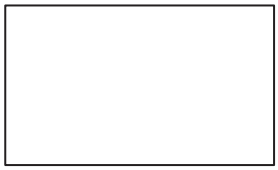
c. 

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 2 sixths. In the second area model, show 3 ninths. Show how both fractions can be renamed as the same unit fraction.



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

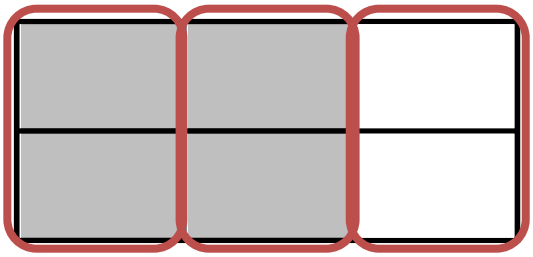
4. a. In the first area model, show 2 eighths. In the second area model, show 3 twelfths. Show how both fractions can be composed, or renamed, as the same unit fraction.

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

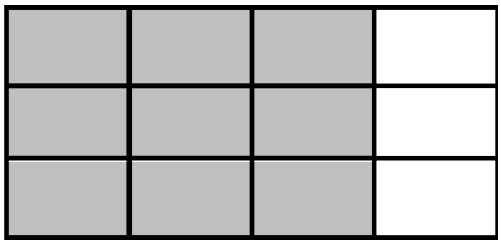
Name _____ Date _____

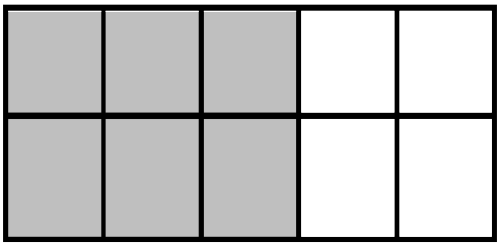
Each rectangle represents 1.

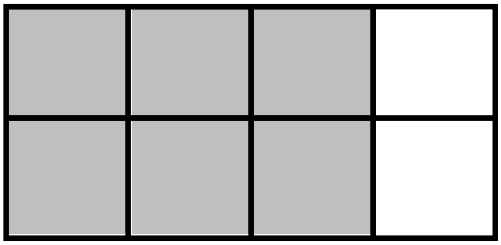
1. Compose the shaded fraction into larger fractional units. Express the equivalent fractions in a number sentence using division. The first one has been done for you.

a. 

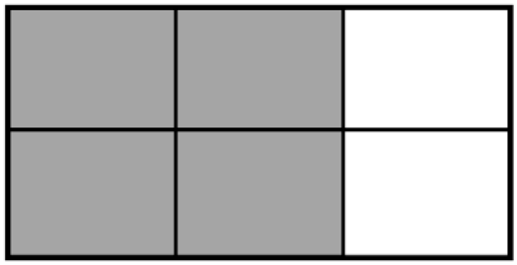
$$\frac{4}{6} = \frac{4 \div 2}{6 \div 2} = \frac{2}{3}$$

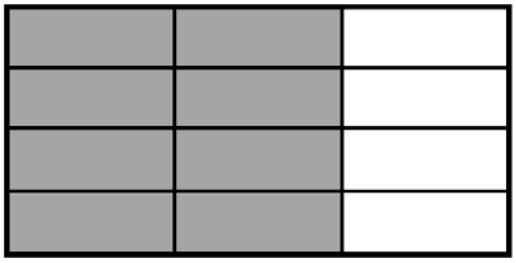
b. 

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

   b. $\frac{6}{9} = \frac{6 \div 3}{9 \div 3} = \frac{2}{3}$

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. $\frac{4}{8}$

   b. $\frac{12}{16}$

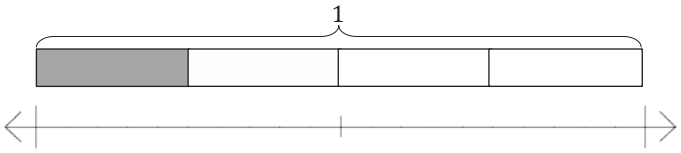
   c. $\frac{12}{20}$

   d. $\frac{16}{20}$

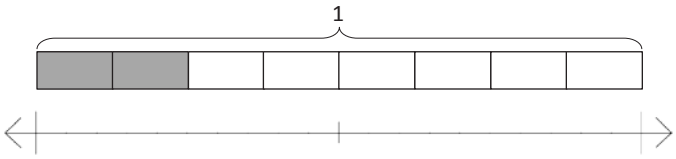
Name _____ Date _____

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 selected part of the tape diagram.

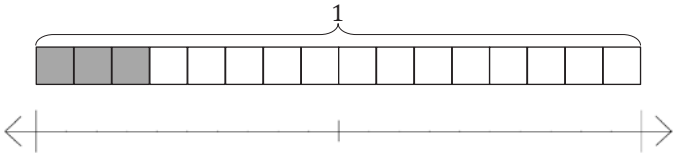
a.



b.



c.



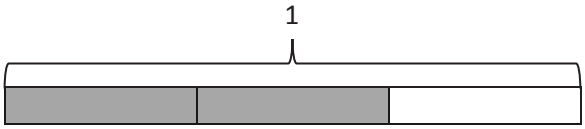
2. Write number sentences using multiplication to show:

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

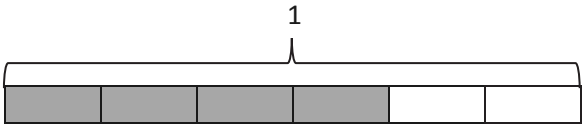
   b. The fraction represented in 1(a) is equivalent to the fraction represented in 1(c).

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 selected part of the tape diagram.

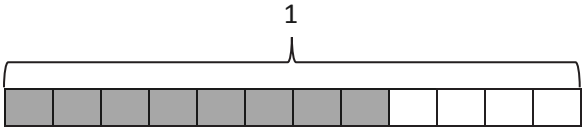
a.



b.



c.



4. Write number sentences using division to show:

   a. The fraction represented in 3(a) is equivalent to the fraction represented in 3(b).

   b. The fraction represented in 3(a) is equivalent to the fraction represented in 3(c).

