Lesson 6:

Add and subtract fractions with related units by using area models to rename fractions.

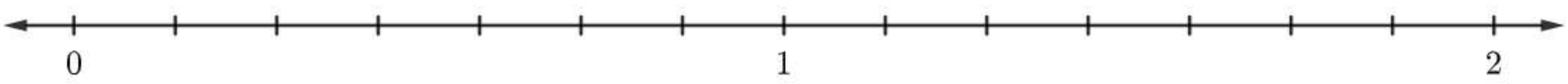
CCSS Standard – 5.NF.A

FLUENCY (10-min) **Counting on the Number Line**

What FRACTIONAL UNIT does the number line show? Raise your hand when you know.

Sevenths

Use the number line to count forward by sevenths



Now count forward by sevenths again. This time rename the fractions as **whole numbers** when possible.

Now count forward by sevenths again. This time rename the fractions as **whole numbers and mixed numbers** when possible.

Notice: Whole numbers and fractional units.

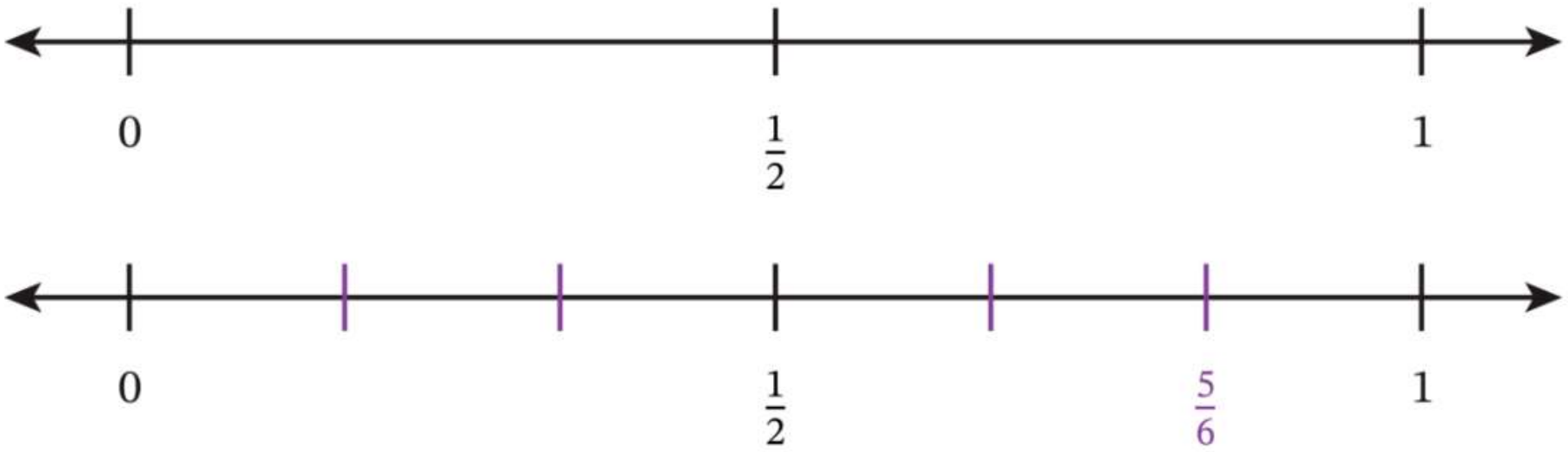
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 5/6 is located on the number line.
Is 5/6 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{5}{6}$

Closer to 1



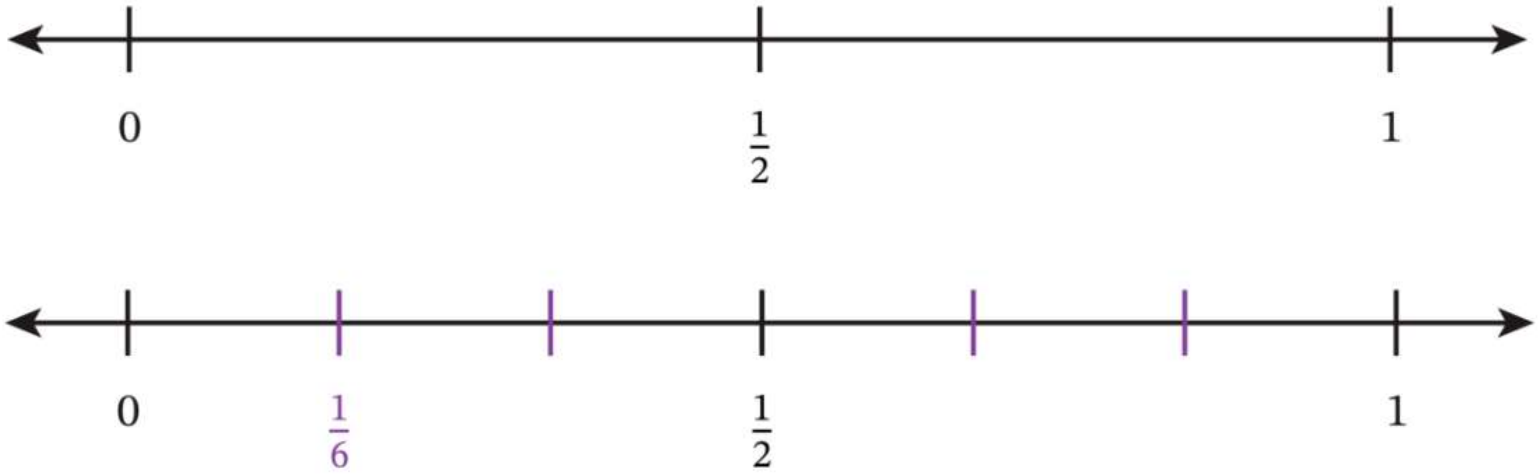
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 1/6 is located on the number line.
Is 1/6 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{1}{6}$

