7 days

- L1
- L2 > same objective
- L3
- L4
- L5
- L6
- L7

Topic A

Repeated Addition of Fractions as Multiplication

How what

5.3I, 5.4E, 5.4F 5.9A, 5.9C, 5.3K

Focus Standards:	SS 5.3I	Represent and solve multiplication of a whole number and a fraction that refers to the same whole using objects and pictorial models, including area models.
	SS 5.4E	Describe the meaning of parentheses and brackets in a numeric expression.
	RS 5.4F	Simplify numerical expressions that do not involve exponents, including up to two levels of grouping.
	SS 5.9A	Represent categorical data with bar graphs or frequency tables and numerical data, including data sets of measurements in fractions or decimals, with dot plots or stem-and-leaf plots.
	RS 5.9C	Solve one- and two-step problems using data from a frequency table, dot plot, bar graph, stem-and-leaf plot, or scatterplot.
Instructional Days:	7	
Coherence -Links from:	G3–M5	Fractions as Numbers on the Number Line
	G5–M3	Addition and Subtraction of Fractions builds from last module

Topic A extends the concept of representing repeated addition as multiplication, applying this familiar concept to work with fractions. • connects repeated addition to X w/fractions.

Multiplying a whole number times a fraction is introduced in Lesson 1 as students learned to decompose fractions, e.g., $\frac{3}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} = 3 \times \frac{1}{5}$. In Lessons 2–4, students use models and the associative property, as exemplified below, to multiply a whole number times a non-unit fraction.

L1: Multiply whole numbers by fractions using decomposition

3 bananas + 3 bananas + 3 bananas + 3 bananas

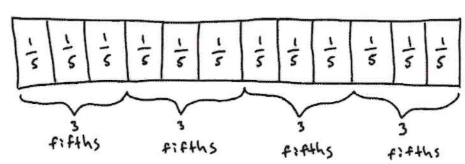
= 4 × 3 bananas

= 4 × (3 × 1 banana) = (4 × 3) × 1 banana = 12 bananas

3 fifths + 3 fifths + 3 fifths + 3 fifths

= 4 × 3 fifths

= 4 × (3 fifths) = (4 × 3) fifths = 12 fifths



4 × (3 fifths) = (4×3) fifths
= 12 fifths

4×3 fifths = 12 fifths

$4 \times \frac{3}{5} = \frac{12}{5}$

L2-L4: use models associative prop. to show structure

$4 \times \frac{3}{5}$

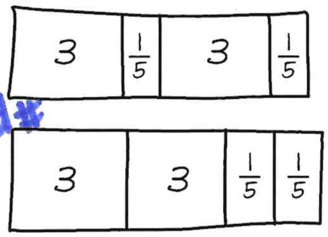
$4 \times (3 \times \frac{1}{5}) = (4 \times 3) \times \frac{1}{5} = 12 \times \frac{1}{5} = \frac{12}{5}$

*Reinforce that multiplying by a fraction parallels multiplying by whole numbers

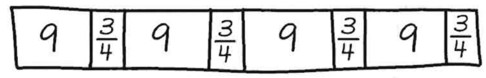
Students may have never before considered that 3 bananas = 3 × (1 banana), but it is an understanding that connects place value, whole number work, measurement conversions, and fractions, (e.g., 3 hundreds = 3 × 1 hundred or 3 feet = 3 × (1 foot); 1 foot = 12 inches; therefore, 3 feet = 3 × (12 inches) = (3 × 12) inches = 36 inches). → builds understanding of x as repeated units

5: use distributive property to x a whole # by a mixed #

Students use the distributive property in Lesson 5 to multiply a whole number by a mixed number. They see the multiplication of each part of a mixed number by the whole number and use the appropriate strategies to do so. As shown below, there are multiple steps when using the distributive property, and students can become lost in those steps. Efficiency in solving is encouraged.



$$2 \times 3\tfrac{1}{5} = (2 \times 3) + (2 \times \tfrac{1}{5})$$
$$= 6 + \tfrac{2}{5} = 6\tfrac{2}{5}$$