5. a. Partition a number line from 0 to 1 into fifths. Decompose $\frac{2}{5}$ into 4 equal lengths.

   b. Write a number sentence using multiplication to show what fraction represented on the number line is equivalent to $\frac{2}{5}$.

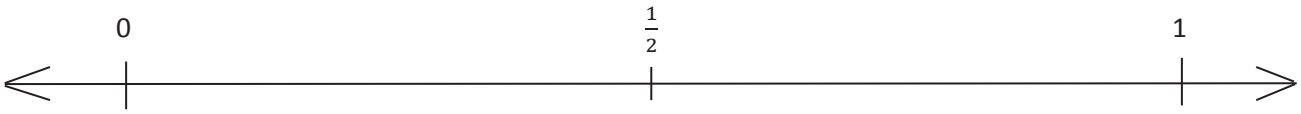
   c. Write a number sentence using division to show what fraction represented on the number line is equivalent to $\frac{2}{5}$.

Name _____ Date _____

1.

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

i. $\frac{1}{3}$ ii. $\frac{5}{6}$ iii. $\frac{7}{12}$



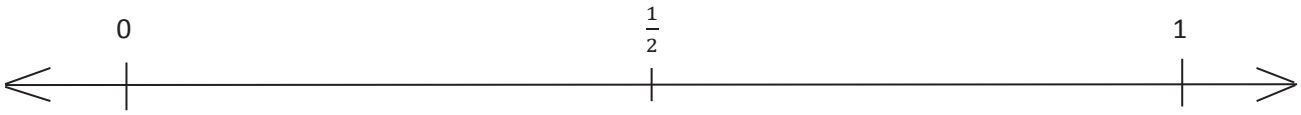
b. Use the number line in Part (a) to compare the fractions by writing >, <, or = on the lines.

i. $\frac{7}{12}$ _____ $\frac{1}{2}$ ii. $\frac{7}{12}$ _____ $\frac{5}{6}$

2.

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

i. $\frac{11}{12}$ ii. $\frac{1}{4}$ iii. $\frac{3}{8}$



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 benchmarks 0, $\frac{1}{2}$, and 1.

a. $\frac{1}{2}$ _____ $\frac{3}{4}$

b. $\frac{1}{2}$ _____ $\frac{7}{8}$

c. $\frac{2}{3}$ _____ $\frac{2}{5}$

d. $\frac{9}{10}$ _____ $\frac{3}{5}$

e. $\frac{2}{3}$ _____ $\frac{7}{8}$

f. $\frac{1}{3}$ _____ $\frac{2}{4}$

g. $\frac{2}{3}$ _____ $\frac{5}{10}$

h. $\frac{11}{12}$ _____ $\frac{2}{5}$

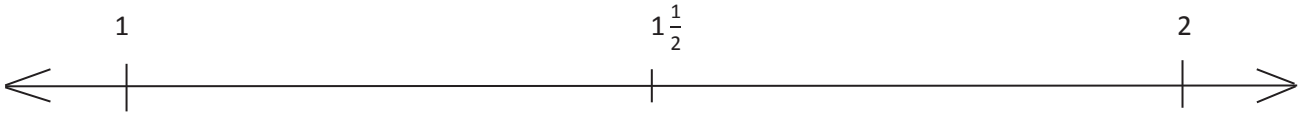
i. $\frac{49}{100}$ _____ $\frac{51}{100}$

j. $\frac{7}{16}$ _____ $\frac{51}{100}$

Name _____ Date _____

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

   a. $\frac{4}{3}$ b. $\frac{11}{6}$ c. $\frac{17}{12}$

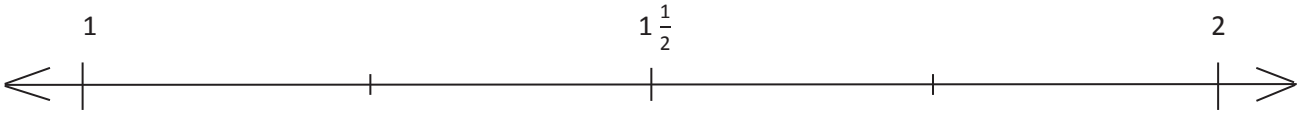


2. Use the number line in Problem 1 to compare the fractions by writing >, <, or = on the lines.

   a. $1\frac{5}{6}$ _____ $1\frac{5}{12}$ b. $1\frac{1}{3}$ _____ $1\frac{5}{12}$

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

   a. $\frac{11}{8}$ b. $\frac{7}{4}$ c. $\frac{15}{12}$



4. Use the number line in Problem 3 to explain the reasoning you used when determining whether $\frac{11}{8}$ or $\frac{15}{12}$ is greater.