Closer to 0



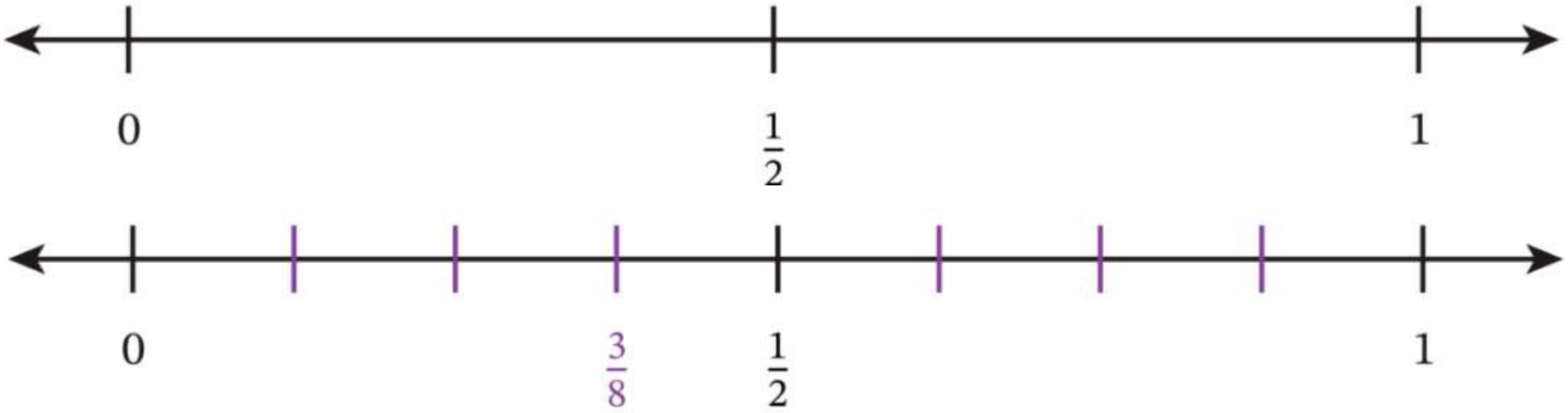
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 3/8 is located on the number line.
Is 3/8 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{3}{8}$

Closer to 1/2



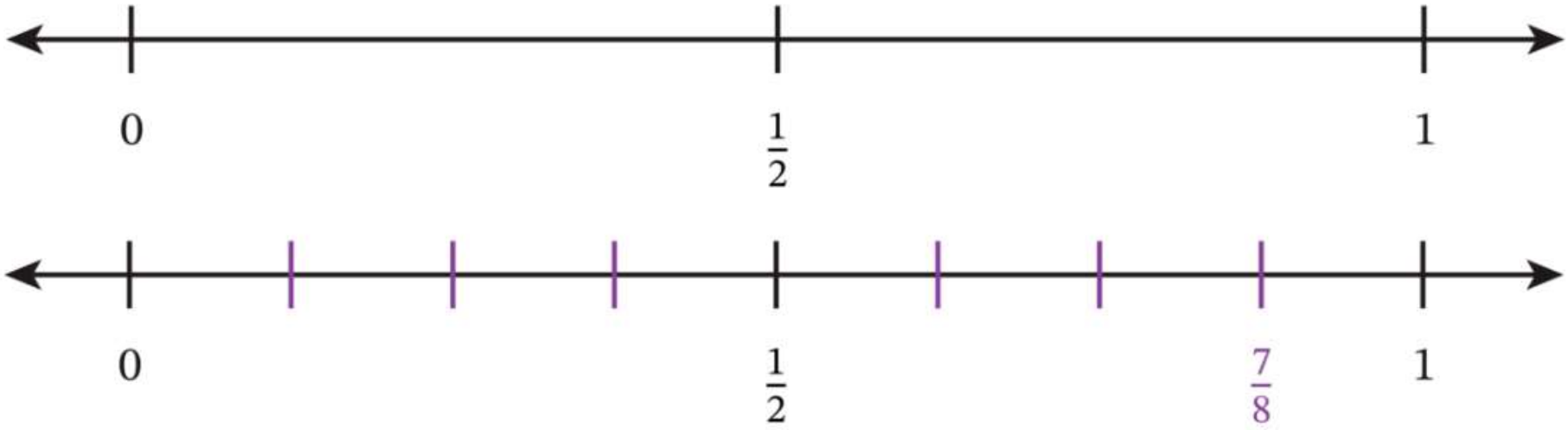
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 7/8 is located on the number line.
Is 7/8 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{7}{8}$

