

## Grade 3, Module 1: Properties of Multiplication and Division and Solving Problems with 2-5 and 10



**What is this module about?** In this first module of Grade 3, we build on second grade knowledge of addition and work toward greater fluency. We will also be building arrays (arrangements of a set of objects organized into equal groups in rows and columns), and setting the stage for multiplication and division.



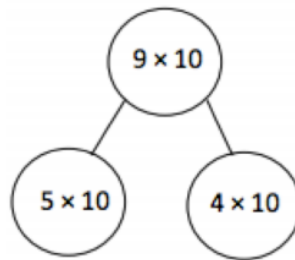
**What came before this module?** This is the first module of Grade 3.



**What comes after this module?** In Module 2, students will have opportunities to use tools that build both measurement skills as well as conceptual understanding of metric and time units. Through practical application of measurement skills, students will practice both estimating and rounding numbers.

## How can you help at home?

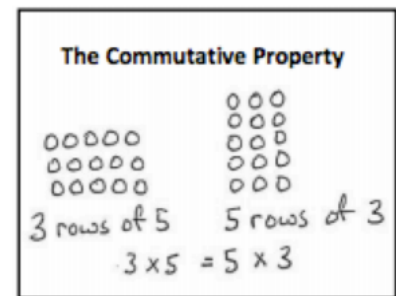
- Have your student set out groups of small objects in arrays (equal groups in rows and columns) and write the accompanying multiplication equation.
- Encourage your student to practice multiplication facts for 2s, 3s, 4s, 5s and 10s.



A number bond illustration of the Distributive Property:

$$9 \times 10 = (5 \times 10) + (4 \times 10)$$

## An illustration of the Commutative Property.



## Key Words and Ideas in this Module

- **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
- **Equal groups:** with reference to multiplication and division; one factor is the number of objects in the group and the other is a multiplier that indicates the number of groups
- **Equation:** a statement that 2 expressions are equal
- **Quotient:** the answer when one number is divided by another

## Key Standards in this Module

- Represent and solve problems involving multiplication and division
- Understand properties of multiplication and the relationship between multiplication and division
- Multiply and divide within 100
- Solve problems involving the four operations, and identify and explain patterns in the arithmetic



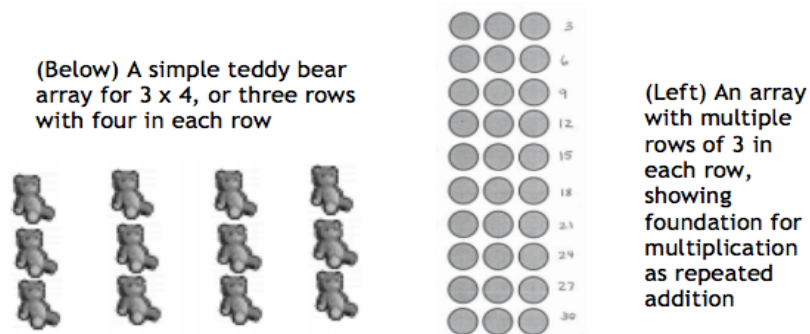
## Spotlight on Math Models

### Spotlight on Math Models

The math curriculum used in our District (EngageNY) carefully sequences the progression of mathematical ideals into expertly crafted instructional modules. The curriculum is also based on a theory of teaching math that is proven to work. That theory posits that mathematical knowledge is conveyed most effectively when it is taught in a specific sequence and when teaching methods drive student understanding beyond process (solving problems, for example) to deep mastery of mathematical concepts. Each module's parent tip sheet will highlight a new math strategy or math model your student will be working on.

### Arrays

Students worked with arrays toward the end of Grade 2, learning how to use them to show repeated addition. Now, in Grade 3, students put all of their knowledge to work as they learn multiplication and division skills, using arrays to demonstrate the properties of both operations.



### Sample problem from Module 1 (Lesson 7)

Ann picks 24 flowers. She makes equal bundles of flowers and gives 1 bundle to each of her seven friends. She keeps a bundle for herself too.

How many flowers does Anna put in each bundle?