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

a. $\frac{3}{8}$ _____ $\frac{7}{12}$

b. $\frac{5}{12}$ _____ $\frac{7}{8}$

c. $\frac{8}{6}$ _____ $\frac{11}{12}$

d. $\frac{5}{12}$ _____ $\frac{1}{3}$

e. $\frac{7}{5}$ _____ $\frac{11}{10}$

f. $\frac{5}{4}$ _____ $\frac{7}{8}$

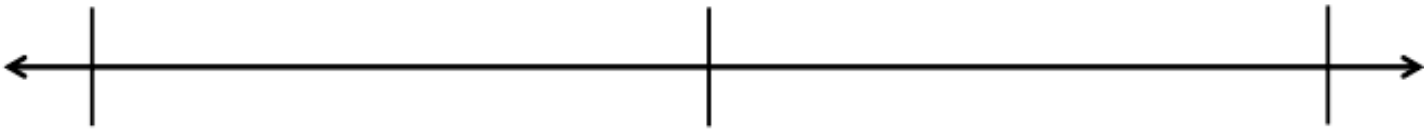
g. $\frac{13}{12}$ _____ $\frac{9}{10}$

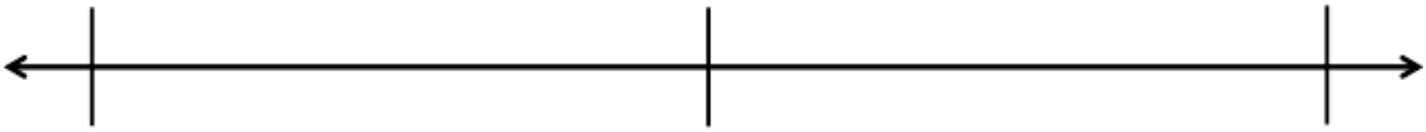
h. $\frac{6}{8}$ _____ $\frac{5}{4}$

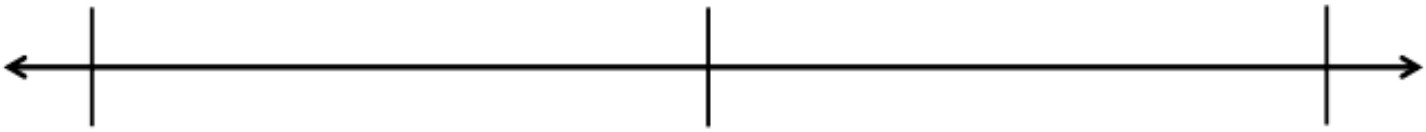
i. $\frac{8}{12}$ _____ $\frac{8}{4}$

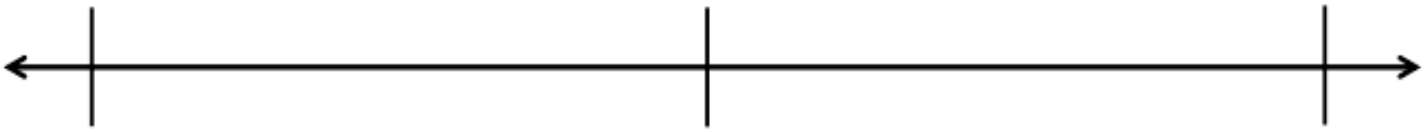
j. $\frac{7}{5}$ _____ $\frac{16}{10}$

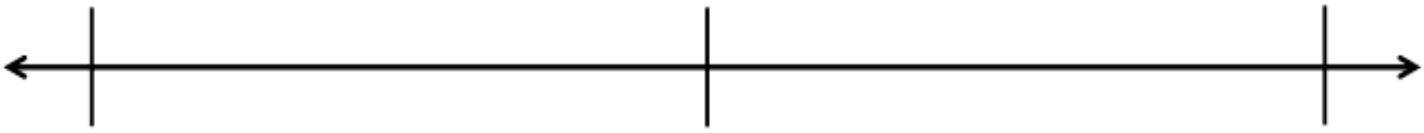
Name _____ Date _____











blank number lines with midpoint

Name _____ Date _____

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

   a. 1 fourth _____ 1 fifth

   b. 3 fourths _____ 3 fifths

   c. 1 tenth _____ 1 twelfth

   d. 7 tenths _____ 7 twelfths

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. $\frac{3}{5}$ _____ $\frac{3}{4}$

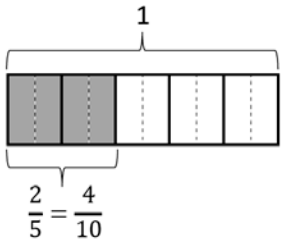
   b. $\frac{2}{5} < \frac{4}{9}$

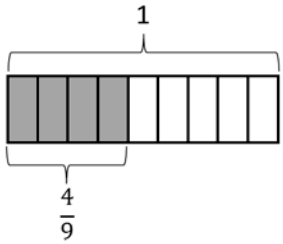
   because $\frac{2}{5} = \frac{4}{10}$

   4 tenths is less

   than 4 ninths because

   tenths are smaller than ninths.





   c. $\frac{7}{11}$ _____ $\frac{7}{13}$

   d. $\frac{6}{7}$ _____ $\frac{12}{15}$

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

   a. $\frac{2}{3}$ _____ $\frac{5}{6}$

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

   c. $1\frac{3}{4}$ _____ $1\frac{7}{12}$

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

a. $\frac{2}{3}$ _____ $\frac{5}{6}$

b. $\frac{3}{8}$ _____ $\frac{1}{4}$

c. $\frac{2}{6}$ _____ $\frac{5}{12}$

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

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

a. $\frac{3}{4}$ _____ $\frac{3}{7}$

b. $\frac{4}{5}$ _____ $\frac{8}{12}$

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

d. $\frac{2}{3}$ _____ $\frac{11}{15}$

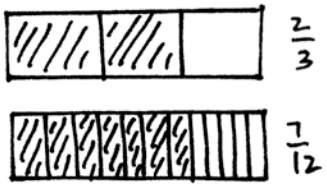
e. $\frac{3}{4}$ _____ $\frac{11}{12}$

f. $\frac{7}{3}$ _____ $\frac{7}{4}$

g. $1\frac{1}{3}$ _____ $1\frac{2}{9}$

h. $1\frac{2}{3}$ _____ $1\frac{4}{7}$

6. Timmy drew the picture to the right and claimed that $\frac{2}{3}$ is less than $\frac{7}{12}$. Evan says he thinks $\frac{2}{3}$ is greater than $\frac{7}{12}$. Who is correct? Support your answer with a picture.

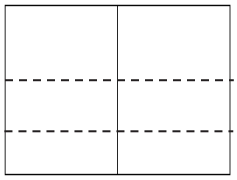


Name _____ Date _____

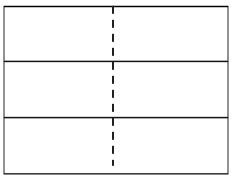
1. Draw an area model for each pair of fractions, and use it to compare the two fractions by writing >, <, or = on the line. The first two have been partially done for you. Each rectangle represents 1.

a. $\frac{1}{2}$ _____ < _____ $\frac{2}{3}$

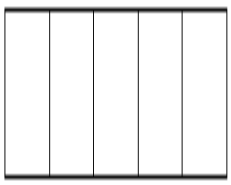
$\frac{1\times3}{2\times3} = \frac{3}{6}$