Closer to 1



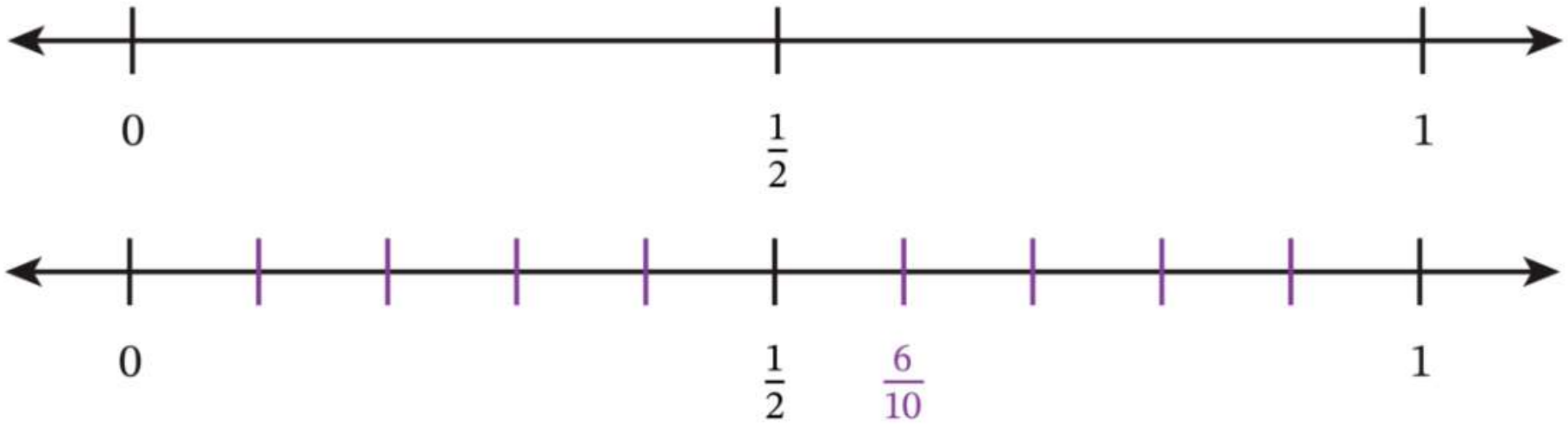
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 6/10 is located on the number line.
Is 6/10 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{6}{10}$

Closer to ½



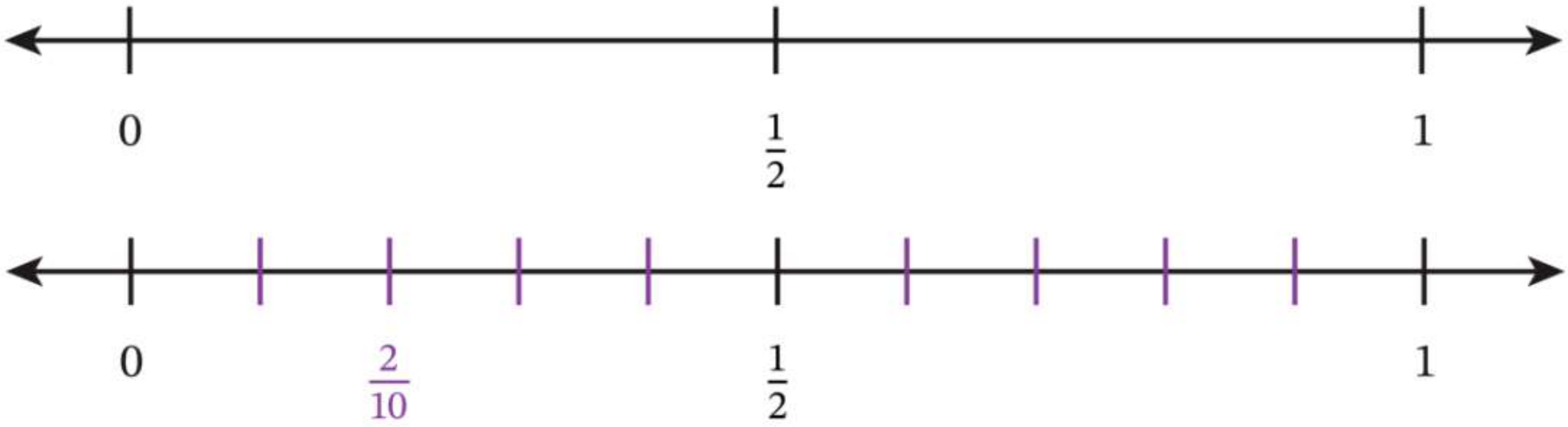
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 2/10 is located on the number line.
Is 2/10 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{2}{10}$

Closer to 0



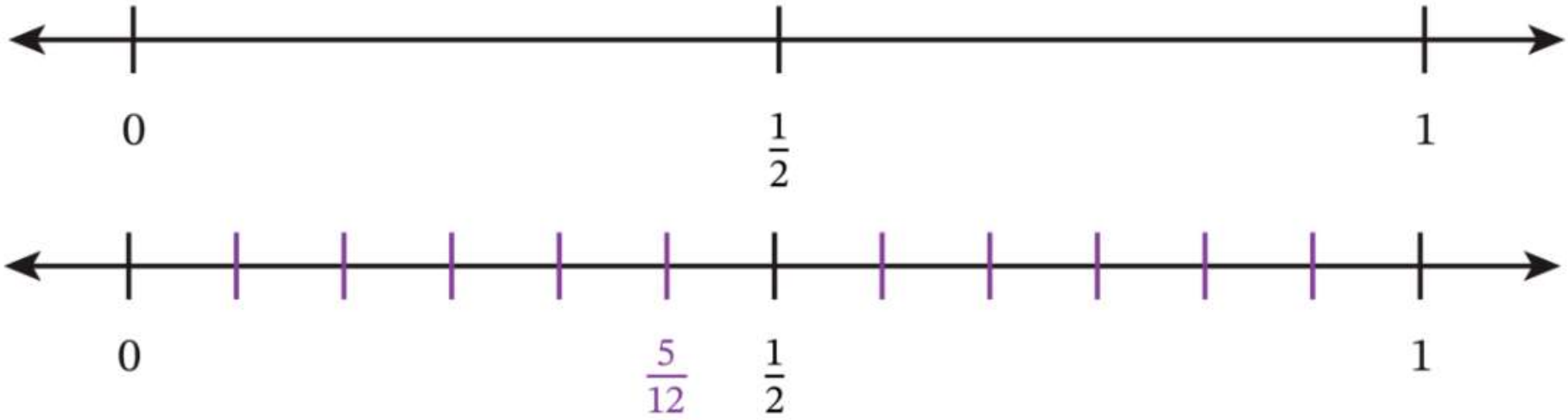
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 5/12 is located on the number line.
Is 5/12 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{5}{12}$

