Dividing a Fraction by a Fraction

Lesson Goals

Review dividing and whole numbers. Model how to fractions by fractions.

Words to Know

Fill in this table as you work through the lesson. You may also use the glossary to help you.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>dividend</td>
<td>the number that is by another number in a division problem</td>
</tr>
<tr>
<td>divisor</td>
<td>the number that is divided another number in a division problem</td>
</tr>
<tr>
<td>mixed number</td>
<td>a number that has a whole-number part and a part</td>
</tr>
<tr>
<td>quotient</td>
<td>the to a division problem</td>
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</tbody>
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Whole Number Division

Find $45 \div 15$ using a number line.

$\text{dividend} \div \quad = \quad \text{quotient}$

On the number line, 45 is divided into equal groups of 15.

My dividend is ____.  
My divisor is ____.  
My quotient is the number of equal pieces I can make, or 3.

$45 \div 15 = \quad $
Using an Area Model

Use the area model to show $\frac{1}{2} \div 4$.

It takes __ pieces to make up the whole. So the size of each piece is __.
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Using a Number Line to Divide

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

You can think of this as “how many equal groups of $\frac{3}{4}$ are there in $\square$?”

There are 5 groups of $\frac{3}{4}$, and there is 1 fourth left over. The remainder is

$\frac{1}{4}$ fourths, or $\frac{1}{3}$.

$4 \div \frac{3}{4} = \square$
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**Fractional Answers**

Divide: $3 \div \frac{5}{6}$

Circle 5 sixths in each of the 3 wholes.

I can make 3 whole [ ], but I have some left over.

What fraction of a group is left over?

I have 3 sixths left over.

To make a whole group, I would need 5 sixths.

So, I have $\frac{3}{5}$ of a group left over.

$3 \div \frac{5}{6} =$ [ ]
Using Area Models

\[ \frac{2}{3} \div \frac{1}{6} = ? \]

Think: How many sixths are in \( \frac{2}{3} \)?

There are \( \square \) sixths in the shaded \( \frac{2}{3} \).

\[ \frac{2}{3} \div \frac{1}{6} = \square \]

There are four equal \( \square \) of \( \frac{1}{6} \) in \( \frac{2}{3} \).
Using Number Lines to Divide Fractions

What is the quotient of \( \frac{7}{3} \div \frac{2}{3} \)? Write the answer as a **mixed number**, or a number that has a whole-number part and a fraction part.

7 thirds divided by 2 thirds equals \( \square \) whole groups and 1 fractional part.

What fraction of a group is left over? \( \frac{1}{3} \text{ th}ird \div \frac{2}{3} \text{ th}irds

I have \( \square \) of a group left over.

\[
\frac{7}{3} \div \frac{2}{3} = \square
\]
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Using Fraction Bars to Divide Fractions with Unlike Denominators

Divide: \( \frac{3}{5} \div \frac{1}{3} \)

The fraction bars show 1 whole, 3 thirds, 5 fifths, and 15 fifteenths.

Think: How many \( \frac{1}{5} \) are in \( \frac{3}{5} \)?

Find the dividend.

Draw a rectangle around 3 fifths on the fraction bars.

One whole third is the same as \( \frac{1}{3} \).

What fraction of \( \frac{1}{3} \) is left over?

The fraction of a group left over is \( \frac{4}{15} \) fifteenths.

\[ \frac{3}{5} \div \frac{1}{3} = \]
Summary | Dividing a Fraction by a Fraction

Lesson Question

How can you divide a fraction by a fraction?

Answer

Use this space to write any questions or thoughts about this lesson.