

What We Are Learning

Adding and Subtracting Fractions

Dear Family,

The student will be learning how to add and subtract fractions and mixed numbers. He or she will begin this process by first learning how to estimate sums and differences. This important skill teaches your child how to recognize whether a solution is reasonable.

The student will estimate sums and differences of fractions and mixed numbers by rounding each fraction to 0, $\frac{1}{2}$, or 1. The following table lists benchmarks, or rules, for rounding.

Benchmarks for Rounding Fractions		
Round to 0 if the numerator is much smaller than the denominator. Examples: $\frac{1}{9}$, $\frac{3}{20}$, $\frac{2}{11}$	Round to $\frac{1}{2}$ if the numerator is about half of the denominator. Examples: $\frac{2}{5}$, $\frac{5}{12}$, $\frac{7}{13}$	Round to 1 if the numerator is nearly equal to the denominator. Examples: $\frac{8}{9}$, $\frac{23}{25}$, $\frac{97}{100}$

Estimate each sum or difference.

$$\frac{5}{9} + \frac{11}{13}$$

$$\frac{5}{9} \rightarrow \frac{1}{2}$$

$$\frac{11}{13} \rightarrow 1$$

Round each fraction.

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

Add.

$$6\frac{2}{15} - 2\frac{6}{11}$$

$$6\frac{2}{15} \rightarrow 6$$

$$2\frac{6}{11} \rightarrow 2\frac{1}{2}$$

Round each mixed number.

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

Subtract.

When adding and subtracting fractions, the denominators of each fraction have to be the same. When adding or subtracting fractions with like denominators, just add or subtract the numerators and keep the common denominator.

To add or subtract fractions with different denominators, the student will learn how to find a common denominator by either multiplying the denominators or by finding the least common multiple (LCM) of the denominators.

Add. Write your answer in simplest form.

$$\frac{1}{5} + \frac{1}{6}$$

$$\frac{1}{5} + \frac{1}{6}$$

The LCM of the denominators is 30.

$$\frac{6}{30} + \frac{5}{30}$$

Write equivalent fractions.

$$\frac{11}{30}$$

Add.

Remember that a mixed number can be written as the sum of an integer and a fraction. $3\frac{5}{6} = 3 + \frac{5}{6}$

To add or subtract mixed numbers, first add or subtract the integers and then add or subtract the fractions. Sometimes you must first regroup before subtracting mixed numbers.

Subtract. Write your answer in simplest form.

$$14\frac{1}{4} - 3\frac{3}{4}$$

$$14\frac{1}{4} \rightarrow 13\frac{5}{4}$$

$$\text{Regroup. } 14\frac{1}{4} = 13 + \frac{4}{4} + \frac{1}{4} = 13 + \frac{5}{4}$$

$$13\frac{5}{4} - 3\frac{3}{4}$$

Subtract the integers, and then subtract the fractions.

$$10\frac{2}{4}$$

Simplify.

$$10\frac{1}{2}$$

Sincerely,

What We Are Learning

Multiplying and Dividing Fractions

Vocabulary

These are the math words we are learning:

multiplicative inverse a number times its multiplicative inverse is equal to 1; also called *reciprocal*

reciprocals two numbers whose product equals 1; also called *multiplicative inverses*

Dear Family,

The student will be learning how to multiply and divide fractions and mixed numbers. When multiplying fractions the student will need to multiply both the numerators **AND** the denominators. If the fractions are mixed numbers, the student will need to first convert the mixed number to an improper fraction.

Multiply. Write each answer in simplest form.

$$\frac{1}{5} \cdot 8\frac{4}{5}$$

$$\frac{1}{5} \cdot 8\frac{4}{5} = \frac{1}{5} \cdot \frac{44}{5}$$

$$= \frac{44}{25}$$

$$= 1\frac{19}{25}$$

Write the mixed number as an improper fraction.

Multiply numerators. Multiply denominators.

Simplify.

The student will use the **reciprocal** of a fraction and the skill of multiplying fractions when dividing fractions. To find the reciprocal of a number, simply flip or switch the numerator and the denominator of the fraction or whole number. The reciprocal of $\frac{6}{11}$ is $\frac{11}{6}$. To divide by a fraction, find its reciprocal and then multiply.

Divide. Write each answer in simplest form.

$$5\frac{1}{2} \div 1\frac{3}{8}$$

$$5\frac{1}{2} \div 1\frac{3}{8} = \frac{11}{2} \div \frac{11}{8}$$

$$= \frac{11}{2} \cdot \frac{8}{11}$$

$$= \frac{\cancel{11}}{2} \cdot \frac{4}{\cancel{11}}$$

$$= 4$$

Write mixed numbers as improper fractions.

Multiply by the reciprocal of $\frac{11}{8}$.