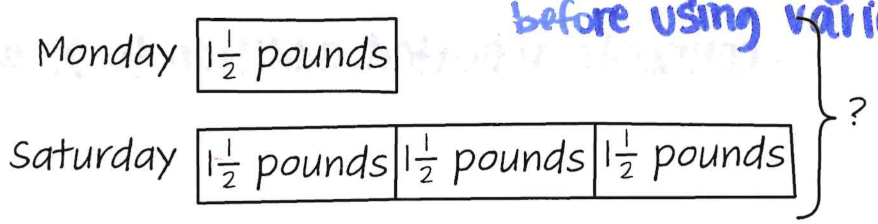
$$4 \times 9\tfrac{3}{4} = 36 + \tfrac{12}{4}$$
$$= 36 + 3$$
$$= 39$$

$$5 \times 3\tfrac{3}{4} = 5 \times (3 + \tfrac{3}{4}) = (5 \times 3) + (5 \times \tfrac{3}{4}) = 15 + \tfrac{15}{4} = 15 + 3\tfrac{3}{4} = 18\tfrac{3}{4}$$

6: solve multiplicative comparison word probs. w/ mixed numbers

In Lesson 6, students build their problem-solving skills by solving multiplicative comparison word problems involving mixed numbers, e.g., "Jennifer bought 3 times as much meat on Saturday as she did on Monday. If she bought $1\frac{1}{2}$ pounds on Monday, what is the total amount of meat bought for the two days?" They create and use strip diagrams to represent these problems before using various strategies to solve them numerically.

*use strip diagrams before using various strategies

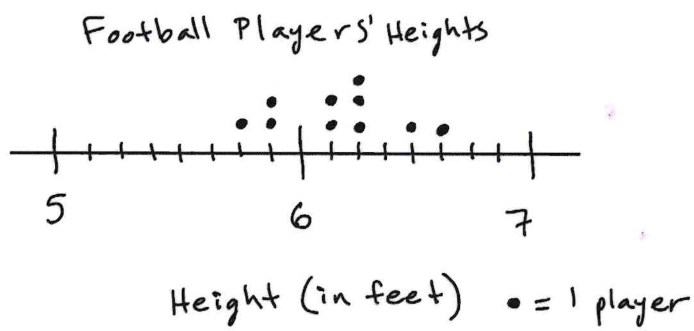


$$4 \times 1\tfrac{1}{2} = (4 \times 1) + (4 \times \tfrac{1}{2}) = 4 + \tfrac{4}{2} = 4 + 2 = 6$$

Jennifer bought 6 pounds of meat.

In Lesson 7, students solve word problems involving multiplication of a fraction by a whole number. Additionally, students work with data presented in dot plots.

L7: Solve word problems X a fraction by whole number



A Teaching Sequence Toward Proficiency in Repeated Addition of Fractions as Multiplication	
Objective 1:	**Decompose non-unit fractions and represent them as a whole number times a unit fraction using strip diagrams.** **(Lesson 1)**
Objective 2:	**Represent and solve multiplication of a whole number and a fraction that refers to the same whole.** **(Lessons 2–3)**
Objective 3:	**Represent multiplication of a whole number times a non-unit fraction using the associative property and visual models.** **(Lesson 4)**
Objective 4:	**Find the product of a whole number and a mixed number using the distributive property.** **(Lesson 5)**
Objective 5:	**Solve multiplicative comparison word problems involving fractions.** **(Lesson 6)**
Objective 6:	**Solve word problems involving the multiplication of a whole number and a fraction including those involving dots plots.** **(Lesson 7)**

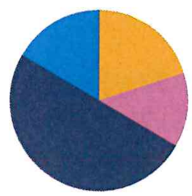
5.3I

Lesson 1

Objective: Decompose non-unit fractions and represent them as a whole number times a unit fraction using strip diagrams.

Suggested Lesson Structure

Fluency Practice	(12 minutes)
Application Problem	(8 minutes)
Concept Development	(30 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



NOTE ON FLUENCY:

Throughout the module, teachers are encouraged to make appropriate adjustments to fluency activities to account for varying student needs.

Fluency Practice (12 minutes)

- Multiply Mentally **4.4B, 4.4D** (4 minutes) maintenance
- Repeated Addition as Multiplication **3.4E** (4 minutes) maintenance
- Add Fractions **3.3D** (4 minutes) preparation

Multiply Mentally (4 minutes)

Materials: (S) Personal white board

Note: This fluency activity reviews multiplication concepts.

4x2=68
T: (Write 34 × 2 = ____.) Say the multiplication sentence.
S: 34 × 2 = 68.
4x20=680
T: (Write 34 × 2 = 68. Below it, write 34 × 20 = ___.) Say the multiplication sentence.
4x22=748
S: 34 × 20 = 680.
T: (Write 34 × 20 = 680. Below it, write 34 × 22 = ___.) On your personal white board, solve 34 × 22.
S: (Write 34 × 22 = 748.) "Why is this true?"

