

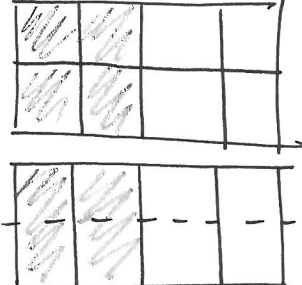
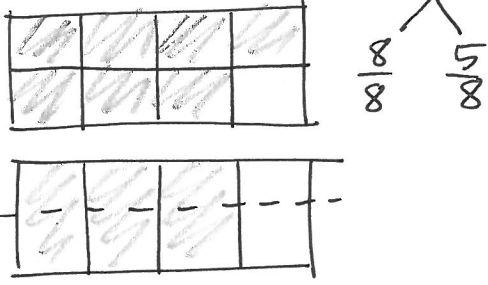
Name \_\_\_\_\_

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.

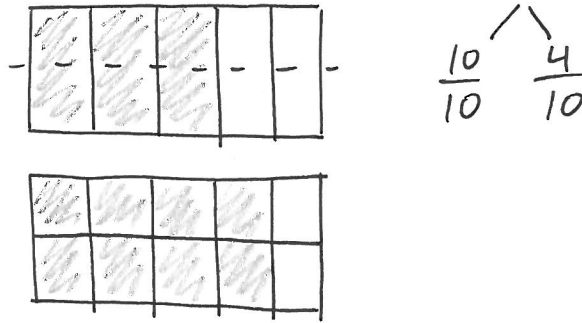
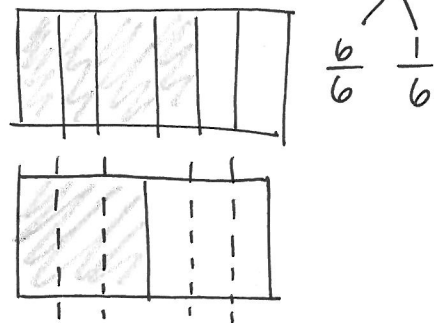
a.  $\frac{7}{8} + \frac{1}{4}$       $\frac{7}{8} + \frac{6}{8} = \frac{13}{8} = 1\frac{5}{8}$

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



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

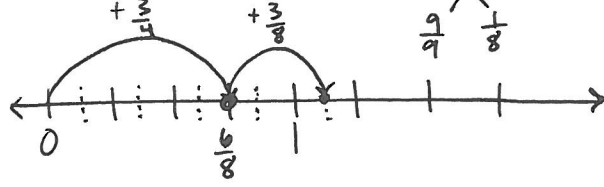
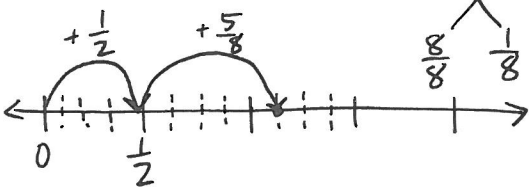
d.  $\frac{3}{5} + \frac{8}{10}$       $\frac{6}{10} + \frac{8}{10} = \frac{14}{10} = 1\frac{4}{10}$

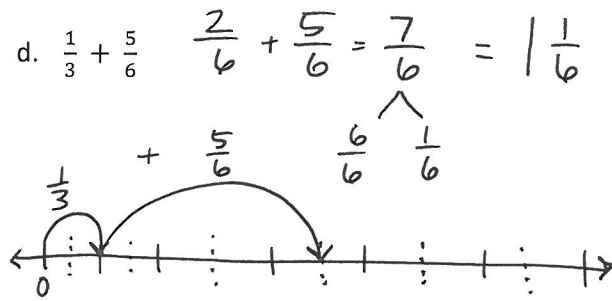
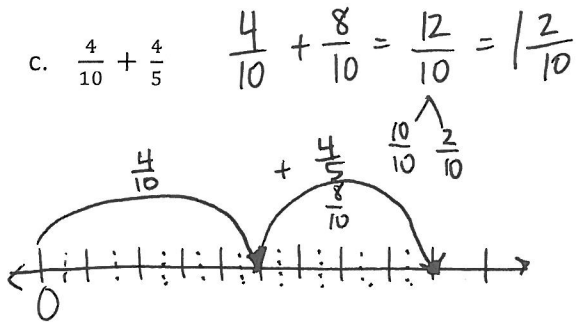


2. Draw a number line to model the addition. Then write a complete number sentence. Use a number bond to write each sum as a mixed number.

a.  $\frac{1}{2} + \frac{5}{8}$       $\frac{4}{8} + \frac{5}{8} = \frac{9}{8} = 1\frac{1}{8}$

b.  $\frac{3}{4} + \frac{3}{8}$       $\frac{6}{8} + \frac{3}{8} = \frac{9}{8} = 1\frac{1}{8}$





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

a.  $\frac{1}{2} + \frac{6}{8} = \frac{4}{8} + \frac{6}{8} = \frac{10}{8} = 1\frac{2}{8}$

b.  $\frac{7}{8} + \frac{3}{4} = \frac{7}{8} + \frac{6}{8} = \frac{13}{8} = 1\frac{5}{8}$

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

d.  $\frac{9}{10} + \frac{2}{5} = \frac{9}{10} + \frac{4}{10} = \frac{13}{10} = 1\frac{3}{10}$

e.  $\frac{4}{12} + \frac{3}{4} = \frac{4}{12} + \frac{9}{12} = \frac{13}{12} = 1\frac{1}{12}$

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

g.  $\frac{3}{12} + \frac{5}{6} = \frac{3}{12} + \frac{10}{12} = \frac{13}{12} = 1\frac{1}{12}$

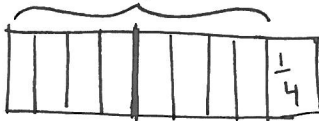
h.  $\frac{7}{10} + \frac{4}{5} = \frac{7}{10} + \frac{8}{10} = \frac{15}{10} = 1\frac{5}{10}$

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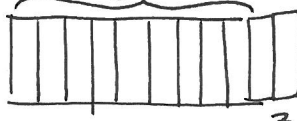
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1. Draw a tape diagram to match each number sentence. Then complete the number sentence.

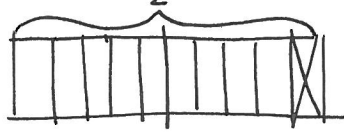
a.  $2 + \frac{1}{4} = \underline{2\frac{1}{4}}$



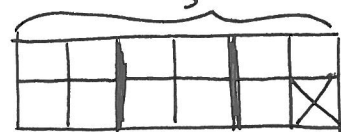
b.  $3 + \frac{2}{3} = \underline{3\frac{2}{3}}$



c.  $2 - \frac{1}{5} = \underline{1\frac{4}{5}}$



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



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

a.  $4, 4\frac{5}{8}, \frac{5}{8}$

$4 + \frac{5}{8} = 4\frac{5}{8}$        $4\frac{5}{8} - 4 = \frac{5}{8}$

$\frac{5}{8} + 4 = 4\frac{5}{8}$        $4\frac{5}{8} - \frac{5}{8} = 4$

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

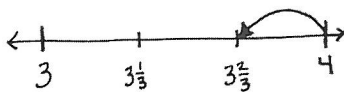
$5\frac{5}{7} + \frac{2}{7} = 6$        $6 - \frac{2}{7} = 5\frac{5}{7}$

$\frac{2}{7} + 5\frac{5}{7} = 6$        $6 - 5\frac{5}{7} = \frac{2}{7}$

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

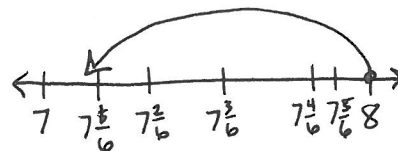
a.  $4 - \frac{1}{3} = \underline{3\frac{2}{3}}$

$4 - \frac{1}{3} = 3\frac{2}{3}$   
 $\begin{array}{l} 4 \\ \swarrow \searrow \\ 3 \quad \frac{3}{3} \end{array}$        $\frac{3}{3} - \frac{1}{3} = \frac{2}{3}$



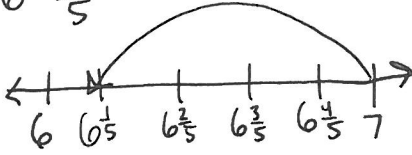
b.  $8 - \frac{5}{6} = \underline{7\frac{1}{6}}$

$\begin{array}{l} 8 \\ \swarrow \searrow \\ 7 \quad \frac{6}{6} \end{array}$



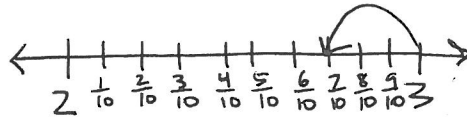
$$c. 7 - \frac{4}{5} = 6\frac{1}{5}$$

$$\begin{array}{r} 6 \\ \swarrow \searrow \\ 5 \end{array}$$



$$d. 3 - \frac{3}{10} = 2\frac{7}{10}$$

$$\begin{array}{r} 2 \\ \swarrow \searrow \\ 10 \end{array}$$



4. Complete the subtraction sentences using number bonds.

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

$$\begin{array}{r} 5 \\ \swarrow \searrow \\ 4 \end{array}$$

$$b. 7 - \frac{2}{10} = 6\frac{8}{10}$$

$$\begin{array}{r} 6 \\ \swarrow \searrow \\ 10 \end{array}$$

$$c. 5 - \frac{5}{6} = 4\frac{1}{6}$$

$$\begin{array}{r} 4 \\ \swarrow \searrow \\ 6 \end{array}$$

$$d. 6 - \frac{6}{8} = 5\frac{2}{8}$$

$$\begin{array}{r} 5 \\ \swarrow \searrow \\ 8 \end{array}$$

$$e. 3 - \frac{7}{8} = 2\frac{1}{8}$$

$$\begin{array}{r} 2 \\ \swarrow \searrow \\ 8 \end{array}$$

$$f. 26 - \frac{7}{10} = 25\frac{3}{10}$$

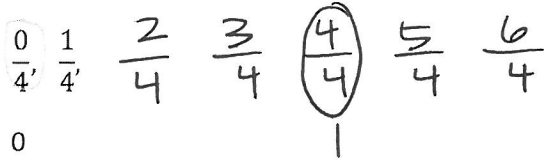
$$\begin{array}{r} 25 \\ \swarrow \searrow \\ 10 \end{array}$$

