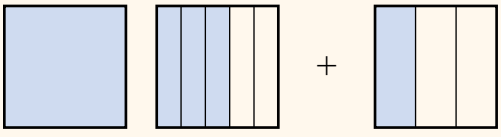
Add Fractions

LESSON 12

Dear Family,

This week your child is learning to add fractions with unlike denominators.

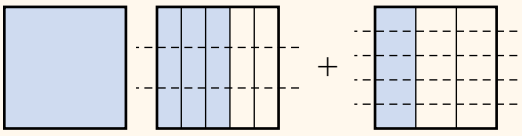
Here is how a model can show fraction addition, such as $1\frac{3}{5} + \frac{1}{3}$.



$1\frac{3}{5}$ + $\frac{1}{3}$

The denominators, 5 and 3, tell how many equal parts are in the whole. 5 and 3 are **unlike denominators**.

The parts of the whole are different sizes, thirds and fifths. You cannot add different-size parts. You need to divide the model to show equal-size parts, fifteenths.



$1\frac{3}{5} = 1\frac{9}{15}$ $\frac{1}{3} = \frac{5}{15}$

The denominator, 15, tells that there are 15 equal parts in the whole. So, 15 and 15 are **like denominators**.

Then add. $1\frac{3}{5} + \frac{1}{3} = 1\frac{9}{15} + \frac{5}{15} = 1\frac{14}{15}$

Some other ways your child can think about adding fractions are to use a number line model or to use multiplication to replace the given fractions with equivalent fractions that have the same denominator.

Invite your child to share what he or she knows about adding fractions by doing the following activity together.

ACTIVITY ADDING FRACTIONS

Do this activity with your child to add fractions.

Work together with your child to solve real-world problems about adding fractions.

- Suppose you want to make some healthy snacks and you have $\frac{7}{8}$ cup of cream cheese and $\frac{3}{4}$ cup raisins.
- Look at the two recipes below. Add fractions to decide if there is enough cream cheese and raisins to make both recipes.

Recipe

Recipe for Creamed Crackers

Ingredients:

12 crackers (any variety)

$\frac{1}{2}$ cup cream cheese

$\frac{1}{4}$ cup raisins

Directions:

Spread cream cheese evenly on crackers.

Sprinkle with raisins.

Recipe

Recipe for Celery Logs

Ingredients:

6 two-inch pieces of celery

$\frac{1}{3}$ cup cream cheese

$\frac{1}{8}$ cup raisins

Directions:

Spread cream cheese evenly on celery.

Sprinkle with raisins.

Answer: There is enough cream cheese and enough raisins to make both recipes.

Subtract Fractions

LESSON 13

Dear Family,

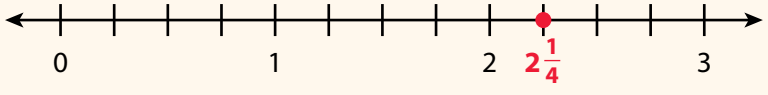
This week your child is learning to subtract fractions with unlike denominators.

Your child might see a problem like this:

> *Hailey needs $2\frac{1}{4}$ cups of almond milk for a recipe. She has $\frac{1}{2}$ cup. How much more almond milk does Hailey need?*

One way to model subtracting $\frac{1}{2}$ from $2\frac{1}{4}$ is with a number line.

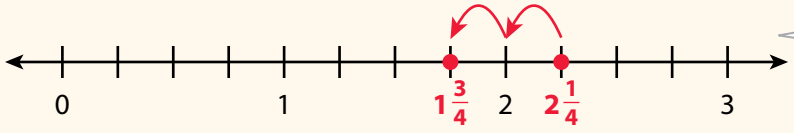
Start at the point $2\frac{1}{4}$.



Each whole on the number line is divided into 4 equal parts.

To subtract $\frac{1}{2}$, you need to find a common denominator with the fraction in $2\frac{1}{4}$. The number 4 is a multiple of 2 and 4, so 4 is a common denominator.

Because $\frac{1}{2}$ is equivalent to $\frac{2}{4}$, you can start at $2\frac{1}{4}$ and jump back (left) $\frac{2}{4}$.



Each jump back is $\frac{1}{4}$.

The number line shows that $2\frac{1}{4} - \frac{1}{2} = 1\frac{3}{4}$. Hailey needs $1\frac{3}{4}$ cups of almond milk.

Some other ways your child can think about subtracting fractions include using fraction bars or using multiplication to replace the given fractions with equivalent fractions that have the same denominator.

Invite your child to share what he or she knows about subtracting fractions by doing the following activity together.

ACTIVITY SUBTRACTING FRACTIONS

Do this activity with your child to subtract fractions.

Materials ruler, yardstick, or measuring tape, and a variety of household objects

Work with your child to compare the lengths or heights of various objects around your home.

- Find two objects and measure their lengths. Measure the length of one object to the nearest $\frac{1}{2}$ inch and the length of the second object to the nearest $\frac{1}{8}$ or $\frac{1}{16}$ inch.