Continue with the following possible sequence: 23 × 3, 23 × 20, and 23 × 23; and 12 × 4, 12 × 30, and 12 × 34.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Scaffold the Multiply Mentally fluency activity for students needing more proficiency practice. Clarify that (34 × 2) + (34 × 20) is the same as 34 × 22, and so on. Ask students, "Why is this true?"

Repeated Addition as Multiplication (4 minutes)

Materials: (S) Personal white board

Note: This fluency activity reviews multiplication concepts.

T: (Write 2 + 2 + 2 = ___.) Say the addition sentence.
S: 2 + 2 + 2 = 6.

2+2+2= ___
×2=6

Materials:
Personal
Whiteboard

T: (Write 2 + 2 + 2 = 6. Beneath it, write ___ × 2 = 6.) On your personal white board, fill in the unknown factor.

S: (Write 3 × 2 = 6.)

T: (Write 3 × 2 = 6. To the right, write 30 + 30 + 30 = ___.) Say the addition sentence.

2 + 2 + 2 = 6	30 + 30 + 30 = 90	32 + 32 + 32 = 96
3 × 2 = 6	3 × 30 = 90	3 × 32 = 96

S: 30 + 30 + 30 = 90.

T: (Write 30 + 30 + 30 = 90. Beneath it, write ___ × 30 = 90.) Fill in the unknown factor.

S: (Write 3 × 30 = 90.)

T: (Write 3 × 30 = 90. To the right, write 32 + 32 + 32 = ___.) On your board, write the repeated addition sentence. Then, beneath it, write a multiplication sentence to reflect the addition sentence.

S: (Write 32 + 32 + 32 = 96. Beneath it, write 3 × 32 = 96.)

Continue with the following possible sequence: 1 + 1 + 1 + 1, 4 × 1; 20 + 20 + 20 + 20, 4 × 20; 21 + 21 + 21 + 21, 4 × 21; and 23 + 23 + 23, 3 × 23.

1+1+1+1=4	20+20+20+20=80
4x1=4	4x20=80
21+21+21+21	
4x21	

Add Fractions (4 minutes)

Materials: (S) Personal white board

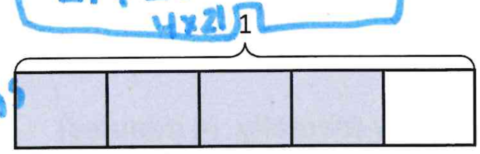
Note: This fluency activity prepares students for today's lesson.

T: (Write $\frac{4}{5}$.) Say the fraction.

S: 4 fifths.

four fifths

T: On your personal white board, draw a strip diagram representing 4 fifths.



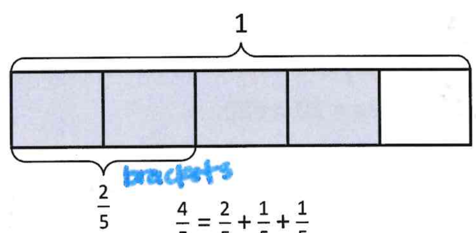
S: (Draw a strip diagram partitioned into 5 equal units. Shade 4 units.)

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

T: (Write $\frac{4}{5}$ = ___ + ___ + ___ + ___.) Write $\frac{4}{5}$ as the sum of unit fractions.

S: (Write $\frac{4}{5} = \frac{1}{5} + \frac{1}{5} + \frac{1}{5} + \frac{1}{5}$)

T: (Write $\frac{4}{5} = \frac{2}{5} + \frac{}{5} + \frac{}{5}$.) Bracket 2 fifths on your diagram, and complete this number sentence.



S: (Group $\frac{2}{5}$ on the diagram. Write $\frac{4}{5} = \frac{2}{5} + \frac{1}{5} + \frac{1}{5}$.)

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

T: (Write $\frac{4}{5} = \frac{2}{5} + \frac{2}{5}$.) Bracket fifths again on your diagram, and write a number sentence to match. There's more than one correct answer.

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

S: (Group fifths on the diagram. Write $\frac{4}{5} = \frac{2}{5} + \frac{2}{5}$, $\frac{4}{5} = \frac{3}{5} + \frac{1}{5}$, or $\frac{4}{5} = \frac{1}{5} + \frac{3}{5}$.)

