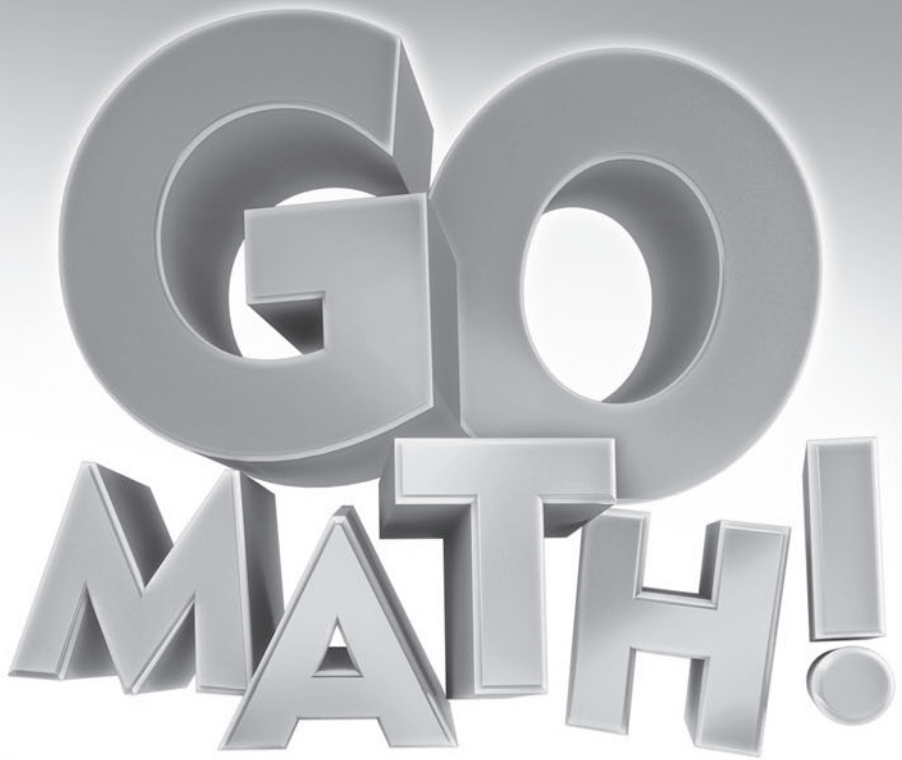
CHAPTER RESOURCES • Chapter 7

Add and Subtract Fractions

Houghton Mifflin Harcourt



INCLUDES

- School-Home Letter
- Vocabulary Game Directions
- Daily Enrichment Activities
- Reteach Intervention for every lesson
- Chapter 7 Test
- Chapter 7 Performance Task
- Answer Keys and Individual Record Forms

Contents

Chapter 7

School-Home Letter

Dear Family,

During the next few weeks, our math class will be learning how to add and subtract fractions and mixed numbers. First, we will use models to find the sums or the differences. Then we will record equations to match our models. Finally, we will add and subtract without using models.

You can expect to see homework that provides practice adding and subtracting fractions with and without models.

Here is a sample of how your child will be taught to add fractions using fraction strips.

Vocabulary

denominator The number in a fraction that tells how many equal parts are in the whole or in the group

fraction A number that names a part of a whole or part of a group

mixed number A number represented by a whole number and a fraction

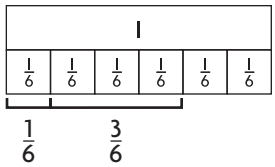
numerator The number in a fraction that tells how many parts of the whole or group are being considered

unit fraction A fraction that has a numerator of 1

MODEL Add Fractions Using Models

This is how we will be adding fractions using fraction strips.

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



STEP 1

Each section represents 1 sixth. How many sixths are there in all?
4 sixths

STEP 2

Write the number of sixths as a fraction.

4 sixths $= \frac{4}{6}$

$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$

Tips

Renaming as a Mixed Number

When the numerator is greater than the denominator, you can rename the sum or the difference as a mixed number.

$$\frac{9}{8} = \frac{8}{8} + \frac{1}{8}$$
$$= 1 + \frac{1}{8}$$
$$= 1\frac{1}{8}$$

Activity

Have your child use measuring cups to practice addition and subtraction of fractions. For example, to model $\frac{1}{4} + \frac{3}{4}$, have your child use rice to fill one measuring cup to the $\frac{1}{4}$-cup mark and another measuring cup to the $\frac{3}{4}$-cup mark. Then ask him or her to combine the amounts to find the sum, $\frac{4}{4}$ or 1 whole cup.

Capítulo 7

Carta para la casa

Querida familia,

Durante las próximas semanas, en la clase de matemáticas estudiaremos la suma y resta de fracciones y números mixtos. Primero usaremos modelos para hallar las sumas o las diferencias. Después haremos ecuaciones que se ajusten a nuestros modelos. Finalmente, sumaremos y restaremos sin usar modelos.

Llevaré a casa tareas con actividades para practicar la suma y la resta de fracciones con y sin modelos.

Este es un ejemplo de la manera como aprenderemos a sumar fracciones usando tiras de fracciones.

Vocabulario

denominador El número de una fracción que dice cuántas partes iguales hay en el todo o en el grupo

fracción Un número que nombra una parte de un todo o una parte de un grupo

número mixto Un número representado por un número entero y una fracción

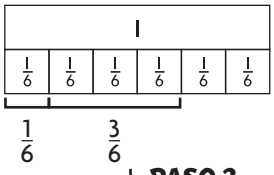
numerador El número de una fracción que dice cuántas partes del todo o de un grupo están siendo consideradas

fracción unitaria Una fracción cuyo numerador es 1

MODELO Sumar fracciones usando modelos

Así sumaremos fracciones usando tiras de fracciones.

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



PASO 1

Cada sección representa 1 sexto. ¿Cuántos sextos hay en total?

4 sextos

PASO 2

Escribe el número de sextos como una fracción.

4 sextos $= \frac{4}{6}$

$\frac{1}{6} + \frac{3}{6} = \frac{4}{6}$

Pistas

Expresar como un número mixto

Cuando el numerador es mayor que el denominador, puedes expresar la suma o la diferencia como un número mixto.

$$\frac{9}{8} = \frac{8}{8} + \frac{1}{8}$$
$$= 1 + \frac{1}{8}$$
$$= 1\frac{1}{8}$$

Actividad

Pida a su hijo/a que use tazas de medir para practicar la suma y la resta de fracciones. Por ejemplo, para hacer un modelo de $\frac{1}{4} + \frac{3}{4}$, pida a su hijo/a que use arroz para llenar una taza de medir hasta la marca de $\frac{1}{4}$ y otra hasta la marca de $\frac{3}{4}$. Luego pídale que combine las cantidades para hallar la suma, $\frac{4}{4}$ o 1 taza completa.

Going Places with GO MATH! words

Game

Bingo

For 3 to 6 players

Materials

- 1 set of word cards
- 1 Bingo board for each player
- game markers

How to Play

1. The caller chooses a card and reads the definition. Then the caller puts the card in a second pile.
2. Players put a marker on the word that matches the definition each time they find it on their Bingo boards.
3. Repeat Steps 1 and 2 until a player marks 5 boxes in a line going down, across, or on a slant and calls "Bingo."
4. Check the answers. Have the player who said "Bingo" read the words aloud while the caller checks the definitions on the cards in the second pile.

Word Box
Associative Property of Addition
Commutative Property of Addition
denominator
fraction
mixed number
numerator
simplest form
unit fraction

Name _____

Add and Subtract Parts of a Whole

Justin has $\frac{3}{8}$ pound of cheddar cheese and $\frac{2}{8}$ pound of brick cheese. How much cheese does he have in all?

Step 1 Use fraction strips to model the problem. Use three $\frac{1}{8}$-strips to represent $\frac{3}{8}$ pound of cheddar cheese.

Step 2 Join two more $\frac{1}{8}$-strips to represent the amount of brick cheese.

Step 3 Count the number of $\frac{1}{8}$-strips. There are _five_ $\frac{1}{8}$-strips. Write the amount as a fraction. Justin has _$\frac{5}{8}$_ pound of cheese.

Step 4 Use the model to write an equation. $\frac{3}{8} + \frac{2}{8} = \frac{5}{8}$

Suppose Justin eats $\frac{1}{8}$ pound of cheese. How much cheese is left?

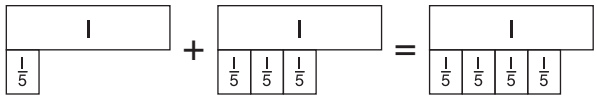
Step 1 Use five $\frac{1}{8}$-strips to represent the $\frac{5}{8}$ pound of cheese.

Step 2 Remove one $\frac{1}{8}$-strip to show the amount eaten.

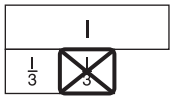
Step 3 Count the number of $\frac{1}{8}$-strips left. There are _four_ $\frac{1}{8}$ fraction strips. There is _$\frac{4}{8}$_ pound left.

Step 4 Write an equation for the model. $\frac{5}{8} - \frac{1}{8} = \frac{4}{8}$

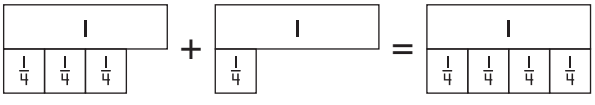
Use the model to write an equation.

1. 

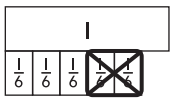
_____

2. 

_____

3. 

_____

4. 

_____

Name _____

Fraction Fun

Solve each problem.

1. Gina ate $\frac{1}{6}$ of an apple pie. Greg ate $\frac{1}{2}$ of the same pie. How much of the apple pie was left?

_____

2. So far, John has run $\frac{1}{4}$ of the way to school and walked $\frac{3}{8}$ of the way. What fraction of the distance to school does John have left?

