

Parent Guide to 5th Grade



2017

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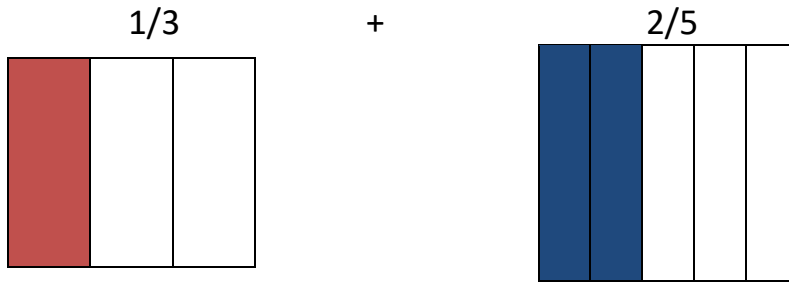
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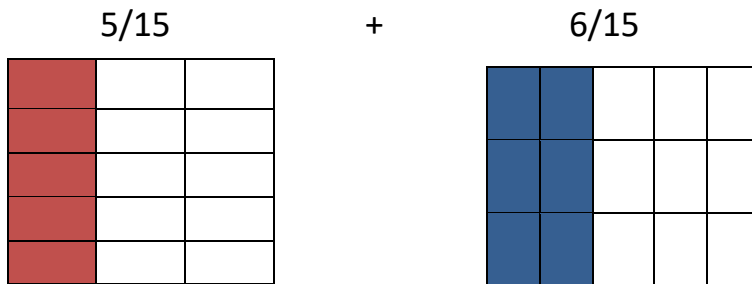
[Video Resources](#)

Step by Step: Adding and Subtracting Fractions - Area Models

Step 1) Draw Models and shade the portion being added.



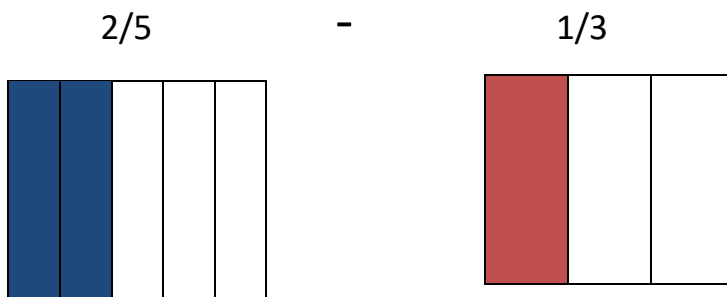
Step 2) Draw fifths horizontally AND draw thirds horizontally



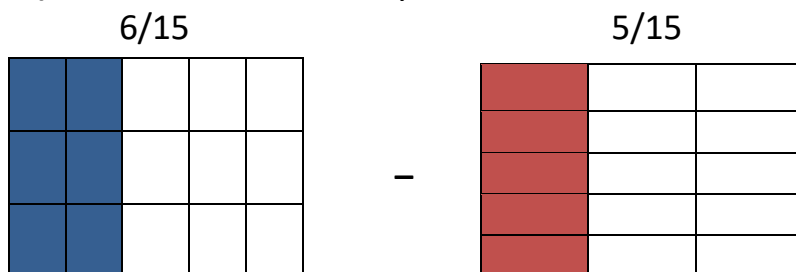
Step 3) Fill in your equation and solve by adding with common denominators

Addition Equation = 5/15 + 6/15 = 11/15

Step 1) Draw Models and shade the portion being subtracted.



Step 2) Draw fifths horizontally AND draw thirds horizontally

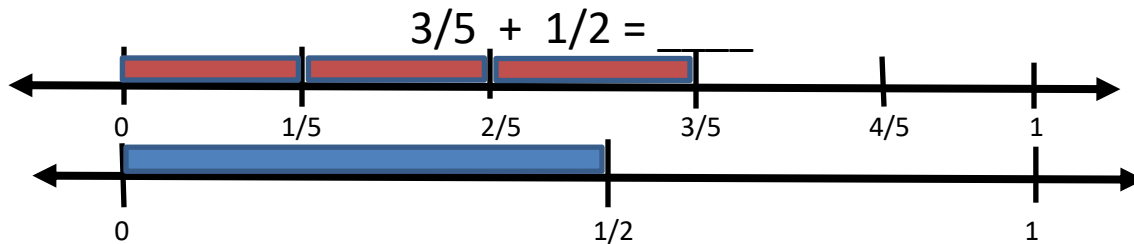


Step 3) Fill in your equation and solve by adding with common denominators

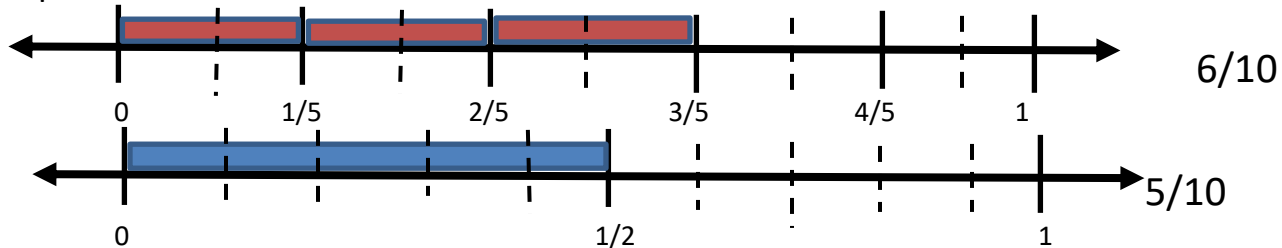
Subtraction Equation = 6/15 - 5/15 = 1/15

Step by Step: Adding and Subtracting Fractions – Linear Models

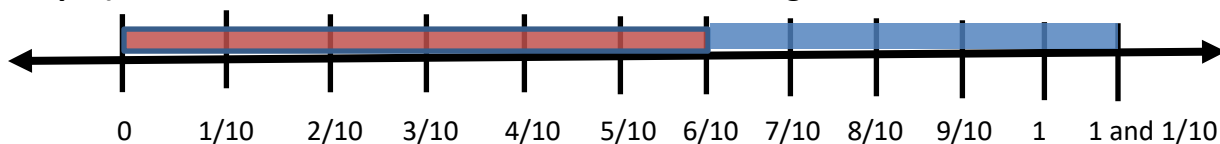
Step 1) Draw two number lines to represent each fraction being added.



Step 2) Divide each number line using the denominator of the other fraction to find an equivalent denominator.

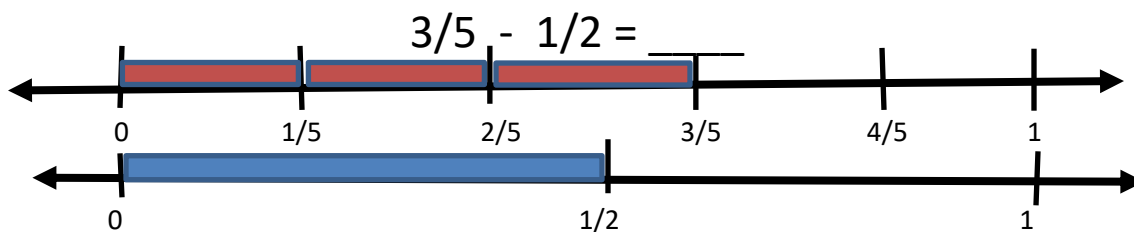


Step 3) Add both fractions on one number line using the common denominator.