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

or

Continue with the following possible sequence: $\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$, $\frac{5}{6} = \frac{1}{6} + \frac{3}{6} + \frac{1}{6}$, and $\frac{5}{6} = \frac{3}{6} + \frac{1}{6} + \frac{1}{6}$.

R·D·W

Application Problem (8 minutes)

Mrs. Beach prepared copies for 4 reading groups. She made 6 copies for each group. How many copies did Mrs. Beach make?

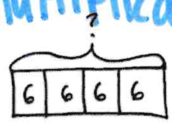
a. Draw a strip diagram.

b. Write both an addition and a multiplication sentence to solve. Discuss with a partner why you are able to add or multiply to solve this problem.

c. What fraction of the copies is needed for 3 groups? To show that, shade the strip diagram.

T&T: Why are you able to add or multiply to solve this problem

multiplication addition

a) 

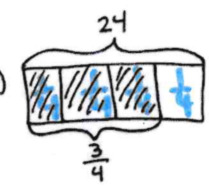
$4 \times 6 = 24$

Mrs. Beach made 24 copies.

b) $6+6+6+6=24$

$4 \times 6 = 24$

Multiplication is repeated addition. Both number sentences mean 4 groups of 6.

c) 

$\frac{3}{4}$ of the copies are needed for 3 groups.

Note: This Application Problem builds from Grade 4 knowledge of interpreting products of whole numbers. This Application Problem bridges to today's lesson where students come to understand that a non-unit fraction can be decomposed and represented as a whole number times a unit fraction.

Concept Development (30 minutes)

CD-20 min
PS-10 min

Materials: (S) Personal white board

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

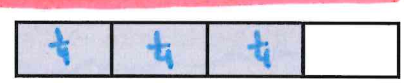
Recording choral responses on the board alongside the model supports emergent bilingual language acquisition.

min: 7 min.

Problem 1: Express a non-unit fraction less than 1 as a whole number times a unit fraction using a strip diagram.

T: Look back at the strip diagram that we drew in the Application Problem. What fraction is represented by the shaded part?

S: $\frac{3}{4}$.



T: Say $\frac{3}{4}$ decomposed as the sum of unit fractions.

S: $\frac{3}{4}=\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$.

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

T: How many fourths are there in $\frac{3}{4}$?

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

S: 3. fourths

T&T

T: We know this because we count 1 fourth 3 times. Discuss with a partner. How might we express this using multiplication?

S: We have 3 fourths. That's $\frac{1}{4}+\frac{1}{4}+\frac{1}{4}$ or three groups of 1 fourth. Could we multiply $3\times\frac{1}{4}$?

sum of unit fractions

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

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

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

$\frac{7}{8} = 7 \times \frac{1}{8}$

T: Yes! If we want to add the same fraction of a certain amount many times, instead of adding, we can multiply. Just like you multiplied 6 four times, we can multiply 1 fourth 3 times. What is 3 copies of $\frac{1}{4}$?

S: It's $\frac{3}{4}$. My strip diagram proves it!

Repeat with $\frac{2}{3}$ and $\frac{7}{8}$. Instruct students to draw a strip diagram to represent each fraction (as on the previous page), to shade the given number of parts. Then, direct students to write an addition number sentence and a multiplication number sentence.

4 min–7 min

Problem 2: Determine the non-unit fraction greater than 1 that is represented by a strip diagram, and then write the fraction as a whole number times a unit fraction.

T: (Project the strip diagram of $\frac{10}{8}$ as shown below.) What fractional unit does the strip diagram show?

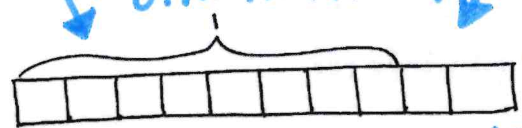
S: It shows tenths! → It shows eighths!

T: We first must identify 1. It's bracketed here. (Point.) How many units is 1 partitioned into?

S: 8.

T: The bracketed portion of the strip diagram shows 8 fractional units. What is the total number of eighths?

8 fractional units



10 = total # of eighths

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

$\frac{10}{8} = 10 \times \frac{1}{8}$

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

S: 10.

T: What is the fraction?

S: 10 eighths.

T: Say this as an addition number sentence. Use your fingers to keep track of the number of units as you say them.

S: $\frac{10}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$.

T: As a multiplication number sentence?

