Understand Multiplication by a Fraction

LESSON 19

Math Tools

Number Line

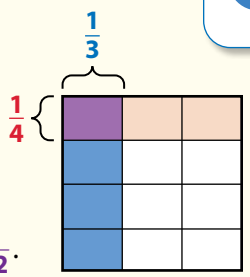
Fraction Models

Dear Family,

This week your child is exploring multiplying fractions.

An area model can help you visualize finding a fraction of a fraction.

The model shows $\frac{1}{4}$ and $\frac{1}{3}$ of the same whole.



Each row shows $\frac{1}{4}$ of the whole.

Each column shows $\frac{1}{3}$ of the whole.

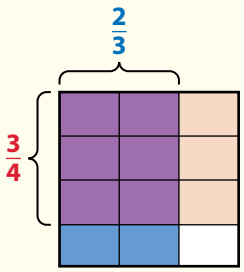
The darkest part shaded purple shows $\frac{1}{4}$ of $\frac{1}{3}$ of the whole, or $\frac{1}{12}$.

Your child is learning that finding a fraction of a fraction is the same as finding the product of the fractions. Your child might see a problem like the one below.

> *Suppose $\frac{2}{3}$ of the gym floor has been cleaned and students can play on $\frac{3}{4}$ of the cleaned floor. What part of the whole gym floor can the students play on?*

To solve the problem, you find $\frac{3}{4}$ of $\frac{2}{3}$, or $\frac{3}{4} \times \frac{2}{3}$.

The model shows $\frac{3}{4}$ and $\frac{2}{3}$ of the same whole.



3 rows show $\frac{3}{4}$ of the whole.

2 columns show $\frac{2}{3}$ of the whole.

The darkest part shaded purple shows $\frac{3}{4}$ of $\frac{2}{3}$ of the whole.

The model is divided into 12 equal parts, **6** of which are shaded the darkest in purple.

You can see that $\frac{6}{12}$ of the whole is shaded the darkest in purple.

So, $\frac{3}{4} \times \frac{2}{3} = \frac{6}{12}$.

Students can play on $\frac{6}{12}$, or $\frac{1}{2}$, of the gym floor.

Invite your child to share what they know about multiplying fractions by doing the following activity together.

ACTIVITY MULTIPLY BY A FRACTION

Do this activity with your child to understand multiplication by a fraction.

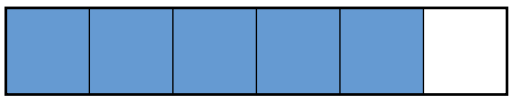
Materials 2 different colors of crayons or color pencils, number cube

- Together with your child, draw a blank rectangle at the bottom of the page to show the product of two fractions.
- One person rolls the number cube. This number tells how many equal parts to show in the rectangle. Draw vertical lines to show the equal parts.

  Example: Roll a 6 and draw vertical lines to show 6 equal parts in the rectangle.

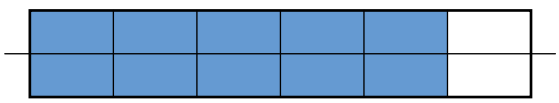
- The same person shades a fraction of the rectangle and names that fraction.

  Example: Shade $\frac{5}{6}$.



- The other person rolls the number cube. This number tells how many equal parts to show in the same rectangle. Draw horizontal lines to show the equal parts.

  Example: Roll a 2 and draw a horizontal line to show 2 equal parts (top and bottom) of the rectangle.



- The same person shades a fraction of the rectangle and names that fraction.

  Example: Shade $\frac{1}{2}$.

- The part where the shading overlaps and is darkest shows the product. Together, write the fraction multiplication equation that the picture shows.

  Example: $\frac{1}{2} \times \frac{5}{6} = \frac{5}{12}$