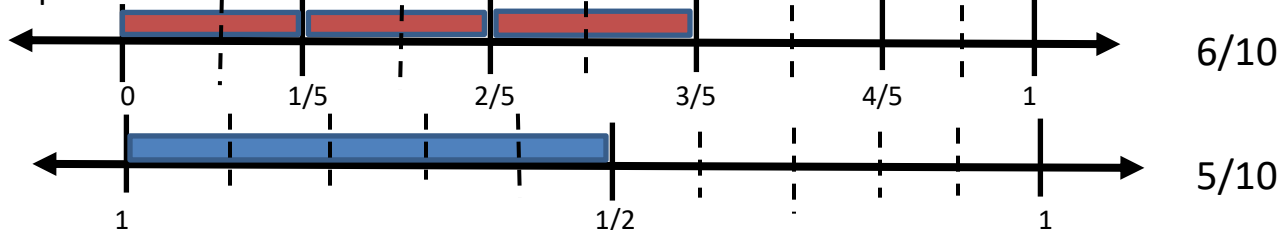


Addition Equation = 6/10 + 5/10 = 11/10 = 1 and 1/10

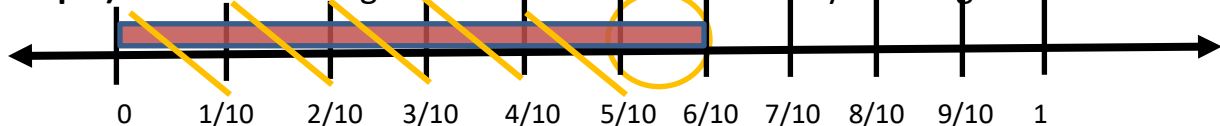
Step 1) Draw two number lines to represent each fraction being subtracted



Step 2) Divide each number line using the denominator of the other fraction to find an equivalent denominator.



Step 3) Subtract the larger fraction from the smaller by crossing it out.



Subtraction Equation = 6/10 - 5/10 = 1/10

Practice: Adding and Subtracting Fractions Area and Linear Models

Part A) Directions: Use an area model and algorithm to solve number 1 and 2.

1) $\frac{4}{5} + \frac{2}{3}$

2) $\frac{3}{4} - \frac{1}{3}$

Part B) Directions: Use a number line and algorithm to solve number 3.

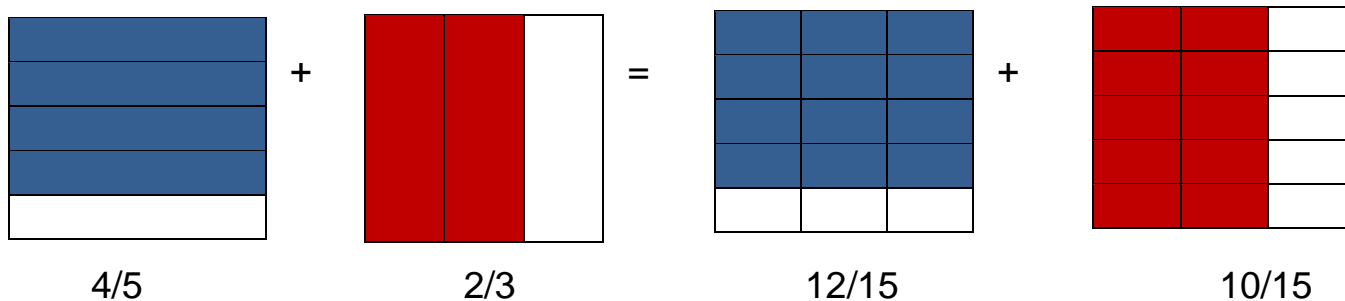
3) $\frac{1}{2} + \frac{2}{3}$

4) $\frac{3}{5} - \frac{1}{2}$

Answer Key - Adding and Subtracting Fractions Area and Linear Models

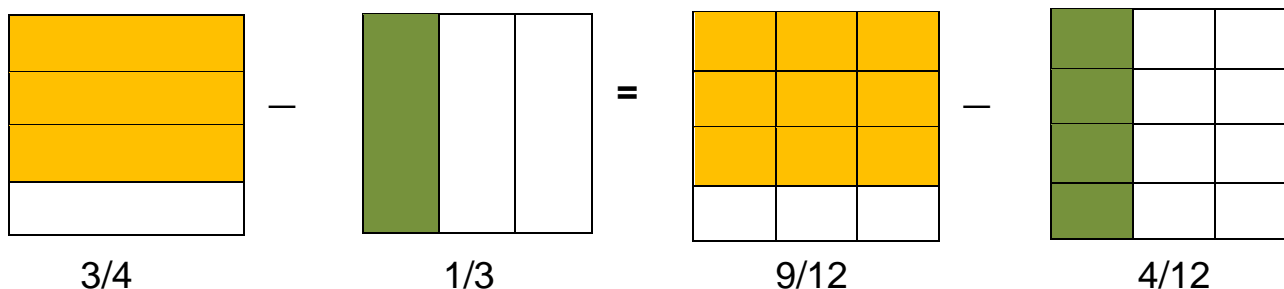
Part A) Directions: Use an area model and algorithm to solve number 1 and 2.

1) $\frac{4}{5} + \frac{2}{3}$



$$\frac{12}{15} + \frac{10}{15} = \frac{22}{15} = 1 \frac{7}{15}$$

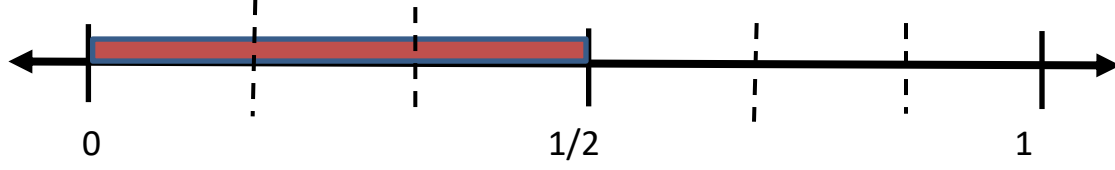
2) $\frac{3}{4} - \frac{1}{3}$



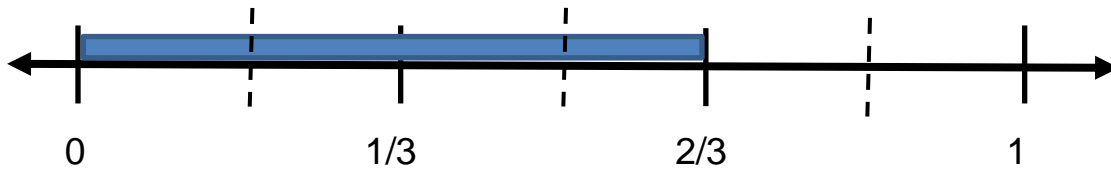
$$\frac{9}{12} - \frac{4}{12} = \frac{5}{12}$$

Part B) Directions: Use a number line and algorithm to solve number 3.

