Lesson 13:

Subtract mixed numbers from mixed numbers with related units.

CCSS Standard – 5.NF.A.1 / 5.NF.A.2

FLUENCY (10-min) **Whiteboard Exchange: Interpret Division as a Fraction**

Write the quotient as a fraction. Then express the quotient as a whole number if possible.

$1 \div 4 =$

$3 \div 4 =$

$8 \div 4 = \quad =$

$16 \div 4 = \quad =$

$2 \div 5 =$

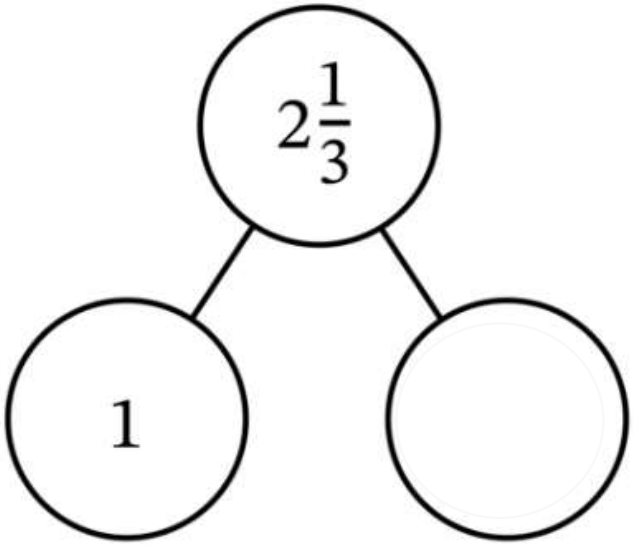
$3 \div 5 =$

$5 \div 5 = \quad =$

$20 \div 5 = \quad =$

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

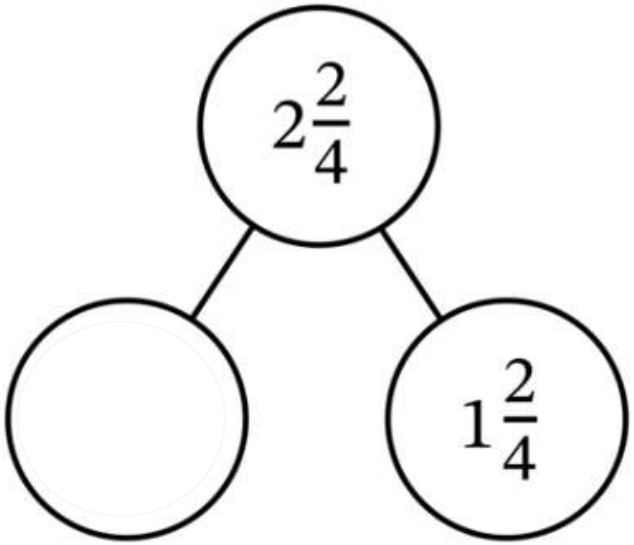
What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



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

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

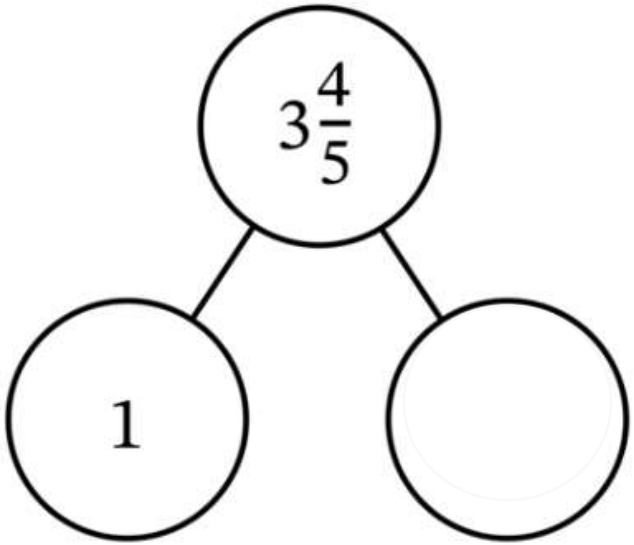
What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



