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Unit 6.4, Family Resource

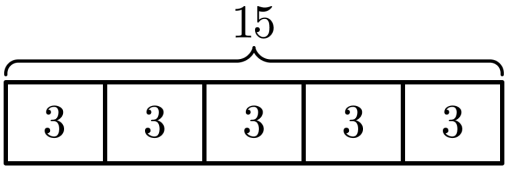
Unit 4 Summary

Prior Learning	Math 6, Unit 4	Future Learning
Grades 3–5 • Equivalent fractions • Calculating volumes of prisms • Interpreting fractions as division • Multiplying fractions • Dividing unit fractions and whole numbers Math 6, Unit 1 • Calculating areas of parallelograms	• Dividing fractions • Area and volume with fractions	Math 6, Units 5 and 6 • Dividing decimals • Solving equations with fractions Math 7 • Operations with positive and negative numbers • Scale drawings and scaled areas • Proportional relationships

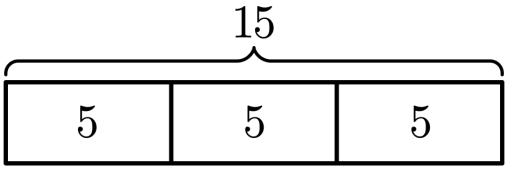
Introduction to Dividing Fractions

Here are two ways to think about $15 \div 3 = 5$.

How many groups of 3 fit into 15?

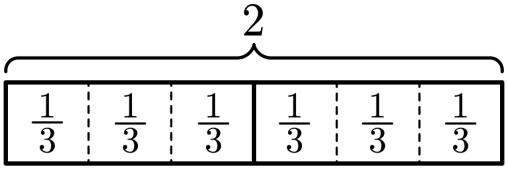


There are 15 in 3 groups.
How many are in 1 group?

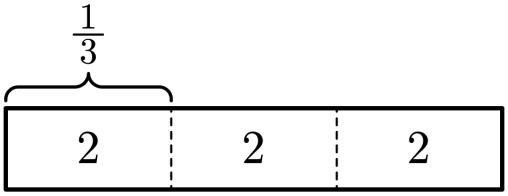


Here are two ways to think about $2 \div \frac{1}{3} = 6$.

How many groups of $\frac{1}{3}$ fit into 2?



There are 2 in $\frac{1}{3}$ of a group.
How many are in 1 group?



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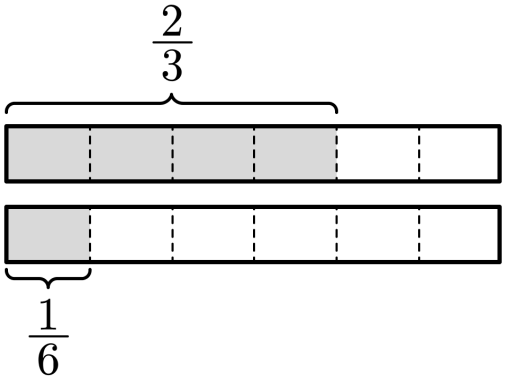
Dividing Fractions

One strategy for dividing fractions is to rewrite both fractions with *a common denominator*.

For $\frac{2}{3} \div \frac{1}{6}$, it can be helpful to rewrite $\frac{2}{3}$ as $\frac{4}{6}$.

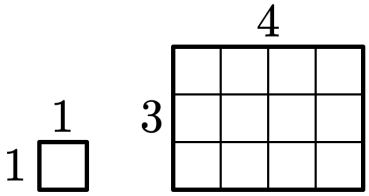
This is now $\frac{4}{6} \div \frac{1}{6}$, which is equivalent to $4 \div 1$ or 4.



Area and Volume With Fractions

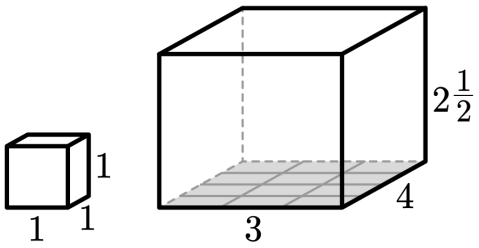
Area is the number of unit squares needed to cover a shape without gaps or overlaps.