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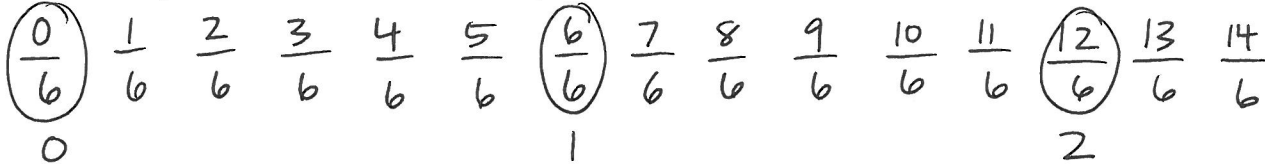
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1. Circle any fractions that are equivalent to a whole number. Record the whole number below the fraction.

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



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

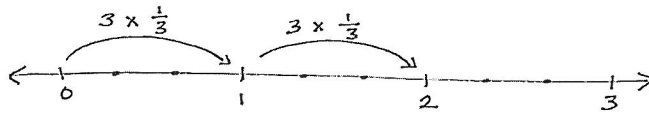


2. Use parentheses to show how to make ones in the following number sentence.

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

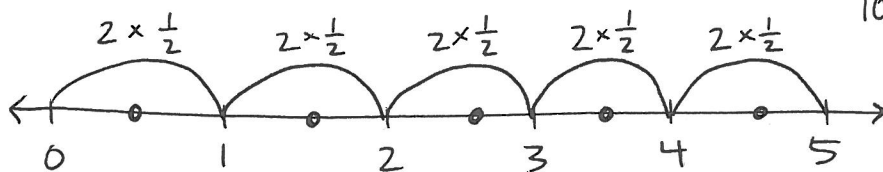
3. Multiply, as shown below. Draw a number line to support your answer.

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



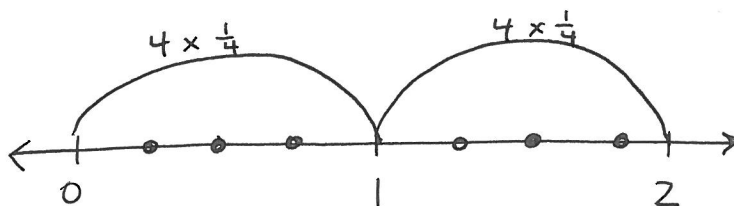
$$6 \times \frac{1}{3} = 2 \times \frac{3}{3} = 2$$

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



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

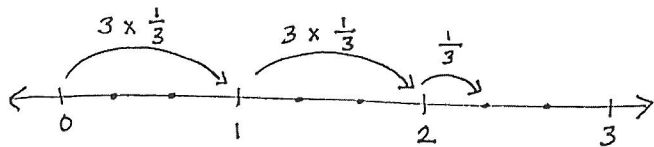
c.  $8 \times \frac{1}{4}$



$$8 \times \frac{1}{4} = 2 \times \frac{4}{4} = 2$$

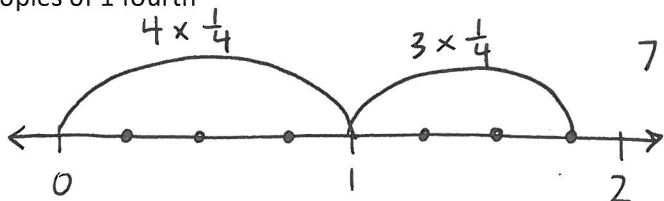
4. Multiply, as shown below. Write the product as a mixed number. Draw a number line to support your answer.

- a. 7 copies of 1 third



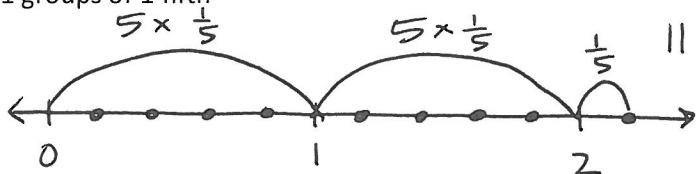
$$7 \times \frac{1}{3} = \left(2 \times \frac{3}{3}\right) + \frac{1}{3} = 2 + \frac{1}{3} = 2\frac{1}{3}$$

- b. 7 copies of 1 fourth



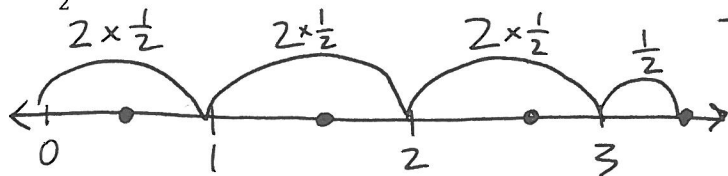
$$7 \times \frac{1}{4} = \left(1 \times \frac{4}{4}\right) + \frac{3}{4} = 1 + \frac{3}{4} = 1\frac{3}{4}$$

- c. 11 groups of 1 fifth



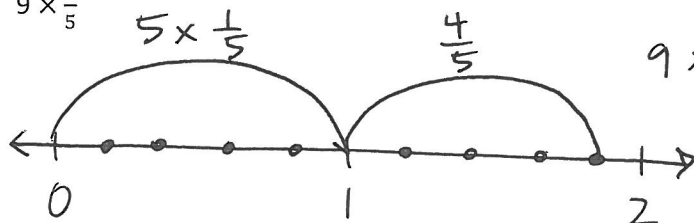
$$11 \times \frac{1}{5} = \left(2 \times \frac{5}{5}\right) + \frac{1}{5} = 2 + \frac{1}{5} = 2\frac{1}{5}$$

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



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

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



$$9 \times \frac{1}{5} = \left(1 \times \frac{5}{5}\right) + \frac{4}{5} = 1 + \frac{4}{5} = 1\frac{4}{5}$$

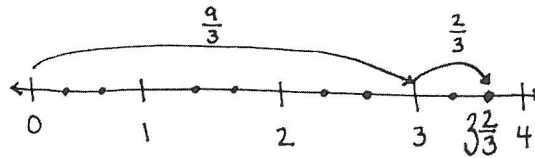
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1. Rename each fraction as a mixed number by decomposing it into two parts as shown below. Model the decomposition with a number line and a number bond.

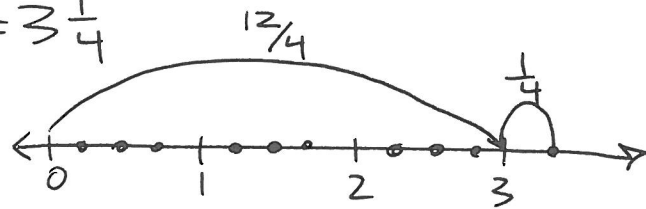
a.  $\frac{11}{3}$

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



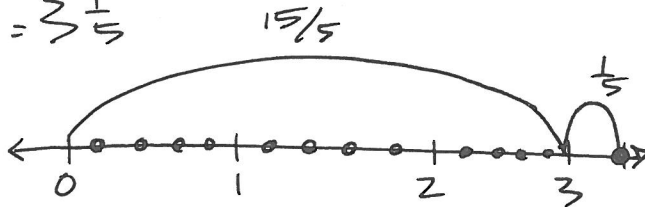
b.  $\frac{13}{4}$

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



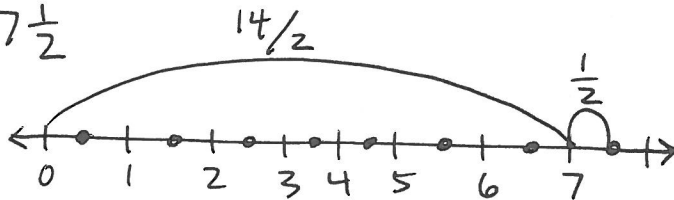
c.  $\frac{16}{5}$

$$\frac{16}{5} = \frac{15}{5} + \frac{1}{5} = 3 + \frac{1}{5} = 3\frac{1}{5}$$



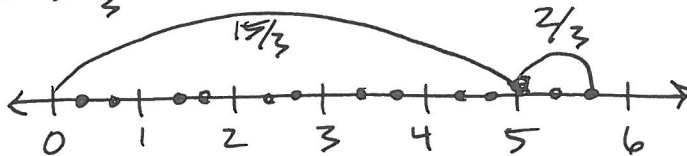
d.  $\frac{15}{2}$

$$\frac{15}{2} = \frac{14}{2} + \frac{1}{2} = 7 + \frac{1}{2} = 7\frac{1}{2}$$



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

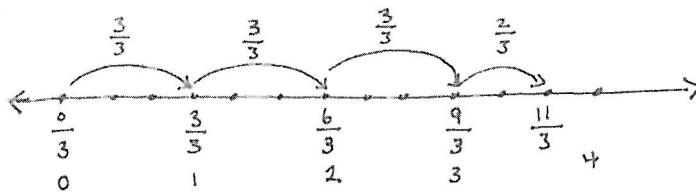
$$\frac{17}{3} = \frac{15}{3} + \frac{2}{3} = 5 + \frac{2}{3} = 5\frac{2}{3}$$