  Examples: lengths of fork and spoon, lengths of hand and foot

- Determine how much longer one object is than the other.

- Continue to practice adding fractions by finding the combined length of two or more objects and then comparing the combined length to another length.

- Find the combined length of your hand and foot. Next, find the combined length of a family member's hand and foot. Then find the difference between the two combined lengths.

Look for other real-world examples of subtracting fractions with your child.

Add and Subtract in Word Problems

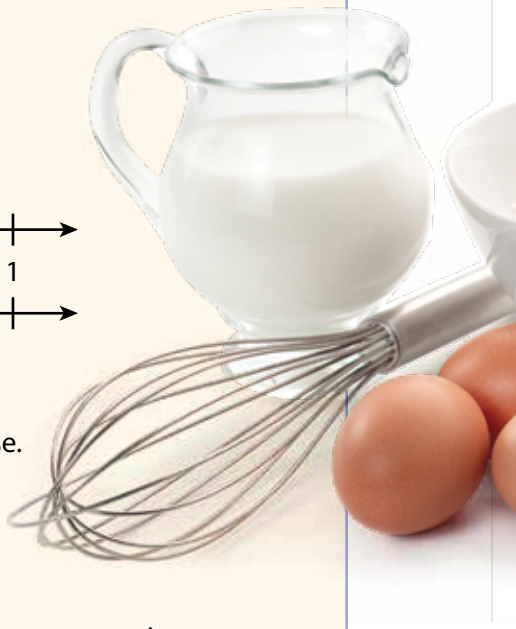
LESSON 14

Dear Family,

This week your child is learning to add and subtract fractions and decimals in word problems.

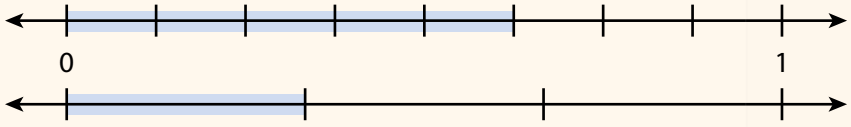
Your child is also learning to estimate the answer in order to check whether an answer is reasonable or not. He or she might see a problem like this:

Paul used $\frac{5}{8}$ cup of milk to make muffins and $\frac{1}{3}$ cup of milk to make nut bread. How much milk did Paul use to make muffins and nut bread?



To solve the problem, add the fractions $\frac{5}{8}$ and $\frac{1}{3}$.

It can be helpful to show the fractions on number lines.



To estimate the sum, you can use a benchmark fraction for each fraction in the problem. Here, $\frac{1}{2}$ is a good benchmark fraction to use.

$\frac{5}{8}$ is close to $\frac{1}{2}$ and $\frac{1}{3}$ is close to $\frac{1}{2}$. Since $\frac{1}{2} + \frac{1}{2} = 1$, an estimate of $\frac{5}{8} + \frac{1}{3}$ is about 1.

Now add the fractions $\frac{5}{8} + \frac{1}{3}$. The fractions need to have equal-size parts, so write equivalent fractions with like denominators. Then add.

$\frac{5}{8} = \frac{15}{24}$ $\quad \frac{1}{3} = \frac{8}{24}$

$\frac{15}{24} + \frac{8}{24} = \frac{23}{24}$

Is a sum of $\frac{23}{24}$ a reasonable answer? Check the sum against the estimate you made. The estimate is about 1, and $\frac{23}{24}$ is about 1, so the sum is reasonable.

Invite your child to share what he or she knows about adding and subtracting fractions in word problems by doing the following activity together.

ACTIVITY ADDING AND SUBTRACTING FRACTIONS IN WORD PROBLEMS

Do this activity with your child to add and subtract in word problems.

Work together with your child to identify some real-world situations when you might use fractions, such as when you are cooking, building, or gardening.

- Here are some examples in which you might add and subtract fractions:

  A recipe for soup calls for $2\frac{1}{3}$ cups of water and $1\frac{3}{8}$ cups of milk.

One piece of wood is $4\frac{1}{2}$ feet long and another piece is $2\frac{2}{3}$ feet long.

A string used for tomato plants is $3\frac{3}{4}$ feet long. Another string is $2\frac{1}{3}$ feet long.

Choose one of the examples above. Add the mixed numbers in that example. Work together to first make an estimate of the sum. Check your answer against the estimate to make sure your answer is reasonable.

Multiply Decimals

LESSON 16

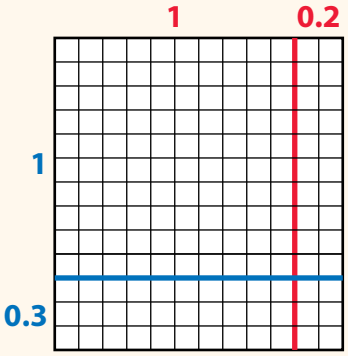
Dear Family,

This week your child is learning to multiply decimals.

