Module 3 - Lesson 1:

Find fractions of a set with arrays.

CCSS Standard – 5.NF.B.4.a / 5.NF.B.5.b

FLUENCY (10-min) **Happy Counting by Halves – Visualizing a Number line**

When I give this signal, count up. 

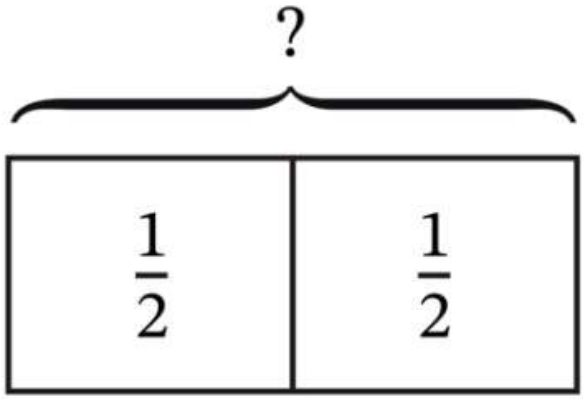
When I give this signal, count down. 

When I give this signal, stop. 

Let's count by halves. The first number you say is 0 halves. Ready?

FLUENCY (10-min)

Whiteboard Exchange: Relate Repeated Addition to Multiplication

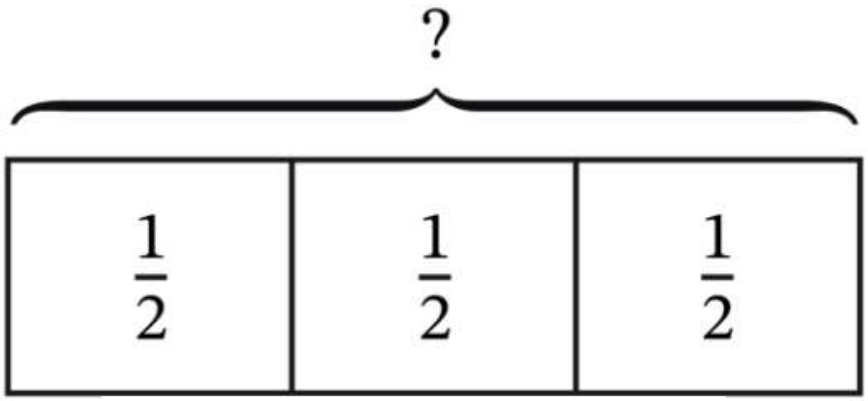


Write a repeated addition equation to represent the tape diagram.
Write the sum as a fraction.

Now, write a multiplication equation to represent the tape diagram.
Write the product as a fraction.

FLUENCY (10-min)

Whiteboard Exchange: Relate Repeated Addition to Multiplication

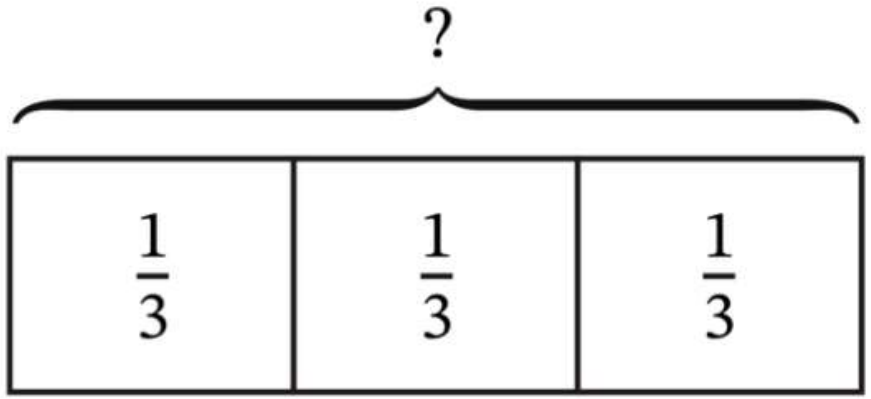


Write a repeated addition equation to represent the tape diagram.
Write the sum as a fraction.

Now, write a multiplication equation to represent the tape diagram.
Write the product as a fraction.

