3 Module 10

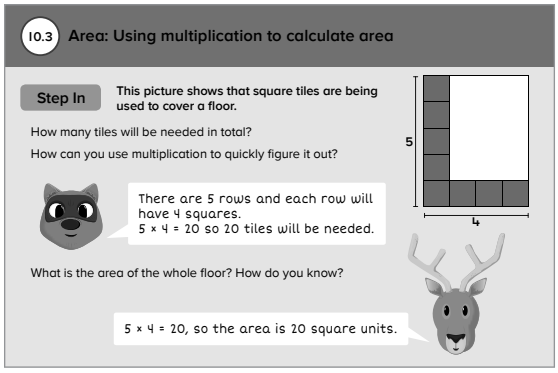
ORIGO STEPPING STONES 2.0

Core Focus

- Geometry: Using customary units and multiplication to calculate area
- Multiplication: Using the distributive and associative property with two-digit numbers
- Algebra: Solving problems involving multiple operations

Geometry

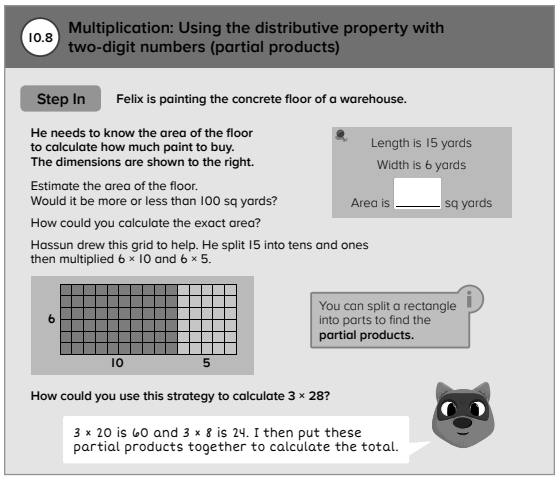
- Students find the area of rectangles. At first, they count all the squares inside a shape but soon see how those squares are arranged in rows and columns, similar to the **arrays** they have been using with multiplication facts.



In this lesson, students multiply to determine the number of units of measure when finding the area of rectangles.

Multiplication

- Students investigate how separating one rectangle into two or more rectangular sections makes calculations easier. For a rectangle that is 6 × 15, students think of it as two rectangles: 6 × 10 and 6 × 5. The area is 60 + 30 = 90.



In this lesson, students split rectangles into two parts and use distributive property to figure out the area of rectangles.

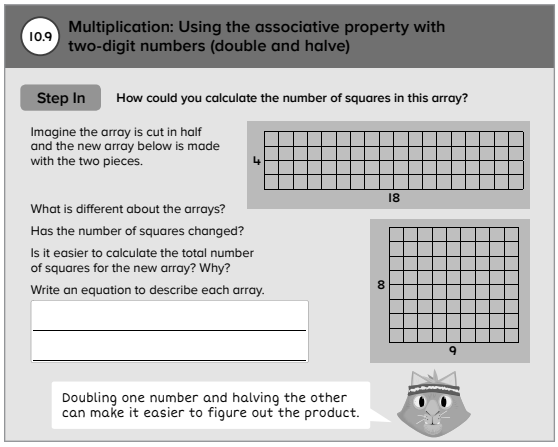
Ideas for Home

- Measuring area is a practical skill and a common way people refer to the size of a room or a space. Using measuring tape, work together to find the area of smaller rectangular spaces in your home, such as a stove top, a cupboard, or a closet.
- When in a store, notice boxes and labels that have length and width dimensions listed, like carpets, photo frames, or furniture. Determine the area together using the dimensions listed.

Glossary

- An **array** is an arrangement of objects in equal and orderly rows or columns.

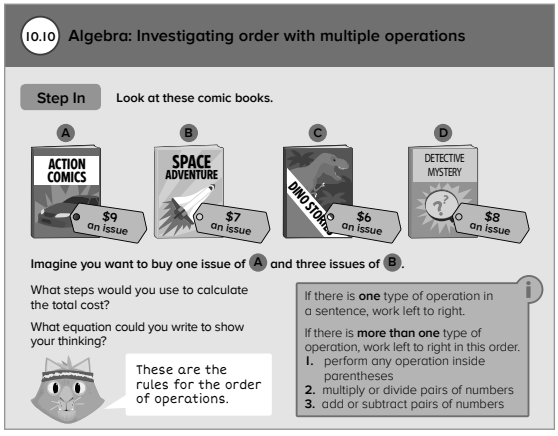
- Students work with multiplying a single-digit number by multi-digit numbers using the **partial products** strategy. Multi-digit numbers are decomposed into place- value parts so the multiplication is easy to do using an array model. Each part is multiplied (as in area), then added together, resulting in the total product.
- Students use the **associative property** to multiply. When one factor is doubled and the other halved, the quantity of the product is the same. An array model illustrates why it works.



Students use a rectangular array to show how one factor can be doubled and the other can be halved to figure out the total.

Algebra

- Students discuss everyday situations that involve more than one operation. Students consider in which order to do the operations to ensure the correct result.



In this lesson, students learn the rules for the order of operations.

Ideas for Home

- Practice the doubling and halving strategy with factors such as 18 × 5. Half of 18 is 9 and double 5 is 10, so 18 × 5 = 9 × 10, which is easier to multiply mentally (90). Note: one of the factors must be even.

Glossary

- The **partial products strategy** uses the distributive property, multiplying each place value separately to get a partial product and then adding the products together, resulting in a single final product.
- The **associative property of multiplication** allows three numbers to be multiplied in any order: e.g. 2 × 3 × 4 can be (2 × 3) × 4 = 6 × 4 = 24, or 2 × (3 × 4) = 2 × 12 = 24, or (2 × 4) × 3 = 8 × 3.