$\frac{2\times2}{3\times2} = \frac{4}{6}$



b. $\frac{4}{5}$ _____ $\frac{3}{4}$



c. $\frac{3}{5}$ _____ $\frac{4}{7}$

d. $\frac{3}{7}$ _____ $\frac{2}{6}$

e. $\frac{5}{8}$ _____ $\frac{6}{9}$

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

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

a. $\frac{3}{5}$ _____ $\frac{5}{6}$

b. $\frac{2}{6}$ _____ $\frac{3}{8}$

c. $\frac{7}{5}$ _____ $\frac{10}{8}$

d. $\frac{4}{3}$ _____ $\frac{6}{5}$

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

a. $\frac{3}{4}$ _____ $\frac{7}{8}$

b. $\frac{6}{8}$ _____ $\frac{3}{5}$

c. $\frac{6}{4}$ _____ $\frac{8}{6}$

d. $\frac{8}{5}$ _____ $\frac{9}{6}$

4. Explain two ways you have learned to compare fractions. Provide evidence using words, pictures, or numbers.

Name _____ Date _____

1. Solve.

   a. 3 fifths – 1 fifth = _____

   b. 5 fifths – 3 fifths = _____

   c. 3 halves – 2 halves = _____

   d. 6 fourths – 3 fourths = _____

2. Solve.

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

   b. $\frac{6}{8} - \frac{4}{8}$

   c. $\frac{3}{10} - \frac{3}{10}$

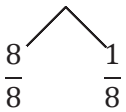
   d. $\frac{5}{5} - \frac{4}{5}$

   e. $\frac{5}{4} - \frac{4}{4}$

   f. $\frac{5}{4} - \frac{3}{4}$

3. Solve. Use a number bond to show how to convert the difference to a mixed number. Problem (a) has been completed for you.

   a. $\frac{12}{8} - \frac{3}{8} = \frac{9}{8} = 1\frac{1}{8}$

   b. $\frac{12}{6} - \frac{5}{6}$

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

   d. $\frac{14}{8} - \frac{3}{8}$

   e. $\frac{8}{4} - \frac{2}{4}$

   f. $\frac{15}{10} - \frac{3}{10}$

4. Solve. Write the sum in unit form.

   a. 2 fourths + 1 fourth = _____

   b. 4 fifths + 3 fifths = _____

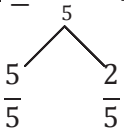
5. Solve.

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

   b. $\frac{4}{12} + \frac{5}{12}$

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

   a. $\frac{3}{5} + \frac{4}{5} = \frac{7}{5} = 1\frac{2}{5}$

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

   c. $\frac{6}{9} + \frac{6}{9}$

   d. $\frac{7}{10} + \frac{6}{10}$

   e. $\frac{5}{6} + \frac{7}{6}$

   f. $\frac{9}{8} + \frac{5}{8}$

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

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

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

Name _____ Date _____

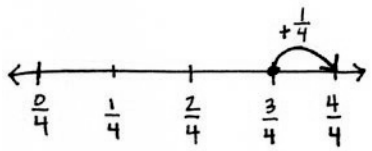
1. Use the following three fractions to write two subtraction and two addition number sentences.

a. $\frac{8}{5}, \frac{2}{5}, \frac{10}{5}$	b. $\frac{15}{8}, \frac{7}{8}, \frac{8}{8}$

2. Solve. Model each subtraction problem with a number line, and solve by both counting up and subtracting. Part (a) has been completed for you.

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

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



b. $1 - \frac{8}{10}$

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

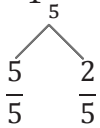
d. $1 - \frac{5}{8}$

e. $1\frac{2}{10} - \frac{7}{10}$

f. $1\frac{1}{5} - \frac{3}{5}$

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

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



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

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

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

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

b. $1\frac{3}{6} - \frac{4}{6}$

c. $1\frac{6}{8} - \frac{7}{8}$

d. $1\frac{1}{10} - \frac{7}{10}$

e. $1\frac{3}{12} - \frac{6}{12}$

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. $\frac{2}{5} + \frac{3}{5} + \frac{1}{5}$ $= \frac{5}{5} + \frac{1}{5} = 1 + \frac{1}{5}$ =_____	b. $\frac{3}{6} + \frac{1}{6} + \frac{3}{6}$	c. $\frac{5}{7} + \frac{7}{7} + \frac{2}{7}$
d. $\frac{7}{8} - \frac{3}{8} - \frac{1}{8}$	e. $\frac{7}{9} + \frac{1}{9} + \frac{4}{9}$	f. $\frac{4}{10} + \frac{11}{10} + \frac{5}{10}$
g. $1 - \frac{3}{12} - \frac{4}{12}$	h. $1\frac{2}{3} - \frac{1}{3} - \frac{1}{3}$	i. $\frac{10}{12} + \frac{5}{12} + \frac{2}{12} + \frac{7}{12}$

2. Monica and Stuart used different strategies to solve $\frac{5}{8}+\frac{2}{8}+\frac{5}{8}$.

Monica's Way

$\frac{5}{8}+\frac{2}{8}+\frac{5}{8}=\frac{7}{8}+\frac{5}{8}=\frac{8}{8}+\frac{4}{8}=1\frac{4}{8}$

$\frac{1}{8}$ $\frac{4}{8}$

Stuart's Way

$\frac{5}{8}+\frac{2}{8}+\frac{5}{8}=\frac{12}{8}=1+\frac{4}{8}=1\frac{4}{8}$

$\frac{8}{8}$ $\frac{4}{8}$

Whose 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(c) $\frac{5}{7}+\frac{7}{7}+\frac{2}{7}$

1(f) $\frac{4}{10}+\frac{11}{10}+\frac{5}{10}$

1(g) $1-\frac{3}{12}-\frac{4}{12}$

Name _____ Date _____

Use the RDW process to solve.

1. Sue ran $\frac{9}{10}$ mile on Monday and $\frac{7}{10}$ mile on Tuesday. How many miles did Sue run in the 2 days?

2. Mr. Salazar cut his son's birthday cake into 8 equal pieces. Mr. Salazar, Mrs. Salazar, and the birthday boy each ate 1 piece of cake. What fraction of the cake was left?

3. Maria spent $\frac{4}{7}$ of her money on a book and saved the rest. What fraction of her money did Maria save?

4. Mrs. Jones had $1\frac{4}{8}$ pizzas left after a party. After giving some to Gary, she had $\frac{7}{8}$ pizza left. What fraction of a pizza did she give Gary?

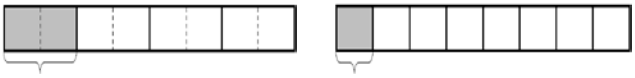
5. A baker had 2 pans of corn bread. He served $1\frac{1}{4}$ pans. What fraction of a pan was left?