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

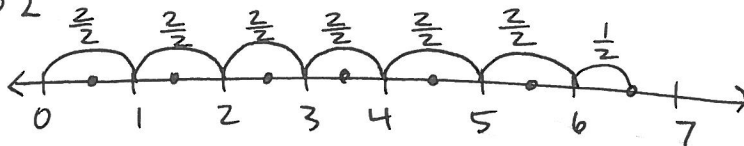
a.  $\frac{11}{3}$

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



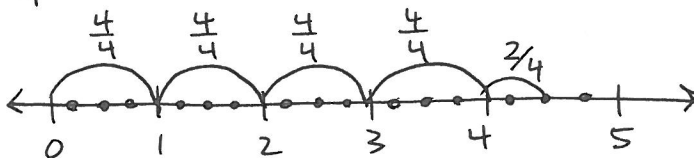
b.  $\frac{13}{2} = \frac{2 \times 6}{2} + \frac{1}{2} = 6 + \frac{1}{2} = 6\frac{1}{2}$

$$\frac{12}{2} \quad \frac{1}{2}$$



c.  $\frac{18}{4} = \frac{4 \times 4}{4} + \frac{2}{4} = 4 + \frac{2}{4} = 4\frac{2}{4}$

$$\frac{16}{4} \quad \frac{2}{4}$$



3. Convert each fraction to a mixed number.

<p>a. <math>\frac{14}{3} = 4\frac{2}{3}</math></p> $\frac{12}{3} \quad \frac{2}{3}$	<p>b. <math>\frac{17}{4} = 4\frac{1}{4}</math></p> $\frac{16}{4} \quad \frac{1}{4}$	<p>c. <math>\frac{27}{5} = 5\frac{2}{5}</math></p> $\frac{25}{5} \quad \frac{2}{5}$
<p>d. <math>\frac{28}{6} = 4\frac{4}{6}</math></p> $\frac{24}{6} \quad \frac{4}{6}$	<p>e. <math>\frac{23}{7} = 3\frac{2}{7}</math></p> $\frac{21}{7} \quad \frac{2}{7}$	<p>f. <math>\frac{38}{8} = 4\frac{6}{8}</math></p> $\frac{32}{8} \quad \frac{6}{8}$
<p>g. <math>\frac{51}{9} = 5\frac{6}{9}</math></p> $\frac{45}{9} \quad \frac{6}{9}$	<p>h. <math>\frac{74}{10} = 7\frac{4}{10}</math></p> $\frac{70}{10} \quad \frac{4}{10}$	<p>i. <math>\frac{45}{12} = 3\frac{9}{12}</math></p> $\frac{36}{12} \quad \frac{9}{12}$

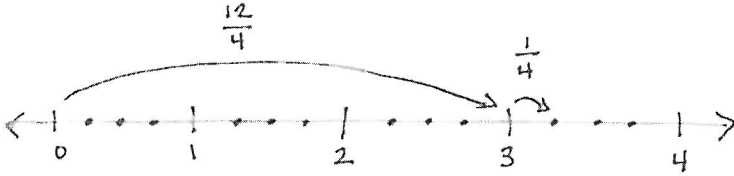


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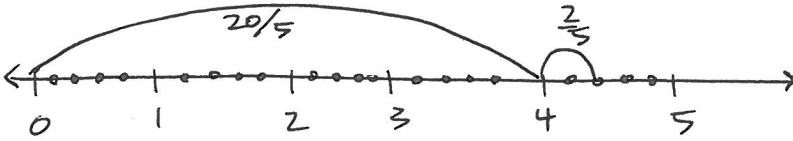
1. Convert each mixed number to a fraction greater than 1. Draw a number line to model your work.

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

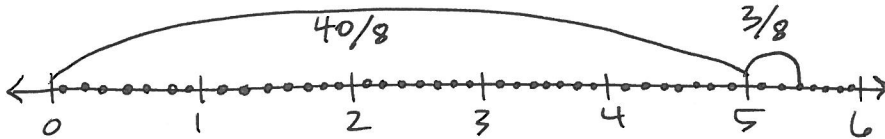


$$3\frac{1}{4} = 3 + \frac{1}{4} = \frac{12}{4} + \frac{1}{4} = \frac{13}{4}$$

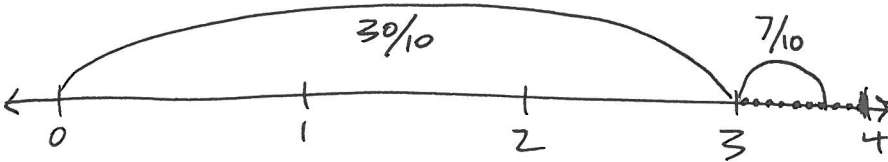
b.  $4\frac{2}{5} = 4 + \frac{2}{5} = \frac{20}{5} + \frac{2}{5} = \frac{22}{5}$



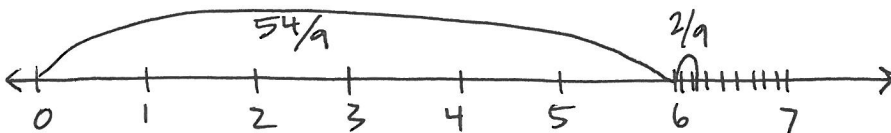
c.  $5\frac{3}{8} = 5 + \frac{3}{8} = \frac{40}{8} + \frac{3}{8} = \frac{43}{8}$



d.  $3\frac{7}{10} = 3 + \frac{7}{10} = \frac{30}{10} + \frac{7}{10} = \frac{37}{10}$



e.  $6\frac{2}{9} = 6 + \frac{2}{9} = \frac{54}{9} + \frac{2}{9} = \frac{56}{9}$



2. Convert each mixed number to a fraction greater than 1. Show your work as in the example.

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.  $5\frac{2}{3} = 5 + \frac{2}{3} = \left(5 \times \frac{3}{3}\right) + \frac{2}{3} = \frac{15}{3} + \frac{2}{3} = \frac{17}{3}$

c.  $4\frac{1}{5} = 4 + \frac{1}{5} = \left(4 \times \frac{5}{5}\right) + \frac{1}{5} = \frac{20}{5} + \frac{1}{5} = \frac{21}{5}$

d.  $3\frac{7}{8} = 3 + \frac{7}{8} = \left(3 \times \frac{8}{8}\right) + \frac{7}{8} = \frac{24}{8} + \frac{7}{8} = \frac{31}{8}$

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

a. $2\frac{1}{3} = \frac{7}{3}$	b. $2\frac{3}{4} = \frac{11}{4}$	c. $3\frac{2}{5} = \frac{17}{5}$
d. $3\frac{1}{6} = \frac{19}{6}$	e. $4\frac{5}{12} = \frac{53}{12}$	f. $4\frac{2}{5} = \frac{22}{5}$
g. $4\frac{1}{10} = \frac{41}{10}$	h. $5\frac{1}{5} = \frac{26}{5}$	i. $5\frac{5}{6} = \frac{35}{6}$
j. $6\frac{1}{4} = \frac{25}{4}$	k. $7\frac{1}{2} = \frac{15}{2}$	l. $7\frac{11}{12} = \frac{95}{12}$

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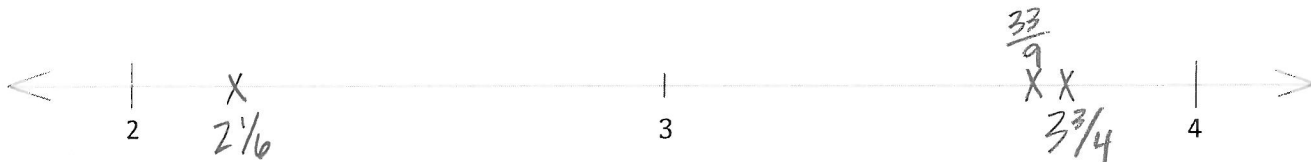
1.

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.  $\frac{33}{9} < 3\frac{3}{4}$

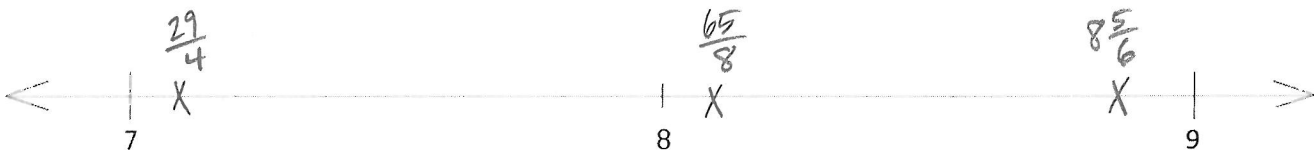
2.

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  $=$ .

