

# Eureka Math Parent Guide

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

**GRADE 3**  
**MODULE 3**

## GRADE FOCUS

Third Grade mathematics is about (1) developing understanding of multiplication and division and strategies for multiplication and division within 100; (2) developing understanding of fractions, especially unit fractions (fractions with numerator 1); (3) developing understanding of the structure of rectangular arrays and of area; and (4) describing and analyzing two-dimensional shapes.

- Module 1: Properties of Multiplication and Division and Solving Problems with Units of 2—5 and 10
- Module 2: Place Value and Problem Solving with Units of Measure
- » **Module 3: Multiplication and Division with Units of 0, 1, 6–9, and Multiples of 10**
- Module 4: Multiplication and Area
- Module 5: Fractions as Numbers on the Number Line
- Module 6: Collecting and Displaying Data
- Module 7: Geometry and Measurement Word Problems

## LET'S CHECK IT OUT!

## MODULE 3 FOCUS

In this module students will go deep into learning about multiplication and division and the relationship between these two related operations. Students will practice their math facts to become fluent, and will learn several strategies for multiplying and dividing numbers.

### MORE SPECIFICALLY, CHILDREN WILL LEARN HOW TO:

- Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities.
- Determine the unknown whole number in a multiplication or division equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations  $8 \times ? = 48$ ,  $5 = \_ \div 3$ ,  $6 \times 6 = ?$ .*
- Apply properties of operations as strategies to multiply and divide. Examples:  $6 \times 4 = 24$  and  $4 \times 6 = 24$ . (Commutative property of multiplication.)  $3 \times 5 \times 2$  can be found by  $3 \times 5 = 15$ , then  $15 \times 2 = 30$ , or by  $5 \times 2 = 10$ , then  $3 \times 10 = 30$ . (Associative property of multiplication.)
- Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that  $8 \times 5 = 40$ , one knows  $40 \div 5 = 8$ ). By the end of Grade 3, know from memory all products of two one-digit numbers.
- Solve two-step word problems using addition, subtraction, multiplication and division.

- Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. *For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.*
- Multiply one-digit whole numbers by multiples of 10 in the range 10—90 (e.g.,  $9 \times 80$ ,  $5 \times 60$ ) using strategies based on place value and properties of operations.

## 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 3:

- Topic A: The Properties of Multiplication and Division
- Topic B: Multiplication and Division Using Units of 6 and 7
- Topic C: Multiplication and Division Using Units up to 8
- Topic D: Multiplication and Division Using Units of 9
- Topic E: Analysis of Patterns and Problem Solving Including Units of 0 and 1
- Topic F: Multiplication of Single-Digit Factors and Multiples of 10

## WORDS TO KNOW

- **Array:** a set of numbers or objects that follow a specific pattern
- **Commutative Property:** e.g.  $3 \times 2 = 2 \times 3$
- **Distributive Property:** e.g.  $12 \times 3 = (10 + 2) \times 3 = (10 \times 3) + (2 \times 3)$
- **Factors:** numbers that are multiplied to obtain a product
- **Multiple:** e.g. multiples of 9 are 18, 27, 36, 45, etc.
- **Number bond:** model used to show part—part—whole relationships
- **Product:** the quantity resulting from multiplying factors
- **Quotient:** the answer when one number is divided by another
- **Tape diagram:** a method for modeling problems

# SAMPLE PROBLEMS

## SAMPLE 1

Students will learn to relate simple one-digit facts to similar facts in the place value family.



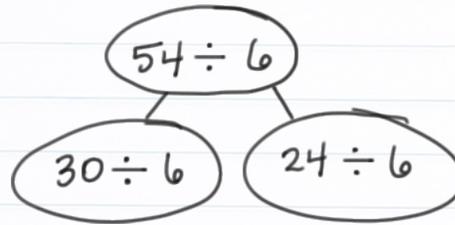
$$2 \times 3 \text{ ones} = 6 \text{ ones}$$
$$2 \times 3 = 6$$



$$2 \times 3 \text{ ones} = 6 \text{ ones}$$
$$2 \times 30 = 60$$

Students will learn to relate simple one-digit facts to similar facts in the place value family.

This is a strategy for division:



Students use facts they already know to help solve an unknown fact.

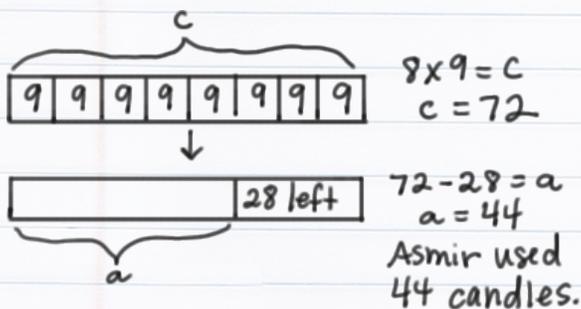
$$54 \div 6 = (30 \div 6) + (24 \div 6)$$
$$= 5 + 4$$
$$= 9$$

## SAMPLE 2

The tape diagram is a powerful model that students can use to solve various kinds of problems. In earlier grades, tape diagrams are models of addition and subtraction, but now in third grade we will use them to model multiplication and division as well. Tape diagrams are also called "bar models" and consist of a simple bar drawing that students make and adjust to fit a word problem. They then use the drawing to discuss and solve the problem.

As students move through the grades, tape diagrams provide an essential bridge to algebra. Below is a sample word problem from Module 3 solved using a tape diagram to show the parts of the problem.

Asmir buys 8 boxes of 9 candles for his dad's birthday. After putting some candles on the cake, there are 28 candles left. How many candles does Asmir use?



# HOW YOU CAN HELP AT HOME

- Continue to review multiplication and division math facts with your student
- Help your student notice related math facts, e.g.  $4 \times 2 = 8$ ,  $4 \times 20 = 80$ ,  $40 \times 2 = 80$