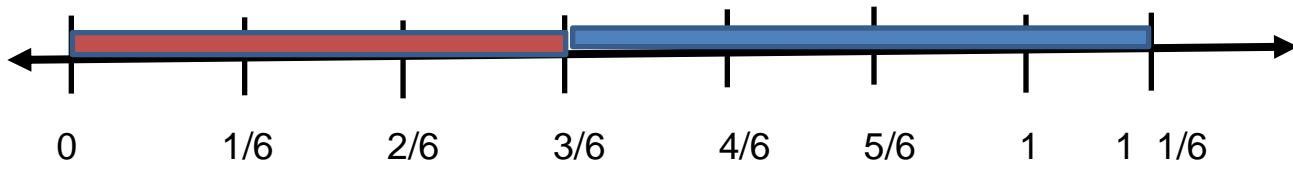
3) $1/2 + 2/3$



$1/2 = 3/6$

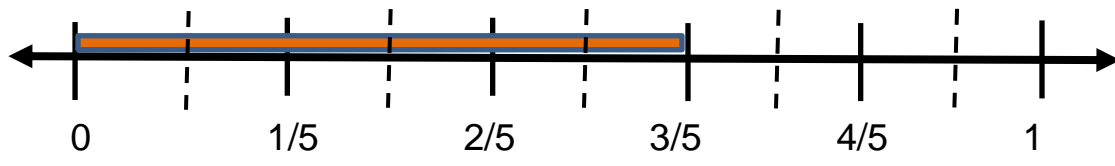


$2/3 = 4/6$

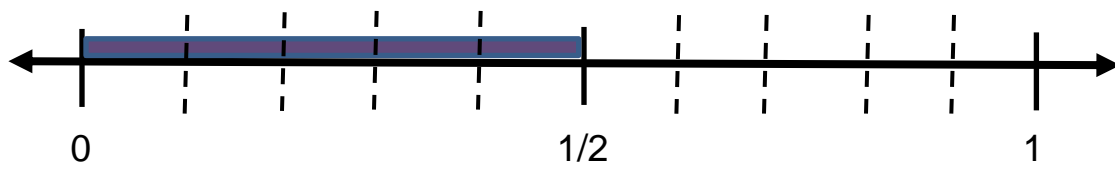


$3/6 + 4/6 = 7/6 = 1 \ 1/6$

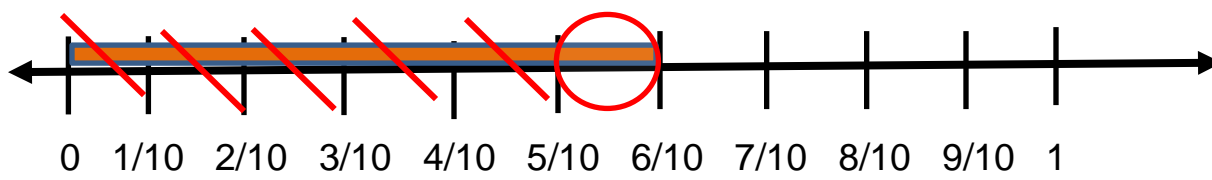
4) $3/5 - 1/2$



$3/5 = 6/10$



$1/2 = 5/10$



$6/10 - 5/10 = 1/10$

Step by Step: Fractions Show Division Word Problems

Example 1: I have 10 pizzas to share among 3 people. How much pizza will each person get?

Step 1) Set the problem up as a fraction. Put what is to be divided on top (numerator) and the number of groups (denominator) on the bottom. $10/3$

Step 2) Change the improper fraction to a mixed number. Divide the numerator (dividend) by the denominator (divisor) and write the remainder over the divisor.

$$10 \div 3 = (3 \text{ goes into } 10, 3 \text{ times with a remainder of } 1/3).$$

Each person will get 3 and $1/3$ pieces of pizza.

Example 2: I have 8 yards of rope and I want to cut it into 16 pieces. How long will each piece be?

Step 1) Set the problem up as a fraction. Put what is to be divided on top (numerator) and the number of groups (denominator) on the bottom. $8/16$

Step 2) Simplify the fraction to the lowest term. Divide both the numerator and the denominator by the greatest common factor. The greatest common factor is 8.

$$8 \div 8 = 1 \quad 16 \div 8 = 2 \quad \text{The answer will be } \frac{1}{2}. \text{ Each piece of rope will be } \frac{1}{2} \text{ yard.}$$

Example 3: I have 10 bags of candy and 25 students want to share them equally. How much of a bag will each student get?

Step 1) Set the problem up as a fraction. Put what is to be divided on top (numerator) and the number of groups (denominator) on the bottom. $10/25$

Step 2) Simplify the fraction to the lowest term. Divide both the numerator and the denominator by the greatest common factor. The greatest common factor is 5.

$$10 \div 5 = 2 \quad 25 \div 5 = 5 \quad \text{The answer will be } 2/5. \text{ Each student will get } 2/5 \text{ bag of candy.}$$

Example 4: Sue had 24 feet of ribbon to make into 5 fancy bows. How many feet of ribbon would be in each bow?

Step 1) Set the problem up as a fraction. Put what is to be divided on top (numerator) and the number of groups (denominator) on the bottom. $24/5$

Step 2) Change the improper fraction to a mixed number. Divide the numerator (dividend) by the denominator (divisor) and write the remainder over the divisor.

$$5 \text{ goes into } 24, 4 \text{ times with a remainder of } 4/5$$

Each bow would have 4 $4/5$ feet of ribbon.

Practice: Fractions Show Division Word Problems

1. Four friends share 3 apples equally. What fraction of apple does each friend get?
2. A baker has 15 cups of flour to share equally to make 12 loaves of bread. How many cups of flour will the baker use for each loaf of bread?
3. Five friends share 6 cheesecakes equally. How many cheesecakes will each friend get?
4. A board that is 6 feet long is cut into 10 pieces of equal lengths. How long is each piece of the cut board?

Answer Key - Fractions Show Division Word Problems

1. Four friends share 3 apples equally. What fraction of apple does each friend get?

You are dividing 3 apples by 4 people so your answer is $\frac{3}{4}$ apple for each person.

2. A baker has 15 cups of flour to share equally to make 12 loaves of bread. How many cups of flour will the baker use for each loaf of bread?

You are dividing 15 cups of flour by 12 loaves, so you will have $\frac{15}{12}$ which is $1 \frac{1}{4}$ cups in each loaf.

3. Five friends share 6 cheesecakes equally. How many cheesecakes will each friend get?

You are dividing 6 cakes by 5 friends, so you will have $\frac{6}{5}$ which is $1 \frac{1}{5}$ cakes each.

4. A board that is 6 feet long is cut into 10 pieces of equal lengths. How long is each piece of the cut board?

You are dividing 6 feet by 10 pieces, so you have $\frac{6}{10}$ which simplifies to $\frac{3}{5}$ feet for each board.

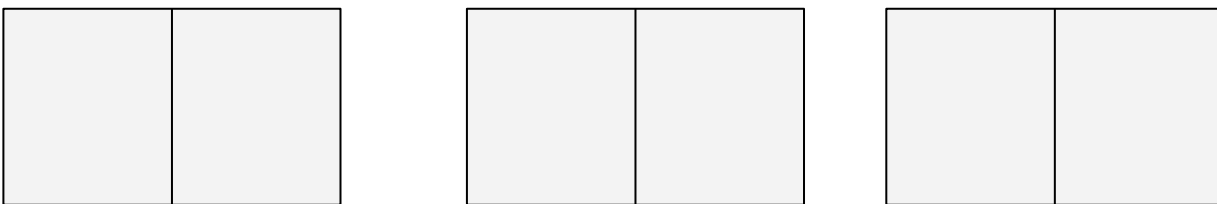
Step by Step: Multiply Fractions and Whole Numbers

Find the Product $\frac{1}{2} \times 3$

Step 1) Draw 3 rectangles to represent the factor 3.



Step 2) The denominator of the factor $\frac{1}{2}$ is 2. So, divide the 3 rectangles into 2 equal parts.



Step 3) The numerator of the factor $\frac{1}{2}$ is 1. SO, shade 1 of each rectangles.



Step 4) The rectangles have 1 shaded part. Each rectangle is divided into 2 equal parts. So, $\frac{3}{2}$ of the rectangles are shaded.

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

Practice: Multiplying a Whole Number x a Fraction Models and Word Problems

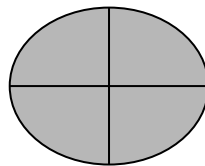
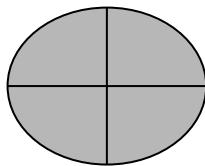
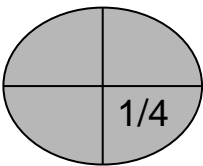
1) Whole Number X Fraction



Read the model and write the equation

_____ X _____ = _____

2) Use the model to determine the product as a whole number.



Each piece = $\frac{1}{4}$

How many sets of $\frac{1}{4}$ are there? _____

Read the model and write the equation?