_____

3. Ann, Nan, and Jan snacked on a plate of fruit slices while doing their homework. Ann ate $\frac{1}{5}$ of the fruit slices, Nan ate $\frac{2}{5}$ of the fruit slices, and Jan ate $\frac{1}{5}$ of the fruit slices. What fraction of the fruit slices are left on the plate?

_____

4. While watching a movie, Ned, Fred, and Jed shared a bowl of popcorn. Ned ate $\frac{1}{2}$ of the popcorn, Fred ate $\frac{1}{4}$ of the popcorn, and Jed ate $\frac{1}{8}$ of the popcorn. What fraction of the bowl of popcorn is left?

_____

5. In a grid of squares, Alice colored $\frac{3}{4}$ of the squares blue. She colored $\frac{1}{8}$ of the squares red. She colored the rest of the squares yellow. What fraction of the squares did Alice color yellow?

_____

6. Pierre bounced a ball for $\frac{1}{3}$ of his recess time. He threw the ball in the air and caught it $\frac{3}{6}$ of the time. He carried the ball the rest of the time. For what fraction of his recess time did he carry the ball?

_____

7. Write Math How did you solve Problem 6? **Explain.**

_____

_____

_____

_____

Name _____

Write Fractions as Sums

A **unit fraction** tells the part of the whole that 1 piece represents. A unit fraction always has a numerator of 1.

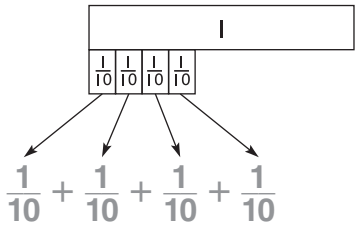
Bryan has $\frac{4}{10}$ pound of clay for making clay figures. He wants to use $\frac{1}{10}$ pound of clay for each figure. How many clay figures can he make?

Use fraction strips to write $\frac{4}{10}$ as a sum of unit fractions.

Step 1 Represent $\frac{4}{10}$ with fraction strips.

Step 2 Each $\frac{1}{10}$ is a unit fraction. Write a $\frac{1}{10}$ addend for each $\frac{1}{10}$-strip you used to show $\frac{4}{10}$.

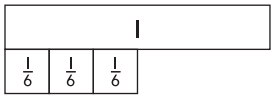
Step 3 Count the number of addends. The number of addends represents the number of clay figures Bryan can make.



So, Bryan can make 4 clay figures.

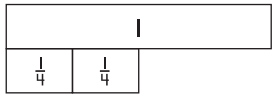
Write the fraction as the sum of unit fractions.

1.



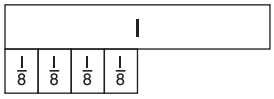
$\frac{3}{6} =$ ___ + ___ + ___

2.



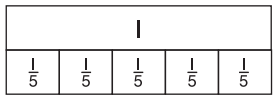
$\frac{2}{4} =$ ___ + ___

3.



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

4.



$\frac{5}{5} =$ ___ + ___ + ___ + ___ + ___

Name _____

Mixed-Up Sums

Match each fraction on the left with an addition problem on the right.

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

7. Stretch Your Thinking Write another possible sum for Exercise 4.

_____

8. Stretch Your Thinking Write another possible sum for Exercise 5. Use $\frac{1}{4}$ for one of the addends. Explain how you found your answer.

_____

_____

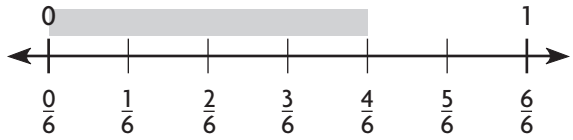
Name _____

Add Fractions Using Models

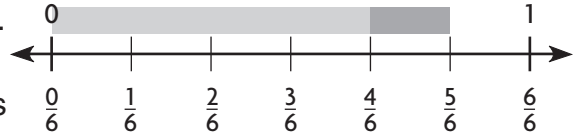
Fractions with like denominators have the same denominator. You can add fractions with like denominators using a number line.

Model $\frac{4}{6} + \frac{1}{6}$.

Step 1 Draw a number line labeled with sixths. Model the fraction $\frac{4}{6}$ by starting at 0 and shading 4 sixths.



Step 2 Add the fraction $\frac{1}{6}$ by shading 1 more sixth.

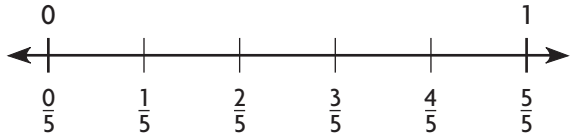


Step 3 How many sixths are there in all? 5 sixths

Write the number of sixths as a fraction.

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

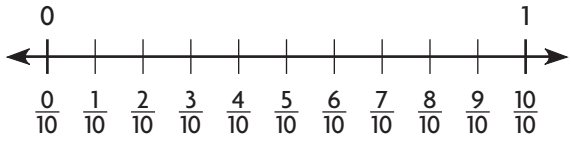
1. Model $\frac{1}{5} + \frac{4}{5}$.



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

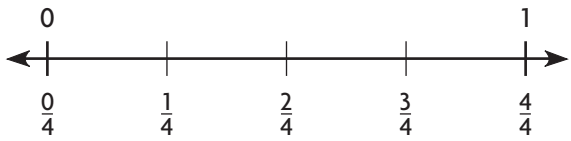
Find the sum. Use a model to help.

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



_____

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



_____

Name _____

Sum Fractions!

Find the two fractions that have the sum shown. Use each fraction only once. Use fraction strips to help.

1. The sum is $\frac{7}{8}$.

$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{5}{8}$	$\frac{7}{8}$

_____

2. The sum is $\frac{5}{6}$.

$\frac{1}{6}$	$\frac{2}{6}$	$\frac{3}{6}$	$\frac{5}{6}$	$\frac{8}{6}$

_____

3. The sum is $\frac{9}{12}$.

$\frac{1}{12}$	$\frac{2}{12}$	$\frac{3}{12}$	$\frac{5}{12}$	$\frac{8}{12}$

_____

4. The sum is $\frac{6}{10}$.

$\frac{1}{10}$	$\frac{2}{10}$	$\frac{3}{10}$	$\frac{4}{10}$	$\frac{6}{10}$

_____

5. The sum is $\frac{4}{4}$.

$\frac{1}{4}$	$\frac{2}{4}$	$\frac{3}{4}$	$\frac{5}{4}$	$\frac{7}{4}$

_____

6. The sum is 1.

$\frac{1}{5}$	$\frac{2}{5}$	$\frac{3}{5}$	$\frac{5}{5}$	$\frac{6}{5}$

_____

7. Stretch Your Thinking Suppose you could use a fraction more than once. What other answer could you find for Exercise 5? Which other exercise would have more than one answer?

_____

8. Write Math Write a fraction sum problem similar to the ones above.

_____

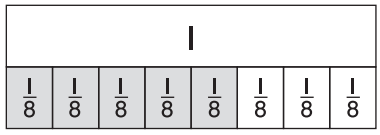
Name _____

Subtract Fractions Using Models

You can subtract fractions with like denominators using fraction strips.

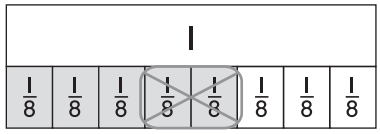
Model $\frac{5}{8} - \frac{2}{8}$.

Step 1 Shade the eighths you start with.
Shade 5 eighths.



Step 2 Subtract $\frac{2}{8}$.

Think: How many eighths are taken away?
Cross out **2** of the shaded eighths.

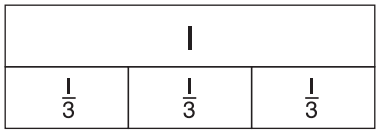


Step 3 Count the shaded eighths that remain.
There are **3** eighths remaining.

Step 4 Write the number of eighths that remain as a fraction.

3 eighths = $\frac{3}{8}$ $\frac{5}{8} - \frac{2}{8} = \frac{3}{8}$

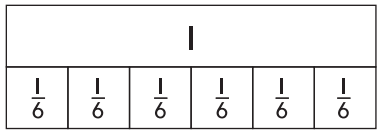
1. Model $\frac{3}{3} - \frac{2}{3}$.



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

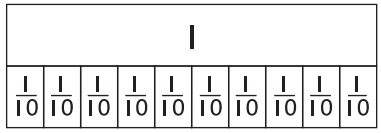
Subtract. Use fraction strips to help.

2. $\frac{5}{6} - \frac{1}{6}$



$\frac{5}{6} - \frac{1}{6} =$ _____

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



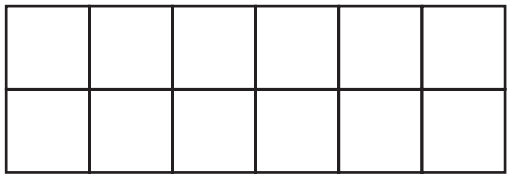
$\frac{6}{10} - \frac{3}{10} =$ _____

Name _____

Fraction Food

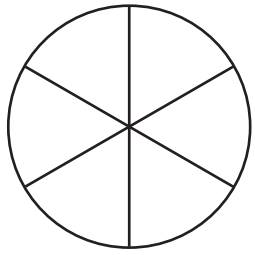
The Foodly family just finished dinner. Help them determine how much food is left. Shade the models to help.

1. The lasagna was cut into 12 equal pieces. The Foodly family ate 7 pieces of lasagna. What fraction of the lasagna is left?



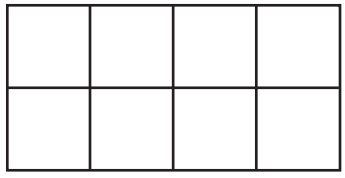
_____ twelfths − _____ twelfths = _____ twelfths or _____

2. The green bean casserole was divided into 6 equal servings. The Foodly family ate 5 servings. What fraction of the casserole is left?