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

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

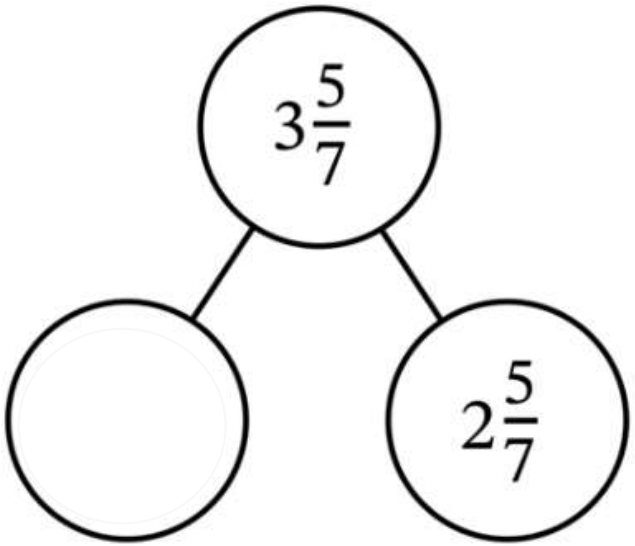
What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



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

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

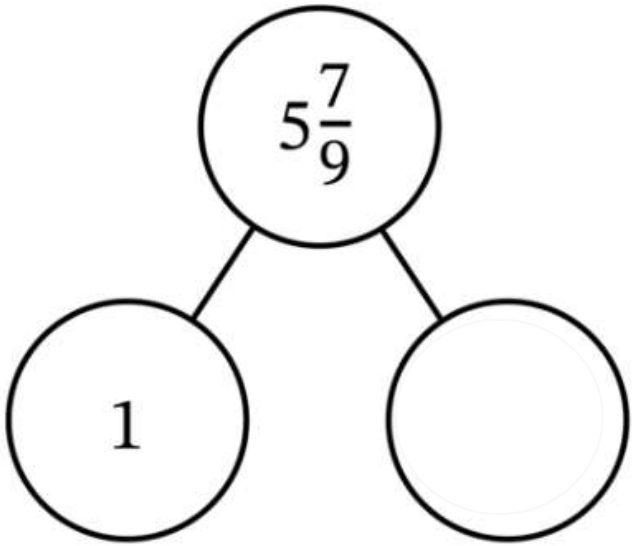
What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



$$3\frac{5}{7} = \square + 2\frac{5}{7}$$

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

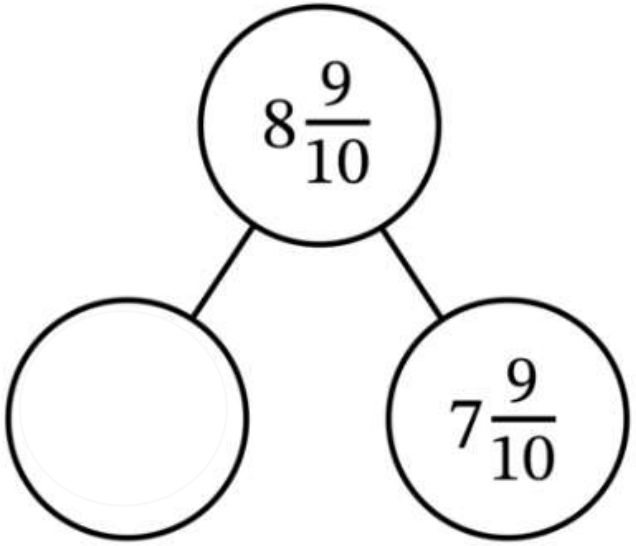
What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



$$5\frac{7}{9} = 1 + ____$$

FLUENCY (15-min) **Choral Response: Decompose Whole Numbers**

What is the unknown part? Raise your hand when you know.
When I give the signal, say the completed equation. Ready?



$$8\frac{9}{10} = ____ + 7\frac{9}{10}$$

FLUENCY (10-min) **Whiteboard Exchange: Make the Next Whole Number**

Write and complete the equation.

$$\frac{3}{4} + \underline{\quad\square\quad} = 1$$

FLUENCY (10-min) **Whiteboard Exchange: Make the Next Whole Number**

Write and complete the equation.

$$\square + \frac{5}{7} = 1$$

FLUENCY (10-min) **Whiteboard Exchange: Make the Next Whole Number**

Write and complete the equation.

$$\frac{2}{9} + \underline{\quad\quad} = 1$$

FLUENCY (10-min) **Whiteboard Exchange: Make the Next Whole Number**

Write and complete the equation.

$$\square + \frac{4}{12} = 1$$

LAUNCH (5-min)

Analyze expressions to make connections between subtraction of whole numbers and subtraction of mixed numbers.