$8\frac{5}{6} > \frac{65}{8}$

$\frac{29}{4} < \frac{65}{8}$

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

*Answers vary :)*

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

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.  $2\frac{49}{50}$   $<$   $2\frac{99}{100}$

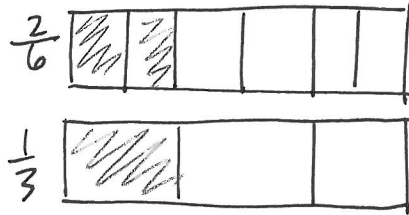
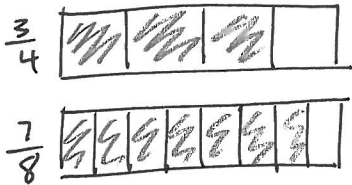
j.  $6\frac{5}{9}$   $>$   $6\frac{49}{100}$

Name \_\_\_\_\_ Date \_\_\_\_\_

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

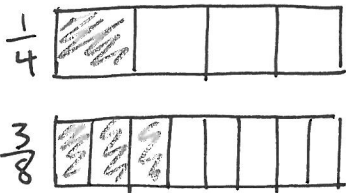
a.  $2\frac{3}{4} < 2\frac{7}{8}$

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



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

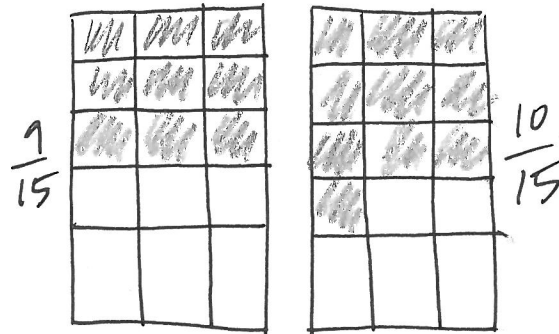
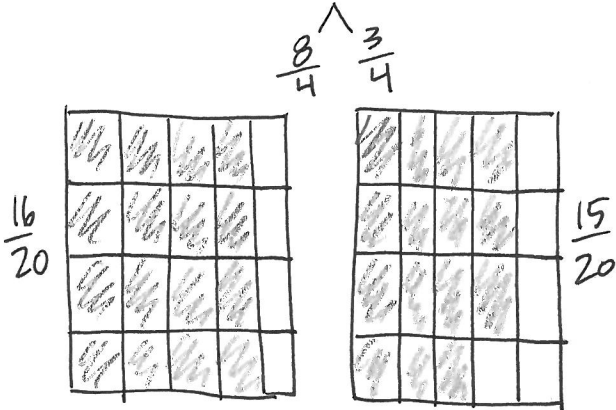
d.  $2\frac{5}{9} < 2\frac{21}{3}$   
 (7)



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.  $\frac{30}{8} > 3\frac{7}{12}$

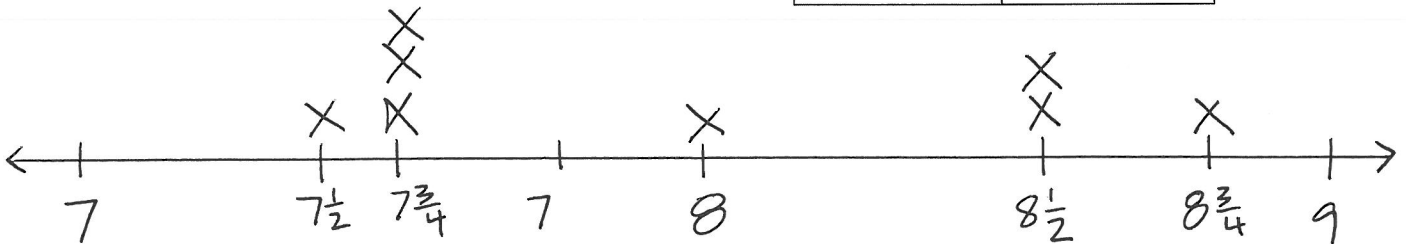
j.  $10\frac{3}{4} > 10\frac{4}{6}$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. A group of children 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. Write an equation and a statement for each. Draw models as needed.

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

$$7\frac{3}{4} + 1 = 8\frac{3}{4}$$

Mary's foot is 1 inch longer than Dickon's foot.

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

$$8\frac{1}{2} - 1 = 7\frac{1}{2}$$

Ben's foot is one inch shorter than Susan's foot.

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

$$7\frac{3}{4} < \frac{28}{4} \quad 28 + 3 = 31 \text{ quarter inches}$$

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

$$8 - 7\frac{3}{4} = \frac{1}{4} \text{ inch}$$

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

$$\begin{array}{ccc} \text{Ben} & & \text{Frances} \\ 7\frac{1}{2} & < & 7\frac{3}{4} \end{array}$$

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

four students had shoes that measured less than 8 inches.

- g. How many children measured the length of their shoes?

8 students measured 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?

$$\frac{25}{2} = 12\frac{1}{2} \quad 12\frac{1}{2} > 8\frac{3}{4}$$

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

Answers vary 😊



Name \_\_\_\_\_

Date \_\_\_\_\_

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

a.  $3\frac{1}{10} + 1\frac{3}{4} \approx \underline{5}$   
 $3 + 2$

b.  $2\frac{9}{10} + 4\frac{4}{5} \approx \underline{8}$   
 $3 + 5$

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

d.  $4\frac{1}{9} - 1\frac{1}{10} \approx \underline{3}$   
 $4 - 1$

e.  $6\frac{3}{12} + 5\frac{1}{9} \approx \underline{11 \text{ or } 11\frac{1}{2}}$   
 $6 + 5$

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

a.  $\frac{16}{3} + \frac{17}{8} \approx \underline{7\frac{1}{2}}$   
 $5\frac{1}{3} \quad 2\frac{1}{8}$

b.  $\frac{17}{3} - \frac{15}{4} \approx \underline{2}$   
 $5\frac{2}{3} \quad 3\frac{3}{4}$

c.  $\frac{57}{8} + \frac{26}{8} \approx \underline{10 \text{ or } 10\frac{1}{2}}$   
 $7\frac{1}{8} \quad 3\frac{7}{8}$

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.

*Gina's estimate was closer - she rounded  $7\frac{5}{8}$  to  $7\frac{4}{8} (\frac{1}{2})$*

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

a. $10\frac{3}{4} + 12\frac{11}{12} \approx 24$	b. $2\frac{7}{10} + 23\frac{3}{8} \approx 26$
c. $15\frac{9}{12} - 8\frac{11}{12} \approx 7$	d. $\frac{56}{7} - \frac{31}{8} \approx 4$

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve.

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

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


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

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

2. Complete the number sentences.

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

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

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


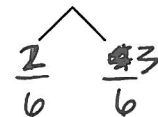
$2\frac{4}{5} \xrightarrow{+\frac{1}{5}} 3 \xrightarrow{-\frac{1}{5}} 3\frac{1}{5}$

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



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

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



$4\frac{4}{6} \xrightarrow{+\frac{2}{6}} 5 \xrightarrow{+\frac{3}{6}} 5\frac{3}{6}$

4. Solve.

a. $2\frac{3}{5} + \frac{3}{5} = 3\frac{1}{5}$	b. $3\frac{6}{8} + \frac{4}{8} = 4\frac{2}{8}$
c. $5\frac{4}{6} + \frac{3}{6} = 6\frac{1}{6}$	d. $\frac{7}{10} + 6\frac{6}{10} = 7\frac{3}{10}$
e. $\frac{5}{10} + 8\frac{9}{10} = 9\frac{4}{10}$	f. $7\frac{8}{12} + \frac{11}{12} = 8\frac{7}{12}$
g. $3\frac{90}{100} + \frac{58}{100} = 4\frac{48}{100}$	h. $\frac{60}{100} + 14\frac{79}{100} = 15\frac{39}{100}$

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.

Answers  
vary 😊

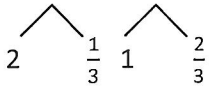
↑  
this is another  
way to say 1

Name \_\_\_\_\_

Date \_\_\_\_\_

1. Solve.

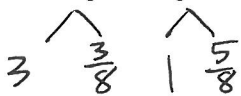
$$a. 2\frac{1}{3} + 1\frac{2}{3} = 3 + \frac{3}{3} = 4$$



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

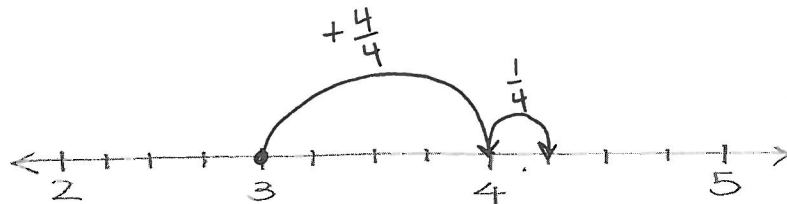
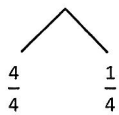


$$c. 3\frac{3}{8} + 1\frac{5}{8} = 4 + \frac{8}{8} = 5$$

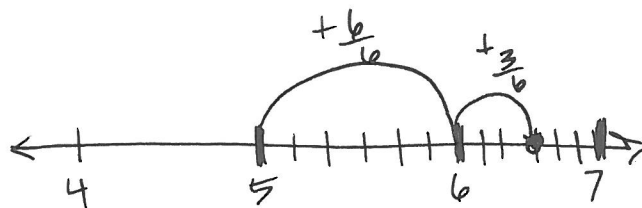
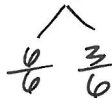


