EUREKA MATH²™

Module 3 - Lesson 14:

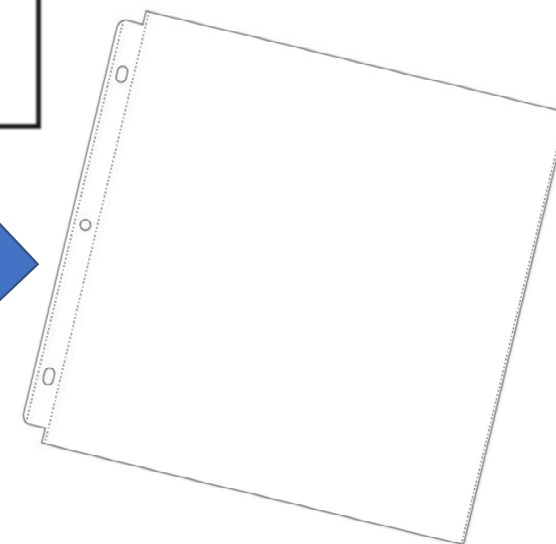**Divide a unit fraction by a nonzero whole number.**

CCSS Standard – 5.NF.B.7.a / 5.NF.B.7.c

Place the blank tape diagram into your dry erase sleeve.
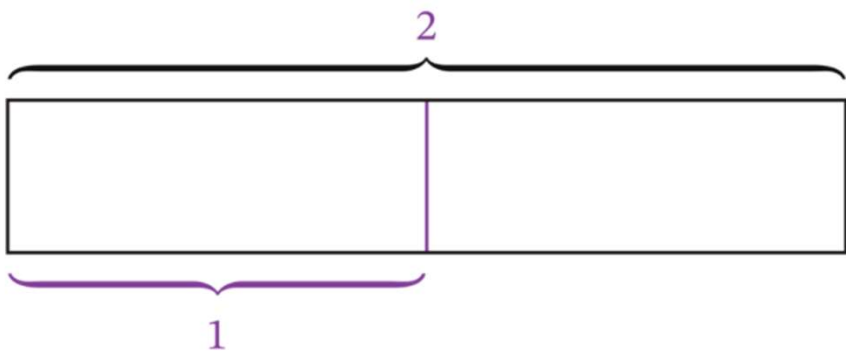
Label the total of the tape diagram as 2.

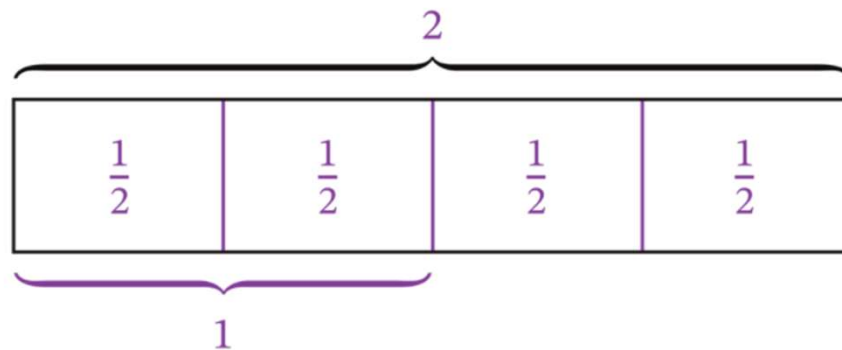**Now partition each unit into 2 equal units.**
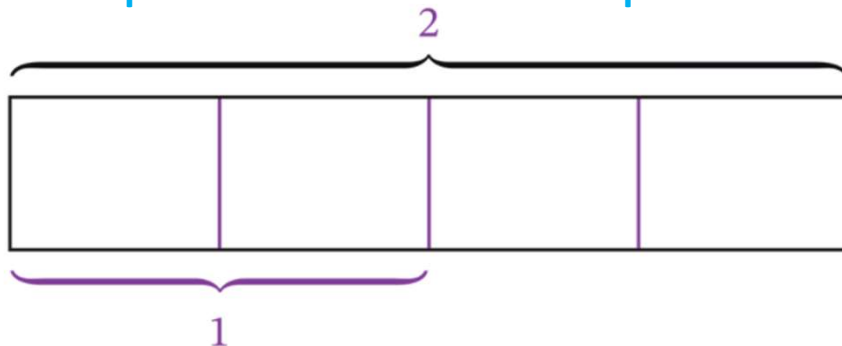
2

1

Partition the tape into 2 equal units and label 1 below the tape.