Can you subtract this using MENTAL MATH?

$$86 - 34$$

Yes, since there is no REGROUPING needed, we just have to subtract the ones form the ones and the tens from the tens.

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

What is the same and what is different compared to the previous expression?

SAME:

- Both show subtraction.
- I can subtract the whole numbers mentally.
- I can subtract the fractions mentally.
- There is NO RENAMING NEEDED.

DIFFERENT:

- The units are different.
- One is whole numbers the other mixed numbers.

LAUNCH (5-min)

Analyze expressions to make connections between subtraction of whole numbers and subtraction of mixed numbers.

Can you subtract this using MENTAL MATH?

$$82 - 47$$

Maybe, there are not enough ones to subtract so <u>REGROUPING IS NEEDED.</u>

What might you plan to do to subtract 47 from 82?

- **Decompose** the 47 into parts then subtract the parts from 82. **(82 – 42 = 40 – 5 = 35)**
- **Rename** 82 as 7 tens and 12 ones. (70 + 12 – 40 – 7 = 35)
- **Add-on** beginning with 47. (47 + **3** = 50 + **30** = 80 + **2** = 82)

$$8\frac{2}{10} - 4\frac{7}{10}$$

What might you do to subtract this expression?

- **Decompose** 4 7/10 into parts and then subtract the parts from 8 2/10.
- **Add-on** beginning with 4 7/10.

LAUNCH (5-min)

Analyze expressions to make connections between subtraction of whole numbers and subtraction of mixed numbers.

- **Decompose** 4 7/10 into parts and then subtract the parts from 8 2/10.

$$8\frac{2}{10} - 4\frac{7}{10}$$

$8\frac{2}{10} - 4\frac{2}{10} =$

$4 - \frac{5}{10} =$

$\mathbf{3\frac{5}{10}}$

- **Add-on** beginning with 4 7/10.

$$8\frac{2}{10} - 4\frac{7}{10}$$

$4\frac{7}{10} + \mathbf{\frac{3}{10}} = 5$

$5 + \mathbf{3\frac{2}{10}} = 8\frac{2}{10}$

$\mathbf{\frac{3}{10} + 3\frac{2}{10} = 3\frac{5}{10}}$

LEARN (35-min) **Subtract Like Units**

LEARN BOOK – PAGE 113

$$4\frac{5}{8} - 2\frac{3}{16} = \underline{\quad 2\frac{7}{16} \quad}$$

$4\frac{10}{16}$

Are the fractional units related or unrelated? How do you know?

***Related**. 8 is a factor of 16 and 16 is a multiple of 8.*

Before we solve this expression, let's estimate the difference.

About 4 ½ minus 2, so the answer is between 2 and 3.

Are we ready to subtract the units as they are right now?

No, because the fractional parts do not have LIKE units.

Are we ready to subtract the units as they are right now?

YES!, 4 – 2 = 2 and 10/16 – 3/16 = 7/6

LEARN (35-min) **Subtract Like Units**

LEARN BOOK – PAGE 113

$9\frac{1}{6} - 4\frac{10}{12} =$ **4 2/6**

9 1/6 - 4 5/6

4 **1/6** **4/6**

9 1/6 - 1/6 = 9

9 – 4 = 5

5 – 4/6 = 4 2/6

Are the fractional units related or unrelated? How do you know?

Related. 6 is a factor of 12 and 12 is a multiple of 6.

Before we solve this expression, let's estimate the difference.

About 9 minus 5, so the answer is between 4 and 5.

Are we ready to subtract the units as they are right now?

No, because the fractional parts do not have LIKE units.

The fractional units are LIKE units, but are we ready to subtract?

No, we are going to have to decompose to help us subtract.