FLUENCY (10-min)

Whiteboard Exchange: Relate Repeated Addition to Multiplication

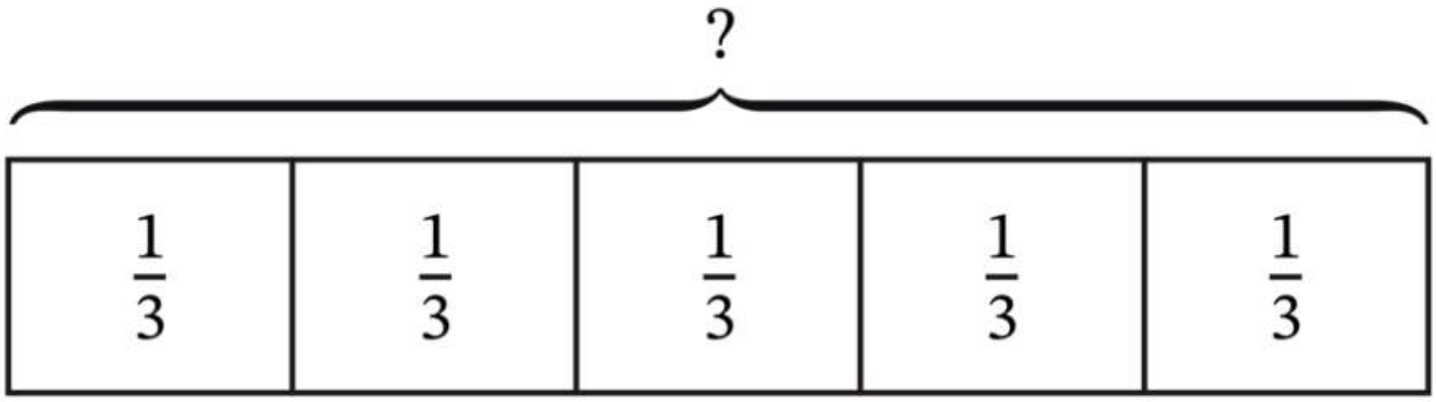


Write a repeated addition equation to represent the tape diagram.
Write the sum as a fraction.

Now, write a multiplication equation to represent the tape diagram.
Write the product as a fraction.

FLUENCY (10-min)

Whiteboard Exchange: Relate Repeated Addition to Multiplication

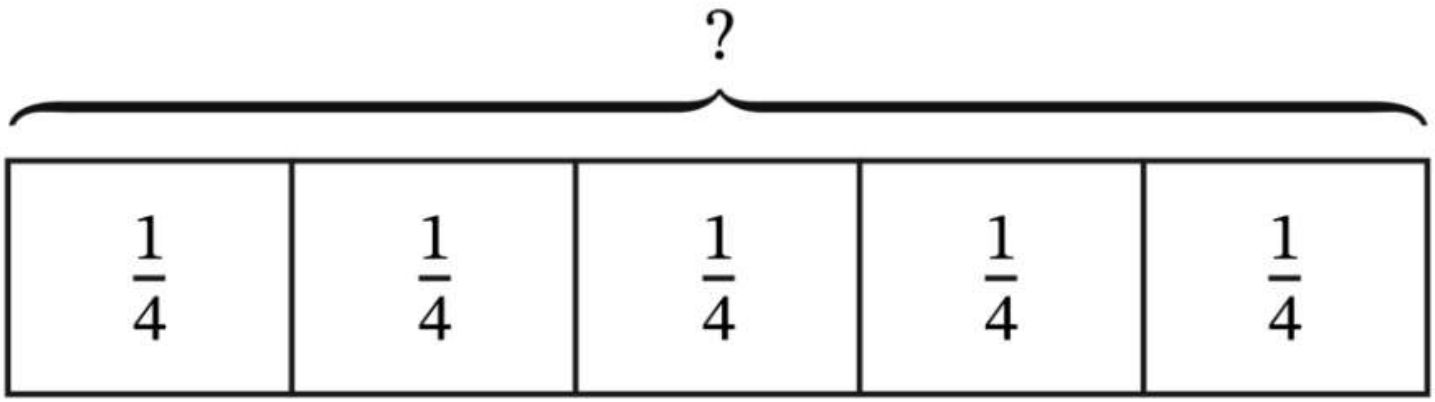


Write a repeated addition equation to represent the tape diagram.
Write the sum as a fraction.

Now, write a multiplication equation to represent the tape diagram.
Write the product as a fraction.

FLUENCY (10-min)

Whiteboard Exchange: Relate Repeated Addition to Multiplication



Write a repeated addition equation to represent the tape diagram.
Write the sum as a fraction.

Now, write a multiplication equation to represent the tape diagram.
Write the product as a fraction.