What is the value of each unit? Raise your hand when you know.

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

2

1

2

$\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$ $\frac{1}{2}$

1

Label the total of the tape diagram as 2.

Partition the tape into 2 equal units and label 1 below the tape.

2

1
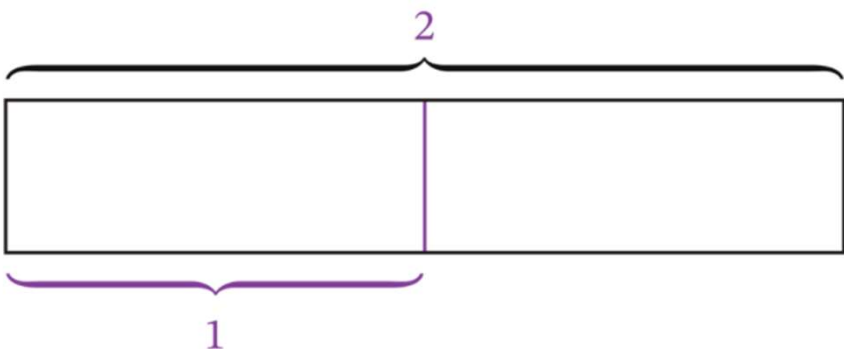
Now partition each unit into 4 equal units.
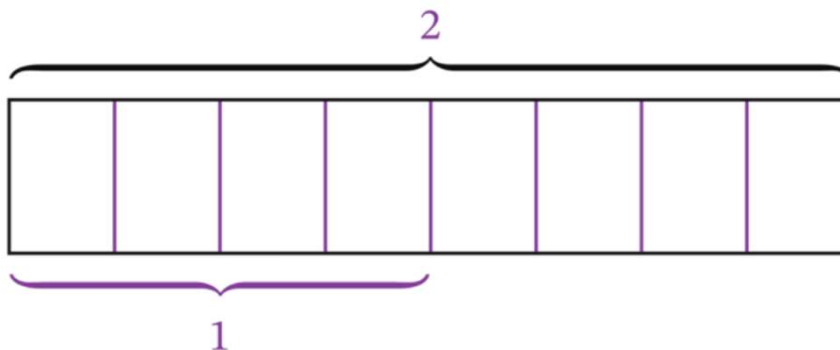
2

1

What is the value of each unit? Raise your hand when you know.

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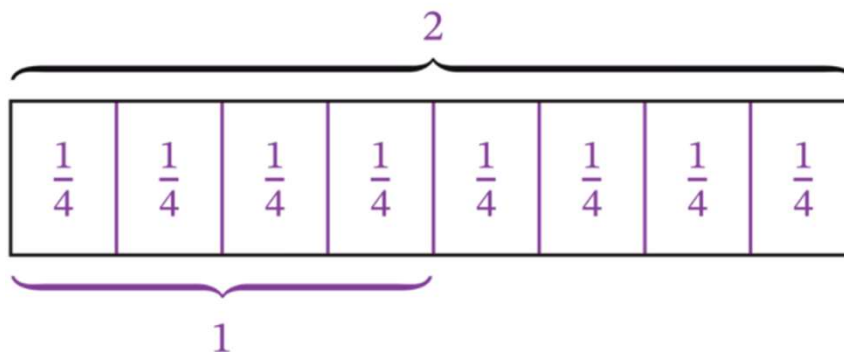
2

| $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ | $\frac{1}{4}$ |

1

Label the total of the tape diagram as 3.

Partition the tape into 3 equal units and label 1 below the tape.

3

1

Now partition each unit into 2 equal units.