_____ sixths − _____ sixths = _____ sixth or _____

3. The gelatin salad was cut into 8 equal servings. The Foodly family ate 6 servings of the salad. What fraction of the gelatin salad is left?



_____ eighths − _____ eighths = _____ eighths or _____

4. The pumpkin bread was cut into 10 equal pieces. The Foodly family ate 5 pieces. What fraction of the pumpkin bread is left?

_____ tenths − _____ tenths = _____ tenths or _____

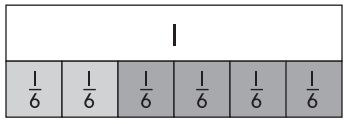
5. **Stretch Your Thinking** The Foodly family had 2 pans of cornbread. Each pan was cut into 5 equal pieces. They ate only 2 pieces. What fraction of the pans of cornbread is left? Draw a model to help.

Name _____

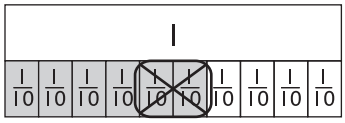
Add and Subtract Fractions

You can find and record the sums and the differences of fractions.

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

Step 1 Model it.	**Step 2** Think: How many sixths are there in all?	**Step 3** Record it.
	There are 6 sixths. 6 sixths $= \frac{6}{6}$	Write the sum as an addition equation. $\frac{2}{6} + \frac{4}{6} = \frac{6}{6}$

Subtract. $\frac{6}{10} - \frac{2}{10}$

Step 1 Model it.	**Step 2** Think: There are 6 tenths. I take away 2 tenths. How many tenths are left?	**Step 3** Record it.
	There are 4 tenths left. 4 tenths $= \frac{4}{10}$	Write the difference as a subtraction equation. $\frac{6}{10} - \frac{2}{10} = \frac{4}{10}$

Find the sum or difference.

1. 7 eighth-size parts − 4 eighth-size parts = _____

$\frac{7}{8} - \frac{4}{8} =$ _____

2. $\frac{11}{12} - \frac{4}{12} =$ _____ **3.** $\frac{2}{10} + \frac{2}{10} =$ _____ **4.** $\frac{6}{8} - \frac{4}{8} =$ _____

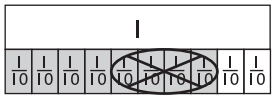
5. $\frac{2}{4} + \frac{2}{4} =$ _____ **6.** $\frac{4}{5} - \frac{3}{5} =$ _____ **7.** $\frac{1}{3} + \frac{2}{3} =$ _____

Name _____

Fraction Equations

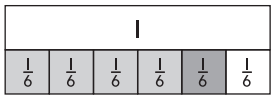
Record the equation shown by the model. Write the answer in simplest form.

1.



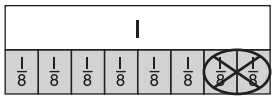
_____ X

2.



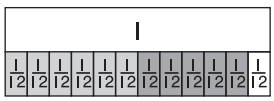
_____ H

3.



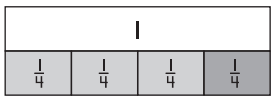
_____ S

4.



_____ I

5.



_____ T

To answer the riddle, write the letter above its answer.

Why did all the fractions think $\frac{1}{6}$ was special?

Because it had a ___ ___ ___ ___ ___ sense!

$\frac{3}{4}$ $\frac{11}{12}$ $\frac{2}{5}$ 1 $\frac{5}{6}$

Name _____

Rename Fractions and Mixed Numbers

A **mixed number** is made up of a whole number and a fraction. You can use multiplication and addition to rename a mixed number as a fraction greater than 1.

Rename $2\frac{5}{6}$ as a fraction.

First, multiply the denominator, or the number of parts in the whole, by the whole number.

$6 \times 2 = 12$

Then, add the numerator to your product.

$12 + 5 = 17$

So, $2\frac{5}{6} = \frac{17}{6}$.

$2\frac{5}{6} = \frac{17}{6}$

17 — total number of parts

6 — number of parts in the whole

You can use division to write a fraction greater than 1 as a mixed number.

Rename $\frac{16}{3}$ as a mixed number.

To rename $\frac{16}{3}$ as a mixed number, divide the numerator by the denominator.

Use the quotient and remainder to write a mixed number.

So, $\frac{16}{3} = 5\frac{1}{3}$.

$$\begin{array}{r} 5 \\ 3\overline{)16} \\ -\,15 \\ \hline 1 \end{array}$$

Write the mixed number as a fraction.

1. $3\frac{2}{3} =$ _____ **2.** $4\frac{3}{5} =$ _____ **3.** $4\frac{3}{8} =$ _____ **4.** $2\frac{1}{6} =$ _____

Write the fraction as a mixed number.

5. $\frac{32}{5} =$ _____ **6.** $\frac{19}{3} =$ _____ **7.** $\frac{15}{4} =$ _____ **8.** $\frac{51}{10} =$ _____

Name _____

The Rename Game

Find the missing number.

1. $51\frac{\square}{5} = \frac{256}{5}$

2. $72\frac{\square}{3} = \frac{218}{3}$

3. $\square\frac{1}{2} = \frac{422}{4}$

4. $\square\frac{1}{4} = \frac{506}{8}$

5. $102\frac{5}{12} = \frac{\square}{12}$

6. $37\frac{1}{3} = \frac{224}{\square}$

7. Write Math Tell how you rename fractions greater than 1 as mixed numbers and mixed numbers as fractions greater than 1.

8. **Stretch Your Thinking** Is it possible for two fractions greater than 1 that have different numerators and denominators to be renamed as the same mixed number? Give an example.

Name _____

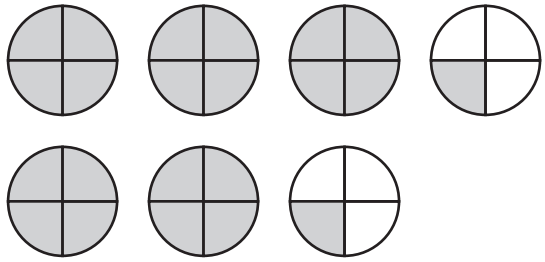
Add and Subtract Mixed Numbers

Find the sum. $3\frac{1}{4} + 2\frac{1}{4}$

Add the whole number and fraction parts.

- Add the whole numbers: $3 + 2 = 5$
- Add the fractions: $\frac{1}{4} + \frac{1}{4} = \frac{2}{4}$

Write the sum as a mixed number, so the fractional part is less than 1. $3\frac{1}{4} + 2\frac{1}{4} = 5\frac{2}{4}$

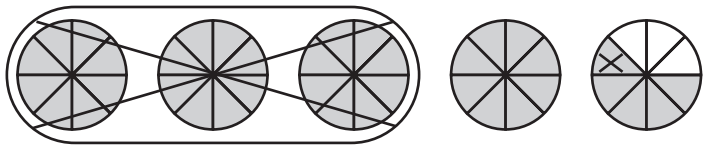


Find the difference. $4\frac{5}{8} - 3\frac{1}{8}$

Subtract the fraction and the whole number parts.

- Subtract the fractions: $\frac{5}{8} - \frac{1}{8} = \frac{4}{8}$
- Subtract the whole numbers: $4 - 3 = 1$

$4\frac{5}{8} - 3\frac{1}{8} = 1\frac{4}{8}$



Find the sum or difference.

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

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

3. $4\frac{7}{12} + 6\frac{5}{12}$ = _____

4. $12\frac{3}{4} - 6\frac{1}{4}$ = _____

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

6. $11\frac{9}{10} - 3\frac{7}{10}$ = _____

7. $7\frac{3}{5} + 4\frac{3}{5}$ = _____

8. $8\frac{3}{6} - 3\frac{1}{6}$ = _____

Name _____

Finding Mixed Numbers

Solve each problem.

1. Find two mixed numbers so that the sum is $8\frac{4}{8}$ and the difference is $2\frac{2}{8}$.

_____

2. Find two mixed numbers so that the sum is $7\frac{2}{4}$ and the difference is 5.

_____

3. Find two mixed numbers so that the sum is $7\frac{2}{8}$ and the difference is $2\frac{4}{8}$.

_____

4. Find two mixed numbers so that the sum is $21\frac{1}{6}$ and the difference is $4\frac{3}{6}$.

_____

5. Find two mixed numbers so that the sum is $15\frac{3}{10}$ and the difference is $8\frac{5}{10}$.

_____

6. Find two mixed numbers so that the sum is 16 and the difference is 5.

_____

7. **Stretch Your Thinking** Find three mixed numbers so that the sum is 18 and the difference between the greatest number and the least number is $5\frac{1}{5}$.

_____

Name _____

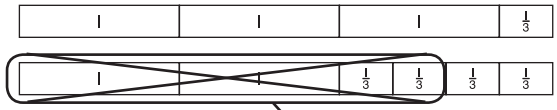
Subtraction with Renaming

Fraction strips can help you subtract mixed numbers or subtract a mixed number from a whole number.

Find the difference. $3\frac{1}{3} - 2\frac{2}{3}$

Step 1 Model the number you are subtracting from, $3\frac{1}{3}$.

Step 2 Because you cannot subtract $\frac{2}{3}$ from $\frac{1}{3}$ without renaming, change one of the 1 strips to three $\frac{1}{3}$ strips. Then subtract by crossing out two wholes and two $\frac{1}{3}$ strips.

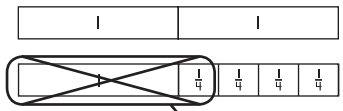


So, $3\frac{1}{3} - 2\frac{2}{3} = \frac{2}{3}$.

Find the difference. $2 - 1\frac{1}{4}$

Step 1 Model the number you are subtracting from, 2.