Closer to 1/2



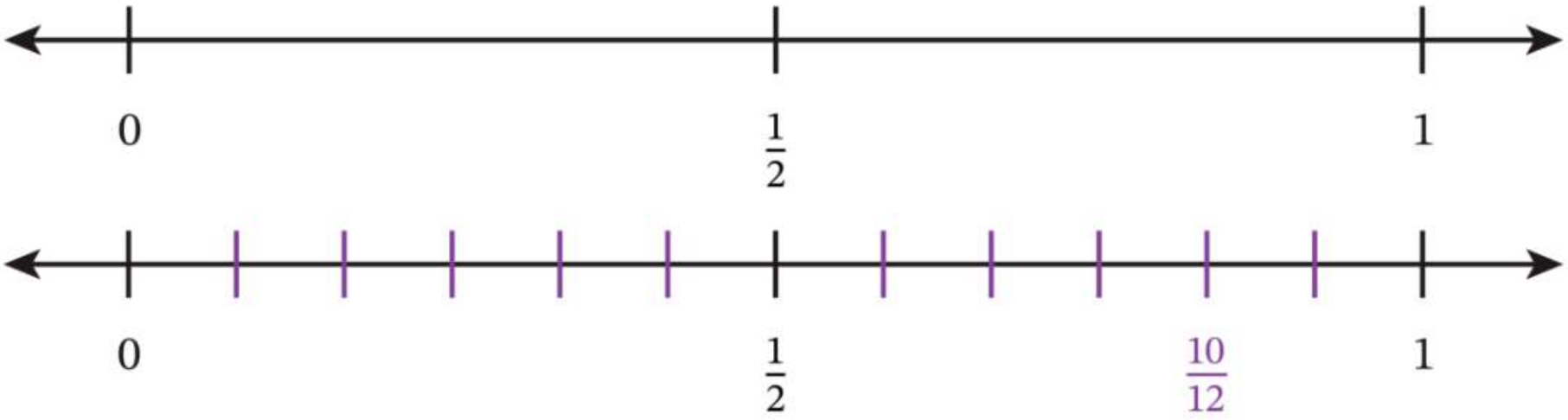
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 10/12 is located on the number line.
Is 10/12 closer to 0, ½, or 1?

Raise your hand when you know.

$\frac{10}{12}$

Closer to 1



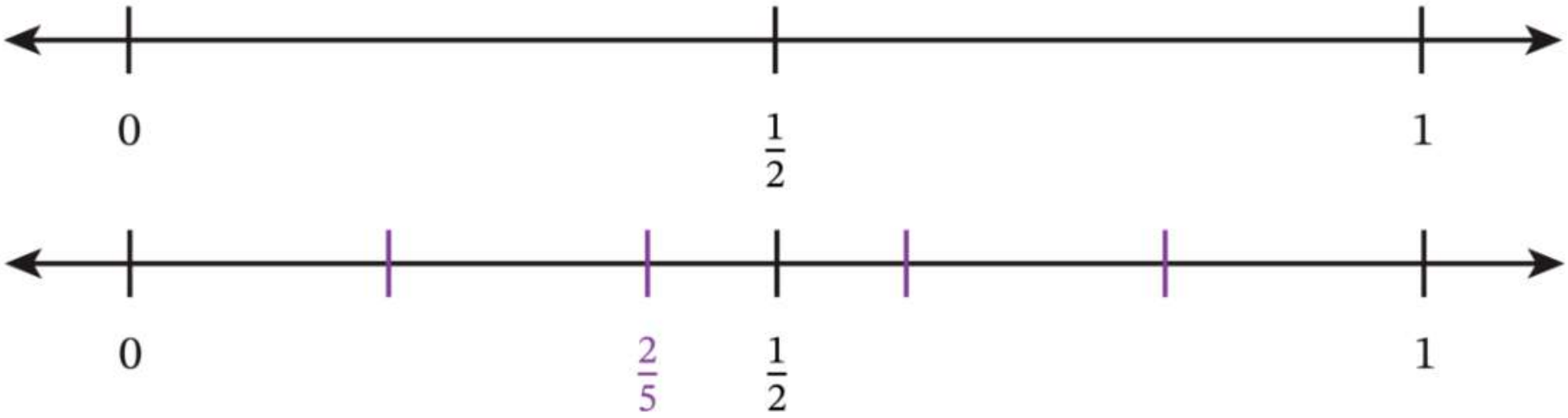
FLUENCY (10-min) **Choral Response: Closer to 0, ½, or 1**

Think about where 2/5 is located on the number line.
Is 2/5 closer to 0, ½, or 1?

Raise your hand when you know.