2. Solve. Use a number line to show your work.

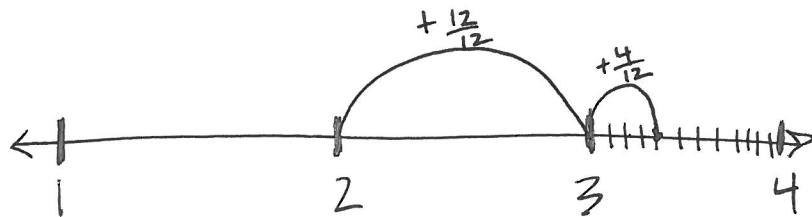
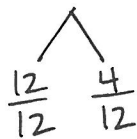
$$a. 2\frac{2}{4} + 1\frac{3}{4} = 3 + \frac{5}{4} = \underline{\quad}$$



$$b. 3\frac{4}{6} + 2\frac{5}{6} = 5\frac{9}{6} = 6\frac{3}{6}$$



$$c. 1\frac{9}{12} + 1\frac{7}{12} = 2 + \frac{16}{12}$$



different ways to decompose

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

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

$$\begin{array}{c} \wedge \\ \frac{1}{4} \quad \frac{2}{4} \end{array}$$

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

b.  $2\frac{7}{8} + 3\frac{4}{8} = 5\frac{11}{8} = 5 + \frac{8}{8} + \frac{3}{8} = 6\frac{3}{8}$

$$\begin{array}{c} \wedge \\ \frac{8}{8} \quad \frac{3}{8} \end{array}$$

$$5 \xrightarrow{+\frac{8}{8}} 6 \xrightarrow{+\frac{3}{8}} 6\frac{3}{8}$$

c.  $1\frac{7}{9} + 4\frac{5}{9} = 5\frac{7}{9} + \frac{5}{9} = 5\frac{7}{9} + \frac{2}{9} + \frac{3}{9} = 6 + \frac{3}{9} = 6\frac{3}{9}$

$$\begin{array}{c} \wedge \\ \frac{2}{9} \quad \frac{3}{9} \end{array}$$

$$5\frac{7}{9} \xrightarrow{+\frac{2}{9}} 6 \xrightarrow{+\frac{3}{9}} 6\frac{3}{9}$$

4. Solve. Use whichever method you prefer.

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

$$\begin{array}{c} \wedge \\ \frac{1}{5} \quad \frac{2}{5} \end{array}$$

b.  $3\frac{8}{10} + 1\frac{5}{10} = 4\frac{8}{10} + \frac{5}{10} = 5\frac{3}{10}$

$$\begin{array}{c} \wedge \\ \frac{2}{10} \quad \frac{3}{10} \end{array}$$

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

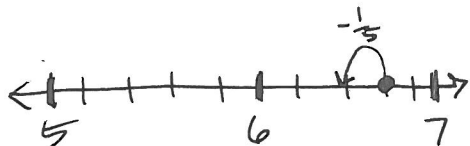
$$\begin{array}{c} \wedge \\ \frac{2}{7} \quad \frac{4}{7} \end{array}$$

Name \_\_\_\_\_

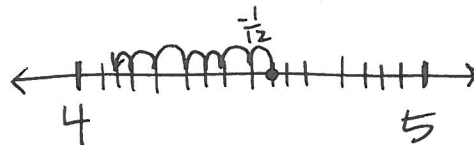
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1. Subtract. Model with a number line or the arrow way.

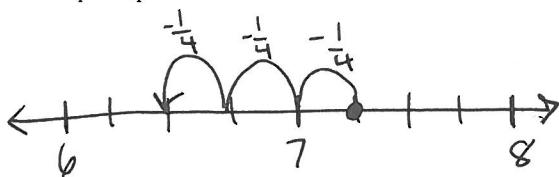
a.  $6\frac{3}{5} - \frac{1}{5} = 6\frac{2}{5}$



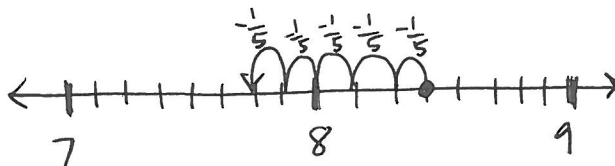
b.  $4\frac{9}{12} - \frac{7}{12} = 4\frac{2}{7}$



c.  $7\frac{1}{4} - \frac{3}{4} = 6\frac{2}{4}$

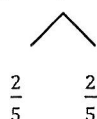


d.  $8\frac{3}{8} - \frac{5}{8} = 7\frac{6}{8}$



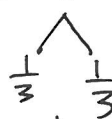
2. Use decomposition to subtract the fractions. Model with a number line or the arrow way.

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



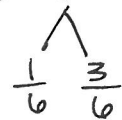
$$2\frac{2}{5} - \frac{2}{5} \rightarrow 2\frac{-2}{5} \rightarrow 1\frac{3}{5}$$

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



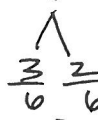
$$2\frac{1}{3} - \frac{1}{3} \rightarrow 2\frac{-1}{3} \rightarrow 1\frac{2}{3}$$

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



$$4\frac{1}{6} - \frac{1}{6} \rightarrow 4\frac{-3}{6} \rightarrow 3\frac{3}{6}$$

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



$$3\frac{3}{6} - \frac{3}{6} \rightarrow 3\frac{-2}{6} \rightarrow 2\frac{4}{6}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{3}{8} \quad \frac{4}{8} \\ \hline 9\frac{3}{8} \xrightarrow{-\frac{3}{8}} 9\frac{-4}{8} \xrightarrow{-1} 8\frac{4}{8} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{1}{10} \quad \frac{5}{10} \\ \hline 7\frac{1}{10} \xrightarrow{-\frac{1}{10}} 7\frac{-5}{10} \xrightarrow{-1} 6\frac{5}{10} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{1}{8} \quad \frac{4}{8} \\ \hline 10\frac{1}{8} \xrightarrow{-\frac{1}{8}} 10\frac{-4}{8} \xrightarrow{-1} 9\frac{4}{8} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{4}{12} \quad \frac{3}{12} \\ \hline 9\frac{4}{12} \xrightarrow{-\frac{4}{12}} 9\frac{-3}{12} \xrightarrow{-1} 8\frac{9}{12} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{3}{5} \quad \frac{1}{5} \\ \hline 11\frac{3}{5} \xrightarrow{-\frac{3}{5}} 11\frac{-1}{5} \xrightarrow{-1} 10\frac{4}{5} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ \frac{1}{9} \quad \frac{4}{9} \\ \hline 17\frac{1}{9} \xrightarrow{-\frac{1}{9}} 17\frac{-4}{9} \xrightarrow{-1} 16\frac{5}{9} \end{array}$$

3. Decompose the total to subtract the fractions.

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

$$\begin{array}{r} \swarrow \quad \searrow \\ 3\frac{1}{8} \quad 1 - \frac{3}{8} \\ \hline \frac{8}{8} \end{array}$$

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

$$\begin{array}{r} \swarrow \quad \searrow \\ 4\frac{2}{5} \quad \frac{2}{5} \\ \hline \end{array}$$

$$c. 7\frac{1}{8} - \frac{3}{8} = 6\frac{1}{8} + \frac{5}{8} = 6\frac{6}{8}$$

$$\begin{array}{r} \swarrow \quad \searrow \\ 6\frac{1}{8} \quad 1 \\ \hline \frac{8}{8} \end{array}$$

$$e. 6\frac{3}{10} - \frac{7}{10} = 5\frac{3}{10} + \frac{3}{10} = 5\frac{6}{10}$$

$$\begin{array}{r} \swarrow \quad \searrow \\ 5\frac{3}{10} \quad \frac{3}{10} \\ \hline \end{array}$$

$$d. 3\frac{3}{9} - \frac{4}{9} = 2\frac{3}{9} + \frac{5}{9} = 2\frac{8}{9}$$

$$\begin{array}{r} \swarrow \quad \searrow \\ 2\frac{3}{9} \quad 1 \\ \hline \end{array}$$

$$f. 2\frac{5}{9} - \frac{8}{9} = 1\frac{5}{9} + \frac{1}{9} = 1\frac{6}{9}$$

$$\begin{array}{r} \swarrow \quad \searrow \\ 1\frac{5}{9} \quad \frac{1}{9} \\ \hline \end{array}$$



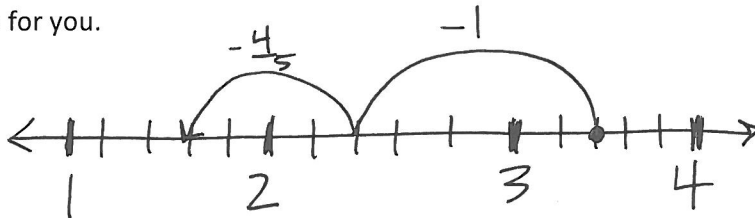
Name \_\_\_\_\_

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.

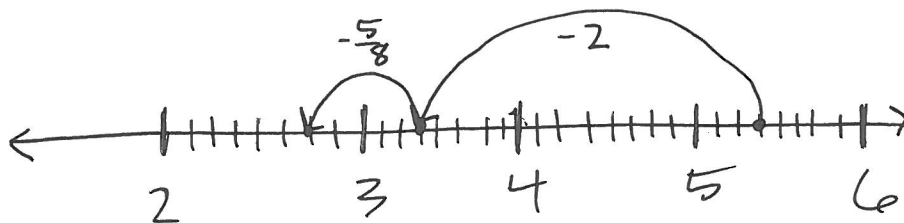
$$a. \quad 3\frac{2}{5} - 1\frac{4}{5} = \underline{1\frac{3}{5}}$$

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



$$b. \quad 5\frac{3}{8} - 2\frac{5}{8} = 2\frac{6}{8}$$

$$2\frac{5}{8} + 2\frac{6}{8} = 5\frac{3}{8}$$



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.