S: $\frac{10}{8} = 10 \times \frac{1}{8}$.

T: How is the expression $10 \times \frac{1}{8}$ represented in the strip diagram?

S: There are 10 units and each unit is 1 eighth.

T: What are the advantages of multiplying fractions instead of adding?

S: It's less to write. → It's faster. → It's more efficient.

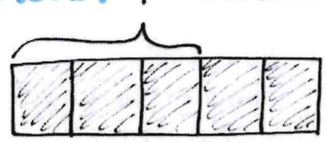
T+T: "What are the advantages of multiplying fractions instead of adding

T: Let's put parentheses around 8 eighths so that we can see 10 eighths can also be written to show 1 and 2 more eighths. (Write $\frac{10}{8} = \left(8 \times \frac{1}{8}\right) + \left(2 \times \frac{1}{8}\right)$.)

4 min–7 min

Problem 3: Express a non-unit fraction greater than 1 as a whole number times a unit fraction using a strip diagram.

T: Discuss with your partner how to draw a strip diagram to show 5 thirds.

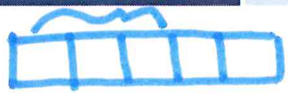


$\frac{5}{3} = 5 \times \frac{1}{3}$

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

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

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



$\frac{5}{3}: 5\times\frac{1}{3}$

$(2\times\frac{1}{3})+(3\times\frac{1}{3})$

S: I can draw one unit at a time. The units are thirds, so I'll draw five small rectangles together. → I know 5 thirds is greater than 1, so I'll draw 1. That's 3 thirds. So, then I can draw another 1. I'll just shade 5 parts. → I will draw a long rectangle and break it into 5 equal parts. Each part represents 1 third. I'll bracket 3 thirds to show 1.

T: How can we express $\frac{5}{3}$ as a multiplication expression?

S: We have five thirds. That's $5 \times \frac{1}{3}$.

T: Is there another way we can express $\frac{5}{3}$ using multiplication?

S: Can we express the 1 as $3\times\frac{1}{3}$ and then add $2\times\frac{1}{3}$?

T: Yes! We can use multiplication and addition to decompose fractions.

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Offer an alternative to Problem 2 on the Problem Set for students who have demonstrated proficiency. Challenge students to compose a word problem of their own to match one or more of the strip diagrams they construct for Problem 2. Always offer challenges and extensions to learners as alternatives, rather than additional *busy* work.

Problem Set (10 minutes)

offer challenge + extensions

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students should solve these problems using the RDW approach used for Application Problems.

Student Debrief (10 minutes)

SD: 7min

ET: 3min

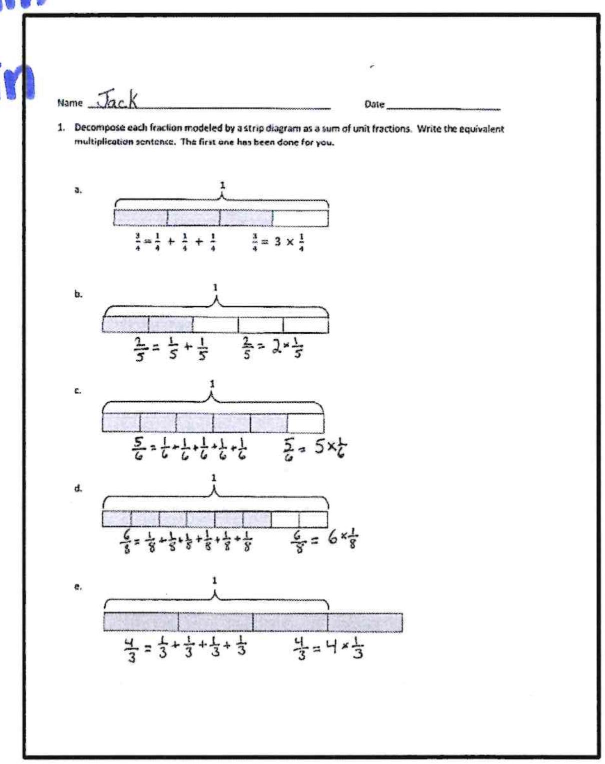
Lesson Objective: Decompose non-unit fractions and represent them as a whole number times a unit fraction using strip diagrams.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Any combination of the questions below may be used to lead the discussion.

- In all of the problems, why do we need to label 1 on our strip diagrams? What would happen if we did not label 1?