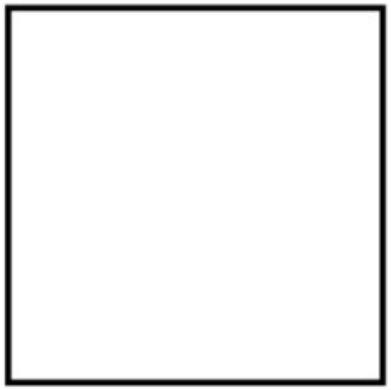
$\frac{2}{5}$

Closer to 1/2



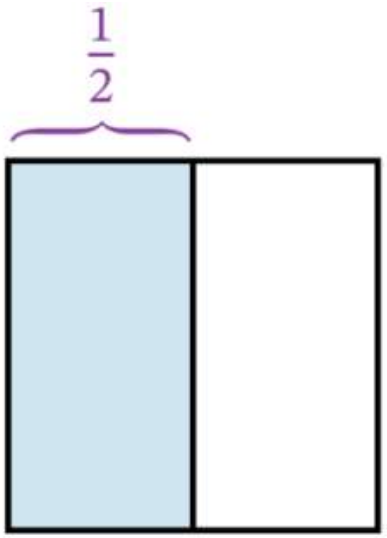
FLUENCY (10-min) **Whiteboard Exchange: Equivalent Fractions**

LEARN Book Page 49.



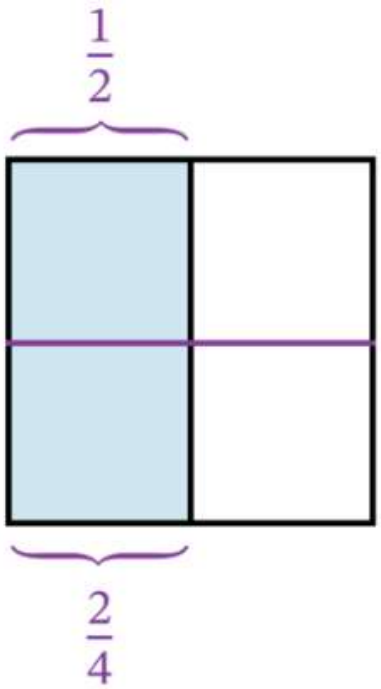
The area of this square represents 1 whole.

Use a vertical line to partition the whole into halves, and then shade and label ½.



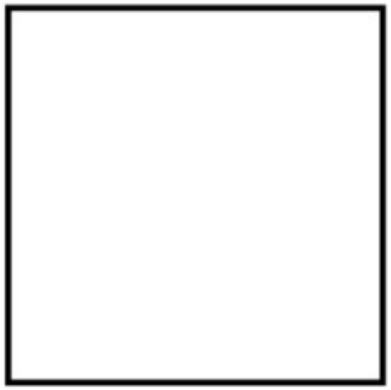
$$\frac{1}{2} = \frac{1 \times 2}{2 \times 2} = \frac{2}{4}$$

Use what is known in the equation above to help you draw a horizontal line and partition the area model into smaller units.



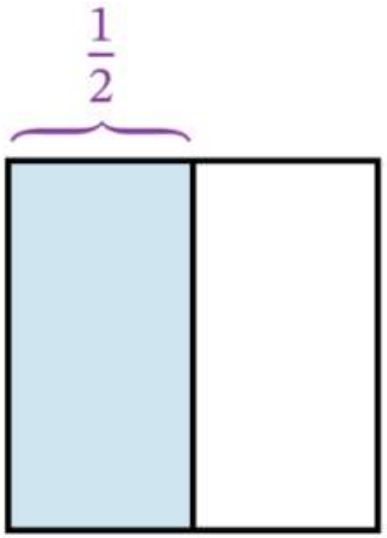
FLUENCY (10-min) **Whiteboard Exchange: Equivalent Fractions**

LEARN Book Page 49.



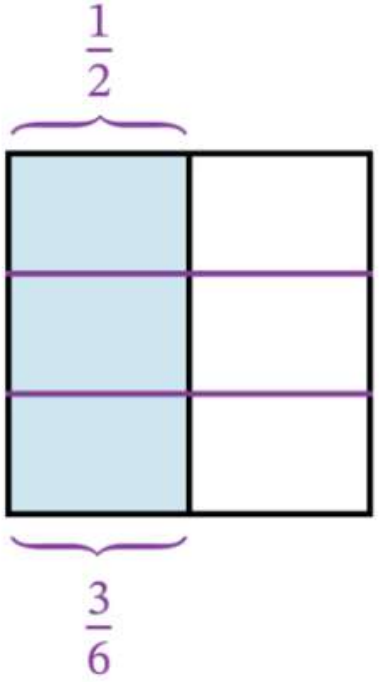
The area of this square represents 1 whole.

Use a vertical line to partition the whole into halves, and then shade and label ½.



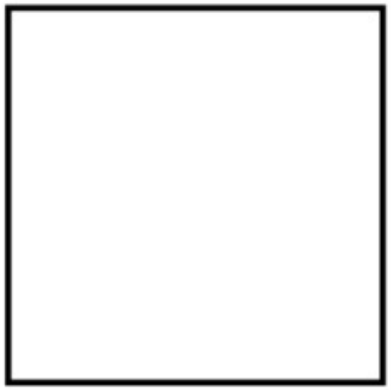
$$\frac{1}{2} = \frac{1 \times 3}{2 \times 3} = \frac{3}{6}$$

Use what is known in the equation above to help you draw horizontal lines and partition the area model into smaller units.