3

1

What is the value of each unit?
Raise your hand when you know.

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

3

| $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ | $\frac{1}{2}$ |

1

Label the total of the tape diagram as 3.

Now partition each unit into 3 equal units.
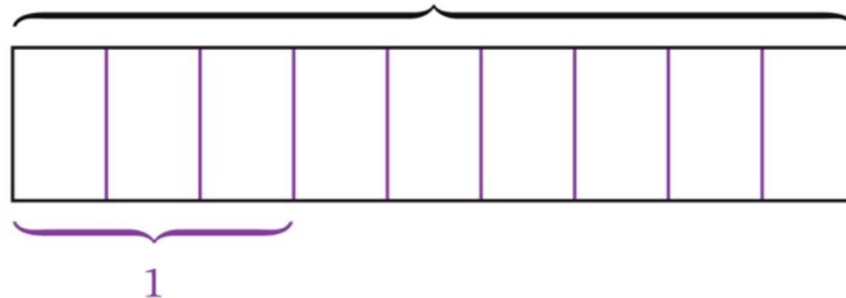
1

Partition the tape into 3 equal units and label 1 below the tape.
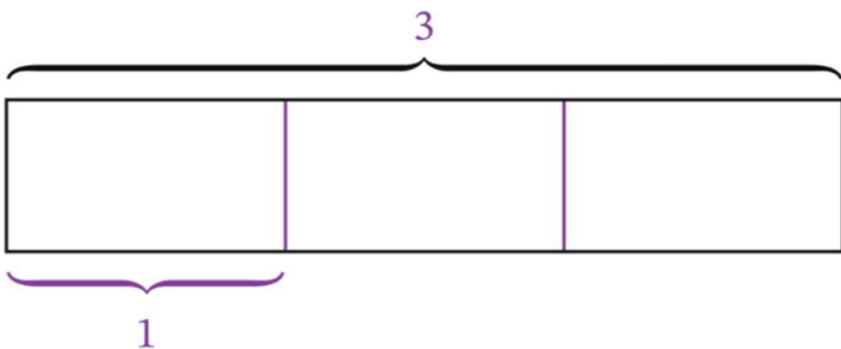
What is the value of each unit? Raise your hand when you know.
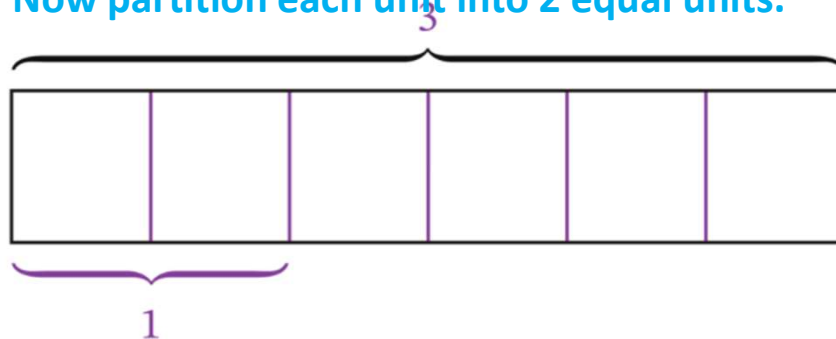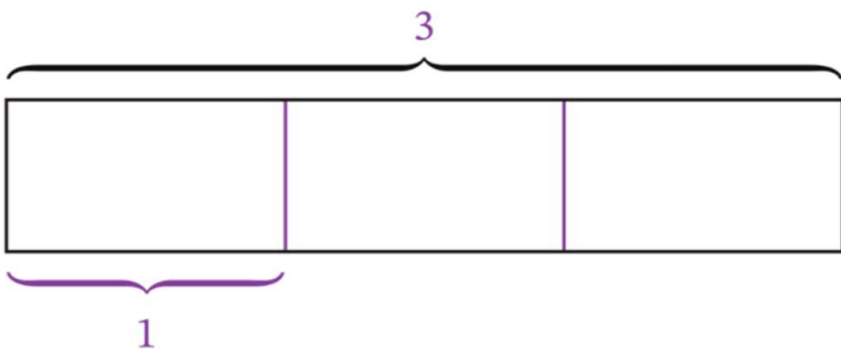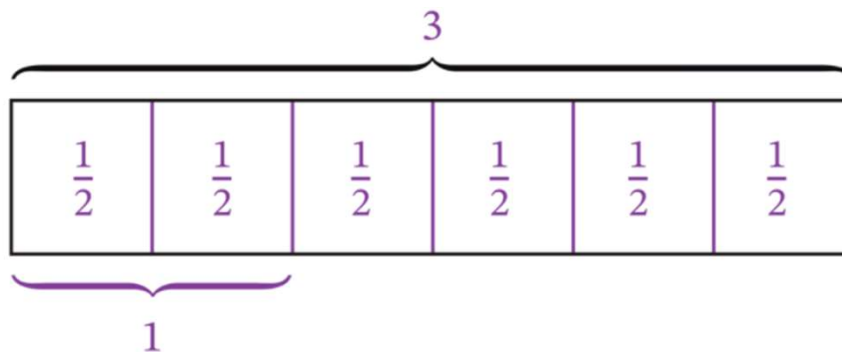
$$3 \div \frac{1}{3} = 9$$