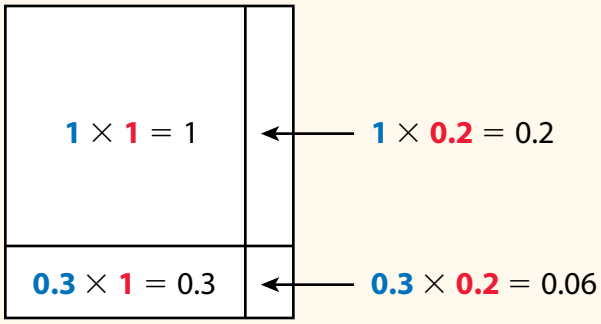
One way your child is learning to show decimal multiplication is with an area model.

The model at right shows **1.2** × **1.3**.

The width of the model represents 1.2.
The length of the model represents 1.3.



Multiply to find the area of each section in the model.
Then add the partial products.
1 + 0.2 + 0.3 + 0.06 = 1.56
1.2 × 1.3 = 1.56



To decide whether the product is reasonable, your child is learning to estimate the product of a decimal multiplication such as 1.2 × 1.3.

- Round each factor to the nearest whole number. (Round 1.2 to 1. Round 1.3 to 1.)
- Multiply the rounded numbers to estimate the product. (1 × 1 = 1)
- The product should be about 1.

The product 1.56 is close to the estimated product, 1.

Invite your child to share what he or she knows about multiplying decimals by doing the following activity together.

ACTIVITY MULTIPLYING DECIMALS

Do this activity with your child to multiply decimals.

Materials calculator, pencil, paper

Work with your child to do an activity that involves decimal multiplication.

- On a sheet of paper, one person writes down two decimal numbers. With a calculator, multiply the two numbers without the decimal points.
- The other person estimates the product of the two numbers written on the sheet of paper. He or she then explains where the decimal point should be placed in the product shown on the calculator.
- Check the answer by multiplying the decimals with the calculator.
- Take turns and repeat the activity.

Look for real-world examples of multiplying decimals. For example, you might buy 12.5 gallons of gas at a price of $3.62 a gallon or 2.5 pounds of apples at a price of $0.99 per pound. Work together with your child to estimate the product and then check your estimates with the receipt.

Divide Decimals

LESSON 17

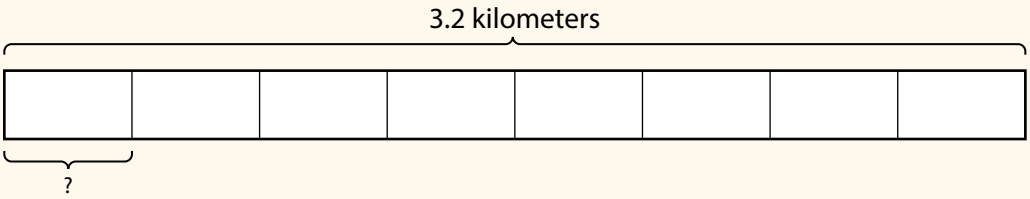
Dear Family,

This week your child is learning to divide with decimals.

Your child might see a problem like this:

> *Marty is running in a 3.2-kilometer race. Water stations are set up at 8 equal sections of the race. How far apart are the water stations?*

One way to understand the relationship of the quantities in the problem is to use a bar model.



The whole bar represents the length of the race, 3.2 kilometers. The bar has 8 equal sections. Find the length of each section to find how far apart the water stations are.

Divide 3.2 by 8 to find the length of each shorter section.

One way your child is learning to divide decimals is to think about multiplying decimals. Division and multiplication are related operations.

To find $3.2 \div 8$, think $8 \times ? = 3.2$.

$3.2 = 32$ tenths

$8 \times ? = 32$ tenths

8×4 tenths $= 32$ tenths

The answer, 4 tenths, is the length represented by each section of the bar model. The water stations are 0.4 kilometer apart.

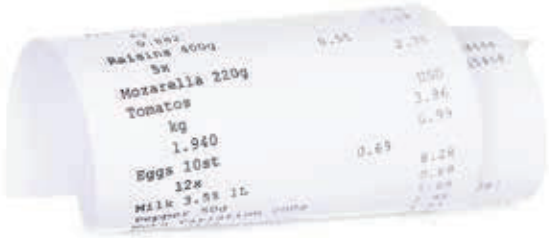
Invite your child to share what he or she knows about dividing decimals by doing the following activity together.

ACTIVITY DIVIDING DECIMALS

Do this activity with your child to divide decimals.

Work with your child to solve a real-world problem involving dividing decimals.

- Think of something you spend money on for the whole family, such as the grocery bill, tickets to the movies, or a new board game.



- Divide the cost by the number of people in your family. This will describe the cost for each family member.

  For example: A book of puzzles costs $11.76. There are 4 people in the family. To find the cost for each person, divide 11.76 by 4.

- Check that the answer is reasonable. In the example above, is 29.4 a reasonable answer for 11.76 ÷ 4?

Be on the lookout for other real-world examples of dividing decimals that you can share with your child.

Answer: no