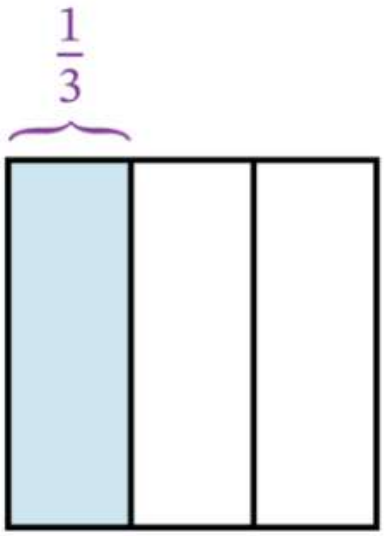
FLUENCY (10-min) **Whiteboard Exchange: Equivalent Fractions**

LEARN Book Page 49.



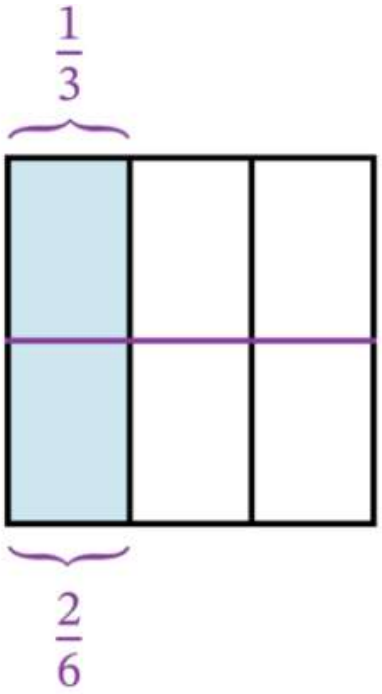
The area of this square represents 1 whole.

Use vertical lines to partition the whole into thirds, and then shade and label 1/3.



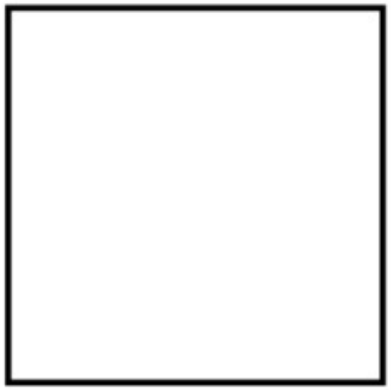
$$\frac{1}{3} = \frac{1 \times 2}{3 \times 2} = \frac{2}{6}$$

Use what is known in the equation above to help you draw horizontal lines and partition the area model into smaller units.



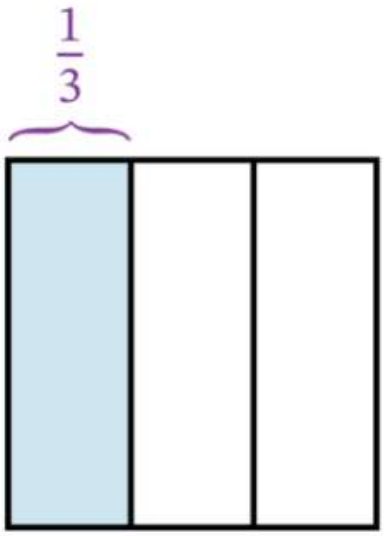
FLUENCY (10-min) **Whiteboard Exchange: Equivalent Fractions**

LEARN Book Page 49.



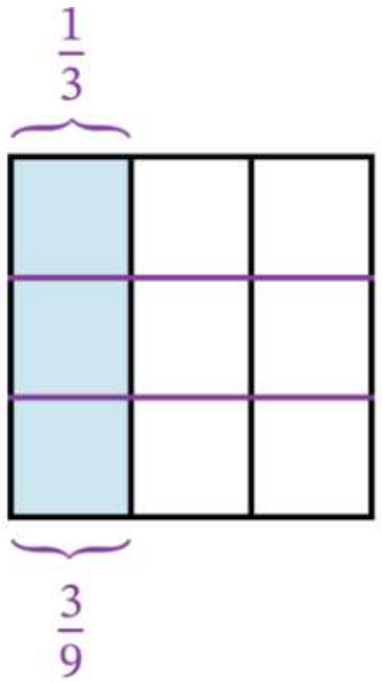
The area of this square represents 1 whole.

Use vertical lines to partition the whole into thirds, and then shade and label 1/3.



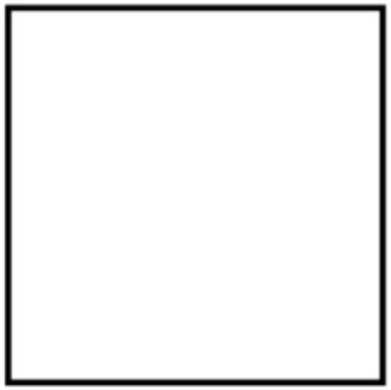
$$\frac{1}{3} = \frac{1 \times 3}{3 \times 3} = \frac{3}{9}$$

Use what is known in the equation above to help you draw horizontal lines and partition the area model into smaller units.



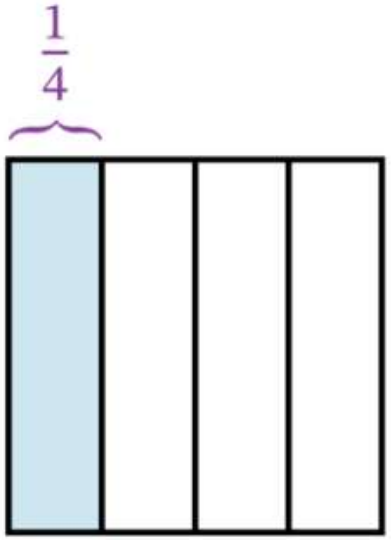
FLUENCY (10-min) **Whiteboard Exchange: Equivalent Fractions**

LEARN Book Page 49.