_____ X _____ = _____

3) Tanya took a test that had 20 questions. She got $\frac{3}{5}$ of the questions correct. How many questions did Tanya correct? Show all work?

- A) 25 B) 16 C) 15 D) 12

4) Gwen uses $\frac{2}{3}$ cup of sugar for one batch of cookies. She used a model to find how much sugar to use in 2 batches of cookies. How much sugar does Gwen need for 2 batches of cookies? Draw a model to show your answer.

Answer Key - Multiplying a whole number times a fraction

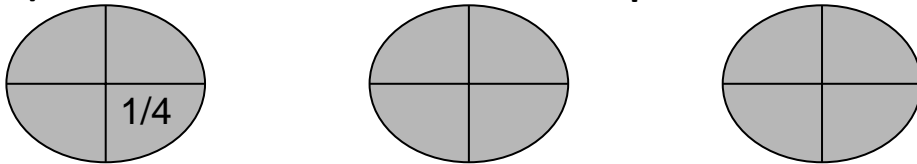
1) Whole Number X Fraction



Read the model and write the equation

$$2 \times \frac{2}{3} = \frac{2}{1} \times \frac{2}{3} = \frac{4}{3} = 1 \frac{1}{3}$$

2) Use the model to determine the product as a whole number.



Each piece = $\frac{1}{4}$

How many sets of $\frac{1}{4}$ are there? **12**

Read the model and write the equation?

$$12 \times \frac{1}{4} = \frac{12}{1} \times \frac{1}{4} = \frac{12}{4} = 3$$

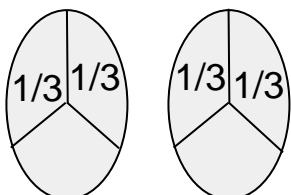
3) Tanya took a test that had 20 questions. She got $\frac{4}{5}$ of the questions correct. How many questions did Tanya correct? Show all work?

- A) 25 **B) 16** C) 15 D) 12

$$20 \times \frac{4}{5} = \frac{20}{1} \times \frac{4}{5} = \frac{80}{5} = 16$$

B is the answer

4) Gwen uses $\frac{2}{3}$ cup of sugar for one batch of cookies. She used a model to find how much sugar to use in 2 batches of cookies. How much sugar does Gwen need for 2 batches of cookies? Draw a model to show your answer



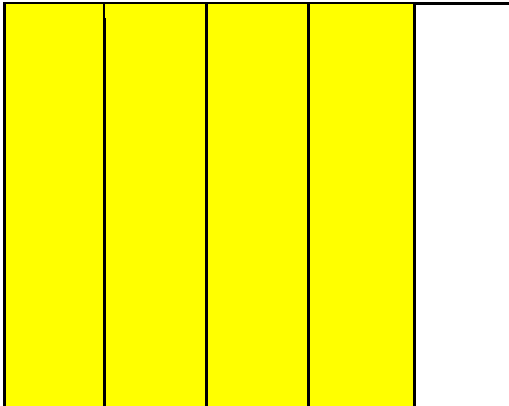
$$\frac{2}{3} \times 2 = \frac{2}{3} \times \frac{2}{1} = \frac{4}{3} = 1 \frac{1}{3}$$

Step by Step: Multiplying a fraction times a fraction

Draw an area model

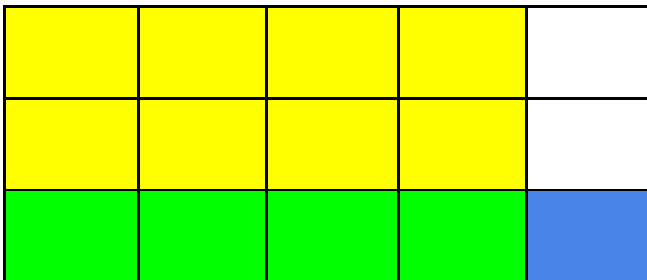
Multiply $\frac{1}{3} \times \frac{4}{5}$

Step 1) Draw a rectangle. Divide it into 5 equal columns. To represent the factor $\frac{4}{5}$ shade 4 of the 5 columns.



Step 2) Now divide the rectangle into 3 equal rows. Shade $\frac{1}{3}$ of the $\frac{4}{5}$ you already shaded. Yellow and Blue = Green

(The Green section is your answer)



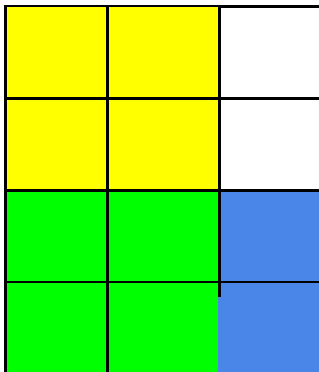
The rectangle is divided into 15 smaller rectangles. This is the denominator of the product. There are 4 squares that overlap with shadings horizontally and vertically. So, 4 is the numerator of the product. $\frac{4}{15}$ of the rectangle contains both types of shading.

Think: What is $\frac{1}{3}$ of $\frac{4}{5}$?

$$\frac{1}{3} \times \frac{4}{5} = \frac{4}{15}$$

Practice: Multiplying a Fraction x a Fraction Models and Word Problems

1)



Read the model and write the equation

$$\underline{\hspace{2cm}} \times \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$$

2) Draw a model to find the product. $\frac{5}{8} \times \frac{3}{5}$

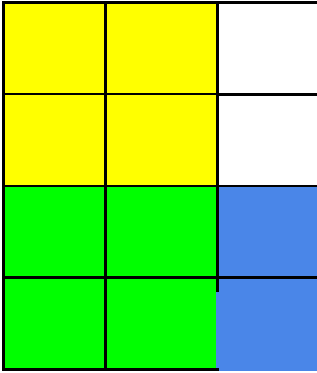
3) Marta breaded $\frac{1}{2}$ of the fish she cooked for dinner. She ate $\frac{1}{3}$ of the breaded fish. How much of the fish did Marta eat?

- A) $\frac{1}{6}$ B) $\frac{1}{5}$ C) $\frac{2}{5}$ D) $\frac{2}{3}$

4) Nora has a piece of ribbon that is $\frac{3}{4}$ yard long. She will use $\frac{1}{2}$ of it to make a bow. What length of the ribbon will she use for the bow?

Answer Key - Multiplying a Fraction x a Fraction

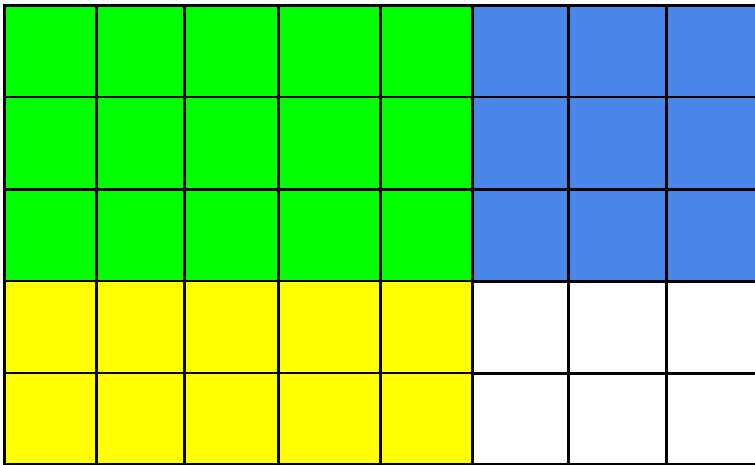
1)



Read the model and write the equation

$$\frac{2}{3} \times \frac{2}{4} = \frac{4}{12} = \frac{1}{3}$$

2) Draw a model to find the product. $\frac{5}{8} \times \frac{3}{5}$



$$\frac{5}{8} \times \frac{3}{5} = \frac{15}{40} = \frac{3}{8}$$

3) Marta breaded $\frac{1}{2}$ of the fish she cooked for dinner. She ate $\frac{1}{3}$ of the breaded fish. How much of the fish did Marta eat?