3

1

3

$\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$ $\frac{1}{3}$

1
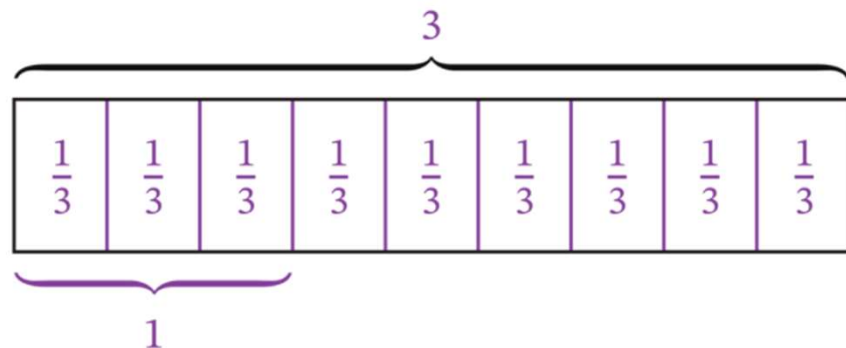
Sprint: Multiply a Whole Number by a Fraction

SPRINT: Students write the product to build fluency with multiplying a whole number by a fraction.
LEARN book (PAGE 125)

Write the product. Use a whole number or mixed number when possible.

1.	$\frac{1}{3}$ of 15 is 15/3		5
2.	$\frac{1}{3} \times 15$ 15/3		5

I don't expect you to finish. Do as many problems as you can. Go for YOUR personal best.
Take your mark. Get set. Think!

Sprint: Multiply a Whole Number by a Fraction

Sprint A – Page 126

Sprint A ⏱ 1 min

STOP!!

<u>Underline the last problem that you did</u>.

I am going to read the answers. If you got it right, call out "Yes!" If you made a mistake, circle the answer.

Count the number you got **correct** and write the number at the top of the page.

THIS WILL BE YOUR PERSONAL GOAL FOR SPRINT B

A

Number Correct: _____

Write the product. Use a whole number or mixed number when possible.