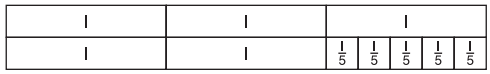
Step 2 Because you cannot subtract $\frac{1}{4}$ from 1 without renaming, change one of the 1 strips to four $\frac{1}{4}$ strips. Then subtract by crossing out one whole and one $\frac{1}{4}$ strip.



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

Find the difference.

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



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

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

4. $3\frac{1}{12} - 2\frac{11}{12}$

5. $4\frac{5}{8} - 2\frac{7}{8}$

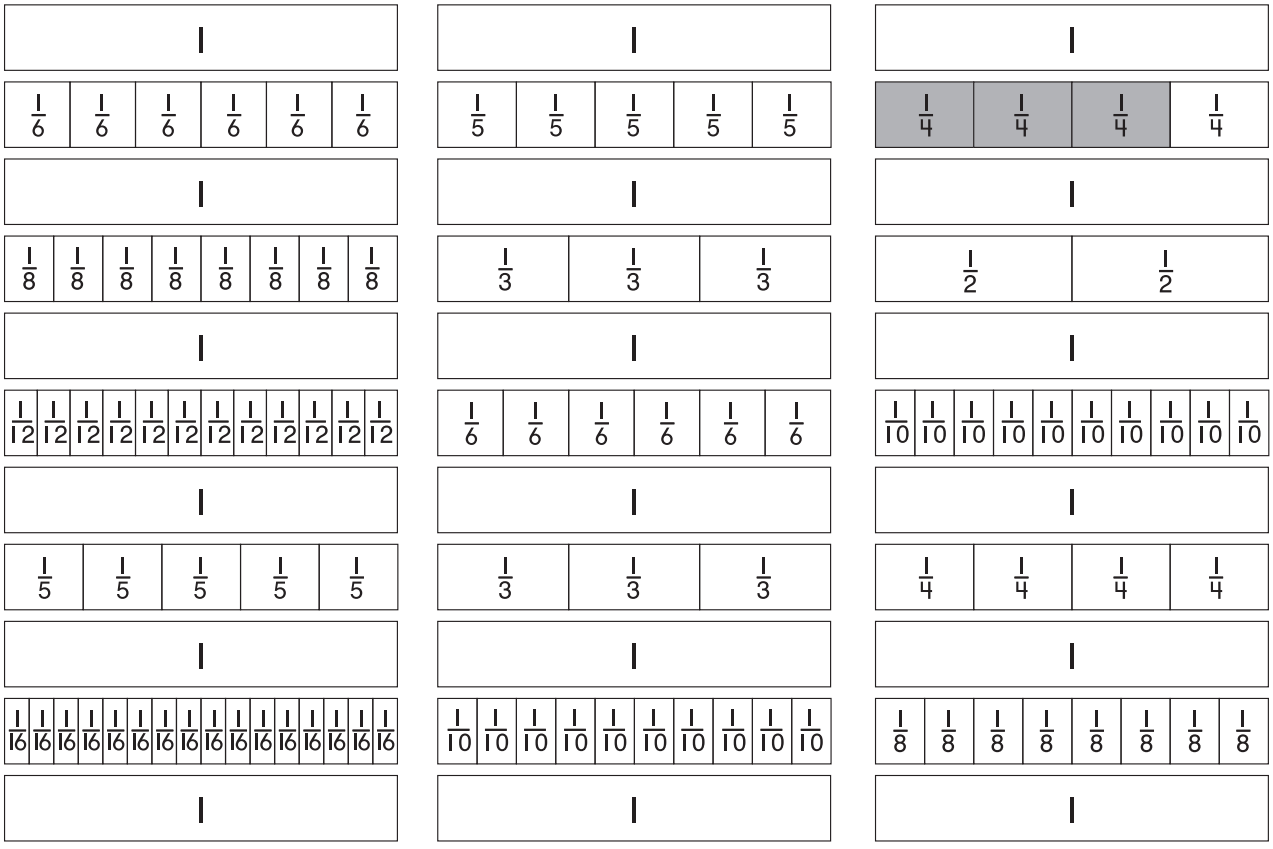
Name _____

Leftovers

The fraction strips shown represent the whole number 33. Subtract the numbers below from 33 by shading the fraction strips. The fraction $\frac{3}{4}$ is shown as an example.

$\frac{3}{4}$ $3\frac{9}{16}$ $1\frac{7}{8}$ $2\frac{4}{5}$ $1\frac{7}{10}$ $\frac{5}{6}$ $1\frac{1}{3}$ $\frac{5}{12}$ $1\frac{3}{8}$ $1\frac{3}{5}$ $2\frac{1}{2}$ $1\frac{2}{3}$ $\frac{1}{6}$

$\frac{5}{16}$ $1\frac{3}{10}$ $\frac{5}{8}$ $\frac{7}{12}$ $1\frac{5}{6}$ $1\frac{2}{3}$ $\frac{3}{4}$ $1\frac{3}{5}$ $\frac{1}{3}$ $\frac{1}{6}$ $\frac{1}{10}$ $1\frac{9}{10}$ $\frac{1}{4}$



1. List the leftover fractions in the fraction strips.

_____

2. What is the difference represented by the leftover fractions?

_____

3. **Stretch Your Thinking** How can you model subtracting $\frac{1}{5}$ if you have only $\frac{1}{10}$ fraction strips?

_____

_____

_____

Name _____

Algebra • Fractions and Properties of Addition

Properties of addition can help you group and order addends so you can use mental math to find sums.

The **Commutative Property of Addition** states that when the order of two addends is changed, the sum is the same. $6 + 3 = 3 + 6$

The **Associative Property of Addition** states that when the grouping of addends is changed, the sum is the same. $(3 + 6) + 4 = 3 + (6 + 4)$

Use the properties and mental math to add $10\frac{3}{8} + 4\frac{7}{8} + 6\frac{5}{8}$.

Step 1 Look for fractions that combine to make 1. $10\frac{3}{8} + 4\frac{7}{8} + 6\frac{5}{8}$

Step 2 Use the Commutative Property to order the addends so that the fractions with a sum of 1 are together. $10\frac{3}{8} + 4\frac{7}{8} + 6\frac{5}{8} = 10\frac{3}{8} + 6\frac{5}{8} + 4\frac{7}{8}$

Step 3 Use the Associative Property to group the addends that you can add mentally. $= \left(10\frac{3}{8} + 6\frac{5}{8}\right) + 4\frac{7}{8}$

Step 4 Add the grouped numbers and then add the other mixed number. $= (17) + 4\frac{7}{8}$

Step 5 Write the sum. $= 21\frac{7}{8}$

Use the properties and mental math to find the sum.

1. $\left(3\frac{1}{5} + 1\frac{2}{5}\right) + 4\frac{4}{5}$ _____

2. $\left(5\frac{7}{10} + 1\frac{4}{10}\right) + 6\frac{3}{10}$ _____

3. $7\frac{3}{4} + \left(5 + 3\frac{1}{4}\right)$ _____

4. $\left(2\frac{5}{12} + 3\frac{11}{12}\right) + 1\frac{7}{12}$ _____

5. $4\frac{7}{8} + \left(6\frac{3}{8} + \frac{1}{8}\right)$ _____

6. $9\frac{2}{6} + \left(4\frac{1}{6} + 7\frac{4}{6}\right)$ _____

Name _____

Mixing Properties

Use addition properties to help you solve each problem.

1. Robyn cut a length of ribbon into four pieces to wrap four gifts. The lengths she cut were $16\frac{7}{12}$ inches, $10\frac{3}{12}$ inches, $4\frac{9}{12}$ inches, and $10\frac{2}{12}$ inches. If she used the whole ribbon, how long was her ribbon?

_____

2. Emily enjoys riding her bike. During a four-day biking trip, she rode $8\frac{1}{8}$ miles, $4\frac{3}{8}$ miles, $5\frac{4}{8}$ miles, $2\frac{7}{8}$ miles, and $6\frac{1}{8}$ miles. How many miles in all did she ride during the trip?

_____

3. Ben's family likes bananas. On Monday, they ate $1\frac{3}{4}$ pounds of bananas. On Tuesday, they ate $2\frac{2}{4}$ pounds. On Wednesday, they ate $2\frac{1}{4}$ pounds. On Thursday, they ate $1\frac{2}{4}$ pounds. How many pounds of bananas did Ben's family eat during the four days?

_____

4. Ms. Cleary runs a catering business. She is buying fruit to make a large order for fruit salad. She buys $5\frac{3}{10}$ pounds of apples, $3\frac{4}{10}$ pounds of oranges, $2\frac{1}{10}$ pounds of bananas, $4\frac{3}{10}$ pounds of green grapes, and $5\frac{4}{10}$ pounds of red grapes. How many pounds of fruit did Ms. Cleary buy in all?

_____

5. Write Math **Explain** how you used the commutative and associative properties to help you add the mixed numbers.

_____

_____

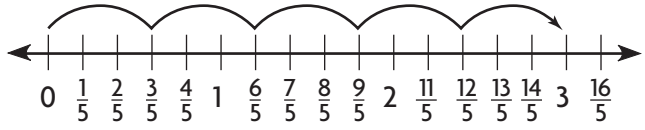
_____

_____

Name _____

Problem Solving • Multistep Fraction Problems

Jeff runs $\frac{3}{5}$ mile each day. He wants to know how many days he has to run before the total number of miles he runs is a whole number.

Read the Problem	Solve the Problem
What do I need to find? I need to find how many days Jeff needs to run $\frac{3}{5}$ mile until the total number of miles he runs is a whole number.	**Describe how to act it out.** **Use a number line.**  Day 1: $\frac{3}{5}$ mile Day 2: $\frac{6}{5}$ mile $\frac{3}{5} + \frac{3}{5} = \frac{6}{5}$ 1 whole mile and $\frac{1}{5}$ mile more Day 3: $\frac{9}{5}$ mile $\frac{3}{5} + \frac{3}{5} + \frac{3}{5} = \frac{9}{5}$ 1 whole mile and $\frac{4}{5}$ mile more Day 4: $\frac{12}{5}$ mile $\frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5} = \frac{12}{5}$ 2 whole miles and $\frac{2}{5}$ mile more Day 5: $\frac{15}{5}$ mile $\frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5} + \frac{3}{5} = \frac{15}{5}$ 3 whole miles So, Jeff will run 3 miles in 5 days.
What information do I need to use? Jeff runs $\frac{3}{5}$ mile a day. He wants the distance run to be a whole number.	
How will I use the information? I can use a number line and patterns to act out the problem.	