Name Jack Date

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

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

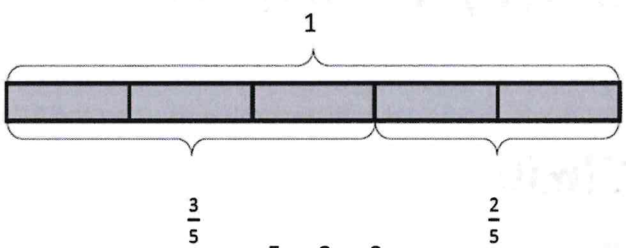
b. $\frac{2}{5}=\frac{1}{5}+\frac{1}{5}$ $\frac{2}{5}=2\times\frac{1}{5}$

c. $\frac{5}{6}=\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}+\frac{1}{6}$ $\frac{5}{6}=5\times\frac{1}{6}$

d. $\frac{6}{8}=\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}+\frac{1}{8}$ $\frac{6}{8}=6\times\frac{1}{8}$

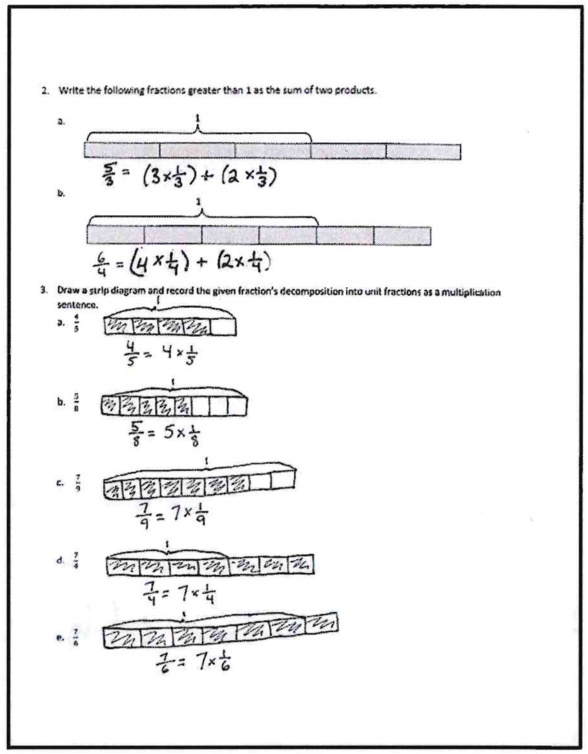
e. $\frac{4}{3}=\frac{1}{3}+\frac{1}{3}+\frac{1}{3}+\frac{1}{3}$ $\frac{4}{3}=4\times\frac{1}{3}$

- What is an advantage to representing the fractions using multiplication?
- What is similar in Problems 3(c), 3(d), and 3(e)? Which fractions are greater than 1? Which is less than 1?
- Are you surprised to see multiplication sentences with products less than 1? Why?
- In our lesson, when we expressed $\frac{5}{3}$ as $\left(3\times\frac{1}{3}\right)+\left(2\times\frac{1}{3}\right)$, what property were we using?
- Consider the work we did in this lesson where we decomposed a strip diagram multiple ways. Can we now rewrite number sentences using addition and multiplication? Try it with this strip diagram (as shown below).



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

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



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

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

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

3. Draw a strip diagram and record the given fraction's decomposition into unit fractions as a multiplication sentence.

a. $\frac{4}{5}$ $\frac{4}{5}=4\times\frac{1}{5}$

b. $\frac{5}{8}$ $\frac{5}{8}=5\times\frac{1}{8}$

c. $\frac{7}{9}$ $\frac{7}{9}=7\times\frac{1}{9}$

d. $\frac{7}{4}$ $\frac{7}{4}=7\times\frac{1}{4}$

e. $\frac{7}{6}$ $\frac{7}{6}=7\times\frac{1}{6}$

- How is multiplying fractions like multiplying whole numbers?
- How did the Application Problem connect to today's lesson?

Exit Ticket (3 minutes)

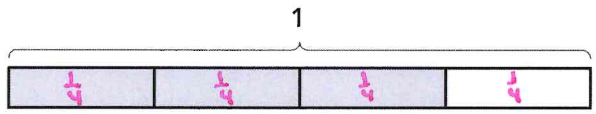
After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

Name ________________________________ Date ________________

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

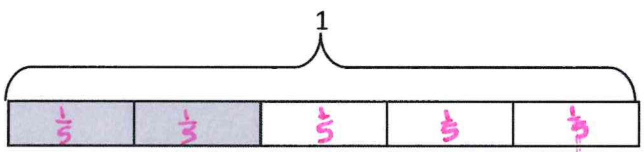
MD

a.