#	Problem	Ans	#	Problem	Ans
1.	$\frac{1}{3}$ of 6 is _____.	2	23.	$\frac{1}{2} \times 6$	3
2.	$\frac{1}{3} \times 6$	2	24.	$\frac{1}{2} \times 7$	$3\frac{1}{2}$
3.	$\frac{1}{3}$ of 9 is _____.	3	25.	$\frac{1}{3} \times 9$	3
4.	$\frac{1}{3} \times 9$	3	26.	$\frac{1}{3} \times 10$	$3\frac{1}{3}$
5.	$\frac{1}{3}$ of 12 is _____.	4	27.	$\frac{1}{4} \times 12$	3
6.	$\frac{1}{3} \times 12$	4	28.	$\frac{1}{4} \times 13$	$3\frac{1}{4}$
7.	$\frac{1}{2}$ of 6 is _____.	3	29.	$\frac{1}{5} \times 15$	3
8.	$\frac{2}{2}$ of 6 is _____.	6	30.	$\frac{1}{5} \times 17$	$3\frac{2}{5}$
9.	$\frac{1}{3}$ of 9 is _____.	3	31.	$\frac{1}{6} \times 18$	3
10.	$\frac{2}{3}$ of 9 is _____.	6	32.	$\frac{1}{6} \times 20$	$3\frac{2}{6}$
11.	$\frac{1}{4}$ of 12 is _____.	3	33.	$\frac{1}{7} \times 21$	3
12.	$\frac{2}{4}$ of 12 is _____.	6	34.	$\frac{1}{7} \times 23$	$3\frac{2}{7}$
13.	$\frac{1}{3} \times 12$	4	35.	$\frac{1}{2} \times 8$	4
14.	$\frac{3}{3} \times 12$	12	36.	$\frac{2}{2} \times 11$	11
15.	$\frac{1}{4} \times 16$	4	37.	$\frac{2}{3} \times 8$	$5\frac{1}{3}$
16.	$\frac{3}{4} \times 16$	12	38.	$\frac{3}{3} \times 12$	12
17.	$\frac{1}{5} \times 15$	3	39.	$\frac{2}{4} \times 11$	$5\frac{2}{4}$
18.	$\frac{3}{5} \times 15$	9	40.	$\frac{3}{4} \times 11$	$8\frac{1}{4}$
19.	$\frac{5}{5} \times 15$	15	41.	$\frac{2}{5} \times 9$	$3\frac{3}{5}$
20.	$\frac{1}{6} \times 18$	3	42.	$\frac{4}{5} \times 11$	$8\frac{4}{5}$
21.	$\frac{3}{6} \times 18$	9	43.	$\frac{2}{6} \times 11$	$3\frac{4}{6}$
22.	$\frac{5}{6} \times 18$	15	44.	$\frac{5}{6} \times 13$	$10\frac{5}{6}$

Sprint A – Page 127
Take your mark. Get set. Improve!

Sprint B ⏱ 1 min

STOP!!

<u>Underline the last problem that you did</u>.

I am going to read the answers. If you got it right, call out "Yes!" If you made a mistake, circle the answer.

Count the number you got **correct** and write the number at the top of the page.

Determine your improved score!

B

Number Correct: _____

Improvement: _____

Write the product. Use a whole number or mixed number when possible.

1.	$\frac{1}{2}$ of 4 is _____ .	2		23.	$\frac{1}{2} \times 4$	2
2.	$\frac{1}{2} \times 4$	2		24.	$\frac{1}{2} \times 5$	$2\frac{1}{2}$
3.	$\frac{1}{2}$ of 6 is _____ .	3		25.	$\frac{1}{3} \times 6$	2
4.	$\frac{1}{2} \times 6$	3		26.	$\frac{1}{3} \times 7$	$2\frac{1}{3}$
5.	$\frac{1}{2}$ of 8 is _____ .	4		27.	$\frac{1}{4} \times 8$	2
6.	$\frac{1}{2} \times 8$	4		28.	$\frac{1}{4} \times 9$	$2\frac{1}{4}$
7.	$\frac{1}{2}$ of 4 is _____ .	2		29.	$\frac{1}{5} \times 10$	2
8.	$\frac{2}{2}$ of 4 is _____ .	4		30.	$\frac{1}{5} \times 12$	$2\frac{2}{5}$
9.	$\frac{1}{3}$ of 6 is _____ .	2		31.	$\frac{1}{6} \times 12$	2
10.	$\frac{2}{3}$ of 6 is _____ .	4		32.	$\frac{1}{6} \times 14$	$2\frac{2}{6}$
11.	$\frac{1}{4}$ of 8 is _____ .	2		33.	$\frac{1}{7} \times 14$	2
12.	$\frac{2}{4}$ of 8 is _____ .	4		34.	$\frac{1}{7} \times 16$	$2\frac{2}{7}$
13.	$\frac{1}{3} \times 9$	3		35.	$\frac{1}{2} \times 6$	3
14.	$\frac{3}{3} \times 9$	9		36.	$\frac{2}{2} \times 10$	10
15.	$\frac{1}{4} \times 12$	3		37.	$\frac{2}{3} \times 7$	$4\frac{2}{3}$
16.	$\frac{3}{4} \times 12$	9		38.	$\frac{3}{3} \times 11$	11
17.	$\frac{1}{5} \times 10$	2		39.	$\frac{2}{4} \times 9$	$4\frac{2}{4}$
18.	$\frac{3}{5} \times 10$	6		40.	$\frac{3}{4} \times 10$	$7\frac{2}{4}$
19.	$\frac{5}{5} \times 10$	10		41.	$\frac{2}{5} \times 8$	$3\frac{1}{5}$
20.	$\frac{1}{6} \times 12$	2		42.	$\frac{4}{5} \times 9$	$7\frac{1}{5}$
21.	$\frac{3}{6} \times 12$	6		43.	$\frac{2}{6} \times 10$	$3\frac{2}{6}$
22.	$\frac{5}{6} \times 12$	10		44.	$\frac{5}{6} \times 11$	$9\frac{1}{6}$