6. Marius combined $\frac{4}{8}$ gallon of lemonade, $\frac{3}{8}$ gallon of cranberry juice, and $\frac{6}{8}$ gallon of soda water to make punch for a party. How many gallons of punch did he make in all?

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. Part (a) is partially completed.

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



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

b. $\frac{1}{4} + \frac{1}{12}$

c. $\frac{2}{6} + \frac{1}{3}$

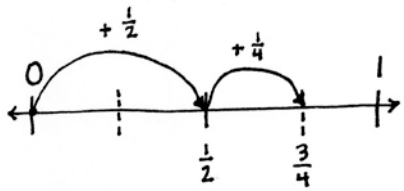
d. $\frac{1}{2} + \frac{3}{8}$

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

f. $\frac{2}{3} + \frac{2}{9}$

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. Part (a) has been completed for you.

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



b. $\frac{1}{2} + \frac{4}{10}$

c. $\frac{6}{10} + \frac{1}{2}$

d. $\frac{2}{3} + \frac{3}{6}$

e. $\frac{3}{4} + \frac{6}{8}$

f. $\frac{4}{10} + \frac{6}{5}$

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

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

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

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

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

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

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

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

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

d. $\frac{2}{3} + \frac{5}{6}$

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

a. $\frac{3}{4} + \frac{2}{8}$

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

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

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

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

f. $\frac{5}{8} + \frac{2}{4}$

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

h. $\frac{3}{10} + \frac{4}{5}$

Name _____ Date _____

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

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

   b. $4 + \frac{3}{4} =$ _____

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

   d. $5 - \frac{2}{5} =$ _____

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

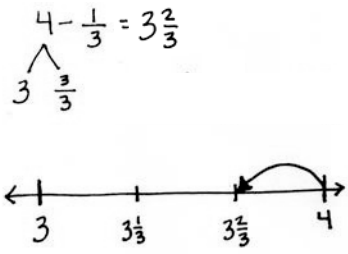
   a. $6,\ 6\frac{3}{8},\ \frac{3}{8}$

   b. $\frac{4}{7},\ 9,\ 8\frac{3}{7}$

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. $5 - \frac{2}{3} =$ _____



c. $7 - \frac{3}{8} =$ _____

d. $10 - \frac{4}{10} =$ _____

4. Complete the subtraction sentences using number bonds.

a. $3 - \frac{1}{10} =$ _____

b. $5 - \frac{3}{4} =$ _____

c. $6 - \frac{5}{8} =$ _____

d. $7 - \frac{3}{9} =$ _____

e. $8 - \frac{6}{10} =$ _____

f. $29 - \frac{9}{12} =$ _____

Name _____ Date _____

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

   a. Count by 1 thirds. Start at 0 thirds. End at 6 thirds.

   $\frac{0}{3}$, $\frac{1}{3}$,

   0

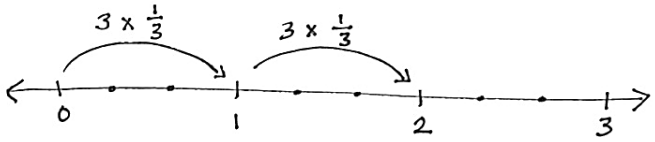
   b. Count by 1 halves. Start at 0 halves. End at 8 halves.

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

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

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

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



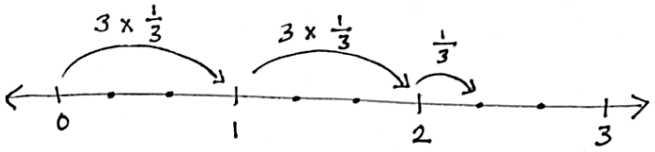
   $6 \times \frac{1}{3} = 2 \times \frac{3}{3} = 2$

   b. $6 \times \frac{1}{2}$

   c. $12 \times \frac{1}{4}$

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 half

   c. $10 \times \frac{1}{4}$

   d. $14 \times \frac{1}{3}$

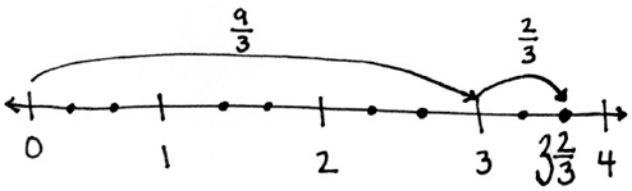
Name _____ Date _____

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. $\frac{12}{5}$

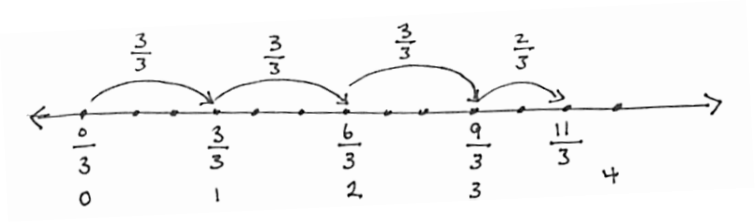
c. $\frac{13}{2}$

d. $\frac{15}{4}$

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. $\frac{9}{2}$

c. $\frac{17}{4}$

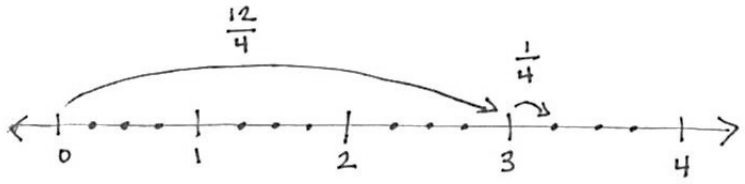
3. Convert each fraction to a mixed number.

a. $\frac{9}{4}$ =	b. $\frac{17}{5}$ =	c. $\frac{25}{6}$ =
d. $\frac{30}{7}$ =	e. $\frac{38}{8}$ =	f. $\frac{48}{9}$ =
g. $\frac{63}{10}$ =	h. $\frac{84}{10}$ =	i. $\frac{37}{12}$ =

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

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

d. $4\frac{4}{10}$

e. $4\frac{7}{9}$

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

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

d. $4\frac{6}{8}$

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

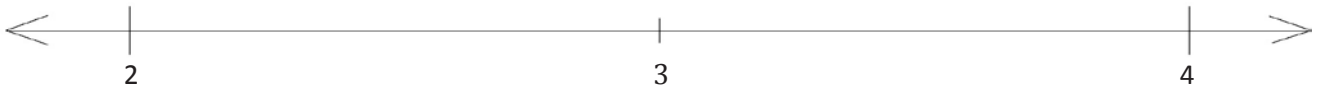
a. $2\frac{3}{4}$	b. $2\frac{2}{5}$	c. $3\frac{3}{6}$
d. $3\frac{3}{8}$	e. $3\frac{1}{10}$	f. $4\frac{3}{8}$
g. $5\frac{2}{3}$	h. $6\frac{1}{2}$	i. $7\frac{3}{10}$

Name _____ Date _____

1.