FLUENCY (10-min)

Whiteboard Exchange: Interpret a Fraction as Division

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

$\frac{1}{2} = \_\_\_\_ \div \_\_\_\_$

$\frac{6}{2} = \_\_\_\_ \div \_\_\_\_ =$

$\frac{2}{3} = \_\_\_\_ \div \_\_\_\_$

$\frac{9}{3} = \_\_\_\_ \div \_\_\_\_ =$

$\frac{2}{5} = \_\_\_\_ \div \_\_\_\_$

$\frac{4}{5} = \_\_\_\_ \div \_\_\_\_$

$\frac{5}{5} = \_\_\_\_ \div \_\_\_\_ =$

$\frac{20}{5} = \_\_\_\_ \div \_\_\_\_ =$

LAUNCH (5-min) **Students use centimeter cubes to find fractional units of a set.**

Each student receives 12 cubes. Use the cubes to solve the problem.
Today, we will use arrays to find fractional parts of sets of objects.

Mr. Perez has 12 eggs.

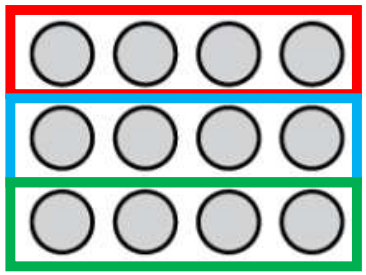
He uses $\frac{1}{3}$ of the eggs to make a cake.

How many eggs does Mr. Perez use to make the cake?

LEARN (35-min) **Partition arrays to represent a fraction of a set.**

LEARN BOOK – PAGE 5

What do you notice about the array?

1. 

We know that 1/3 means 1 part of the whole when it is partitioned into 3 equal parts. How can we use the array to demonstrate, or show, that?

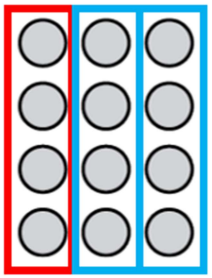
Now we have 3 equal groups. Let's look at the groups. How many circles are in each group? 4

a. $\frac{1}{3}$ of 12 is **4**.

b. $\frac{2}{3}$ of 12 is **8**.

How many circles are in 2/3?
How many circles are in 3/3? 12

Think back to Mr. Perez and his cake. How could you model with the cubes to show 1/3 of 12?

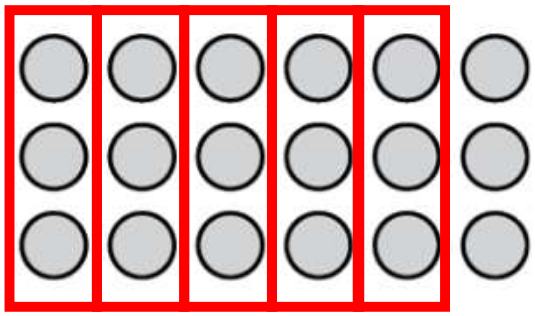


Could we use an array with 4 rows of 3 cubes as a model?

LEARN (35-min) **Partition arrays to represent a fraction of a set.**

LEARN BOOK – PAGE 5

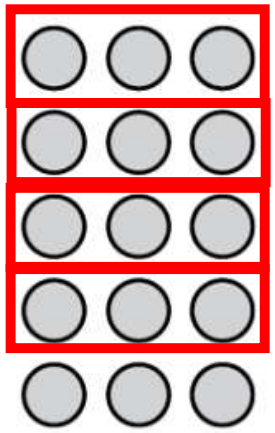
Use the array to find the value. Draw lines to show your work.

2. 

a. $\frac{1}{6}$ of 18 is **3**.

b. $\frac{3}{6}$ of 18 is **9**.

c. $\frac{5}{6}$ of 18 is **15**.

3. 

a. $\frac{1}{5}$ of 15 is **3**.

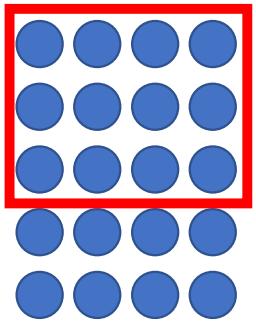
b. $\frac{2}{5}$ of 15 is **6**.

c. $\frac{4}{5}$ of 15 is **12**.

LEARN (35-min)

Solve a Real-World Problem.

LEARN BOOK – PAGE 6



4. There are 20 people on a bus. $\frac{3}{5}$ of the people are adults. The rest are children.

   a. How many adults are on the bus?

12 adults

$$\frac{3}{5} \times 20 = \frac{60}{5} = 12$$

   b. What fraction of the people on the bus are children?

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

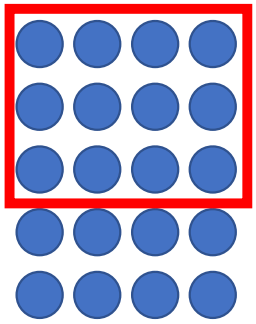
   c. How many people on the bus are children?

$$\frac{2}{5} \times 20 = \frac{40}{5} = 8$$

LEARN (35-min)

Solve a Real-World Problem.