Students reason about division by using a tape diagram.

6 lbs.

Sana has some birdseed.

She divides the birdseed equally among 3 bird feeders.

How much birdseed is in each feeder?

What information does the problem tell us?

Do we have enough information to solve the problem?

No. We do not know how much birdseed Sana started with!

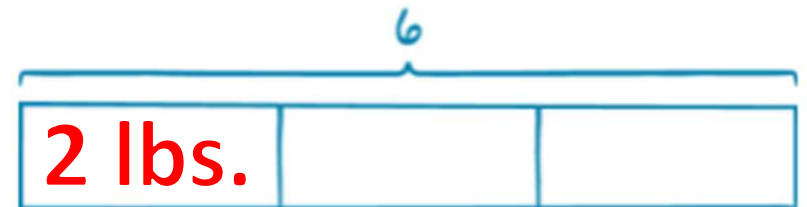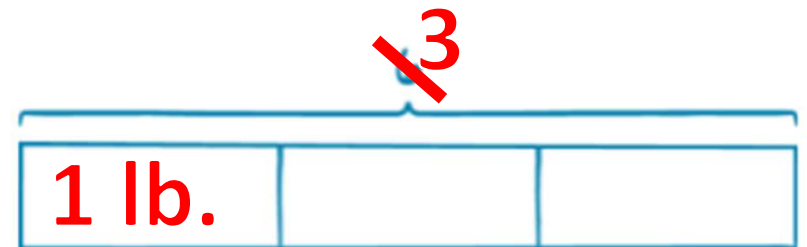**Let's say Sana started with 6 pounds of birdseed. Do we have enough information to solve the problem now?**

Yes. We know the total and the number of groups so we can find the amount in each group.

How can we model the problem with a tape diagram?

What is the value of each part?

6 lbs. ÷ 3 feeders = 2 lbs. per feeder

6

| 2 lbs. | | |

Students reason about division by using a tape diagram.

3 lbs.

Sana has some birdseed.

She divides the birdseed equally among 3 bird feeders.
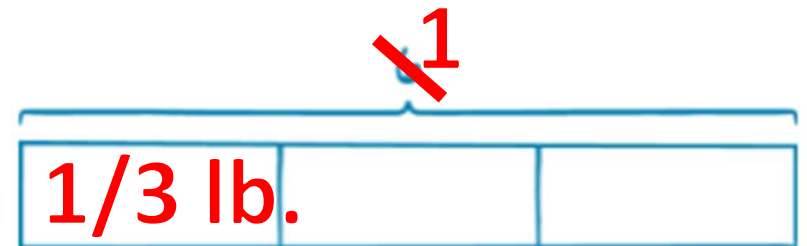
How much birdseed is in each feeder?