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

i. $2\frac{7}{8}$ ii. $3\frac{1}{6}$ iii. $\frac{29}{12}$



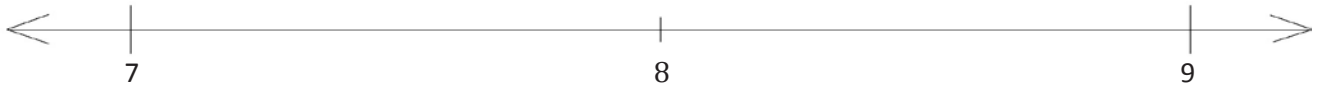
b. Use the number line in Problem 1(a) to compare the fractions by writing >, <, or =.

i. $\frac{29}{12}$ _____ $2\frac{7}{8}$ ii. $\frac{29}{12}$ _____ $3\frac{1}{6}$

2.

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

i. $\frac{70}{9}$ ii. $8\frac{2}{4}$ iii. $\frac{25}{3}$



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

i. $8\frac{2}{4}$ _____ $\frac{25}{3}$ ii. $\frac{70}{9}$ _____ $8\frac{2}{4}$

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. $5\frac{1}{3}$ _____ $4\frac{3}{4}$

b. $\frac{12}{6}$ _____ $\frac{25}{12}$

c. $\frac{18}{7}$ _____ $\frac{17}{5}$

d. $5\frac{2}{5}$ _____ $5\frac{5}{8}$

e. $6\frac{2}{3}$ _____ $6\frac{3}{7}$

f. $\frac{31}{7}$ _____ $\frac{32}{8}$

g. $\frac{31}{10}$ _____ $\frac{25}{8}$

h. $\frac{39}{12}$ _____ $\frac{19}{6}$

i. $\frac{49}{50}$ _____ $3\frac{90}{100}$

j. $5\frac{5}{12}$ _____ $5\frac{51}{100}$

Name _____ Date _____

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

a. $3\frac{2}{3}$ _____ $3\frac{5}{6}$

b. $3\frac{2}{5}$ _____ $3\frac{6}{10}$

c. $4\frac{3}{6}$ _____ $4\frac{1}{3}$

d. $4\frac{5}{8}$ _____ $\frac{19}{4}$

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

a. $2\frac{3}{5}$ _____ $\frac{18}{7}$

b. $2\frac{3}{8}$ _____ $2\frac{1}{3}$

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

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

b. $5\frac{2}{5}$ _____ $5\frac{8}{10}$

c. $5\frac{6}{10}$ _____ $\frac{27}{5}$

d. $5\frac{2}{3}$ _____ $5\frac{9}{15}$

e. $\frac{7}{2}$ _____ $\frac{7}{3}$

f. $\frac{12}{3}$ _____ $\frac{15}{4}$

g. $\frac{22}{5}$ _____ $4\frac{2}{7}$

h $\frac{21}{4}$ _____ $5\frac{2}{5}$

i. $\frac{29}{8}$ _____ $\frac{11}{3}$

j. $3\frac{3}{4}$ _____ $3\frac{4}{7}$

Name _____ Date _____

1. The chart to the right shows the distance fourth graders in Ms. Smith's class were able to run before stopping for a rest. Create a line plot to display the data in the table.

Student	Distance (in miles)
Joe	$2\frac{1}{2}$
Arianna	$1\frac{3}{4}$
Bobbi	$2\frac{1}{8}$
Morgan	$1\frac{5}{8}$
Jack	$2\frac{5}{8}$
Saisha	$2\frac{1}{4}$
Tyler	$2\frac{2}{4}$
Jenny	$\frac{5}{8}$
Anson	$2\frac{2}{8}$
Chandra	$2\frac{4}{8}$

2. Solve each problem.
   a. Who ran a mile farther than Jenny?

   b. Who ran a mile less than Jack?

   c. Two students ran exactly $2\frac{1}{4}$ miles. Identify the students. How many quarter miles did each student run?

   d. What is the difference, in miles, between the longest and shortest distance run?

   e. Compare the distances run by Arianna and Morgan using >, <, or =.

   f. Ms. Smith ran twice as far as Jenny. How far did Ms. Smith run? Write her distance as a mixed number.

   g. Mr. Reynolds ran $1\frac{3}{10}$ miles. Use >, <, or = to compare the distance Mr. Reynolds ran to the distance that Ms. Smith ran. Who ran farther?

3. Using the information in the table and on the line plot, develop and write a question similar to those above. Solve, and then ask your partner to solve. Did you solve in the same way? Did you get the same answer?

