3 Module 8

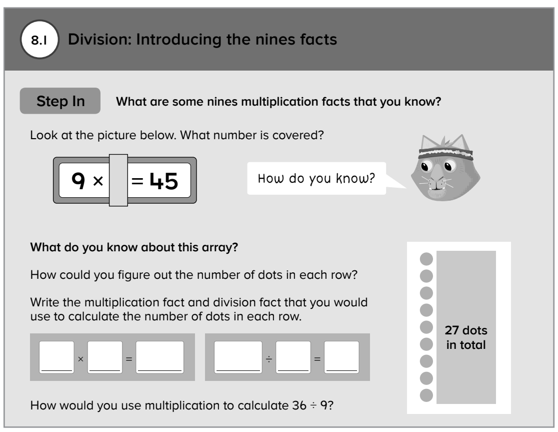
ORIGO STEPPING STONES 2.0

Core Focus

- Division: Nines, sixes, and last facts
- Common fractions: Improper fractions
- Common fractions: Equivalent fractions
- Capacity and mass: Fractions of a liter, fractions of a kilogram, and word problems

Division

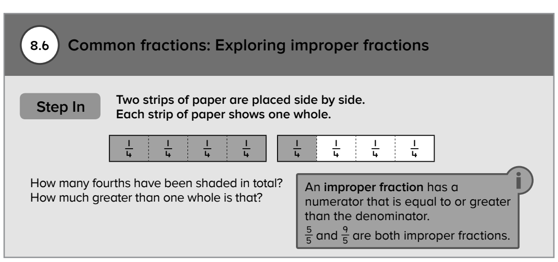
- Students extend their understanding of ×9 multiplication facts to division facts. The key is to *think* multiplication, and remember how multiplication/division **fact families** are formed.
- Arrays can model the relationship between multiplication and division by showing the total and how many rows there are, or how many are in each row.



In this lesson, students use nines multiplication to figure out how to divide by 9.

Fractions

- Students consider the relationship between the **numerator** and the **denominator** of **improper fractions**.



- Students visualize fractions using a number line. The denominator tells how the distance between whole numbers (0 to 1, or 1 to 2, etc.) is split; the numerator tells the number of jumps along those dividing marks.

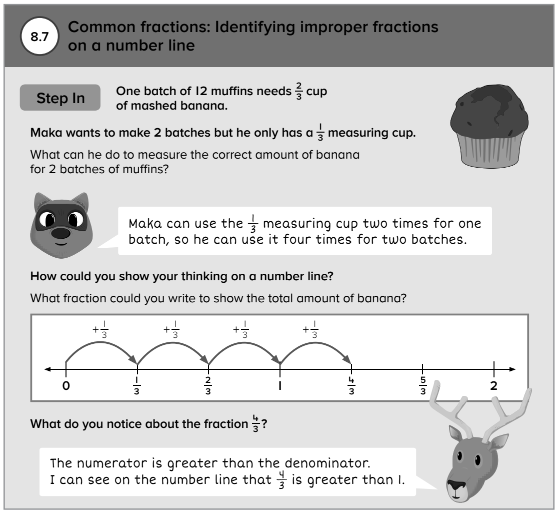
Ideas for Home

- Continue to practice the ×9 facts and make connections to the division facts. Encourage your child to *think* multiplication. E.g. for 63 ÷ 9, *think* 9 × ? = 63.
- When cooking, use measuring cups and spoons to review equivalency. E.g. $\frac{1}{2}$ cup is equivalent to $\frac{2}{4}$ cup.

Glossary

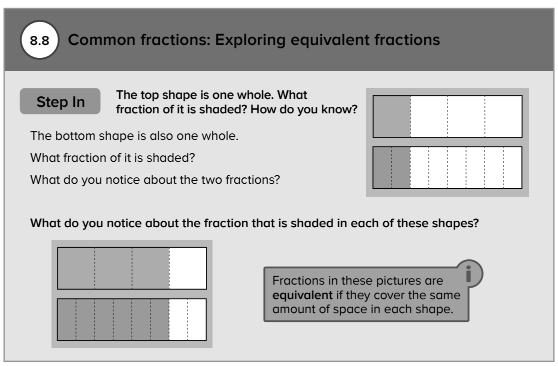
- Each **fact family** has two multiplication facts and two related division facts, which use the same three numbers. E.g. 9 × 3 = 27, 3 × 9 = 27, 27 ÷ 9 = 3, and 27 ÷ 3 = 9 are a fact family using the numbers 9, 3, and 27.
- The top number of a fraction is the **numerator**, the count of equal parts being considered.
- The bottom number of a fraction is the **denominator**, the total number of equal parts in the whole.
- An **improper fraction** has a numerator that is equal to, or greater than, the denominator. E.g. $\frac{6}{6}$ and $\frac{9}{6}$ are both improper fractions.

- Students use a number line to explore fractions that are beyond one whole.



In this lesson, students use number lines to explore the additive nature of fractions.

- Area models help students see why a shape's shaded area can be called different fraction names, depending on how many equal parts fill the whole. E.g. $\frac{1}{4}$ and $\frac{2}{8}$ can refer to the same shaded area, so they are **equivalent fractions**.



In this lesson, students find different ways to show the same fractional parts of one whole.

Measurement

- Students practice reading masses (weights) in kilograms and parts of a **kilogram**. They make the connection that reading fractional marks on a scale ($\frac{1}{4}$, $\frac{1}{2}$, $\frac{3}{4}$) involves the same skills as reading marks on a number line.
- Since the metric system is based on ×10, it is a convenient real-life context to practice ×10 and fractions of a unit because the numbers are easy to work with.
- Students are introduced to fractions of a **liter**.

Ideas for Home

- Cut a rectangular pan of food (e.g. brownies, lasagna) into rows and columns of equal portions. Count the portions by unit fractions. E.g. if a lasagna is cut into 12 equal pieces, count the pieces of the total lasagna: "$\frac{1}{12}$, $\frac{2}{12}$, $\frac{3}{12}$, ... to $\frac{12}{12}$."
- Practice reading a scale when shopping in the fruit and vegetable aisle. Use the scales to weigh the produce and have your child read the mass (weight) in kilograms (if possible).

Glossary

- **Unit fractions** are fractions that have a numerator of 1, e.g. $\frac{1}{2}$, $\frac{1}{3}$, and $\frac{1}{4}$.
- **Equivalent fractions** are fractions described in different ways but cover an area that is the same fraction of a whole. E.g. $\frac{3}{4}$ is equivalent to $\frac{6}{8}$.
- There are 1,000 grams (g) in **1 kilogram** (kg).
- There are 1,000 mililiters (mL) in **1 liter** (L).