Let's say Sana started with 3 pounds of birdseed. Do we have enough information to solve the problem now?

Yes. We know the total and the number of groups so we can find the amount in each group.

How can we model the problem with a tape diagram?

What is the value of each part?

3 lbs. ÷ 3 feeders = 1 lb. per feeder

3

1 lb.

Students reason about division by using a tape diagram.

1 lb.

> Sana has some birdseed.
>
> She divides the birdseed equally among 3 bird feeders.
>
> How much birdseed is in each feeder?

Let's say Sana started with 1 pound of birdseed. Do we have enough information to solve the problem now?

Yes. We know the total and the number of groups so we can find the amount in each group.

How can we model the problem with a tape diagram?

What is the value of each part?

1 lbs. ÷ 3 feeders = 1/3 lb. per feeder

1

1/3 lb.

Students reason about division by using a tape diagram.

½ lb.

Sana has some birdseed.

She divides the birdseed equally among 3 bird feeders.

How much birdseed is in each feeder?

Let's say Sana started with ½ pound of birdseed. Do we have enough information to solve the problem now?

Yes. We know the total and the number of groups so we can find the amount in each group.

How can we model the problem with a tape diagram?

What is the value of each part?

½ lbs. ÷ 3 feeders = ½ ÷ 3

½ x 1/3

½

1/6 lb.
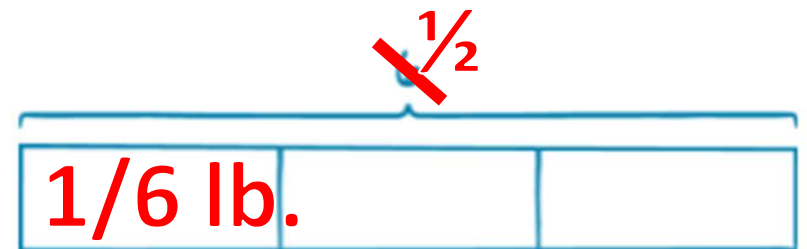
Divide a Unit Fraction by a Whole Number.

LEARN book page 129.

$$\frac{1}{2} \div 3$$

⬇ ⬇ ⬇

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

Does it make sense that the quotient is less than the dividend?
That 1/6 is less than ½?
Yes. It makes sense. We started with ½ and divided it into 3 equal groups, so each group must be smaller than ½.

1.

$\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$

$\frac{1}{6}$ $\frac{1}{6}$ $\frac{1}{6}$

0        $\frac{1}{2}$ 1
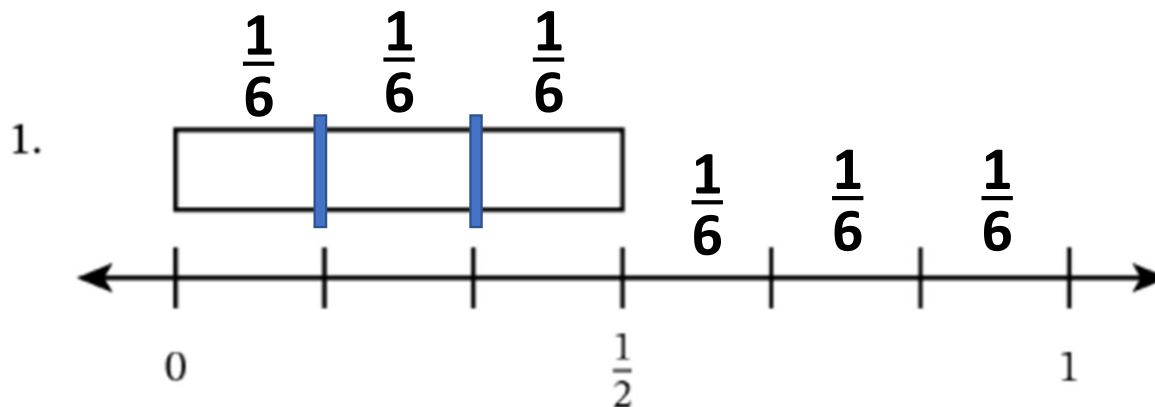
a. Partition the tape diagram into 3 equal units.

b. Write a division expression that represents the model.

$$\frac{1}{2} \div 3$$

c. What is the size of one unit? $\frac{1}{6}$

6 ÷ 3

What does 6 represent?