A) $\frac{1}{6}$

B) $\frac{1}{5}$

C) $\frac{2}{5}$

D) $\frac{2}{3}$

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

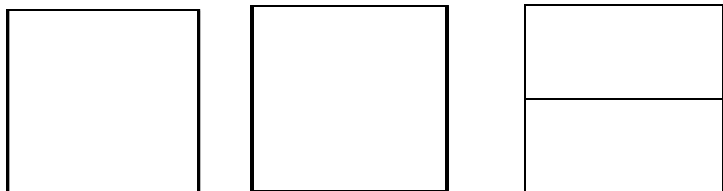
4) Nora has a piece of ribbon that is $\frac{3}{4}$ yard long. She will use $\frac{1}{2}$ of it to make a bow. What length of the ribbon will she use for the bow?

$$\frac{3}{4} \times \frac{1}{2} = \frac{3}{8}$$

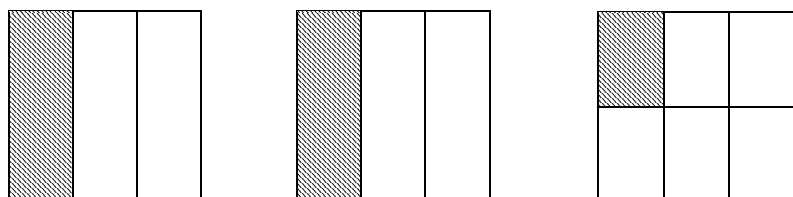
Step by Step: Multiplication of Mixed Numbers

Area Model Mixed Number X Fraction: $2 \frac{1}{2} \times \frac{1}{3} =$

Step 1) Break apart the $2 \frac{1}{2}$



Step 2) Do an area model with $\frac{1}{3}$ across each figure and shade the third.

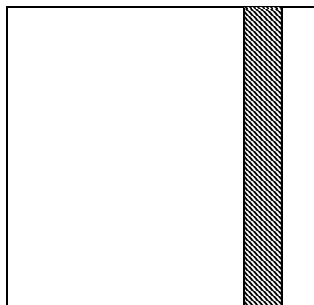
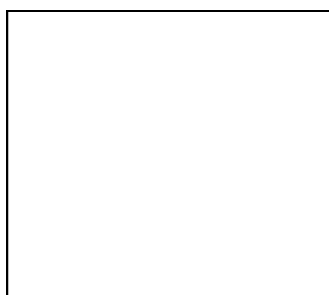


$$1/3 + 1/3 + 1/6 = 2/6 + 2/6 + 1/6 = 5/6$$

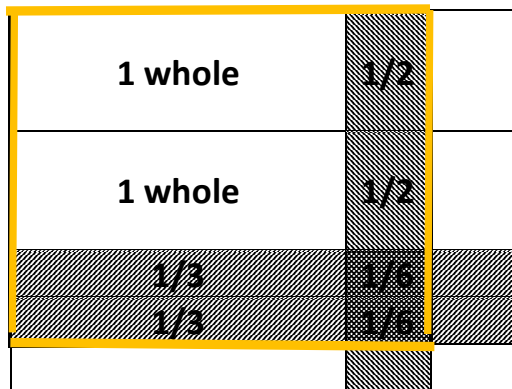
Area Model Mixed Number X Mixed Number: $1 \frac{1}{2} \times 2 \frac{2}{3} =$

Step 1) Draw a large box

Step 2) Draw 1 and $\frac{2}{2}$ down and color $\frac{1}{2}$.

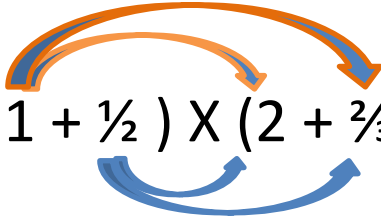


Step 3) Draw 2 and $\frac{3}{3}$ across and color $\frac{2}{3}$. Outline where they intersect. Read each area.



$$2 + 2/3 + 1(2/2) + 2/6 = 4$$

Distributive

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


Step 1) Expand the fractions

Step 2) Distribute each number like shown above.

$$1 \times 2 = 2$$

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

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

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

Step 3) Add all the products together.

$$2 + \frac{2}{3} + 1(\frac{2}{2}) + \frac{2}{6} = 4$$

Algorithm:

Step 1) Change the mixed numbers to improper fractions.

$$1 \frac{1}{2} \times 2 \frac{2}{3} = \frac{3}{2} \times \frac{8}{3}$$

Step 2) Multiply the numerator times numerator and denominator times denominator.

$$\frac{3}{2} \times \frac{8}{3} = \frac{3 \times 8}{2 \times 3} = \frac{24}{6} = 4$$

Step 3) Change the improper fraction to a mixed number.

$$\frac{24}{6} = 4$$

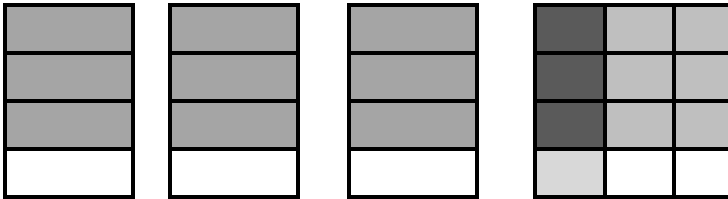
Practice: Multiplication of Mixed Numbers

Part A: Draw a model to show each problem and solution. Do the algorithm to check your answer.

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

2) $1\frac{1}{4} \times 1\frac{1}{3}$

3) Write the problem and solution from the model.



4) Jan is making a garden that is $\frac{2}{3}$ yards by $2\frac{1}{5}$ yards. What is the area of her garden?

5) Without doing any work, which is larger?

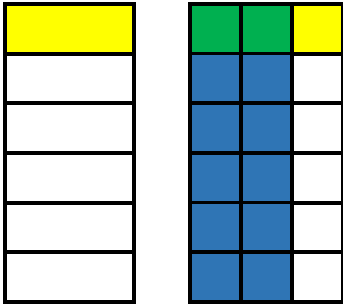
$\frac{1}{2} \times 30$ or $\frac{1}{4} \times 30$

$5\frac{3}{4} \times 10$ or $5\frac{4}{3} \times 10$

Answer Key - Multiplication of Mixed Numbers

Part A: Draw a model to show each problem and solution. Do the algorithm to check your answer.

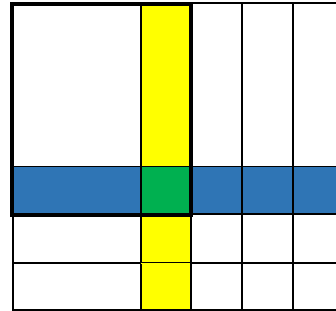
1) $1\frac{2}{3} \times \frac{1}{6}$



$$\frac{1}{6} + \frac{2}{18} =$$

$$\frac{3}{18} + \frac{2}{18} = \frac{5}{18}$$

2) $1\frac{1}{4} \times 1\frac{1}{3}$

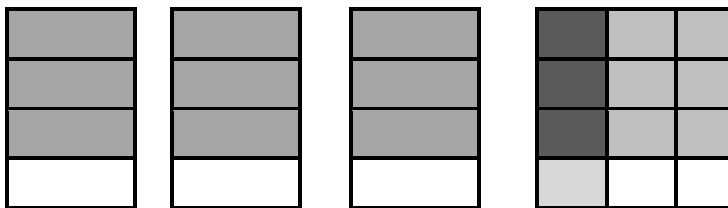


$$1 + \frac{1}{3} + \frac{1}{4} + \frac{1}{12} =$$

$$1 + \frac{4}{12} + \frac{3}{12} + \frac{1}{12} =$$

$$1 \frac{8}{12} = 1 \frac{2}{3}$$

3) Write the problem and solution from the model.



$$3 \frac{1}{3} \times \frac{3}{4} = \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{12} =$$

$$\frac{9}{4} + \frac{3}{12} = \frac{27}{12} + \frac{3}{12} = \frac{30}{12} = 2 \frac{1}{2}$$

4) Jan is making a garden that is $\frac{2}{3}$ yards by $2\frac{1}{5}$ yards. What is the area of her garden? $\frac{2}{3} \times 2\frac{1}{5} = \frac{22}{15} = 1\frac{7}{15}$ yards squared

5) Without doing any work, which is larger?