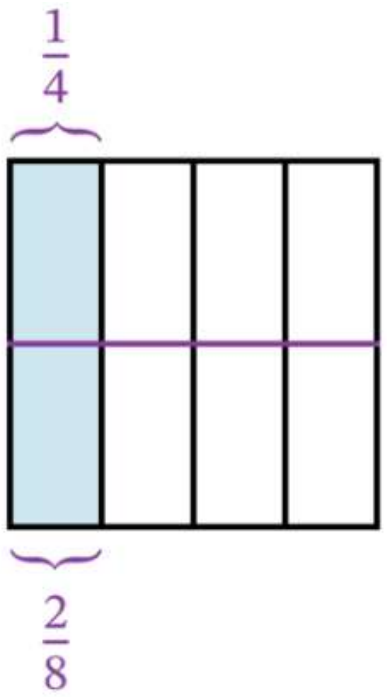
The area of this square represents 1 whole.

Use vertical lines to partition the whole into fourths, and then shade and label 1/4.



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

Use what is known in the equation above to help you draw horizontal lines and partition the area model into smaller units.



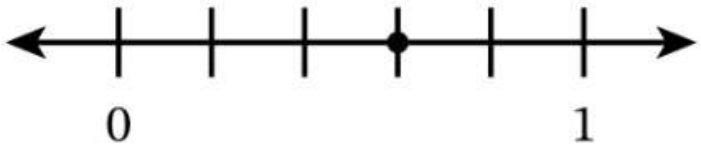
LAUNCH (5-min)

Which One Doesn't Belong?

Each represents the fraction 3/5

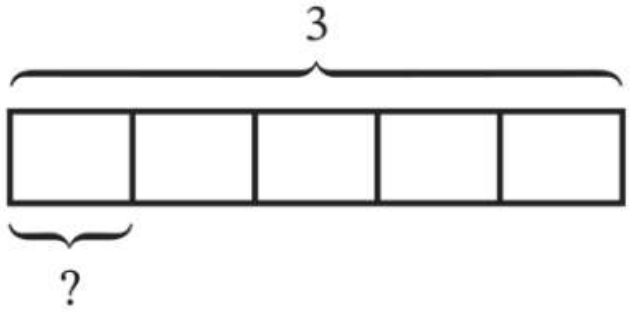
A

A doesn't belong because it is the only one that shows a point on a number line for 3/5.



B

B doesn't belong because it is the only one that shows 3 wholes portioned into 5 equal parts.

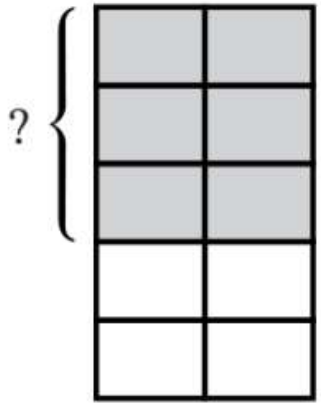


C

$\frac{3}{5}$

C doesn't belong because it is the only one that is written as a number and not a model.

D



D doesn't belong because it is the only one that shows tenths.

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

Are we ready to add these fractions as they are written?
Why? Or Why not?

No! The whole units are not the same.

What do we need to do before we can add?

We need to rename one of the fractions, so we have LIKE units.

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 3 is a factor of 9.

Which fraction should we rename?

Rename 2/3 into ninths.

$$\frac{2}{3} + \frac{8}{9}$$

Use interactive fraction model on Digital Great Minds

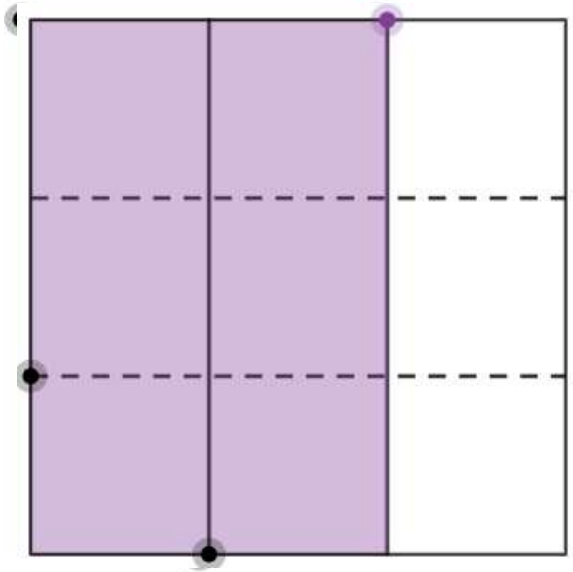
LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

To rename 2/3 as ninths, we need to show 9 equal parts in our area model. We already have 3 parts because our model shows thirds.

$$\frac{2}{3} + \frac{8}{9}$$

How many equal parts must we partition each third into to show ninths?

We need to partition each third into 3 equal parts.



What is 2/3 renamed as ninths?

6/9

The new shaded area has <u>3 times the units it did before</u>.
2 pieces shaded turned into 6 pieces shaded.

The equation we can use is:

$$\frac{2}{3} = \frac{2 \times 3}{3 \times 3} = \frac{6}{9}$$

$$\frac{6}{9} + \frac{8}{9} = \frac{14}{9}$$

Use interactive fraction model on Digital Great Minds

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

Are we ready to subtract these fractions as they are written? Why? Or Why not?