The total of the tape diagram. It is the DIVIDEND in the expression.

What does 3 represent?

The total number of groups. It is the DIVISOR in the expression.

Would you also be able to see this problem as a multiplication expression?
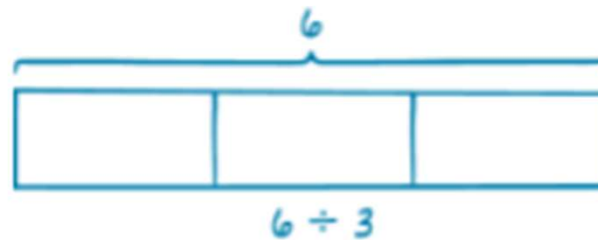
6 = 3 x _____
or
6 is 3 groups of what?

What is the quotient?

The quotient is 2.

$$6 \div 3$$

$$6 \div 3 = 2$$

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

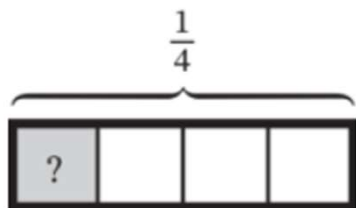**Use a Tape Diagram to Divide**

LEARN book page 129.

Use the Read–Draw–Write process to solve each problem.

2. Mr. Perez has $\frac{1}{4}$ gallon of water. He pours the water equally into 4 bottles. How much water is in each bottle?

$$\frac{1}{4} \div 4$$

$$\frac{1}{4} \times \frac{1}{4} = \frac{1}{16}$$

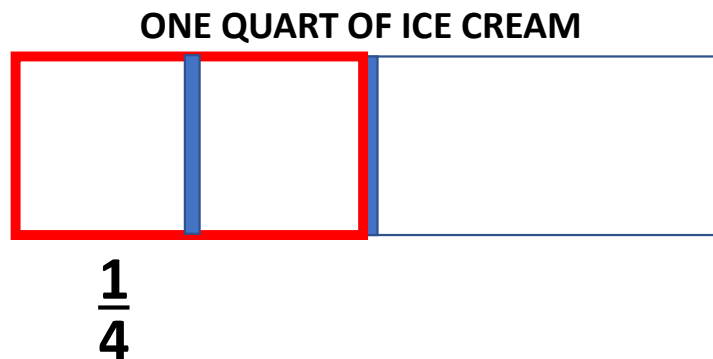**Divide a Unit Fraction by a Whole Number.**

LEARN book page 130.

3. Lacy and Adesh share $\frac{1}{2}$ quart of ice cream equally. How much ice cream does each person get?
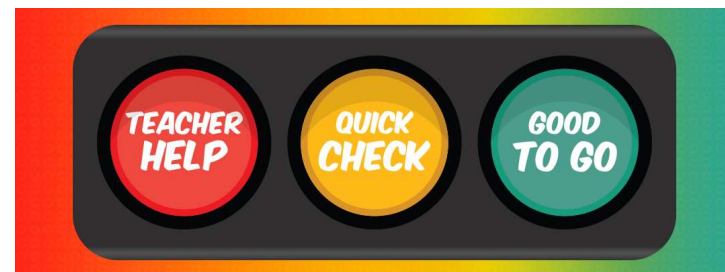
$$\frac{1}{2} \div 2$$

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

ONE QUART OF ICE CREAM

$$\frac{1}{4}$$

EACH PERSON GETS ¼ QUART OF ICE CREAM

Exit Ticket

Draw a model to divide.

$\frac{1}{8} \div 2 =$ _____

$$\frac{1}{8} \div 2$$

Exit Ticket – PAGE 135

Small Group Time:
Problem Set Pages 131 – 132

Homework:
Page 89 APPLY BOOK