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

$$\begin{array}{c} \wedge \\ \frac{1}{5} \quad \frac{2}{5} \end{array}$$

$$b. \quad 4\frac{1}{7} - 2\frac{4}{7} = 2\frac{1}{7} - \frac{4}{7} = 2 - \frac{3}{7} = 1\frac{4}{7}$$

$$\begin{array}{c} \wedge \\ \frac{1}{7} \quad \frac{3}{7} \end{array}$$

$$c. \quad 5\frac{5}{12} - 3\frac{8}{12} = 2\frac{5}{12} - \frac{8}{12} = 2 - \frac{3}{12} = 1\frac{9}{12}$$

$$\begin{array}{c} \wedge \\ \frac{5}{12} \quad \frac{3}{12} \end{array}$$

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

$$\text{a. } 5\frac{5}{8} - 2\frac{7}{8} = 3\frac{5}{8} - \frac{7}{8} = 2\frac{5}{8} + \frac{1}{8} = 2\frac{6}{8}$$

$\begin{array}{c} \wedge \\ 2\frac{5}{8} \quad 1 \end{array}$

$$\text{b. } 4\frac{3}{12} - 3\frac{8}{12} = 1\frac{3}{12} - \frac{8}{12} = \frac{3}{12} + \frac{4}{12} = \frac{7}{12}$$

$\begin{array}{c} \wedge \\ \frac{3}{12} \quad \frac{12}{12} \end{array}$

$$\text{c. } 9\frac{1}{10} - 6\frac{9}{10} = 3\frac{1}{10} - \frac{9}{10} = 2\frac{1}{10} + \frac{1}{10} = 2\frac{2}{10}$$

$\begin{array}{c} \wedge \\ 2\frac{1}{10} \quad \frac{10}{10} \end{array}$

4. Solve using any strategy.

$$\text{a. } 6\frac{1}{9} - 4\frac{3}{9} = 2\frac{1}{9} - \frac{3}{9} = 1\frac{7}{9}$$

$$\text{b. } 5\frac{3}{10} - 3\frac{6}{10} = 2\frac{3}{10} - \frac{6}{10} = 1\frac{7}{10}$$

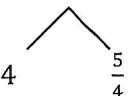
$$\text{c. } 8\frac{7}{12} - 5\frac{9}{12} = 3\frac{7}{12} - \frac{9}{12} = 2\frac{10}{12}$$

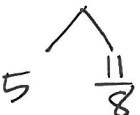
$$\text{d. } 7\frac{4}{100} - 2\frac{92}{100} = 5\frac{4}{100} - \frac{92}{100} = 4\frac{88}{100}$$

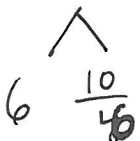
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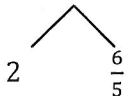
1. Subtract.

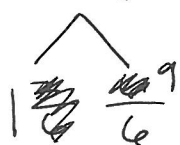
$$a. \quad 5\frac{1}{4} - \frac{3}{4} = 4\frac{2}{4}$$


$$b. \quad 6\frac{3}{8} - \frac{6}{8} = 5\frac{5}{8}$$


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


2. Subtract the ones first.

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


$$b. \quad 4\frac{3}{6} - 2\frac{5}{6} = 2\frac{3}{6} - \frac{5}{6} = \cancel{1\frac{3}{6}} \mid \frac{4}{6}$$


$$c. \quad 8\frac{3}{8} - 2\frac{5}{8} = 6\frac{3}{8} - \frac{5}{8} = 5\frac{6}{8}$$

$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 5\frac{11}{8}$$

$$d. \quad 13\frac{3}{10} - 8\frac{7}{10} = 5\frac{3}{10} - \frac{7}{10} = 4\frac{6}{10}$$

$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 4\frac{13}{10}$$

3. Solve using any strategy.

$$a. \quad 7\frac{3}{12} - 4\frac{9}{12} = 3\frac{3}{12} - \frac{9}{12} = 2\frac{6}{12}$$

$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 2\frac{15}{12}$$

$$b. \quad 9\frac{6}{10} - 5\frac{8}{10} = 4\frac{6}{10} - \frac{8}{10} = 3\frac{8}{10}$$

$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 3\frac{16}{10}$$

$$c. \quad 17\frac{2}{16} - 9\frac{7}{16} = 8\frac{2}{16} - \frac{7}{16} = 7\frac{11}{16}$$

$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 7\frac{18}{16}$$

$$d. \quad 12\frac{5}{100} - 8\frac{94}{100} = 4\frac{5}{100} - \frac{94}{100} = 3\frac{11}{100}$$

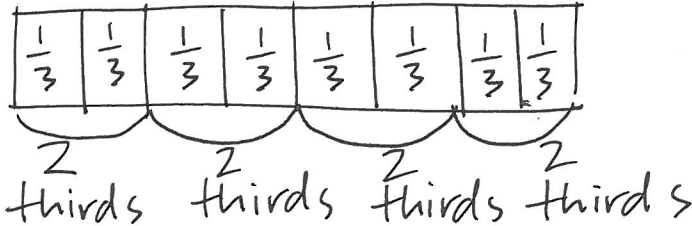
$$\quad \quad \quad \wedge$$

$$\quad \quad \quad 3\frac{105}{100}$$

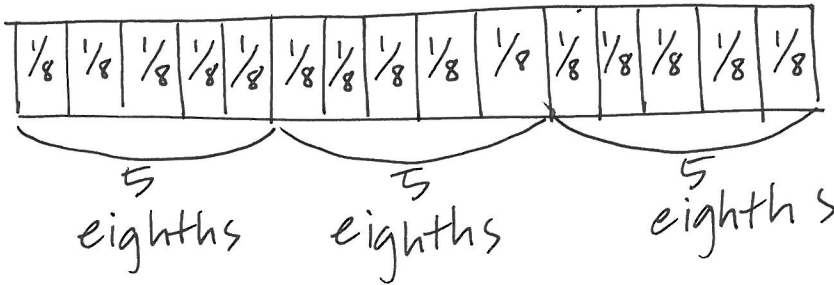
Name \_\_\_\_\_

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1. Draw and label a tape diagram to show the following are true.
- a.  $8 \text{ thirds} = 4 \times (2 \text{ thirds}) = (4 \times 2) \text{ thirds}$



- b.  $15 \text{ eighths} = 3 \times (5 \text{ eighths}) = (3 \times 5) \text{ eighths}$



2. Write the expression in unit form to solve.

a.  $10 \times \frac{2}{5} = \frac{20}{5}$

$7 \times 2 \text{ fifths} = 20 \text{ fifths}$

b.  $3 \times \frac{5}{6} = \frac{15}{6}$

$3 \times 5 \text{ sixths} = 15 \text{ sixths}$

c.  $9 \times \frac{4}{9} = \frac{36}{9}$

$9 \times 4 \text{ ninths} = 36 \text{ ninths}$

d.  $7 \times \frac{3}{4} = \frac{21}{4}$

$7 \times 3 \text{ fourths} = 21 \text{ fourths}$

3. Solve.

a.  $6 \times \frac{3}{4} = \frac{6 \times 3}{4} = \frac{18}{4}$

b.  $7 \times \frac{5}{8} = \frac{7 \times 5}{8} = \frac{35}{8}$

c.  $13 \times \frac{2}{3} = \frac{13 \times 2}{3} = \frac{26}{3}$

d.  $18 \times \frac{2}{3} = \frac{18 \times 2}{3} = \frac{36}{3}$

e.  $14 \times \frac{7}{10} = \frac{14 \times 7}{10} = \frac{98}{10}$

f.  $7 \times \frac{14}{100} = \frac{7 \times 14}{100} = \frac{98}{100}$

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?

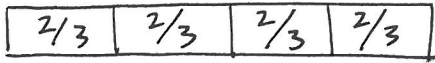
$$5 \times \frac{2}{3} = \frac{10}{3} \text{ or } 3\frac{1}{3} \text{ cups of orange juice}$$

Name \_\_\_\_\_

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1. Draw a tape diagram to represent

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

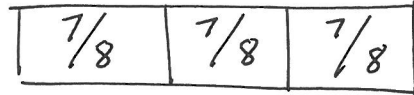


Write a multiplication expression equal to

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

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

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



Write a multiplication expression equal to

$$\frac{7}{8} + \frac{7}{8} + \frac{7}{8}$$

$$3 \times \frac{7}{8}$$

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.

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

$$b. \frac{7}{10} + \frac{7}{10} + \frac{7}{10} = 3 \times \frac{7}{10} = \frac{3 \times 7}{10} = \frac{21}{10} = 2\frac{1}{10}$$

$$c. \frac{5}{12} + \frac{5}{12} + \frac{5}{12} + \frac{5}{12} + \frac{5}{12} + \frac{5}{12} = 6 \times \frac{5}{12} = \frac{6 \times 5}{12} = \frac{30}{12} = 2\frac{6}{12}$$

$$d. \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} + \frac{3}{8} = 12 \times \frac{3}{8} = \frac{12 \times 3}{8} = \frac{36}{8} = 4\frac{4}{8}$$

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

$$a. 7 \times \frac{2}{9} = \frac{14}{9} = 1\frac{5}{9}$$

$$b. 11 \times \frac{2}{3} = \frac{22}{3} = 7\frac{1}{3}$$

c.  $40 \times \frac{2}{6} = \frac{80}{6} = 13 \frac{2}{6}$

d.  $24 \times \frac{5}{6} = \frac{125}{6} = 20 \frac{5}{6}$

e.  $23 \times \frac{3}{5} = \frac{69}{5} = 13 \frac{4}{5}$

f.  $34 \times \frac{2}{8} = \frac{68}{8} = 8 \frac{4}{8}$

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?

$$17 \times \frac{3}{4} = \frac{51}{4} = 12 \frac{3}{4} \text{ inches}$$

(1 foot  $\frac{3}{4}$  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?

$$11 \times \frac{3}{8} = \frac{33}{8} = 4 \frac{1}{8} \text{ pizzas}$$

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

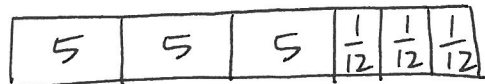
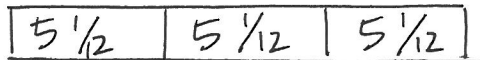
$$12 \times \frac{3}{4} = \frac{36}{4} = 9 \text{ feet long}$$



Name \_\_\_\_\_

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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.

$$3 \times 5\frac{1}{12} \quad \left(3 \times 5\right) + \left(3 \times \frac{1}{12}\right)$$

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.)