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. $2\frac{1}{12} + 1\frac{7}{8} \approx$ _____

b. $1\frac{11}{12} + 5\frac{3}{4} \approx$ _____

c. $8\frac{7}{8} - 2\frac{1}{9} \approx$ _____

d. $6\frac{1}{8} - 2\frac{1}{12} \approx$ _____

e. $3\frac{3}{8} + 5\frac{1}{9} \approx$ _____

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. $\frac{16}{5} + \frac{11}{4} \approx$ _____

   b. $\frac{17}{3} - \frac{15}{7} \approx$ _____

   c. $\frac{59}{10} + \frac{26}{10} \approx$ _____

3. Montoya's estimate for $8\frac{5}{8} - 2\frac{1}{3}$ was 7. Julio's estimate was $6\frac{1}{2}$. 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. $14\frac{3}{4} + 29\frac{11}{12}$	b. $3\frac{5}{12} + 54\frac{5}{8}$
c. $17\frac{4}{5} - 8\frac{7}{12}$	d. $\frac{65}{8} - \frac{37}{6}$

Name _____ Date _____

1. Solve.

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

b. $7\frac{3}{4} + \frac{1}{4}$

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

d. $\frac{1}{8} + 6\frac{7}{8}$

2. Complete the number sentences.

a. $4\frac{7}{8} + \_\_\_\_ = 5$	b. $7\frac{2}{5} + \_\_\_ = 8$
c. $3 = 2\frac{1}{6} + \_\_\_\_$	d. $12 = 11\frac{1}{12} + \_\_\_\_$

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

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

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

4. Solve.

a. $4\frac{2}{3} + \frac{2}{3}$	b. $3\frac{3}{5} + \frac{4}{5}$
c. $5\frac{4}{6} + \frac{5}{6}$	d. $\frac{7}{8} + 6\frac{4}{8}$
e. $\frac{7}{10} + 7\frac{9}{10}$	f. $9\frac{7}{12} + \frac{11}{12}$
g. $2\frac{70}{100} + \frac{87}{100}$	h. $\frac{50}{100} + 16\frac{78}{100}$

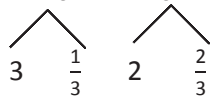
5. To solve $7\frac{9}{10} + \frac{5}{10}$, Maria thought, "$7\frac{9}{10} + \frac{1}{10} = 8$ and $8 + \frac{4}{10} = 8\frac{4}{10}$."

Paul thought, "$7\frac{9}{10} + \frac{5}{10} = 7\frac{14}{10} = 7 + \frac{10}{10} + \frac{4}{10} = 8\frac{4}{10}$." Explain why Maria and Paul are both right.

Name _____ Date _____

1. Solve.

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

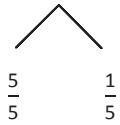


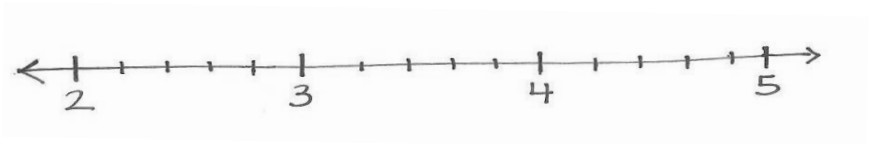
b. $4\frac{1}{4} + 3\frac{2}{4}$

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

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

a. $2\frac{4}{5} + 1\frac{2}{5} = 3 + \frac{6}{5} =$ _____



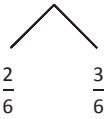


b. $1\frac{3}{4} + 3\frac{3}{4}$

c. $3\frac{3}{8} + 2\frac{6}{8}$

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

   a. $2\frac{4}{6} + 1\frac{5}{6} = 3\frac{4}{6} + \frac{5}{6} =$

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

   c. $3\frac{3}{8} + 2\frac{6}{8}$

4. Solve. Use whichever method you prefer.

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

   b. $2\frac{6}{8} + 3\frac{7}{8}$

   c. $3\frac{8}{12} + 2\frac{7}{12}$

Name _____ Date _____

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

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

b. $4\frac{7}{10} - \frac{3}{10}$

c. $5\frac{1}{3} - \frac{2}{3}$

d. $9\frac{3}{5} - \frac{4}{5}$

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

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

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

c. $5\frac{1}{3} - \frac{2}{3}$

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

3. Decompose the total to subtract the fractions.

a. $3\frac{1}{8} - \frac{3}{8} = 2\frac{1}{8} + \frac{5}{8} = 2\frac{6}{8}$

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

b. $5\frac{1}{8} - \frac{7}{8}$

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

d. $5\frac{4}{6} - \frac{5}{6}$

e. $6\frac{4}{12} - \frac{7}{12}$

f. $9\frac{1}{8} - \frac{5}{8}$

g. $7\frac{1}{6} - \frac{5}{6}$

h. $8\frac{3}{10} - \frac{4}{10}$

i. $12\frac{3}{5} - \frac{4}{5}$

j. $11\frac{2}{6} - \frac{5}{6}$

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. $3\frac{1}{3} - 1\frac{2}{3} =$ _____

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

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

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

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

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

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

   c. $5\frac{3}{7} - 3\frac{6}{7}$

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

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

$2\frac{3}{5} \quad 1$

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

c. $8\frac{3}{10} - 2\frac{7}{10}$

4. Solve using any method.

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

b. $5\frac{1}{8} - 2\frac{7}{8}$

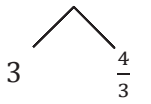
c. $8\frac{3}{12} - 3\frac{8}{12}$

d. $5\frac{1}{100} - 2\frac{97}{100}$

Name _____ Date _____

1. Subtract.

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

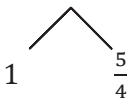


b. $5\frac{2}{4} - \frac{3}{4}$

c. $8\frac{3}{5} - \frac{4}{5}$

2. Subtract the ones first.

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



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

c. $5\frac{2}{6} - 3\frac{5}{6}$

d. $9\frac{3}{5} - 2\frac{4}{5}$

3. Solve using any strategy.

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

b. $6\frac{4}{10} - 3\frac{8}{10}$

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

d. $14\frac{2}{50} - 6\frac{43}{50}$

Name _____ Date _____

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

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

   b. 10 sixths = 5 × (2 sixths) = (5 × 2) sixths

2. Write the expression in unit form to solve.

   a. $7 \times \frac{2}{3}$

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

   c. $16 \times \frac{3}{8}$

   d. $6 \times \frac{5}{8}$

3. Solve.

a. $7 \times \frac{4}{9}$

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

c. $8 \times \frac{3}{4}$

d. $16 \times \frac{3}{8}$

e. $12 \times \frac{7}{10}$

f. $3 \times \frac{54}{100}$

4. Maria needs $\frac{3}{5}$ yard of fabric for each costume. How many yards of fabric does she need for 6 costumes?

Name _____ Date _____

1. Draw a tape diagram to represent $\frac{3}{4}+\frac{3}{4}+\frac{3}{4}+\frac{3}{4}$.

   Write a multiplication expression equal to $\frac{3}{4}+\frac{3}{4}+\frac{3}{4}+\frac{3}{4}$.