1. Lena runs $\frac{2}{3}$ mile each day. She wants to know how many days she has to run before she has run a whole number of miles.

2. Mack is repackaging $\frac{6}{8}$-pound bags of birdseed into 1-pound bags of birdseed. What is the least number of $\frac{6}{8}$-pound bags of birdseed he needs in order to fill 1-pound bags without leftovers?

Name _____

Problem Solving with Fractions

Solve each problem.

1. Cornelia cut equal lengths of ribbon each $\frac{7}{10}$ feet long. The ribbon was $3\frac{1}{2}$ feet long. How many pieces did Cornelia cut?

_____

2. Tim walks $\frac{2}{3}$ mile to school each day. He walks the same distance home. How far does he walk to and from school during a regular school week (5 days)?

_____

3. At a class pizza party, each pizza ordered had $\frac{2}{8}$ of the pizza left over after the party. In all, $1\frac{1}{2}$ pizzas were left over. How many pizzas were ordered?

_____

4. A teacher had 10 pounds of raisins. He has 16 students. He gave each student $\frac{3}{5}$ pound. The teacher kept the leftover raisins for himself. How much did he keep for himself?

_____

5. Stretch Your Thinking Explain how you solved Exercise 4.

_____

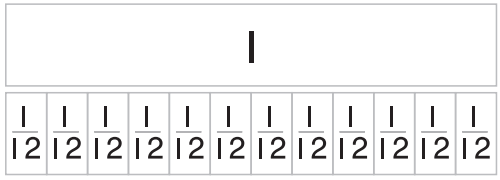
_____

_____

_____

_____

1. Ben uses $\frac{3}{12}$ pound of strawberries and $\frac{2}{12}$ pound of blueberries to make jam.



How many pounds of berries does Ben use to make jam?

_____ pound

2. To get the correct color, Johan mixed $3\frac{1}{4}$ quarts of white paint, $1\frac{2}{4}$ quarts of blue paint, and $2\frac{3}{4}$ quarts of green paint. How much paint did Johan make?

Johan made _____ quarts of paint.

3. Nick had $3\frac{1}{4}$ bottles of water for his wrestling practice. When he finished he had $1\frac{2}{4}$ bottles of water left. He said he used $2\frac{1}{4}$ bottles of water during the practice. Do you agree? Explain.

GO ON

4. The school carnival is divided into sections. The dunk tanks are in $\frac{1}{10}$ of the carnival. Games are in $\frac{4}{10}$ of the carnival. Student exhibits are in $\frac{5}{10}$ of the carnival.

Part A

Use the model. What fraction of the carnival is dunk tanks and games?

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

The fraction of the carnival with dunk tanks and games is ☐.

Part B

How much greater is the part of the carnival with student exhibits than games? Explain how the model could be used to find the answer.

5. Ilene is making smoothies. The recipe calls for $1\frac{1}{4}$ cups of strawberries. How many cups of strawberries, written as a fraction greater than one, are used in the recipe?

_____ cups

6. Dillon's dad sells golf balls online. He sells $\frac{4}{5}$ of the golf balls. Select a way $\frac{4}{5}$ can be written as a sum of fractions. Mark all that apply.

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

Ⓑ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

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

Ⓓ $\frac{2}{5} + \frac{2}{5}$

Ⓔ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

Ⓕ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

GO ON

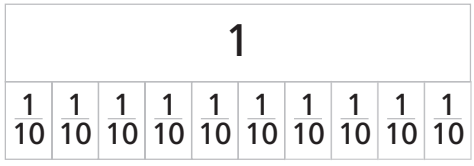
7. Betsy brought $\frac{6}{12}$ pound of trail mix on a camping trip. She ate $\frac{4}{12}$ pound of the trail mix. How much trail mix is left?

_____ pound

8. In a survey, $\frac{5}{10}$ of the students chose a dog and $\frac{1}{10}$ chose a fish as their favorite pet. What fraction shows the students who chose a dog or a fish as their favorite pet?

Part A

Shade the model to show your answer.



☐ of the students chose a dog or fish.

Part B

How are the numerator and denominator of your answer related to the model? Explain.

9. Match the equation with the property used.

$\frac{3}{5} + \left(\frac{2}{5} + \frac{1}{5}\right) = \left(\frac{3}{5} + \frac{2}{5}\right) + \frac{1}{5}$ •

$\left(4\frac{1}{8} + \frac{1}{8}\right) + 2\frac{7}{8} = 4\frac{1}{8} + \left(\frac{1}{8} + 2\frac{7}{8}\right)$ •

$3\frac{1}{5} + \left(5 + 1\frac{3}{5}\right) = 3\frac{1}{5} + \left(1\frac{3}{5} + 5\right)$ •

$\left(1\frac{4}{10} + 1\frac{1}{10}\right) + 3\frac{6}{10} = \left(1\frac{1}{10} + 1\frac{4}{10}\right) + 3\frac{6}{10}$ •

- Commutative Property
- Associative Property

GO ON

10. For numbers 10a–10e, select Yes or No to show if the sum or difference is correct.

10a. $\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$ ○ Yes ○ No

10b. $\frac{6}{12} - \frac{2}{12} = \frac{8}{12}$ ○ Yes ○ No

10c. $\frac{5}{10} + \frac{2}{10} = \frac{7}{10}$ ○ Yes ○ No

10d. $\frac{6}{8} - \frac{4}{8} = \frac{2}{8}$ ○ Yes ○ No

10e. $\frac{3}{9} + \frac{2}{9} = \frac{5}{18}$ ○ Yes ○ No

11. SuLee has $8\frac{1}{4}$ yards of blue fabric and $4\frac{2}{4}$ yards of green fabric. How much more blue fabric does SuLee have than green fabric?

_____ yards more blue fabric

12. Aidan is making cinnamon apples. He needs $3\frac{1}{4}$ teaspoons of cinnamon. He needs $1\frac{2}{4}$ teaspoons of nutmeg.

Part A

Aidan incorrectly subtracted the two mixed numbers to find how much more cinnamon than nutmeg he needs. His work is shown below.

$$3\frac{1}{4} - 1\frac{2}{4} = \frac{12}{4} - \frac{4}{4} = \frac{8}{4} = 2$$

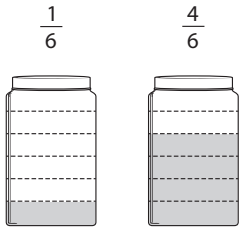
Why is Aidan's work incorrect?

Part B

How much more cinnamon than nutmeg will he need? Show your work.

GO ON

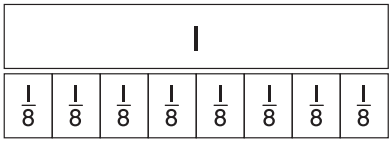
13. Jack has two jars of wax. One jar is $\frac{1}{6}$ full. The other jar is $\frac{4}{6}$ full.



Use the fractions to write an equation to find the amount of wax Jack has.

$\frac{1}{6}$	$\frac{3}{6}$	$\frac{4}{6}$	$\frac{5}{6}$	☐	+	☐	=	☐

14. Ellen needs $\frac{5}{8}$ yard of fringe for her scarf. Ling needs $\frac{2}{8}$ yard of fringe for her scarf. How much more fringe does Ellen need than Ling? Shade the model to show your answer.



Ellen needs _____ yard more fringe than Ling.

15. Mindi planted beans in $\frac{4}{10}$ of her garden and peas in $\frac{5}{10}$ of her garden. What fraction of the garden has beans or peas?

Mindi's garden has _____ beans or peas.

16. Draw a line to show the mixed number and fraction that have the same value.

$1\frac{3}{4}$	$5\frac{1}{6}$	$3\frac{2}{5}$	$3\frac{1}{4}$
$\frac{13}{4}$	$\frac{16}{5}$	$\frac{31}{4}$	$\frac{17}{6}$

17. Royce walks $\frac{3}{4}$ mile to school and $\frac{3}{4}$ mile home each day.

It will take Royce [2 / 3 / 4] days to walk 3 miles.

GO ON

18. Hector has 3 weeks before his first track meet. He recorded the amount of time he spent running during week 1 of his training. He spent $1\frac{6}{12}$ hours running on Tuesday, $2\frac{6}{12}$ hours running on Wednesday, and $1\frac{9}{12}$ hours running on Thursday.

Part A

How many hours did Hector run during week 1? Explain how you found your answer.

Part B

Hector wants to run 18 hours by his first track meet. Suppose he runs the same number of hours in week 2 and week 3 of his training as in week 1. Will he run enough hours to meet his goal? Explain.

19. Harrison ate $\frac{3}{12}$ of a sushi roll. Miles ate $\frac{5}{12}$ of the same sushi roll. How much more of the sushi roll did Miles eat than Harrison?