Simplify.

Multiply.

The goal when solving equations that contain fractions is the same as when working with other kinds of numbers—to get the variable by itself on one side of the equation.

Solve. Write each answer in simplest form.

A. $x - 2\frac{2}{5} = \frac{4}{5}$

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

Write the mixed number as an improper fraction.

$$x - \frac{12}{5} + \frac{12}{5} = \frac{4}{5} + \frac{12}{5}$$

Add $\frac{12}{5}$ to both sides of the equation.

$$x = \frac{16}{5} = 3\frac{1}{5}$$

Simplify.

B. $\frac{2}{3} + y = \frac{8}{9}$

$$\frac{2}{3} + y - \frac{2}{3} = \frac{8}{9} - \frac{2}{3}$$

Subtract $\frac{2}{3}$ from both sides of the equation.

$$y = \frac{8}{9} - \frac{6}{9}$$

Find a common denominator.

$$y = \frac{2}{9}$$

Simplify.

C. $5n = \frac{10}{13}$

$$5n \cdot \frac{1}{5} = \frac{10}{13} \cdot \frac{1}{5}$$

Multiply by the reciprocal of 5.

$$\cancel{5}n \cdot \frac{1}{\cancel{5}_1} = \frac{2\cancel{10}}{13} \cdot \frac{1}{\cancel{5}_1}$$

Simplify.

$$n = \frac{2}{13}$$

Practice multiplying and dividing fractions with the student to help him or her keep these skills sharp. Have the student think about the need for fractions in everyday situations.

Sincerely,

What We Are Learning

Operations with Decimals

Dear Family,

The student will be learning how to apply the four basic mathematical operations, addition, subtraction, multiplication, and division, to decimals.

When adding and subtracting decimals, the student will learn to line up the decimal points and then add or subtract as usual.

Add or subtract. Estimate to check whether your answer is reasonable.

$$57.68 + 16.02$$

$$\begin{array}{r} 57.68 \\ + 16.02 \\ \hline 73.70 \end{array}$$

Line up the decimal points.

Add.

Estimate

$$58 + 16 = 74 \quad 73.70 \text{ is a reasonable answer.}$$

$$48 - 6.24$$

$$\begin{array}{r} 48.00 \\ - 6.24 \\ \hline \end{array}$$

Use zeros as placeholders.

Line up the decimal points.

$$\begin{array}{r} 47 \overset{9}{.} \overset{10}{00} \\ \cancel{48.00} \\ - 6.24 \\ \hline 41.76 \end{array}$$

Regroup and subtract.

Estimate

Round 6.24 to 6.

$$48 - 6 = 42 \quad 41.76 \text{ is a reasonable answer.}$$

To multiply decimals, multiply as you would with integers, and then place the decimal point. The product should have the same number of decimal places as the sum of the decimal places in the factors.

Multiply.

$$0.36 \times 2.4$$

$$\begin{array}{r} 0.36 \\ \times 2.4 \\ \hline 144 \\ 720 \\ \hline 0.864 \end{array}$$

2 decimal places

1 decimal place

$2 + 1 = 3$ decimal places

When you divide two numbers, such as $0.8 \div 0.2$, you can multiply *both numbers* by the same power of ten without changing the final answer. Multiply both 0.8 and 0.2 by 10.

$$0.8 \times 10 = 8$$

$$0.2 \times 10 = 2$$

Solve the expressions.

$$0.8 \div 0.2 = ? \quad 8 \div 2 = ?$$

$$0.8 \div 0.2 = 4 \quad 8 \div 2 = 4$$

The final answer does not change.

By multiplying both the dividend and the divisor by the same power of ten, you can make the divisor an integer. It is much easier to divide by an integer than to divide by a decimal.

Divide.

$$18.81 \div 0.03$$

$$0.03 \overline{)18.81}$$

$$\begin{array}{r} 627 \\ 3 \overline{)1881} \\ \underline{-18} \\ 8 \\ \underline{-6} \\ 21 \\ \underline{-21} \\ 0 \end{array}$$

Multiply both numbers by 100 to make the divisor an integer.

Divide as with whole numbers.

$$11 \div 1.6$$

$$1.6 \overline{)11.0}$$

$$1.6 \overline{)11.0}$$

Write 11 in decimal form.

Multiply both numbers by 10 to make the divisor an integer.

$$\begin{array}{r} 6.875 \\ 16 \overline{)110.000} \\ \underline{-96} \\ 140 \\ \underline{-128} \\ 120 \\ \underline{-112} \\ 80 \\ \underline{-80} \\ 0 \end{array}$$

Use zero as a placeholder.

Divide as with whole numbers.

Discuss with your child how decimals are used in real-life situations, such as when managing money, to make these concepts more meaningful.

Sincerely,