

Eureka Math Parent Guide

A GUIDE TO SUPPORT PARENTS AS THEY WORK WITH THEIR STUDENTS IN MATH.

**GRADE 5
MODULE 4**

GRADE FOCUS

Fifth grade mathematics is about (1) developing fluency with addition and subtraction of fractions, (2) understanding multiplication and division of fractions in limited cases, (3) extending division to two-digit divisors, (4) developing fluency with whole number and decimal operations to the hundredths, and (5) developing understanding of volume.

- Module 1: Place Value and Decimal Fractions
- Module 2: Multi-Digit Whole Number and Decimal Fraction Operations
- Module 3: Addition and Subtraction of Fractions
- » **Module 4: Multiplication and Division of Fractions and Decimal Fractions**
- Module 5: Addition and Multiplication with Volume and Area
- Module 6: Problem Solving with the Coordinate Plane

LET'S CHECK IT OUT!

MODULE 4 FOCUS

In this 38-day module, students learn to multiply fractions and decimal fractions and start work with fraction division. Students will begin by measuring fractional parts on a number line as a concrete way of understanding fractional parts of a whole, and eventually move to more abstract fraction operations.

MORE SPECIFICALLY, CHILDREN WILL LEARN HOW TO:

- Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- Write simple expressions and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the exact sum or product.
- Add, subtract, multiply, and divide decimals to hundredths.
- Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$.
- Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number; explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number.

- Solve real world problems involving multiplication of fractions and mixed numbers.
- Divide fractions by whole numbers and whole numbers by fractions. *For example, how much chocolate will each person get if 3 people share $1/2$ lb. of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?*
- Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.
- Make a line plot to display a data set of measurements in fractions of a unit ($1/2, 1/4, 1/8$). *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*

TOPIC OVERVIEW

Topics are the lessons within a module that help children master the skills above. Here are the lessons that will guide your child through Module 4:

- Topic A: Line Plots of Fraction Measurements
- Topic B: Fractions as Division
- Topic C: Multiplication of a Whole Number by a Fraction
- Topic D: Fraction Expressions and Word Problems
- Topic E: Multiplication of a Fraction by a Fraction
- Topic F: Multiplication with Fractions and Decimals as Scaling and Word Problems
- Topic G: Division of Fractions and Decimal Fractions
- Topic H: Interpretation of Numerical Expressions

WORDS TO KNOW

- **Decimal divisor:** the number that divides the whole and that has units of tenths, hundredths, thousandths, e.g. $1/100$.
- **Simplify:** using the largest fractional unit possible to express an equivalent fraction, e.g. $4/6$ simplifies to $2/3$, with the denominator 3 being a larger fractional unit than 6.

SAMPLE PROBLEMS

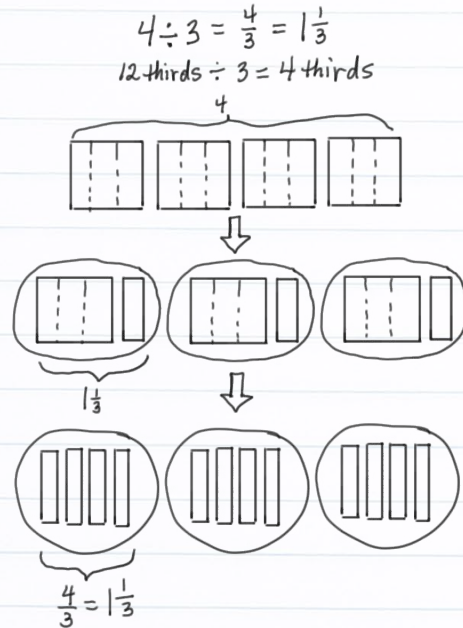
SAMPLE 1

$4 \div 3$, shown as a traditional algorithm division problem:

$$\begin{array}{r} 1\frac{1}{3} \\ 3 \overline{) 4} \\ \underline{-3} \\ 1 \end{array} \quad \text{Check: } 3 \times \frac{1}{3} = 1\frac{1}{3} + 1\frac{1}{3} + 1\frac{1}{3} = 3 + \frac{3}{3} = 4$$

Each bag of oats weighs $1\frac{1}{3}$ kilograms.

A diagram of $4 \div 3$ showing fractional division:

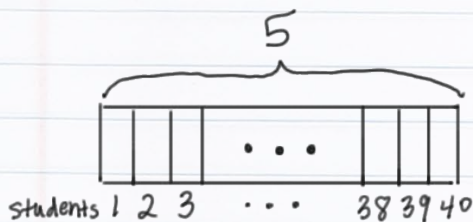


SAMPLE 2

Forty students shared 5 pizzas equally. How much pizza did each student receive?

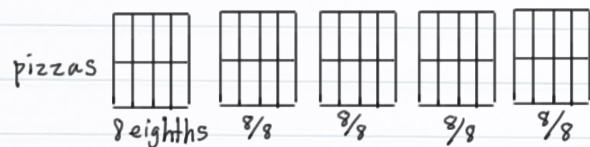
What fraction of the pizza did each student receive?

Note the use of a tape diagram as well as the drawing showing division of a whole number into fractional parts:



$$40 \text{ units} = 5 \\ 1 \text{ unit} = \frac{5}{40}$$

Each student gets $\frac{5}{40}$ of a pizza.



$$40 \text{ units} = 40 \text{ eighths} \\ 1 \text{ unit} = 1 \text{ eighth} \\ \text{Each student gets } \frac{1}{8} \text{ of a pizza.}$$

HOW YOU CAN HELP AT HOME

- Continue to practice and review multiplication and division math facts — this greatly supports work with fractions!
- Look for opportunities in daily life to discuss both fractional parts of a whole and of other fractions, e.g. What is $\frac{1}{4}$ of 20? $\frac{1}{4}$ of $\frac{1}{2}$?