$\frac{1}{2} \times 30$ or $\frac{1}{4} \times 30$ $\frac{1}{2} \times 30$ because $\frac{1}{2} > \frac{1}{4}$

$5\frac{3}{4} \times 10$ or $5\frac{4}{3} \times 10$ $5\frac{4}{3} \times 10$ because the whole numbers are the same and when looking at the fractional part $\frac{4}{3} > 1$ and $\frac{3}{4} < 1$.

Step by Step: Multiplication Truths (Rules that ALWAYS work for multiplying fractions)

1) When multiplying any given number by a fraction greater than 1, the product is always greater than the given number. In other words, when multiplying by a fraction greater than 1, the number increases.

Example: 2 and $2/3 \times 8$ must have a product **greater than 8**. We know this because 2 times 8 is equal to 16 AND 2 and $2/3$ can be rounded to 3. 3 times 8 is 24. So the answer must be in-between 2×8 and 3×8 . **This allows us to know that the product is close to, but less than 24.**

2) When multiplying any given number by a fraction less than 1, the product is always smaller than the given number. In other words, when multiplying by a fraction less than one, the number decreases.

Example: $2/3 \times 1/5$ must have a product **less than $1/5$** . We know this because we are multiplying a fraction times a fraction or a piece times a piece.

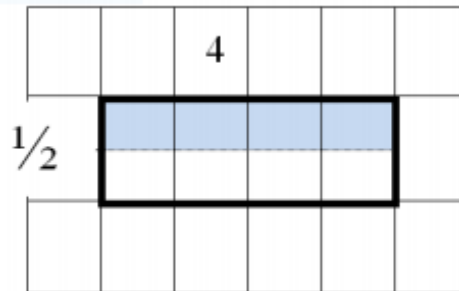
Step by Step: Finding Area using Fractions

The goal is for students to be able to find the area of a rectangle by multiplying fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

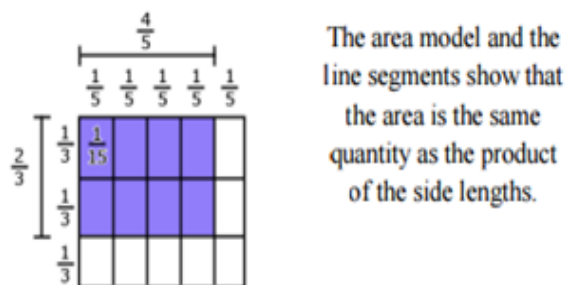
Example 1: The home builder needs to cover a small storage room floor with carpet. The storage room is 4 meters long and half of a meter wide. How much carpet do you need to cover the floor of the storage room? Use a grid to show your work and explain your answer.

Step 1) In the grid below, the top half of 4 boxes have been shaded.

Step 2) Add the shading together by adding $\frac{1}{2}$ four times. This equals 2. ***This could also be solved with multiplication $\frac{1}{2} \times 4$ is equal to $\frac{4}{2}$ which is equal to 2.***



Example 2: To solve $\frac{2}{3} \times \frac{4}{5}$, students can use an area model to visualize it as a 2 by 4 array of small rectangles each of which has side lengths $\frac{1}{3}$ and $\frac{1}{5}$.



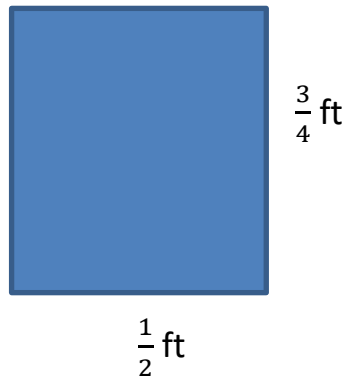
Step 1) Students can reason that $\frac{1}{3} \times \frac{1}{5} = \frac{1}{(3 \times 5)}$ or each square equals $\frac{1}{15}$.

Step 2) Count the squares in the entire shaded rectangle. There are 8. The area of the shaded area is $8 \times \frac{1}{(3 \times 5)}$ OR $8 \times \frac{1}{15}$.

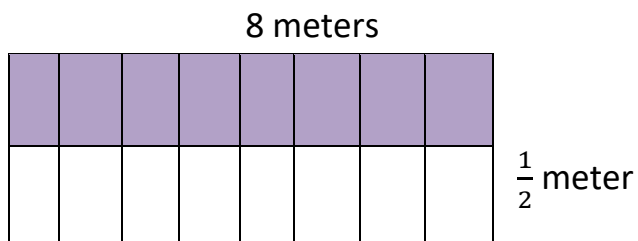
Step 3) Students can explain that the product is *less* than $\frac{4}{5}$ because they are finding $\frac{2}{3}$ of $\frac{4}{5}$ (or multiplying a piece of a piece). They can further estimate that the answer must be between $\frac{2}{3}$ and $\frac{4}{5}$ because $\frac{2}{3}$ of $\frac{4}{5}$ is more than $\frac{1}{2}$ of $\frac{4}{5}$ and less than one group of $\frac{4}{5}$.

Practice: Finding Area using Fractions

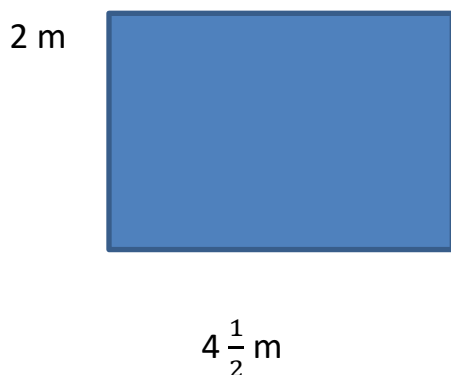
1. Holly wanted to find the area of her doll's tabletop to make a tablecloth. What is the area of her doll's tabletop?



2. A gardener digs a flower bed that is 8 meters long and half a meter wide. What is the area of the flower bed?

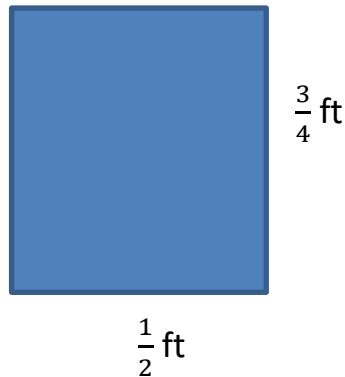


3. A painting in the Art Gallery measures 2 meters by $4\frac{1}{4}$ meters. What is the area of the painting?



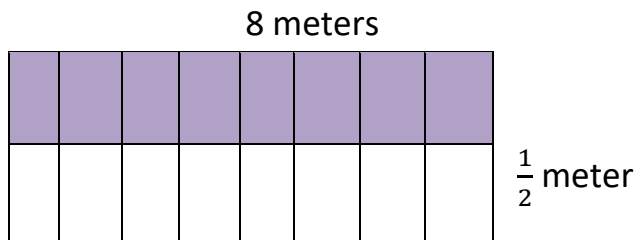
Answer Key - Finding Area using Fractions