<p>a. <math>3 \times 6\frac{4}{5} = 3 \times \left(6 + \frac{4}{5}\right)</math></p> $= (3 \times 6) + \left(3 \times \frac{4}{5}\right)$ $= 18 + \frac{12}{5}$ $= 18 + 2\frac{2}{5}$ $= 20\frac{2}{5}$	<p>b. <math>5 \times 4\frac{1}{6}</math></p> $= (5 \times 4) + \left(5 \times \frac{1}{6}\right)$ $= 20 + \frac{5}{6}$ $= 20\frac{5}{6}$
<p>c. <math>6 \times 2\frac{3}{5}</math></p> $= (6 \times 2) + \left(6 \times \frac{3}{5}\right)$ $= 12 + \frac{18}{5}$ $= 12 + 3\frac{3}{5}$ $= 15\frac{3}{5}$	<p>d. <math>2 \times 7\frac{3}{10}</math></p> $= (2 \times 7) + \left(2 \times \frac{3}{10}\right)$ $= 14 + \frac{6}{10}$ $= 14\frac{6}{10}$

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

$$= (8 \times 7) + (8 \times \frac{1}{4})$$

$$= 56 + \frac{8}{4}$$

$$= 56 + 2$$

$$= 58$$

f.  $3\frac{3}{8} \times 12$

$$= (12 \times 3) + (12 \times \frac{3}{8})$$

$$= 36 + \frac{36}{8}$$

$$= 36 + 4\frac{4}{8}$$

$$= 40\frac{4}{8}$$

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

$$6 \times 2\frac{3}{10} = (6 \times 2) + (6 \times \frac{3}{10})$$

$$= 12 + \frac{18}{10}$$

$$= 12 + 1\frac{8}{10}$$

$$= 13\frac{8}{10} \text{ miles}$$

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?

$$4\frac{7}{10} \times 6 = (6 \times 4) + (6 \times \frac{7}{10})$$

$$= 24 + \frac{42}{10}$$

$$= 24 + 4\frac{2}{10}$$

$$= 28\frac{2}{10} \text{ pounds}$$

Name \_\_\_\_\_

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1. Fill in the unknown factors.

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

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

2. Multiply. Use the distributive property.

$$\begin{aligned} \text{a. } 6 \times 8\frac{2}{7} &= (6 \times 8) + (6 \times \frac{2}{7}) \\ &= 48 + \frac{12}{7} \\ &= 48 + 1\frac{5}{7} \\ &= 49\frac{5}{7} \end{aligned}$$

$$\begin{aligned} \text{b. } 7\frac{3}{4} \times 9 &= (9 \times 7) + (9 \times \frac{3}{4}) \\ &= 63 + \frac{27}{4} \\ &= 63 + 6\frac{3}{4} \\ &= 69\frac{3}{4} \end{aligned}$$

$$\begin{aligned} \text{c. } 9 \times 8\frac{7}{9} &= (9 \times 8) + (9 \times \frac{7}{9}) \\ &= 72 + \frac{63}{9} \\ &= 72 + 7 \\ &= 79 \end{aligned}$$

$$\begin{aligned} \text{d. } 25\frac{7}{8} \times 3 &= (3 \times 25) + (3 \times \frac{7}{8}) \\ &= 75 + \frac{21}{8} \\ &= 75 + 2\frac{5}{8} \\ &= 77\frac{5}{8} \end{aligned}$$

$$\begin{aligned} \text{e. } 4 \times 20\frac{8}{12} &= (4 \times 20) + (4 \times \frac{8}{12}) \\ &= 80 + \frac{32}{12} \\ &= 80 + 2\frac{8}{12} \\ &= 82\frac{8}{12} \end{aligned}$$

$$\begin{aligned} \text{f. } 30\frac{3}{100} \times 12 &= (30 \times 12) + (12 \times \frac{3}{100}) \\ &= 360 + \frac{36}{100} \\ &= 360\frac{36}{100} \end{aligned}$$

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 boards?

$$\begin{aligned} 9 \times 4\frac{5}{8} &= (9 \times 4) + (9 \times \frac{5}{8}) \\ &= 36 + \frac{45}{8} && \text{Brandon had} \\ &= 36 + 5\frac{5}{8} && 41\frac{5}{8} \text{ feet of boards} \\ &= 41\frac{5}{8} \end{aligned}$$

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?

$$\begin{aligned} 14 \times 3\frac{1}{4} &= (14 \times 3) + (14 \times \frac{1}{4}) \\ &= 42 + \frac{14}{4} && \text{Rocky ate} \\ &= 42 + 3\frac{2}{4} && 45\frac{2}{4} \text{ cups of dog food} \\ &= 45\frac{2}{4} \end{aligned}$$

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

$$\begin{aligned} 25 \times 8\frac{5}{8} &= (25 \times 8) + (25 \times \frac{5}{8}) \\ &= 200 + \frac{125}{8} && \text{The teacher should} \\ &= 200 + 15\frac{5}{8} && \text{buy at least } 215\frac{5}{8} \\ &= 215\frac{5}{8} && \text{ounces of juice} \end{aligned}$$

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Use the RDW process to solve.

1. A grocery store had a sale on ground turkey. Eight families each bought  $2\frac{1}{2}$  pounds of ground turkey. How many pounds did the store sell to these families?

$$\begin{array}{l}
 \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}} \\
 \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}} \quad \boxed{2\frac{1}{2}}
 \end{array}
 = 8 \times 2\frac{1}{2}$$

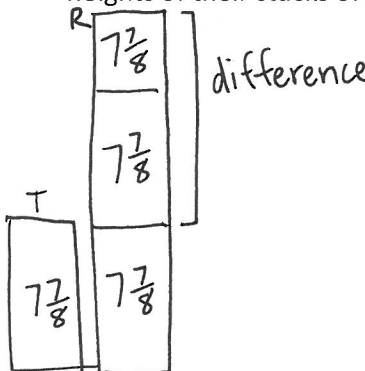
$$= (8 \times 2) + (8 \times \frac{1}{2})$$

$$= 16 + 2$$

$$= 18$$

The store sold 18 pounds of turkey

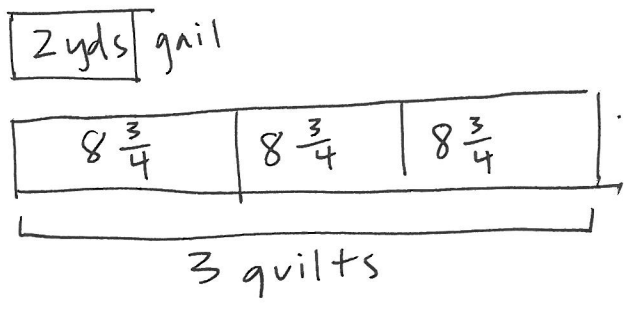
2. Trevor's stack of books is  $7\frac{7}{8}$  inches tall. Rick's stack is 3 times as tall. What is the difference in the heights of their stacks of books?



$$\begin{array}{l}
 2 \times 7\frac{7}{8} = (2 \times 7) + (2 \times \frac{7}{8}) \\
 = 14 + \frac{14}{8} \\
 = 14 + 1\frac{6}{8} \\
 = 15\frac{6}{8}
 \end{array}$$

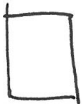
Rick's stack of books is  $15\frac{6}{8}$  inches taller

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



$$\begin{array}{r}
 3 \times 8\frac{3}{4} = 24 + \frac{9}{4} \\
 = 24 + 2\frac{1}{4} \\
 = 26\frac{1}{4} \\
 - \quad 2 \leftarrow \text{what Gail has} \\
 \hline
 24\frac{1}{4}
 \end{array}$$

Gail needs to buy  $24\frac{1}{4}$  more yards of fabric



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?

$$\boxed{12\frac{3}{8}} \text{ Juice}$$

$$\boxed{12\frac{3}{8} \quad 12\frac{3}{8} \quad 12\frac{3}{8}} \text{ ginger ale}$$

$$\boxed{1} \text{ lemonade}$$

The recipe made  
 $50\frac{4}{8}$  cups of punch

$$\begin{aligned} 4 \times 12\frac{3}{8} &= 48 + \frac{12}{8} \\ &= 48 + 1\frac{4}{8} \\ &= 49\frac{4}{8} \\ &\quad + 1 \leftarrow \text{lemonade} \\ &= 50\frac{4}{8} \end{aligned}$$

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?