LEARN BOOK – PAGE 6



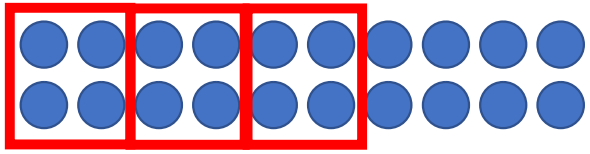
4. There are 20 people on a bus. $\frac{3}{5}$ of the people are adults. The rest are children.

   a. How many adults are on the bus?

12 adults

$$\frac{3}{5} \times 20 = \frac{60}{5} = 12$$

What would have happened if we drew our array like this?



   b. What fraction of the people on the bus are children?

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

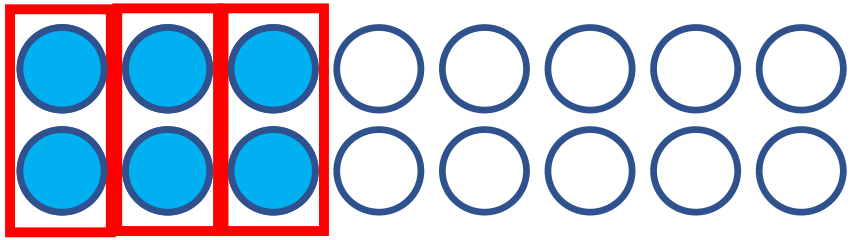
When you find a fraction of a number, you can draw your array any way you want. Just remember, think about the denominator when you decide how many groups you will partition your array into.

How many people on the bus are children? $\frac{2}{5} \times 20 = \frac{40}{5} = 8$

LEARN (35-min) **Solve a Real-World Problem.**

LEARN BOOK – PAGE 6

5. Julie has 16 balloons. $\frac{3}{8}$ of Julie's balloons are blue. How many of Julie's balloons are not blue?



$$\frac{3}{8} \times 16 = \frac{48}{8} = 6$$

We need to look at the array we drew and see it in eighths because that is the fraction given to us in the problem.

LAND (10-min) **Debrief**

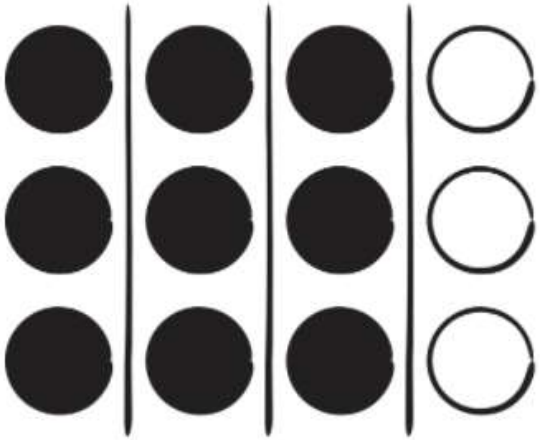
Is an array helpful when you find a fraction of a set?

What do you notice about Sana's and Toby's arrays? Do they both show ¾ of 12 correctly?

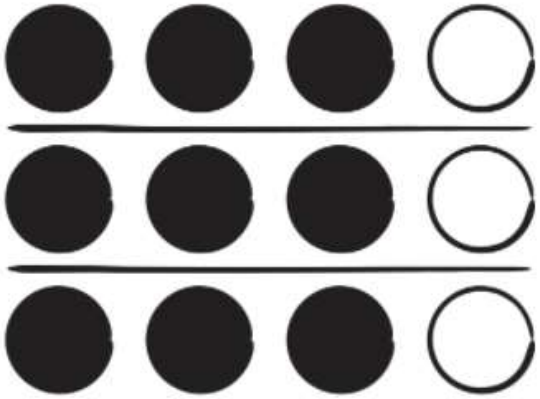
$\frac{3}{4}$ of 12

$\frac{3}{4} \times 12 = \frac{36}{4} = 9$

Sana's Way



Toby's Way



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

Exit Ticket – PAGE 11

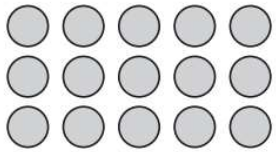
Small Group Time:
Problem Set Pages 7 – 10

Homework:
Pages 9 & 10 APPLY BOOK

Name _____ Date _____

1

1. Use the array to find $\frac{4}{5}$ of 15. Draw lines or boxes to show your work.



$\frac{4}{5}$ of 15 is _____.

2. Yuna reads 20 books during the summer. $\frac{3}{4}$ of the books she reads are fiction. How many fiction books does Yuna read?

Yuna reads _____ fiction books.