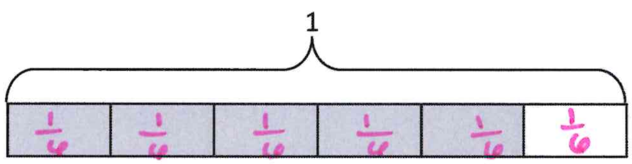
$\frac{3}{4} = \frac{1}{4} + \frac{1}{4} + \frac{1}{4}$ $\frac{3}{4} = 3 \times \frac{1}{4}$

b.



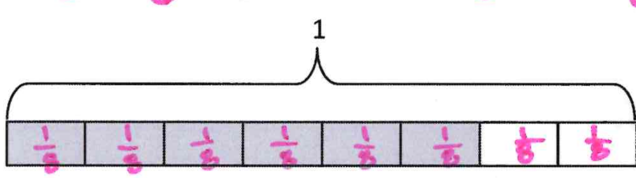
$\frac{2}{5} = \frac{1}{5} + \frac{1}{5}$ $\frac{2}{5} = 2 \times \frac{1}{5}$

c.



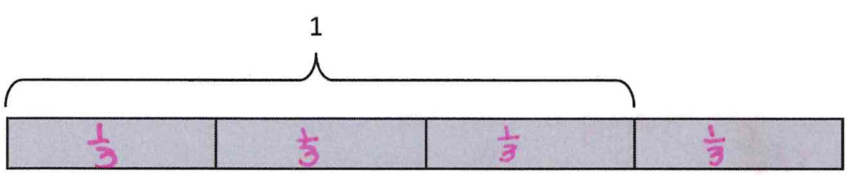
$\frac{5}{6} = \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6} + \frac{1}{6}$ $\frac{5}{6} = 5 \times \frac{1}{6}$

d.



$\frac{6}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$ $\frac{6}{8} = 6 \times \frac{1}{8}$

e.



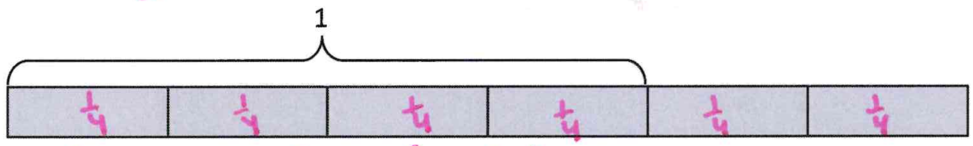
$\frac{4}{3} = \frac{1}{3} + \frac{1}{3} + \frac{1}{3} + \frac{1}{3}$ $\frac{4}{3} = 4 \times \frac{1}{3}$

CD

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

a.


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

b.


