

**North Penn School District**  
**Elementary Math Parent Letter**

**Grade 4**

**Unit 3 – Chapter 7: Add and Subtract Fractions**

**Examples for each lesson:**

**Lesson 7.1**

**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.

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

**Step 4** Use the model to write an equation.

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.

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

**Step 4** Write an equation for the model.

## Lesson 7.2

### 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?

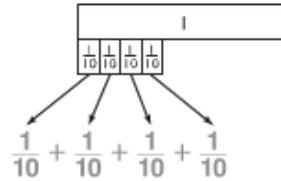
Use fraction strips to write  $\frac{4}{10}$  as a sum of unit fractions.

**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.



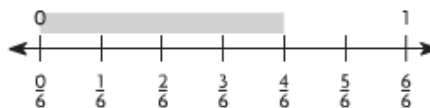
## Lesson 7.3

### Add Fractions Using Models

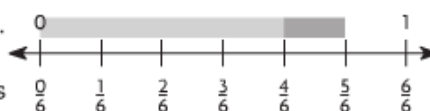
Fractions with like denominators have the same denominator. You can add fractions with like denominators using a number line.

**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.

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

More information on this strategy is available on Animated Math Model #27.

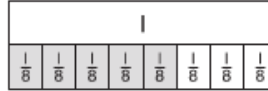
## Lesson 7.4

### 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.

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

More information on this strategy is available on Animated Math Model #28.

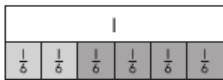
## Lesson 7.5

### 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?

There are 6 sixths.

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

**Step 3** Record it.

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?

There are 4 tenths left.

$$4 \text{ tenths} = \frac{4}{10}$$

**Step 3** Record it.

Write the difference as a subtraction equation.

$$\frac{6}{10} - \frac{2}{10} = \frac{4}{10}$$

More information on this strategy is available on Animated Math Model #29.

## Lesson 7.6

### 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.

$$12 + 5 = 17$$

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

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

total number of parts  
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.

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

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

More information on this strategy is available on Animated Math Model #30.

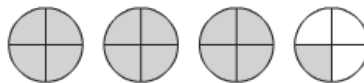
## Lesson 7.7

### 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

$$\text{part is less than 1. } 3\frac{1}{4} + 2\frac{1}{4} = 5\frac{2}{4}$$

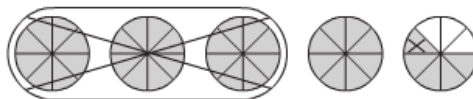


#### Find the difference. $4\frac{5}{8} - 3\frac{1}{8}$

Subtract the fraction and the whole number parts.

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

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



More information on this strategy is available on Animated Math Model #31.

## Lesson 7.8

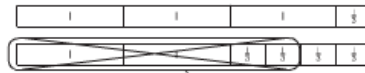
### Subtraction with Renaming

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.

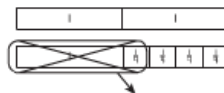


$$\text{So, } 3\frac{1}{3} - 2\frac{2}{3} = \frac{2}{3}.$$

**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.



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

More information on this strategy is available on Animated Math Model #32.

## Lesson 7.9

### 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.  $= (10\frac{3}{8} + 6\frac{5}{8}) + 4\frac{7}{8}$

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

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

## Lesson 7.10

### 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 he has run a whole number of miles.

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

### Vocabulary

**Mixed number** – an amount given as a whole number and a fraction

**Unit fraction** – a fraction that has a numerator of one

**Associative Property of Addition** – the property that states that when the grouping of addends is changed, the sum is the same

**Commutative Property of Addition** – the property that states that when the order of two or more addends is changed, the sum is the same

**Denominator** – the part of a fraction below the line, which tells how many equal parts there are in the whole group or in a group

**Fraction** – a number that names a part of a whole or part of a group

**Numerator** – the part of a fraction above the line, which tells how many parts are being counted

**Simplest form** – a fraction in which the numerator and the denominator have only 1 as a common factor