_____ of the sushi roll

20. For numbers 20a–20d, choose True or False for each sentence.

20a.	$6\frac{7}{10} + 2\frac{1}{10}$ is equal to $4\frac{8}{10}$.	○ True	○ False
20b.	$1\frac{2}{8} + 3\frac{7}{8}$ is equal to $4\frac{1}{8}$.	○ True	○ False
20c.	$1\frac{3}{5} + 2\frac{4}{5}$ is equal to $4\frac{2}{5}$.	○ True	○ False
20d.	$9\frac{5}{6} - 3\frac{2}{6}$ is equal to $6\frac{3}{6}$.	○ True	○ False

21. Winter break starts in $3\frac{4}{7}$ weeks. Write the mixed number as a fraction greater than one.

$3\frac{4}{7} =$ _____

STOP

Lending a Hand

1. Enrique lives with his grandmother in an apartment building for senior citizens. He earns extra money by running errands for some of his grandmother's neighbors. Enrique charges $2 for every $\frac{1}{4}$ hour he spends working. He spent $\frac{2}{4}$ hour going to the deli for Mr. McGuire, $1\frac{1}{4}$ hours delivering papers for the apartment manager, and $\frac{3}{4}$ hour picking up Mrs. Shultz's groceries. Did Enrique earn enough money to buy an $18 DVD? Explain your math reasoning using models.

2. Enrique's grandmother tried to help him figure out how much he earned this week. This is how she calculated the hours Enrique worked.

$$1\frac{1}{4} + \frac{3}{4} + 2\frac{2}{4} + 1\frac{3}{4} + 1 = 5\frac{9}{16}$$

Is she correct? If not, explain the error and find the correct sum.

3. On Saturdays, Enrique charges \$2 for every $\frac{1}{6}$ hour he spends running errands. He earned \$50 last Saturday. He picked up dry cleaning for Mrs. Abel for $\frac{4}{6}$ hour, ran to the post office for Mr. Kovac for $1\frac{1}{6}$ hours, and swept up the lobby of the building for the apartment manager for $\frac{5}{6}$ hour. He got a \$4 tip from Mr. Kovac. How long did it take him to walk Mrs. Camacho's dog and pick up her groceries? Show your work.

4. Enrique charges \$5 for every $\frac{1}{5}$ hour he spends walking dogs. In the morning he walks Buttons for $\frac{2}{5}$ hour, Bruno for $\frac{1}{5}$ hour, and Pepper for $\frac{3}{5}$ hour, Monday through Friday. On Saturdays he takes Mimi, Diva, and Coco to the dog park for $\frac{4}{5}$ of an hour. On Wednesday this week it rained and Pepper wanted to stay out for only $\frac{1}{5}$ hour. How many hours did Enrique spend with the dogs this week? Explain your method.

Add and Subtract Fractions

Lending a Hand

COMMON CORE STANDARDS

4.NF.B.3	Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
4.NF.B.3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
4.NF.B.3b	Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
4.NF.B.3c	Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
4.NF.B.3d	Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.

Also MP2, MP4, MP5

PURPOSE

To assess the ability to add and subtract fractions and mixed numbers

TIME

25–30 minutes

GROUPING

Individuals

MATERIALS

- Performance Task, paper, pencil
- Fraction circles or fraction bars

PREPARATION HINTS

- Review adding and subtracting fractions with students before assigning the task.
- Review adding and subtracting mixed numbers with students before assigning the task.
- Review vocabulary, including *mixed number*, *simplest form*, *Associative Property of Addition*, and *Commutative Property of Addition*.

IMPLEMENTATION NOTES

- Read the task aloud to students and make sure that all students have a clear understanding of the task.
- Students may use manipulatives to complete the task.
- Allow students as much paper as they need to complete the task.
- Allow as much time as students need to complete the task.
- Students must complete the task individually, without collaboration.
- Collect all student work when the task is complete.

TASK SUMMARY

Students add fractions and mixed numbers, then decompose the sum into unit fractions. They find and correct the error in fraction and mixed number calculations. They add and subtract fractions and mixed numbers.

REPRESENTATION

In this task, teachers can…

- Assist students in listing the steps they will take to solve the problem, including listing the asked question.
- Increase understanding by clarifying unfamiliar words.

ACTION and EXPRESSION

In this task, teachers can…

- Provide kinesthetic learners the choice of using fraction bars rather than fraction circles, or vice versa.
- Prepare visual learners to draw models.

ENGAGEMENT

In this task, teachers can…

- Sustain effort by relating problems to students' own experiences.
- Increase mastery by providing specific feedback that emphasizes improvement.

EXPECTED STUDENT OUTCOMES

- Complete the task within the time allowed
- Reflect engagement in a productive struggle
- Find a sum of fractions and mixed numbers

SCORING

Use the associated Rubric to evaluate each student's work.

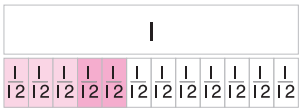
Performance Task Rubric

LENDING A HAND	
A level 3 response	• Indicates that the student has reasoned abstractly and quantitatively • Shows application of addition and subtraction appropriately in solving word problems • Demonstrates an understanding of decomposing fractions into unit fractions • Shows a complete comprehension of adding, subtracting, and converting mixed numbers
A level 2 response	• Indicates that the student has reasoned somewhat abstractly and quantitatively • Shows application of addition and subtraction adequately in solving word problems • Demonstrates an ability to decompose a fraction into unit fractions • Shows an understanding of adding, subtracting, and converting mixed numbers • Addresses most or all facets of the task, using mathematically sound procedures • May include an incorrect answer as the result of a computational error
A level 1 response	• Indicates some effort with reasoning abstractly and quantitatively • Shows some evidence of applying addition and subtraction to solve word problems • Indicates an effort to decompose a fraction into its unit fractions • Shows an effort to add, subtract, and convert mixed numbers • May include an incorrect answer resulting from incorrect mathematical process
A level 0 response	• Shows little evidence that the student has applied any reasoning • Indicates a lack of comprehension of the addition and subtraction of fractions • Shows little evidence of addressing the components of the task

Name _____

Chapter 7 Test
Page 1

1. Ben uses $\frac{3}{12}$ pound of strawberries and $\frac{2}{12}$ pound of blueberries to make jam.



How many pounds of berries does Ben use to make jam?

$\frac{5}{12}$ pound

2. To get the correct color, Johan mixed $3\frac{1}{4}$ quarts of white paint, $1\frac{2}{4}$ quarts of blue paint, and $2\frac{3}{4}$ quarts of green paint. How much paint did Johan make?

Johan made $7\frac{2}{4}$ quarts of paint.

3. Nick had $3\frac{1}{4}$ bottles of water for his wrestling practice. When he finished he had $1\frac{2}{4}$ bottles of water left. He said he used $2\frac{1}{4}$ bottles of water during the practice. Do you agree? Explain.

No; Possible explanation: When I subtract $1\frac{2}{4}$ from $3\frac{1}{4}$, the answer is not $2\frac{1}{4}$. The mixed number $3\frac{1}{4}$ needs to be regrouped as a mixed number with a fraction greater than 1. $3\frac{1}{4} = 2\frac{5}{4}$, so $2\frac{5}{4} - 1\frac{2}{4} = 1\frac{3}{4}$.

GO ON

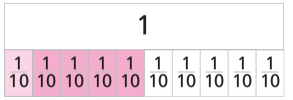
Name _____

Chapter 7 Test
Page 2

4. The school carnival is divided into sections. The dunk tanks are in $\frac{1}{10}$ of the carnival. Games are in $\frac{4}{10}$ of the carnival. Student exhibits are in $\frac{5}{10}$ of the carnival.

Part A

Use the model. What fraction of the carnival is dunk tanks and games?



The fraction of the carnival with dunk tanks and games is $\frac{5}{10}$ or $\frac{1}{2}$.

Part B

How much greater is the part of the carnival with student exhibits than games? Explain how the model could be used to find the answer.

$\frac{1}{10}$ greater; Possible explanation: I could shade 5 sections to represent the section with the student exhibits. Then I could cross out 4 sections to represent the games. This leaves 1 section, so the fraction of the carnival with student exhibits is $\frac{1}{10}$ greater than the games.

5. Ilene is making smoothies. The recipe calls for $1\frac{1}{4}$ cups of strawberries. How many cups of strawberries, written as a fraction greater than one, are used in the recipe?

$\frac{5}{4}$ cups

6. Dillon's dad sells golf balls online. He sells $\frac{4}{5}$ of the golf balls. Select a way $\frac{4}{5}$ can be written as a sum of fractions. Mark all that apply.

- ● $\frac{1}{5} + \frac{1}{5} + \frac{2}{5}$
- Ⓑ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5}$
- Ⓒ $\frac{2}{5} + \frac{2}{5} + \frac{1}{5}$
- ● $\frac{2}{5} + \frac{2}{5}$
- ● $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$
- Ⓕ $\frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$

GO ON

Name _____ Chapter 7 Test Page 3

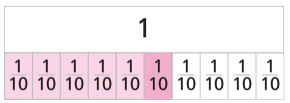
7. Betsy brought $\frac{6}{12}$ pound of trail mix on a camping trip. She ate $\frac{4}{12}$ pound of the trail mix. How much trail mix is left?

$\frac{2}{12}$ or $\frac{1}{6}$ pound

8. In a survey, $\frac{5}{10}$ of the students chose a dog and $\frac{1}{10}$ chose a fish as their favorite pet. What fraction shows the students who chose a dog or a fish as their favorite pet?

Part A

Shade the model to show your answer.



$\frac{6}{10}$ of the students chose a dog or fish.

Part B

How are the numerator and denominator of your answer related to the model? Explain.

Possible explanation: The numerator shows the number of parts shaded. The denominator shows the size of the parts.