2. Draw a tape diagram to represent $\frac{7}{12}+\frac{7}{12}+\frac{7}{12}$.

   Write a multiplication expression equal to $\frac{7}{12}+\frac{7}{12}+\frac{7}{12}$

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

   a. $\frac{7}{5}+\frac{7}{5}+\frac{7}{5}+\frac{7}{5}=4\times\frac{7}{5}=\frac{4\times7}{5}=$

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

   c. $\frac{11}{12}+\frac{11}{12}+\frac{11}{12}+\frac{11}{12}+\frac{11}{12}$

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

   a. $8 \times \frac{2}{3}$

   b. $12 \times \frac{3}{4}$

   c. $50 \times \frac{4}{5}$

   d. $26 \times \frac{7}{8}$

5. Morgan poured $\frac{9}{10}$ liter of punch into each of 6 bottles. How many liters of punch did she pour in all?

6. A recipe calls for $\frac{3}{4}$ cup rice. How many cups of rice are needed to make the recipe 14 times?

7. A butcher prepared 120 sausages using $\frac{3}{8}$ pound of meat for each. How many pounds did he use in all?

Name _____ Date _____

1. Draw tape diagrams to show two ways to represent 2 units of $4\frac{2}{3}$.

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. $2 \times 4\frac{2}{3}$
c. $3 \times 2\frac{5}{8}$	d. $2 \times 4\frac{7}{10}$

e. $3 \times 7\frac{3}{4}$	f. $6 \times 3\frac{1}{2}$
g. $4 \times 9\frac{1}{5}$	h. $5\frac{6}{8} \times 4$

3. For one dance costume, Saisha needs $4\frac{2}{3}$ feet of ribbon. How much ribbon does she need for 5 identical costumes?

Name _____ Date _____

1. Fill in the unknown factors.

   a. $7 \times 3\frac{4}{5} = (\_\_\_ \times 3) + (\_\_\_ \times \frac{4}{5})$

   b. $3 \times 12\frac{7}{8} = (3 \times \_\_\_) + (3 \times \_\_\_)$

2. Multiply. Use the distributive property.

   a. $7 \times 8\frac{2}{5}$

   b. $4\frac{5}{6} \times 9$

   c. $3 \times 8\frac{11}{12}$

   d. $5 \times 20\frac{8}{10}$

e. $25\frac{4}{100} \times 4$

3. The distance around the park is $2\frac{5}{10}$ miles. Cecilia ran around the park 3 times. How far did she run?

4. Windsor the dog ate $4\frac{3}{4}$ snack bones each day for a week. How many bones did Windsor eat that week?

Name _____ Date _____

Use the RDW process to solve.

1. Tameka ran $2\frac{5}{8}$ miles. Her sister ran twice as far. How far did Tameka's sister run?

2. Natasha's sculpture was $5\frac{3}{16}$ inches tall. Maya's was 4 times as tall. How much shorter was Natasha's sculpture than Maya's?

3. A seamstress needs $1\frac{5}{8}$ yards of fabric to make a child's dress. She needs 3 times as much fabric to make a woman's dress. How many yards of fabric does she need for both dresses?

4. A piece of blue yarn is $5\frac{2}{3}$ yards long. A piece of pink yarn is 5 times as long as the blue yarn. Bailey tied them together with a knot that used $\frac{1}{3}$ yard from each piece of yarn. What is the total length of the yarn tied together?

5. A truck driver drove $35\frac{2}{10}$ miles before he stopped for breakfast. He then drove 5 times as far before he stopped for lunch. How far did he drive that day before his lunch break?

6. Mr. Washington's motorcycle needs $5\frac{5}{10}$ gallons of gas to fill the tank. His van needs 5 times as much gas to fill it. If Mr. Washington pays $3 per gallon for gas, how much will it cost him to fill both the motorcycle and the van?

Name _____ Date _____

1. The chart to the right shows the height of some football players.

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

   b. What is the difference in height of the tallest and shortest players?

   c. Player I and Player B have a combined height that is $1\frac{1}{8}$ feet taller than a school bus. What is the height of a school bus?

Player	Height (in feet)
A	$6\frac{1}{4}$
B	$5\frac{7}{8}$
C	$6\frac{1}{2}$
D	$6\frac{1}{4}$
E	$6\frac{2}{8}$
F	$5\frac{7}{8}$
G	$6\frac{1}{8}$
H	$6\frac{5}{8}$
I	$5\frac{6}{8}$
J	$6\frac{1}{8}$

2. One of the players on the team is now 4 times as tall as he was at birth, when he measured $1\frac{5}{8}$ feet. Who is the player?

3. Six of the players on the team weigh over 300 pounds. Doctors recommend that players of this weight drink at least $3\frac{3}{4}$ quarts of water each day. At least how much water should be consumed per day by all 6 players?

4. Nine of the players on the team weigh about 200 pounds. Doctors recommend that people of this weight each eat about $7\frac{7}{10}$ grams of protein per pound each day. About how many combined grams of protein should these 9 players eat per day?

Name _____ Date _____

1. Find the sums.

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

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

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

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

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

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

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. $\frac{0}{10} + \frac{1}{10} + \frac{2}{10} + \ldots \frac{10}{10}$

b. $\frac{0}{12} + \frac{1}{12} + \frac{2}{12} + \ldots \frac{12}{12}$

c. $\frac{0}{15} + \frac{1}{15} + \frac{2}{15} + \ldots + \frac{15}{15}$

d. $\frac{0}{25} + \frac{1}{25} + \frac{2}{25} + \ldots \frac{25}{25}$

e. $\frac{0}{50} + \frac{1}{50} + \frac{2}{50} + \ldots \frac{50}{50}$

f. $\frac{0}{100} + \frac{1}{100} + \frac{2}{100} + \ldots \frac{100}{100}$

5. Compare your strategy for finding the sums in Problems 4(d), 4(e), and 4(f) with a partner.

6. How can you apply this strategy to find the sum of all the whole numbers from 0 to 100?

Video tutorials: http://bit.ly/eurekapusd
Info for parents: http://bit.ly/pusdmath