1. Holly wanted to find the area of her doll's tabletop to make a tablecloth. What is the area of her doll's tabletop?



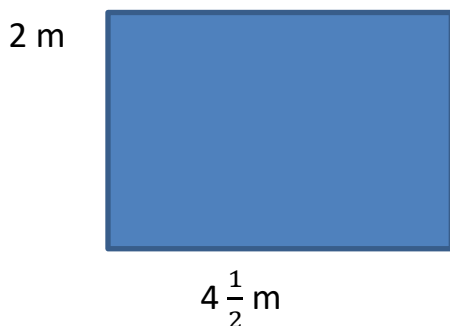
$$\text{Multiply } \frac{1}{2} \times \frac{3}{4} = \frac{3}{8} \text{ feet}$$

2. A gardener digs a flower bed that is 8 meters long and half a meter wide. What is the area of the flower bed?



$$\text{Multiply } 8 \times \frac{1}{2} = \frac{8}{1} \times \frac{1}{2} = \frac{8}{2} = 4 \text{ meters}$$

4. A painting in the Art Gallery measures 2 meters by $4\frac{1}{4}$ meters. What is the area of the painting?



$$\text{Multiply } 2 \times 4\frac{1}{2} = \frac{2}{1} \times \frac{9}{2} = \frac{18}{2} = 9 \text{ m}$$

Click here for more practice problems: [Fractional Area problems](#)

Step by Step: Dividing Fractions - Standard Algorithm



Divide Fractions

I can... divide a fraction by a fraction, a whole # by a fraction, and a fraction by whole #.

Step #1: Convert whole numbers to fractions, OR change mixed #s to improper fractions.

$$\frac{3}{4} \div \frac{1}{4}$$

$$\frac{3}{1} \div \frac{1}{4}$$

$$\frac{1}{4} \div 3 \frac{3}{1}$$

Step #2: Find the **RECIPROCAL** of the divisor. (The 2nd number)

$$\frac{3}{4} \div \frac{1}{4} \rightarrow \frac{4}{1}$$

$$\frac{3}{1} \div \frac{1}{4} \rightarrow \frac{4}{1}$$

$$\frac{1}{4} \div 3 \rightarrow \frac{1}{3}$$

Step #3: Replace the division symbol with a multiplication symbol.

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

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

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

Step #4: **MULTIPLY** the fractions across.

$$\frac{3}{4} \times \frac{4}{1} = \frac{12}{4}$$

$$\frac{3}{1} \times \frac{4}{1} = \frac{12}{1}$$

$$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$$

Step #5: **SIMPLIFY.** If needed, convert to mixed number or whole number.

$$\frac{12}{4} = \boxed{3}$$

$$\frac{12}{1} = \boxed{12}$$

$$\frac{1}{12}$$

Keep → **Change** → **Flip**

First Fraction → × Second Fraction (reciprocal)

Fraction divided by a Fraction.

Whole # divided by a fraction.

Fraction divided by a whole number.

Step by Step: Dividing Fractions - Models

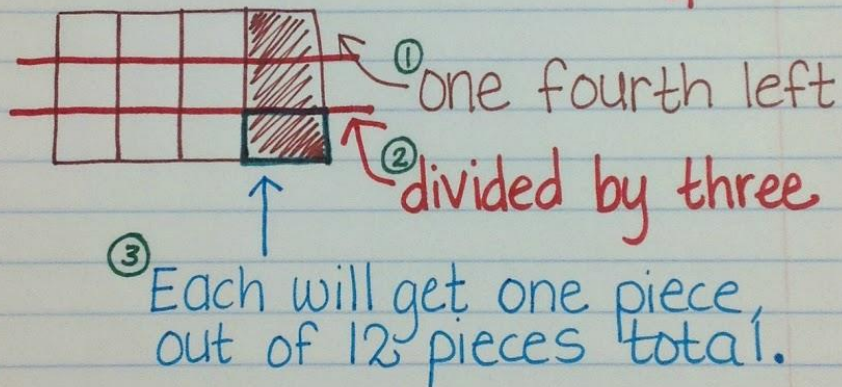


Dividing Fractions w/Models

- Divide a fraction by a whole #.

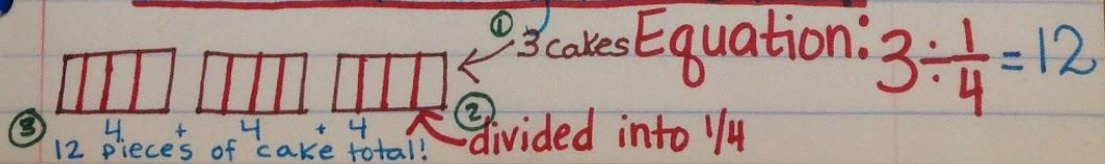
Jada had one fourth of her birthday cake left. She and her mom and dad split it evenly. How much of the cake will they each get?

$$\text{Equation: } \frac{1}{4} \div 3 = \frac{1}{12}$$



- Divide a whole # by a fraction.

Layla had three cakes. She would give each of her friends one fourth of a cake. How many friends would she be able to give a cake?



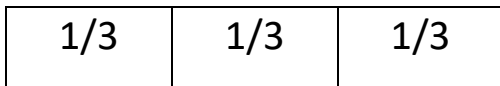
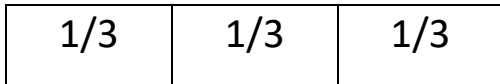
$$\text{Equation: } 3 \div \frac{1}{4} = 12$$

Practice: Dividing Fractions - Standard Algorithm and Models

1) $6 \div 1/5 =$

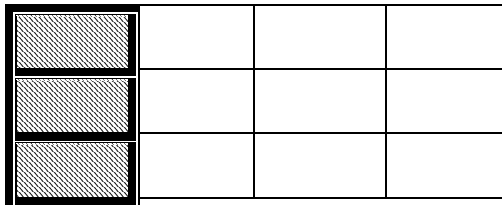
2) $1/6 \div 4 =$

3) Write the division sentence and quotient for this model
(Whole Number Divided by a Fraction)



_____ \div _____ = _____

4) Write the division sentence and quotient for this model
(Fraction Divided by a whole Number)



Equation for the model: _____

What is the quotient: _____

Answer Key - Dividing Fractions - Standard Algorithm and Models

1) $6 \div \frac{1}{5} =$

Step 1) $\frac{6}{1} \div \frac{1}{5} =$

Step 2) $\frac{6}{1} \div \frac{5}{1} =$

Step 3) $\frac{6}{1} \times \frac{5}{1} =$

Step 4) $\frac{6}{1} \times \frac{5}{1} = \frac{30}{1} = 30$

2) $\frac{1}{6} \div 4 =$

Step 1) $\frac{1}{6} \div \frac{4}{1} =$

Step 2) $\frac{1}{6} \div \frac{1}{4} =$

Step 3) $\frac{1}{6} \times \frac{1}{4} =$

Step 4) $\frac{1}{6} \times \frac{1}{4} = \frac{1}{24}$

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

4) $\frac{1}{4} \div 3 = \frac{1}{12}$

Practice: Word Problems – Mixed Fraction Operations

Step 1) Identify the operation or operations needed to solve.

Step 2) Solve

Step 3) Re-read the problem to make sure you correctly answered the question.