9. Match the equation with the property used.

$\frac{3}{5} + \left(\frac{2}{5} + \frac{1}{5}\right) = \left(\frac{3}{5} + \frac{2}{5}\right) + \frac{1}{5}$

$\left(4\frac{1}{8} + \frac{1}{8}\right) + 2\frac{7}{8} = 4\frac{1}{8} + \left(\frac{1}{8} + 2\frac{7}{8}\right)$

$3\frac{1}{5} + \left(5 + 1\frac{3}{5}\right) = 3\frac{1}{5} + \left(1\frac{3}{5} + 5\right)$

$\left(1\frac{4}{10} + 1\frac{1}{10}\right) + 3\frac{6}{10} = \left(1\frac{1}{10} + 1\frac{4}{10}\right) + 3\frac{6}{10}$

Commutative Property

Associative Property

GO ON

Name _____ Chapter 7 Test Page 4

10. For numbers 10a–10e, select Yes or No to show if the sum or difference is correct.

10a.	$\frac{3}{5} + \frac{1}{5} = \frac{4}{5}$	● Yes	○ No
10b.	$\frac{6}{12} - \frac{2}{12} = \frac{8}{12}$	○ Yes	● No
10c.	$\frac{5}{10} + \frac{2}{10} = \frac{7}{10}$	● Yes	○ No
10d.	$\frac{6}{8} - \frac{4}{8} = \frac{2}{8}$	● Yes	○ No
10e.	$\frac{3}{9} + \frac{2}{9} = \frac{5}{18}$	○ Yes	● No

11. SuLee has $8\frac{1}{4}$ yards of blue fabric and $4\frac{2}{4}$ yards of green fabric. How much more blue fabric does SuLee have than green fabric?

$3\frac{3}{4}$ yards more blue fabric

12. Aidan is making cinnamon apples. He needs $3\frac{1}{4}$ teaspoons of cinnamon. He needs $1\frac{2}{4}$ teaspoons of nutmeg.

Part A

Aidan incorrectly subtracted the two mixed numbers to find how much more cinnamon than nutmeg he needs. His work is shown below.

$3\frac{1}{4} - 1\frac{2}{4} = \frac{12}{4} - \frac{4}{4} = \frac{8}{4} = 2$

Why is Aidan's work incorrect?

Possible explanation: Aiden changed only the whole number parts of the mixed numbers to fourths. He forgot to add the fraction part of the mixed number.

Part B

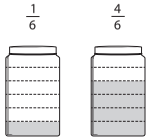
How much more cinnamon than nutmeg will he need? Show your work.

$3\frac{1}{4} - 1\frac{2}{4} = \frac{13}{4} - \frac{6}{4} = \frac{7}{4} = 1\frac{3}{4}$
Aidan will need $1\frac{3}{4}$ teaspoons more of cinnamon than nutmeg.

GO ON

Name _____ **Chapter 7 Test Page 5**

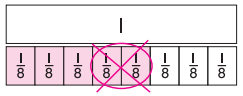
13. Jack has two jars of wax. One jar is $\frac{1}{6}$ full. The other jar is $\frac{4}{6}$ full.



Use the fractions to write an equation to find the amount of wax Jack has.

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

14. Ellen needs $\frac{5}{8}$ yard of fringe for her scarf. Ling needs $\frac{2}{8}$ yard of fringe for her scarf. How much more fringe does Ellen need than Ling? Shade the model to show your answer.

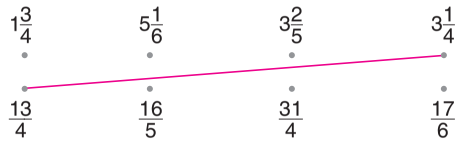


Ellen needs $\frac{3}{8}$ yard more fringe than Ling.

15. Mindi planted beans in $\frac{4}{10}$ of her garden and peas in $\frac{5}{10}$ of her garden. What fraction of the garden has beans or peas?

Mindi's garden has $\frac{9}{10}$ beans or peas.

16. Draw a line to show the mixed number and fraction that have the same value.



17. Royce walks $\frac{3}{4}$ mile to school and $\frac{3}{4}$ mile home each day.

It will take Royce [2] 3 4 days to walk 3 miles.

GO ON

Name _____ **Chapter 7 Test Page 6**

18. Hector has 3 weeks before his first track meet. He recorded the amount of time he spent running during week 1 of his training. He spent $1\frac{6}{12}$ hours running on Tuesday, $2\frac{6}{12}$ hours running on Wednesday, and $1\frac{9}{12}$ hours running on Thursday.

Part A

How many hours did Hector run during week 1? Explain how you found your answer.

$5\frac{9}{12}$ or $5\frac{3}{4}$ hours; Possible explanation: First, I add the whole numbers, 1 + 2 + 1 = 4 hours. Then, I add the fractions by combining $\frac{6}{12} + \frac{6}{12}$ into one whole. So, $4 + 1 + \frac{9}{12} = 5\frac{9}{12}$.

Part B

Hector wants to run 18 hours by his first track meet. Suppose he runs the same number of hours in week 2 and week 3 of his training as in week 1. Will he run enough hours to meet his goal? Explain.

No; Possible explanation: If I add the times from the 3 weeks, or $5\frac{9}{12} + 5\frac{9}{12} + 5\frac{9}{12}$, the sum is only $15\frac{27}{12}$ or $15 + \frac{12}{12} + \frac{12}{12} + \frac{3}{12}$ or $17\frac{1}{4}$ hours. This is less than 18 hours.

19. Harrison ate $\frac{3}{12}$ of a sushi roll. Miles ate $\frac{5}{12}$ of the same sushi roll. How much more of the sushi roll did Miles eat than Harrison?

$\frac{2}{12}$ or $\frac{1}{6}$ of the sushi roll

20. For numbers 20a–20d, choose True or False for each sentence.

20a.	$6\frac{7}{10} + 2\frac{1}{10}$ is equal to $4\frac{8}{10}$.	○ True	● False
20b.	$1\frac{2}{8} + 3\frac{7}{8}$ is equal to $4\frac{1}{8}$.	○ True	● False
20c.	$1\frac{3}{5} + 2\frac{4}{5}$ is equal to $4\frac{2}{5}$.	● True	○ False
20d.	$9\frac{5}{6} - 3\frac{2}{6}$ is equal to $6\frac{3}{6}$.	● True	○ False

21. Winter break starts in $3\frac{4}{7}$ weeks. Write the mixed number as a fraction greater than one.

$3\frac{4}{7} = \frac{25}{7}$

STOP

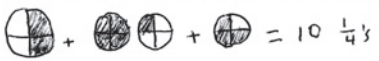
Name _____ **Chapter 7**

Lending a Hand

1. Enrique lives with his grandmother in an apartment building for senior citizens. He earns extra money by running errands for some of his grandmother's neighbors. Enrique charges $2 for every $\frac{1}{4}$ hour he spends working. He spent $\frac{2}{4}$ hour going to the deli for Mr. McGuire, $1\frac{1}{4}$ hours delivering papers for the apartment manager, and $\frac{3}{4}$ hour picking up Mrs. Shultz's groceries. Did Enrique earn enough money to buy an $18 DVD? Explain your math reasoning using models.

deli = $4
paper = $10
groceries = $6
+
$20

Yes, because he earned $20. I broke all of them into $\frac{1}{4}$'s.



2. Enrique's grandmother tried to help him figure out how much he earned this week. This is how she calculated the hours Enrique worked.

$1\frac{1}{4} + \frac{3}{4} + 2\frac{2}{4} + 1\frac{3}{4} + 1 = 5\frac{9}{16}$

$4\frac{2}{4}$
$+1$
$5\frac{2}{4} + 1\frac{3}{4} =$
$6\frac{5}{4}$
$4\frac{1}{5}$ (1/4)
-4
1
$7\frac{1}{4}$

Is she correct? If not, explain the error and find the correct sum.

No, she didn't add it correctly.
The sum of the problem is $7\frac{1}{4}$.
She added the denominators.

3. On Saturdays, Enrique charges $2 for every $\frac{1}{6}$ hour he spends running errands. He earned $50 last Saturday. He picked up dry cleaning for Mrs. Abel for $\frac{4}{6}$ hour, ran to the post office for Mr. Kovac for $1\frac{1}{6}$ hours, and swept up the lobby of the building for the apartment manager for $\frac{5}{6}$ hour. He got a $4 tip from Mr. Kovac. How long did it take him to walk Mrs. Camacho's dog and pick up her groceries? Show your work.

dry cleaning $8
post office $14
lobby = $10
tip = $4
$36

$\$^{4}5\,0^{10}$
-36
$\$14$

$1\frac{1}{6}$ hrs I looked back at the paragraph and saw that $1\frac{1}{6}$ equals $14.

4. Enrique charges $5 for every $\frac{1}{5}$ hour he spends walking dogs. In the morning he walks Buttons for $\frac{2}{5}$ hour, Bruno for $\frac{1}{5}$ hour, and Pepper for $\frac{3}{5}$ hour, Monday through Friday. On Saturdays he takes Mimi, Diva, and Coco to the dog park for $\frac{4}{5}$ of an hour. On Wednesday this week it rained and Pepper wanted to stay out for only $\frac{1}{5}$ hour. How many hours did Enrique spend with the dogs this week? Explain your method.

Buttons $10
Bruno = $10
Pepper = $15
Mimi, Diva, Coco = $20

8 hours, I added all of the fractions.

am: $\frac{2}{5} + \frac{1}{5} + \frac{3}{5} = \frac{6}{5}$
all week $\frac{6}{5} + \frac{6}{5} + \frac{6}{5} + \frac{6}{5} + \frac{6}{5} = \frac{30}{5}$

Pepper: $\frac{3}{5} - \frac{1}{5} = \frac{2}{5}$
$\frac{30}{5} - \frac{2}{5} = \frac{28}{5}$

Saturday: $\frac{4}{5} + \frac{4}{5} + \frac{4}{5} = \frac{12}{5}$
$\frac{28}{5} + \frac{12}{5} = \frac{40}{5} = 8$ 8 hrs

Name ______________________ **Chapter 7**

Lending a Hand

1. Enrique lives with his grandmother in an apartment building for senior citizens. He earns extra money by running errands for some of his grandmother's neighbors. Enrique charges \$2 for every $\frac{1}{4}$ hour he spends working. He spent $\frac{2}{4}$ hour going to the deli for Mr. McGuire, $1\frac{1}{4}$ hours delivering papers for the apartment manager, and $\frac{3}{4}$ hour picking up Mrs. Shultz's groceries. Did Enrique earn enough money to buy an \$18 DVD? Explain your math reasoning using models.

deli = \$4
papers = \$10
groceries = \$6
\$20

Yes, because he got \$4 for deli, \$10 deli, \$6 groceries.

deli   groceries   paper   10

2. Enrique's grandmother tried to help him figure out how much he earned this week. This is how she calculated the hours Enrique worked.

$$1\frac{1}{4} + \frac{3}{4} + 2\frac{2}{4} + 1\frac{3}{4} + 1 = 5\frac{9}{16}$$

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

$7\frac{1}{4}$

Is she correct? If not, explain the error and find the correct sum.