$$\text{Monday: } \boxed{72\frac{7}{10}}$$

$$\text{Tuesday: } \boxed{72\frac{7}{10} \quad 72\frac{7}{10} \quad 72\frac{7}{10}}$$

$$\begin{aligned} \text{total?} &= 4 \times 72\frac{7}{10} \\ &= 288 + \frac{28}{10} \\ &= 288 + 2\frac{8}{10} \\ &= 290\frac{8}{10} \end{aligned}$$

Brandon drove  $290\frac{8}{10}$  miles

6. Mr. Reiser fills the gas tank of his truck with  $9\frac{8}{10}$  gallons of gas each week. He fills it five times per month. If Mr. Reiser pays \$3 per gallon for gas, how much will it cost him to fill his truck for the entire month?

$$\boxed{9\frac{8}{10} \quad 9\frac{8}{10} \quad 9\frac{8}{10} \quad 9\frac{8}{10} \quad 9\frac{8}{10}} \times \$3 \text{ per gallon}$$

$$\begin{aligned} &= 5 \times 9\frac{8}{10} \\ &= 45 + \frac{40}{10} \\ &= 45 + 4 \\ &= 49 \text{ gallons} \end{aligned}$$

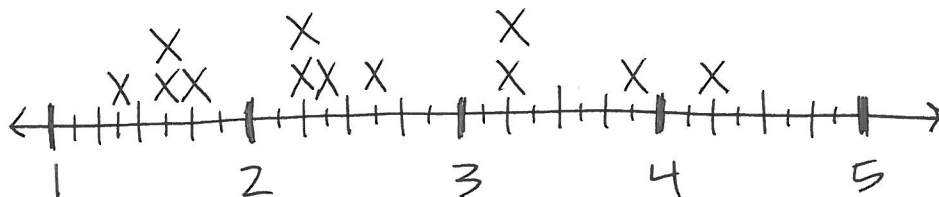
$$\begin{array}{r} 49 \text{ gallons} \\ \times \quad 3 \text{ \$ per gallon} \\ \hline \$147 \text{ per month} \end{array}$$

Name \_\_\_\_\_

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1. The chart to the right shows the total monthly rainfall for a city. 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	$1\frac{5}{8}$



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

$$\begin{array}{l} \text{May } 4\frac{1}{4} < \begin{matrix} 3 \\ \frac{5}{4} \rightarrow \frac{10}{8} \end{matrix} \quad 3\frac{10}{8} - 1\frac{3}{8} = 2\frac{7}{8} \text{ inches difference} \\ \text{Feb } 1\frac{3}{8} \end{array}$$

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

$$\begin{array}{l} \text{May } 4\frac{1}{4} \rightarrow 3\frac{5}{4} \rightarrow 3\frac{10}{8} - 2\frac{5}{8} = 1\frac{5}{8} \text{ more inches of rain} \\ \text{April } 2\frac{5}{8} \end{array} \text{ fell in ~~April~~ May}$$

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

$$\begin{array}{l} 2\frac{1}{4} + 3\frac{7}{8} + 3\frac{1}{4} = 2+3+3 + \frac{2}{8} + \frac{7}{8} + \frac{2}{8} \\ \begin{matrix} \wedge \\ 3\frac{2}{8} \end{matrix} \quad \begin{matrix} \wedge \\ 3\frac{2}{8} \end{matrix} = 8 + \frac{11}{8} \\ = 8 + 1\frac{3}{8} \quad 9\frac{3}{8} \text{ inches of rain} \end{array}$$

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

$$\begin{array}{l} \text{(answer of c)} \qquad \text{Sep Oct Nov Dec} \\ 1\frac{5}{8} + 3\frac{2}{8} + 1\frac{3}{4} + 1\frac{5}{8} = 1+3+1+1 + \frac{5}{8} + \frac{2}{8} + \frac{6}{8} + \frac{5}{8} \left[ \begin{array}{l} 9\frac{3}{8} - 8\frac{2}{8} = 1\frac{1}{8} \text{ in} \\ \text{more rain fell in} \\ \text{the summer} \end{array} \right. \\ \begin{matrix} \wedge \\ 1\frac{6}{8} \end{matrix} = 6 + \frac{18}{8} \\ = 6 + 2\frac{2}{8} = 8\frac{2}{8} \end{array}$$

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

$$\begin{array}{l} 1\frac{5}{8} \times 2 = (2 \times 1) + (2 \times \frac{5}{8}) \\ = 2 + \frac{10}{8} \\ = 3\frac{2}{8} \text{ OR } 3\frac{1}{4} \end{array} \begin{array}{l} \text{August } (3\frac{1}{4}) \\ \text{October } (3\frac{2}{8}) \end{array}$$

f. 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?

$$\begin{array}{l} 10 \times 2\frac{2}{8} = (10 \times 2) + (10 \times \frac{2}{8}) \\ = 20 + \frac{20}{8} \\ = 20 + 2\frac{4}{8} \\ = 22\frac{4}{8} \text{ inches of snow in January} \end{array}$$



Name \_\_\_\_\_

Date \_\_\_\_\_

1. Find the sums. Express each sum as a mixed number.

$$a. \frac{0}{5} + \frac{1}{5} + \frac{2}{5} + \frac{3}{5} + \frac{4}{5} + \frac{5}{5} = \frac{15}{5} = 3$$

$$b. \frac{0}{6} + \frac{1}{6} + \frac{2}{6} + \frac{3}{6} + \frac{4}{6} + \frac{5}{6} + \frac{6}{6} = \frac{21}{6} = 3\frac{3}{6}$$

$$c. \frac{0}{7} + \frac{1}{7} + \frac{2}{7} + \frac{3}{7} + \frac{4}{7} + \frac{5}{7} + \frac{6}{7} + \frac{7}{7} = \frac{28}{7} = 4$$

$$d. \frac{0}{8} + \frac{1}{8} + \frac{2}{8} + \frac{3}{8} + \frac{4}{8} + \frac{5}{8} + \frac{6}{8} + \frac{7}{8} + \frac{8}{8} = \frac{36}{8} = 4\frac{4}{8}$$

$$e. \frac{0}{9} + \frac{1}{9} + \frac{2}{9} + \frac{3}{9} + \frac{4}{9} + \frac{5}{9} + \frac{6}{9} + \frac{7}{9} + \frac{8}{9} + \frac{9}{9} = \frac{45}{9} = 5$$

$$f. \frac{0}{10} + \frac{1}{10} + \frac{2}{10} + \frac{3}{10} + \frac{4}{10} + \frac{5}{10} + \frac{6}{10} + \frac{7}{10} + \frac{8}{10} + \frac{9}{10} + \frac{10}{10} = \frac{55}{10} = 10\frac{5}{10}$$

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

Answers vary 😊

\* the sum of fraction with even denominators have half left over

Why?

$$\text{odd: } \frac{0}{3} + \frac{1}{3} + \frac{2}{3} + \frac{3}{3}$$

└──────────┬──┘ = 1

$$\text{even: } \frac{0}{4} + \frac{1}{4} + \frac{2}{4} + \frac{3}{4} + \frac{4}{4}$$

└──────────┬──┘ = 1

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

The sum would not change because adding 0 does not change the value

4. Find the sums.

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

$\frac{1}{2}$  of 21 =  $10\frac{10}{20}$

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

$\frac{1}{2}$  of 36 = 18

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

$\frac{1}{2}$  of 37 =  $18\frac{18}{36}$

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

$\frac{1}{2}$  of 76 = 38

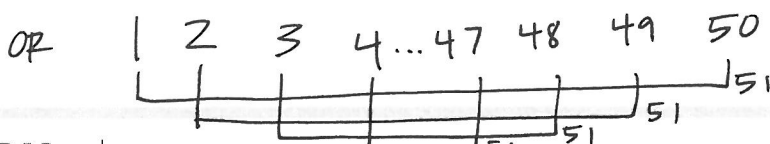
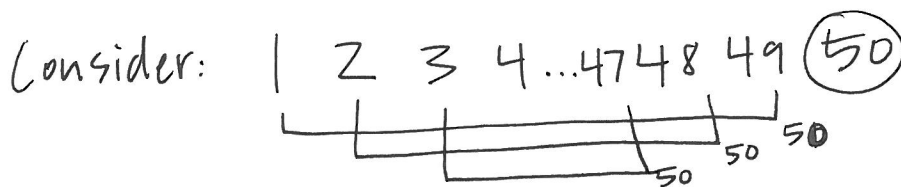
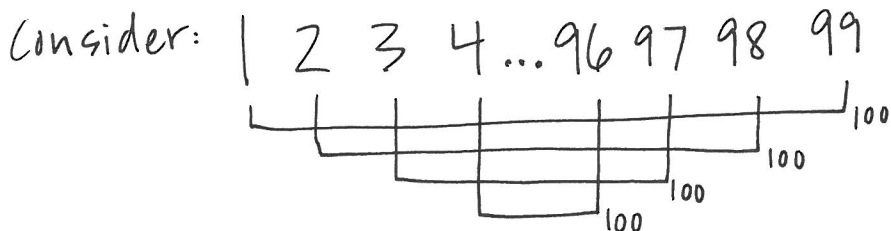
e.  $\frac{0}{100} + \frac{1}{100} + \frac{2}{100} + \dots + \frac{100}{100}$

$\frac{1}{2}$  of 101 =  $50\frac{50}{100}$

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

$\frac{1}{2}$  of 100 = 50

5. Could you apply this strategy to find the sum of all the whole numbers from 0 to 50? To 99? *Answers Vary 😊*



How could you use this to take a shortcut?