- 1) Jessica bought $\frac{8}{9}$ of a pound of chocolate and ate $\frac{1}{3}$ of a pound. How much was left?
- 2) Nick had 4 ice cream sandwiches. He ate $\frac{2}{3}$ of them. How many ice cream sandwiches did he eat?
- 3) Sandra bought $2\frac{3}{4}$ yards of red fabric, $1\frac{1}{4}$ of blue fabric, and $3\frac{2}{3}$ pounds of glue. How much cloth did she buy in all?
- 4) I need a fence for my yard. One side of my yard is 5 yards long. The other side is $\frac{1}{2}$ of that. How much fence do I need?
- 5) Ann had $\frac{3}{8}$ of a birthday cake left over from her party. She ate $\frac{3}{4}$ of the leftover cake for breakfast. How much of the cake did Ann have at breakfast?
- 6) Which apple weighs more, one that weighs $\frac{2}{3}$ of a pound or one that weighs $\frac{5}{6}$ of a pound?
- 7) Addie walked a mile in nineteen and one-fifth minute. It took Morgan only fourteen and a half minutes. How much longer did it take Addie to walk a mile?
- 8) Tyrone eats $\frac{1}{8}$ pounds of cheese each day. How many days will it take him to eat 3 pounds of cheese?
- 9) Bill wants to share wafer biscuits with his three friends. How much wafer biscuit will each of his friends get if his three friends share a $\frac{1}{2}$ pound of wafer biscuit equally?
- 10) Five friends share 6 cheesecakes equally. How many cheesecakes will each friend get?
- 11) Sonia has eight feet of yarn. She divides the yarn into twelve pieces that are each the same length. How long is each piece of yarn?
- 12) I have 4 yards of fabric and I use $\frac{1}{3}$ yard. How much do I have left?
- 13) I live 4 miles from home. I ran $\frac{1}{3}$ of the way before I took a break, how far did I run?
- 14) I have 4 pounds of hamburger. I want each burger to be $\frac{1}{3}$ pound. How many burgers can I make?
- 15) I have $\frac{1}{3}$ gallon of ice cream left to split among 4 people. How much ice cream will each person get?
- 16) I have 4 feet of ribbon and Ann gave me another $\frac{1}{3}$ foot of ribbon. How much ribbon do I have in all?

Answer Key - Word Problems – Mixed Fraction Operations

- 1) Jessica bought $\frac{8}{9}$ of a pound of chocolate and ate $\frac{1}{3}$ of a pound. How much was left?

Subtraction: $\frac{8}{9} - \frac{1}{3} = \frac{5}{9}$

- 2) Nick had 4 ice cream sandwiches. He ate $\frac{2}{3}$ of them. How many ice cream sandwiches did he eat?

Multiplication: $4 \times \frac{2}{3} = \frac{8}{3} = 2 \frac{2}{3}$

- 3) Sandra bought $2 \frac{3}{4}$ yards of red fabric, $1 \frac{1}{4}$ of blue fabric, and $3 \frac{2}{3}$ pounds of glue. How much cloth did she buy in all?

Addition: $2 \frac{3}{4} + 1 \frac{1}{4} = 3 \frac{4}{4} = 4$

- 4) I need a fence for my yard. One side of my yard is 5 yards long. The other side is $\frac{1}{2}$ of that. How much fence do I need?

Multiplication: $5 \times \frac{1}{2} = 2 \frac{1}{2}$ yards for the other side

Addition: $5 + 5 + 2 \frac{1}{2} + 2 \frac{1}{2} = 15$

- 5) Ann had $\frac{3}{8}$ of a birthday cake left over from her party. She ate $\frac{3}{4}$ of the leftover cake for breakfast. How much of the cake did Ann have at breakfast?

Multiplication: $\frac{3}{8} \times \frac{3}{4} = \frac{9}{32}$

- 6) Which apple weighs more, one that weighs $\frac{2}{3}$ of a pound or one that weighs $\frac{5}{6}$ of a pound? **Compare with common denominator fractions:**

$\frac{2}{3} = \frac{4}{6}$ and $\frac{5}{6}$ is larger than $\frac{4}{6}$

- 7) Addie walked a mile in nineteen and one-fifth minute. It took Morgan only fourteen and a half minutes. How much longer did it take Addie to walk a mile?

Subtraction with regrouping:

$19 \frac{1}{5} - 14 \frac{1}{2} = 18 \frac{2}{10} - 14 \frac{5}{10} = 4 \frac{7}{10}$

- 8) Tyrone eats $\frac{1}{8}$ pounds of cheese each day. How many days will it take him to eat 3 pounds of cheese?

Division: $3 \div \frac{1}{8} = 3 \times \frac{8}{1} = 24$

9) Bill wants to share wafer biscuits with his three friends. How much wafer biscuit will each of his friends get if his three friends share a $\frac{1}{2}$ pound of wafer biscuit equally?

Division: $\frac{1}{2} \div 3 = \frac{1}{2} \times \frac{1}{3} = \frac{1}{6}$

10) Five friends share 6 cheesecakes equally. How many cheesecakes will each friend get? Reading a word problem and making it a fraction: $6/5 = 1 \frac{1}{5}$

11) Sonia has eight feet of yarn. She divides the yarn into twelve pieces that are each the same length. How long is each piece of yarn?

Reading a word problem and making it a fraction: $8/12 = \frac{2}{3}$

12) I have 4 yards of fabric and I use $\frac{1}{3}$ yard. How much do I have left?

Subtraction: $4 - \frac{1}{3} = 3 \frac{3}{3} - \frac{1}{3} = 3 \frac{2}{3}$

13) I live 4 miles from home. I ran $\frac{1}{3}$ of the way before I took a break, how far did I run?

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

14) I have 4 pounds of hamburger. I want each burger to be $\frac{1}{3}$ pound. How many burgers can I make?

Divide: $4 \div \frac{1}{3} = 4 \times \frac{3}{1} = 12$

15) I have $\frac{1}{3}$ gallon of ice cream left to split among 4 people. How much ice cream will each person get?

Divide: $\frac{1}{3} \div 4 = \frac{1}{3} \times \frac{1}{4} = \frac{1}{12}$

16) I have 4 feet of ribbon and Ann gave me another $\frac{1}{3}$ foot of ribbon. How much ribbon do I have in all?

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

Video Resources

Adding and Subtraction Fractions using models:

~https://learnzillion.com/lesson_plans/6861-add-fractions-with-unlike-denominators-by-creating-area-models

~ <https://www.youtube.com/watch?v=pmJHyJ0zpw4>

~ https://learnzillion.com/lesson_plans/512-add-and-subtract-fractions-with-unlike-denominators-by-using-number-lines

Fractions as division links/websites:

~[Khan Academy](#)

~[Learnzillion](#)

Fraction X a whole number

~<https://www.khanacademy.org/math/cc-fifth-grade-math/cc-5th-fractions-topic#tcc-5th-mult-frac-and-whole>

~<https://www.khanacademy.org/math/cc-fifth-grade-math/cc-5th-fractions-topic#tcc-5th-mult-frac-and-whole-word-prob>

Fraction X a Fraction

~<https://www.khanacademy.org/math/cc-fifth-grade-math/cc-5th-fractions-topic#tcc-5th-multiplying-fractions>

~<https://www.khanacademy.org/math/cc-fifth-grade-math/cc-5th-fractions-topic#tcc-5th-mult-frac-word-probs>

Multiply mixed numbers by mixed numbers:

~<https://www.khanacademy.org/math/arithmetics/fraction-arithmetic/arith-review-mult-mixed-num/v/multiplying-mixed-numbers>

~https://learnzillion.com/lesson_plans/5675-multiply-mixed-numbers-by-mixed-numbers-using-visual-representations

~<https://www.youtube.com/watch?v=5HN2wNWA1w>

~<https://www.youtube.com/watch?v=0aR04DYSd9Y>

Finding the area using fractional side length links/websites:

~[Khan Academy](#)

~[LearnZillion](#)

Dividing whole numbers by a unit fraction

~<http://www.youtube.com/watch?v=fG4qmnM1aDa>

Dividing Unit Fractions by Whole Numbers- Area Model

~<https://www.youtube.com/watch?v=uybZ6V8ccMg>

Dividing Fractions by Whole Numbers-Standard Algorithm

~<https://www.youtube.com/watch?v=BWfDKHHZR2A>