No, She was wrong the sum was $7\frac{1}{4}$. Her error was that she just added it all together even the bottom.

3. On Saturdays, Enrique charges \$2 for every $\frac{1}{6}$ hour he spends running errands. He earned \$50 last Saturday. He picked up dry cleaning for Mrs. Abel for $\frac{4}{6}$ hour, ran to the post office for Mr. Kovac for $1\frac{1}{6}$ hours, and swept up the lobby of the building for the apartment manager for $\frac{5}{6}$ hour. He got a \$4 tip from Mr. Kovac. How long did it take him to walk Mrs. Camacho's dog and pick up her groceries? Show your work.

dry cleaning 4 × 2 = \$8
post office = 7 × 2 = \$14
lobby = 5 × 2 \$10
+ tip = 4
\$36

$1\frac{1}{6}$ hours

I saw that it was \$14 so I looked back and saw it was the same as the post office $1\frac{1}{6}$ hours

50 − 36 = \$14

\$36 + \$14 = \$50

4. Enrique charges \$5 for every $\frac{1}{5}$ hour he spends walking dogs. In the morning he walks Buttons for $\frac{2}{5}$ hour, Bruno for $\frac{1}{5}$ hour, and Pepper for $\frac{3}{5}$ hour, Monday through Friday. On Saturdays he takes Mimi, Diva, and Coco to the dog park for $\frac{4}{5}$ of an hour. On Wednesday this week it rained and Pepper wanted to stay out for only $\frac{1}{5}$ hour. How many hours did Enrique spend with the dogs this week? Explain your method.

10 11

eleven hrs, I added all of them then subtracted by 7 and got 11.

$\frac{2}{5}\ \frac{1}{5}\ \frac{3}{5}\ \frac{4}{5}\ \frac{1}{5} = \frac{11}{5}$

Name _____ **Chapter 7**

Lending a Hand

1. Enrique lives with his grandmother in an apartment building for senior citizens. He earns extra money by running errands for some of his grandmother's neighbors. Enrique charges $2 for every $\frac{1}{4}$ hour he spends working. He spent $\frac{2}{4}$ hour going to the deli for Mr. McGuire, $1\frac{1}{4}$ hours delivering papers for the apartment manager, and $\frac{3}{4}$ hour picking up Mrs. Shultz's groceries. Did Enrique earn enough money to buy an $18 DVD? Explain your math reasoning using models.

deli = $4 (1)
Paper = $10 (2) (3)
food = $6 (4)
+
20

Yes he had enough to buy a $18 DVD if you separate everything into $\frac{1}{4}$ you would g $20

18 −4 14 −10 4 (+2)

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

2. Enrique's grandmother tried to help him figure out how much he earned this week. This is how she calculated the hours Enrique worked.

$$1\frac{1}{4} + \frac{3}{4} + 2\frac{2}{4} + 1\frac{3}{4} + 1 = 5\frac{9}{16}$$

Is she correct? If not, explain the error and find the correct sum.

no She is not correct she didn't add it the right way.

3. On Saturdays, Enrique charges $2 for every $\frac{1}{6}$ hour he spends running errands. He earned $50 last Saturday. He picked up dry cleaning for Mrs. Abel for $\frac{4}{6}$ hour, ran to the post office for Mr. Kovac for $1\frac{1}{6}$ hours, and swept up the lobby of the building for the apartment manager for $\frac{5}{6}$ hour. He got a $4 tip from Mr. Kovac. How long did it take him to walk Mrs. Camacho's dog and pick up her groceries? Show your work.

dry = 4×2=8
Post = 7×2=14
lobby = 5×2=10

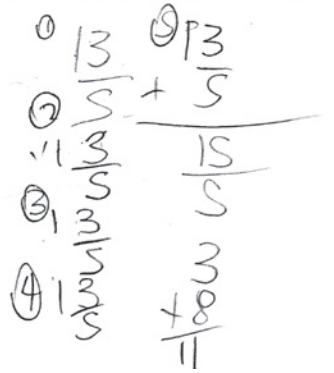
I saw post office was 14 which is $1\frac{1}{6}$ hrs and dry is $\frac{4}{6}$ so $1\frac{5}{6}$ hrs.

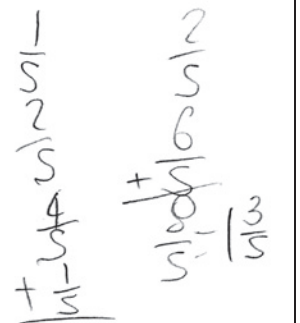
50 − 8 = 42 − 14 = 28 − 10 = 18

4. Enrique charges $5 for every $\frac{1}{5}$ hour he spends walking dogs. In the morning he walks Buttons for $\frac{2}{5}$ hour, Bruno for $\frac{1}{5}$ hour, and Pepper for $\frac{3}{5}$ hour, Monday through Friday. On Saturdays he takes Mimi, Diva, and Coco to the dog park for $\frac{4}{5}$ of an hour. On Wednesday this week it rained and Pepper wanted to stay out for only $\frac{1}{5}$ hour. How many hours did Enrique spend with the dogs this week? Explain your method.

Buttons = $10
Bruno = $5
Pepper = $15

I added all the fraction together and got 11 hrs.





Name _____ **Chapter 7**

Lending a Hand

1. Enrique lives with his grandmother in an apartment building for senior citizens. He earns extra money by running errands for some of his grandmother's neighbors. Enrique charges $2 for every $\frac{1}{4}$ hour he spends working. He spent $\frac{2}{4}$ hour going to the deli for Mr. McGuire, $1\frac{1}{4}$ hours delivering papers for the apartment manager, and $\frac{3}{4}$ hour picking up Mrs. Shultz's groceries. Did Enrique earn enough money to buy an $18 DVD? Explain your math reasoning using models.

deli = $4
papers = $10
food = $6

yes with 2 extra dollars

2. Enrique's grandmother tried to help him figure out how much he earned this week. This is how she calculated the hours Enrique worked.

$$1\frac{1}{4} + \frac{3}{4} + 2\frac{2}{4} + 1\frac{3}{4} + 1 = 5\frac{9}{16}$$

Is she correct? If not, explain the error and find the correct sum.

yes

3. On Saturdays, Enrique charges $2 for every $\frac{1}{6}$ hour he spends running errands. He earned $50 last Saturday. He picked up dry cleaning for Mrs. Abel for $\frac{4}{6}$ hour, ran to the post office for Mr. Kovac for $1\frac{1}{6}$ hours, and swept up the lobby of the building for the apartment manager for $\frac{5}{6}$ hour. He got a $4 tip from Mr. Kovac. How long did it take him to walk Mrs. Camacho's dog and pick up her groceries? Show your work.

Dryclean = 4x2 = $8
P office 7x2 = $14
Sweep lobby 5x2 = 10

3 hrs

$50
- 4
$54

4. Enrique charges $5 for every $\frac{1}{5}$ hour he spends walking dogs. In the morning he walks Buttons for $\frac{2}{5}$ hour, Bruno for $\frac{1}{5}$ hour, and Pepper for $\frac{3}{5}$ hour, Monday through Friday. On Saturdays he takes Mimi, Diva, and Coco to the dog park for $\frac{4}{5}$ of an hour. On Wednesday this week it rained and Pepper wanted to stay out for only $\frac{1}{5}$ hour. How many hours did Enrique spend with the dogs this week? Explain your method.

$\frac{5}{5}$

5 x 1 = 5
5 x 2 = 10
5 x 1 = 5
5 x 3 = 15
5 x 1 = 5
5 x 4 = 20

Student's Name _____ Date _____

Chapter 7 Test

Item	Lesson	Standard	Content Focus	Intervene with	Personal Math Trainer
1, 4, 8, 13	7.3	4.NF.B.3d	Solve word problems involving addition of fractions having like denominators using models.	**R**—7.3	4.NF.3d
2, 20	7.7	4.NF.B.3c	Add and subtract mixed numbers with like denominators.	**R**—7.7	4.NF.3c
3, 11, 12	7.8	4.NF.B.3c	Subtract mixed numbers with renaming.	**R**—7.8	4.NF.3c
4, 14	7.4	4.NF.B.3d	Solve word problems involving subtraction of fractions having like denominators using models.	**R**—7.4	4.NF.3d
5, 16, 21	7.6	4.NF.B.3b	Rename mixed numbers as fractions greater than 1 and rename fractions greater than 1 as mixed numbers.	**R**—7.6	4.NF.3b
6	7.2	4.NF.B.3b	Decompose a fraction into a sum of fractions with the same denominator in more than one way.	**R**—7.2	4.NF.3b
7, 15, 19	7.1	4.NF.B.3a	Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	**R**—7.1	4.NF.3a
9	7.9	4.NF.B.3c	Use properties of operations to add fractions with like denominators.	**R**—7.9	4.NF.3c
10	7.5	4.NF.B.3d	Solve word problems involving addition and subtraction of fractions having like denominators using equations.	**R**—7.5	4.NF.3d
17, 18	7.10	4.NF.B.3d	Solve multistep word problems involving addition and subtraction of fractions with the same denominator.	**R**—7.10	4.NF.3d

Key: R—Reteach