Area of the base: $3 \cdot 4 = 12$ square units



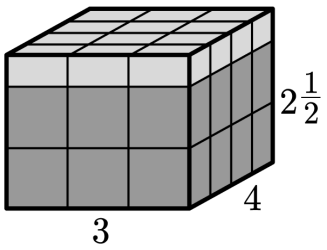
Volume is the number of unit cubes needed to fill a container.

The volume of a prism is the area of the base multiplied by the height.



There are $2\frac{1}{2}$ layers of 12 cubic units.

Volume: $12 \cdot 2\frac{1}{2} = 30$ cubic units.



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Try This at Home

Introduction to Dividing Fractions

Here is an expression: $3 \div \frac{1}{4}$.

1.1 Describe two different situations that could be represented by this expression

1.2 Estimate the value of the quotient: Is it less than 1, equal to 1, or greater than 1? Explain how you know.

1.3 Draw a diagram that could help you evaluate this expression.

1.4 What is $3 \div \frac{1}{4}$?

Dividing Fractions

Determine the value of each expression. Show your thinking.

2.1 $\frac{2}{9} \div \frac{4}{9}$

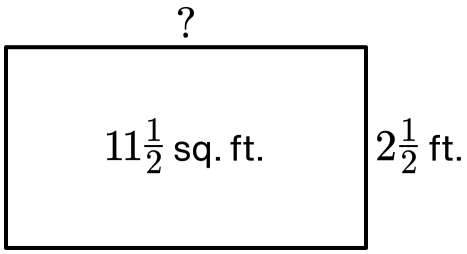
2.2 $\frac{1}{3} \div \frac{5}{9}$

2.3 $3 \div \frac{1}{7}$

2.4 $3 \div \frac{4}{7}$

Area and Volume With Fractions

3.1 What is the length of a rectangular planter if its width is $2\frac{1}{2}$ feet and its area is $11\frac{1}{2}$ square feet?



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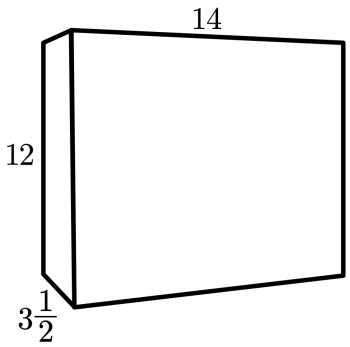
3.2 What is the volume of a box that is 14 inches by 12 inches by $3\frac{1}{2}$ inches?



Solutions:

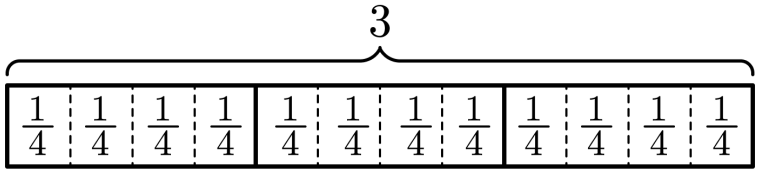
1.1 *Responses vary.*

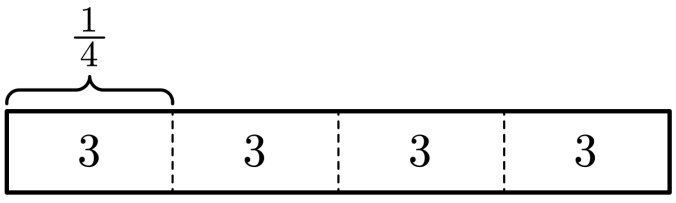
- How many $\frac{1}{4}$-cup scoops would it take to get 3 cups?
- If 3 flowers fill $\frac{1}{4}$ of a big planter, how many flowers fill 1 big planter box?

1.2 Greater than 1.

Explanations vary. You can think of this as "how many groups of $\frac{1}{4}$ fit into 3?" Since that will require more than 1 group, the quotient is greater than 1.

1.3 *Responses vary.*

- 

- 

1.4 12

2.1 $\frac{1}{2}$

2.2 $\frac{3}{5}$

2.3 21

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2.4 $\frac{21}{4}$ or $5\frac{1}{4}$

3.1 $4\frac{1}{2}$ feet

3.2 588 cubic inches