LEARN (35-min) **Subtract Like Units**

LEARN BOOK – PAGE 113

$$18\frac{5}{16} - 7\frac{3}{4}$$

$7\frac{12}{16}$

$7 \quad \frac{5}{16} \quad \frac{7}{16}$

$18\frac{5}{16} - \frac{5}{16} = 18$

$18 - 7 = 11$

$11 - 7/16 = 10\ 9/16$

Are the fractional units related or unrelated? How do you know?

Related. 16 is a factor of 4 and 16 is a multiple of 4.

Before we solve this expression, let's estimate the difference.

About 18 minus 8, so the answer is between 10 and 11.

Are we ready to subtract the units as they are right now?

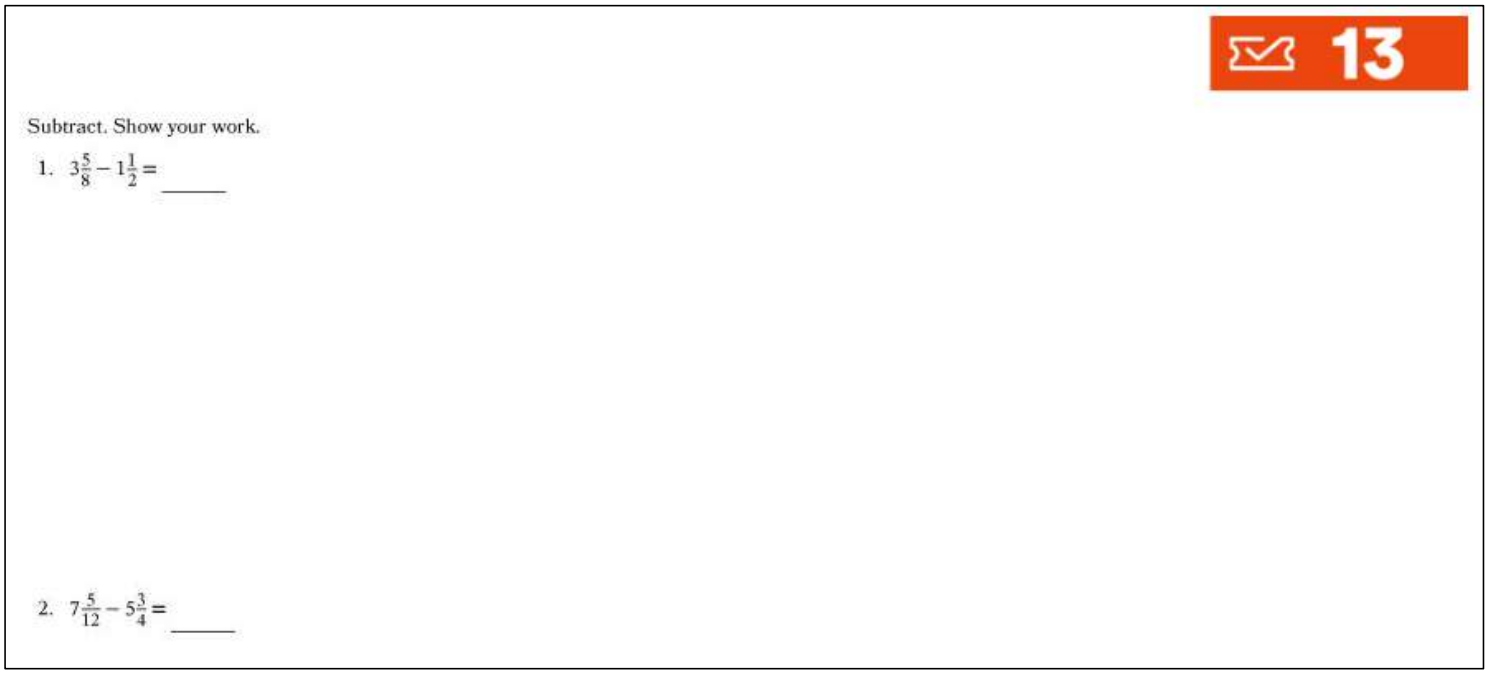
No, because the fractional parts do not have LIKE units.

The fractional units are LIKE units, but are we ready to subtract?

No, we are going to have to decompose to help us subtract.

LAND (10-min)

Exit Ticket



Exit Ticket – PAGE 119

Small Group Time:
Problem Set Pages 115 - 116

Homework:
Page 93 APPLY BOOK