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

MD

3. Draw a strip diagram and record the given fraction's decomposition into unit fractions as a multiplication sentence.

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

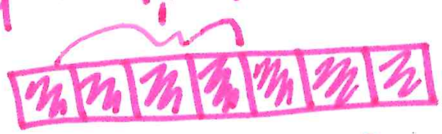

$\frac{4}{5} = 4 \times \frac{1}{5}$

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


$\frac{5}{8} = 5 \times \frac{1}{8}$

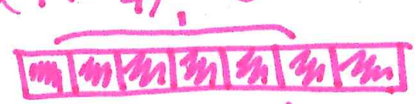
c. $\frac{7}{9}$


$\frac{7}{9} = 7 \times \frac{1}{9}$

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


$\frac{7}{4} = 7 \times \frac{1}{4}$

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

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


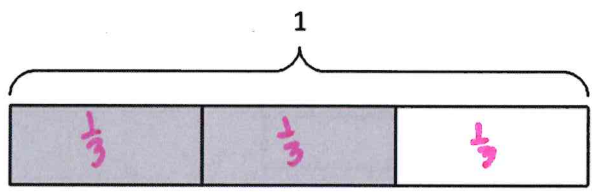
$\frac{7}{6} = 7 \times \frac{1}{6}$

$\frac{7}{6} = (6 \times \frac{1}{6}) + (1 \times \frac{1}{6})$

Name ______________________________ Date ______________

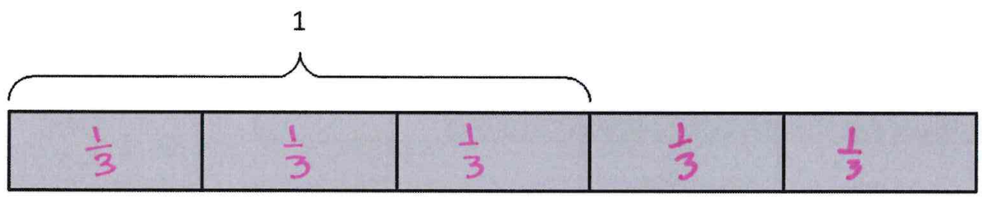
1. Decompose each fraction modeled by a strip diagram as a sum of unit fractions. Write the equivalent multiplication sentence.

a.



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

b.



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

2. Draw a strip diagram and record the given fraction's decomposition into unit fractions as a multiplication sentence.

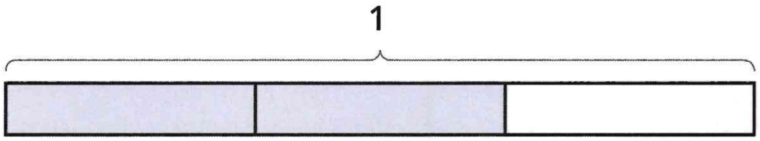
$\frac{6}{9}$

$\frac{6}{9} = 6 \times \frac{1}{9}$

Name ______________________________ Date ______________

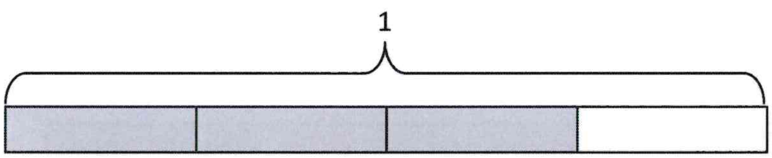
1. Decompose each fraction modeled by a strip diagram as a sum of unit fractions. Write the equivalent multiplication sentence. The first one has been done for you.

a.

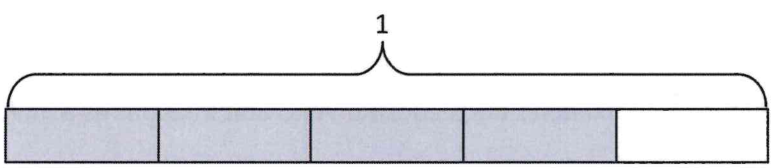


$\frac{2}{3} = \frac{1}{3} + \frac{1}{3}$ $\frac{2}{3} = 2 \times \frac{1}{3}$

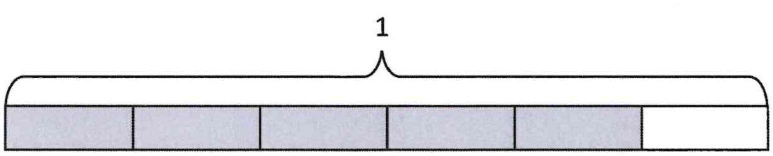
b.



c.

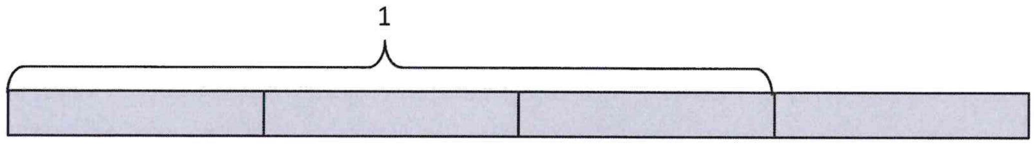


d.

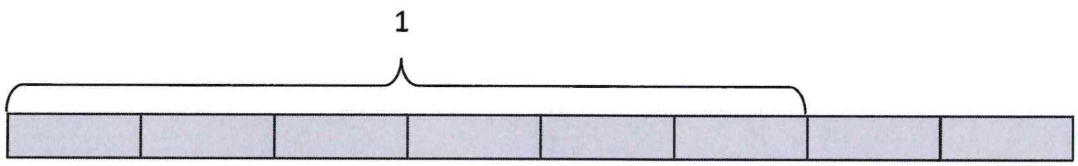


2. Write the following fractions greater than 1 as the sum of two products.

a.



b.



3. Draw a strip diagram and record the given fraction's decomposition into unit fractions as a multiplication sentence.

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

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

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

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

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