No! The whole units are not the same.

$$\frac{4}{5} - \frac{6}{10}$$

What do we need to do before we can subtract?

We need to rename one of the fractions, so we have <u>LIKE</u> units.

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 5 is a factor of 10.

Which fraction should we rename?

Rename 4/5 into tenths.

Use interactive fraction model on Digital Great Minds

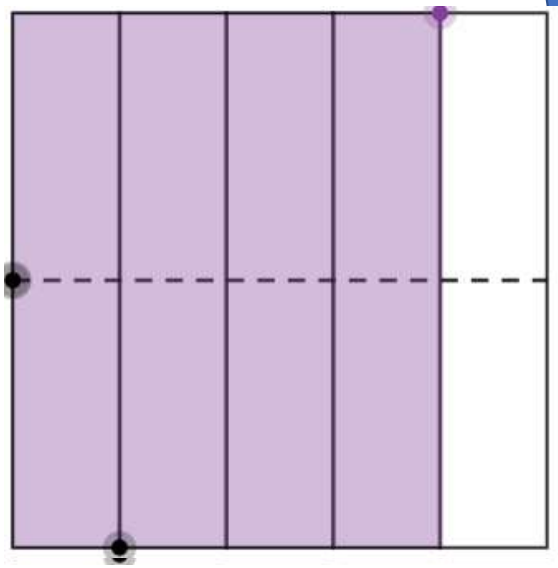
LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

To rename 4/5 as tenths, we need to show 10 equal parts in our area model. We already have 5 parts because our model shows fifths.

$$\frac{4}{5} - \frac{6}{10}$$

How many equal parts must we partition each fifth into to show tenths?

We need to partition each fifth into 2 equal parts.



What is 4/5 renamed as tenths?

8/10

The new shaded area has <u>2 times the units it did before</u>.
4 pieces shaded turned into 8 pieces shaded.

The equation we can use is:

$$\frac{4}{5} = \frac{4 \times 2}{5 \times 2} = \frac{8}{10}$$

$$\frac{8}{10} - \frac{6}{10} = \frac{2}{10}$$

Use interactive fraction model on Digital Great Minds

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

LEARN BOOK – PAGE 51.

Are we ready to subtract these fractions as they are written? Why? Or Why not?

$$\frac{7}{6} - \frac{2}{3}$$

No! The whole units are not the same.

What do we need to do before we can subtract?

We need to rename one of the fractions, so we have LIKE units.

$$\frac{2}{3} = \frac{?}{6}$$

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 3 is a factor of 6.

Which fraction should we rename?

Rename 2/3 into sixths.

$$\frac{2}{3} = \frac{2 \times 2}{3 \times 2} = \frac{4}{6}$$

$$\frac{7}{6} - \frac{4}{6} = \frac{3}{6}$$

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

LEARN BOOK – PAGE 51.

$$\frac{6}{15} + \frac{4}{5}$$

IF THERE US A RELATIONSHIP, WE CAN MULTIPLY OR DIIVDE. THIS TIME WE WILL DIVIDE.

Are we ready to add these fractions as they are written? Why? Or Why not?

No! The whole units are not the same.

What do we need to do before we can add?

We need to rename one of the fractions, so we have LIKE units.

$$\frac{6}{15} = \frac{?}{5}$$

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 5 is a factor of 15. This time we will divide.

$$\frac{6}{15} = \frac{6 \div 3}{15 \div 3} = \frac{2}{5}$$

Which fraction should we rename?

Rename 6/15 into fifths.

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

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

LEARN BOOK – PAGE 52.

$$\frac{1}{7} + \frac{18}{14}$$

IF THERE US A RELATIONSHIP, WE CAN MULTIPLY OR DIIVDE. THIS TIME WE WILL DIVIDE.

Are we ready to add these fractions as they are written? Why? Or Why not?

No! The whole units are not the same.

What do we need to do before we can add?

We need to rename one of the fractions, so we have LIKE units.

$$\frac{18}{14} = \frac{?}{7}$$

$$\frac{18}{14} = \frac{18 \div 2}{14 \div 2} = \frac{9}{7}$$

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 7 is a factor of 14. This time we will divide.

Which fraction should we rename?

Rename 18/14 into sevenths.

$$\frac{1}{7} + \frac{9}{7} = \frac{10}{7}$$

LEARN (35-min) **Use an Area Model to Rename Fractions to Add and Subtract**

LEARN BOOK – PAGE 52.

Are we ready to subtract these fractions as they are written? Why? Or Why not?

$$\frac{15}{6} - \frac{1}{3}$$

No! The whole units are not the same.

What do we need to do before we can subtract?

We need to rename one of the fractions, so we have <u>LIKE</u> units.

$$\frac{1}{3} = \frac{?}{6}$$

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

Are the units related? How do you know?

Yes. The units are related. We only need to rename one of the fractions because 3 is a factor of 6.

Which fraction should we rename?

Rename 1/3 into sixths.

$$\frac{15}{6} - \frac{2}{6} = \frac{13}{6}$$

LAND (10-min) **Exit Ticket**

Exit Ticket – PAGE 57

Small Group Time:
Problem Set Pages 53 – 54

Homework:
Page 41 APPLY BOOK

Name _____ Date _____

6

Draw an area model to make like units. Then add or subtract.

1. $\frac{15}{12} - \frac{1}{3} =$ _____ − _____ = _____

2. $\frac{12}{15} + \frac{3}{5} =$ _____ + _____ = _____