4 Module 7

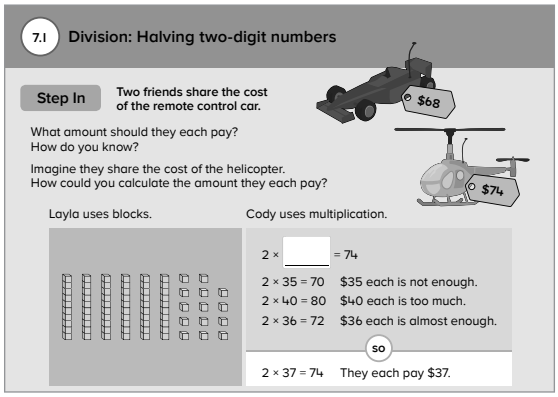
ORIGO STEPPING STONES 2.0

Core Focus

- Division: Partitioning with whole number quotients and remainders
- Common fractions: Adding and subtracting with the same denominators
- Common fractions: Mixed numbers
- Common fractions: Interpreting line plots to solve word problems

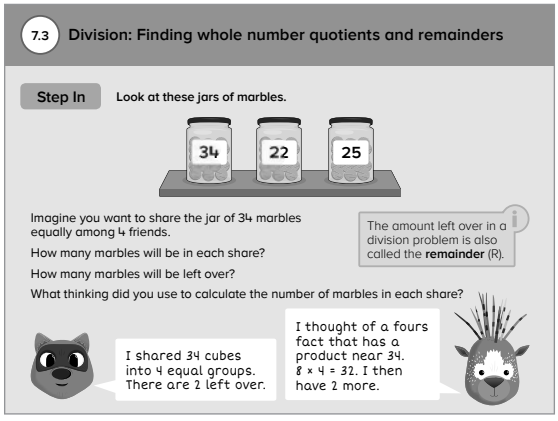
Division

- Students review the basic concept of division as fair sharing. They focus on the important strategy of **partitioning** (pulling apart) the number that is being divided into parts to be shared, piece by piece. Usually, students start by first sharing the hundreds, then the tens, and then the ones.
- Students build on what they already know about multiplication to make sense of the **division equation**.



In this lesson, students halve a two-digit number.

- In this module, students are presented with division situations where some items are left over after sharing equally. The term **remainder** is introduced to describe the quantity that is left over.



In this lesson, students find whole-number quotients and determine the amount left over (remainder).

- Students use known multiplication facts to partition dividends. Students split these dividends into smaller parts so each part can be divided separately, making the overall division easier.

Ideas for Home

- Making sense of division relies on recognizing the related multiplication facts. To know how to divide 172 into 4 equal shares, students need to see that 172 can be regrouped as 16 tens and 12 ones, both of which are easily divided by 4.
- To practice division facts, review basic multiplication facts until they can be repeated automatically.
- Practice real-life problems with remainders. E.g. "I want to divide 22 cards evenly among 6 friends. What is 22 ÷ 6?"
- If this is challenging, model the division problem using multiplication: "I need to get close to 22 using multiplication times 6. I know that 5 × 6 = 30, but this is greater than 22. I know that 2 × 6 = 12, but this is less than 22. I know that 3 × 6 = 18 is close but there are 4 left over. Since 4 is less than 6, I cannot make another group of 6, so 22 ÷ 6 = 3 with a remainder of 4."

Glossary

- A **division equation** is made up of the dividend (total), the divisor (the number of groups), and the quotient (the number in each group).

12 ÷ 3 = 4
dividend divisor quotient

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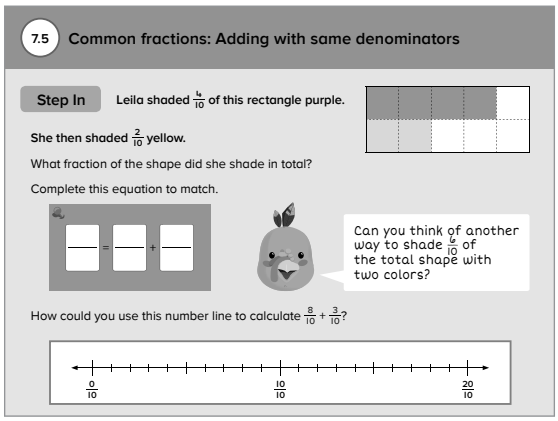
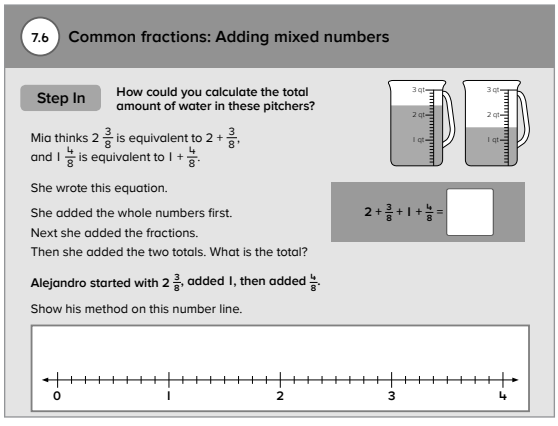
Common fractions

- Students explore the addition of fractions with the same denominator, e.g. $\frac{4}{10} + \frac{2}{10} = \frac{6}{10}$, using an area model or a number line.



- Students have already worked with improper fractions. This module introduces **mixed numbers**.
- Students are encouraged to think about different ways mixed numbers can be composed and decomposed into whole numbers and common fractions, as well as improper fractions.
- Area models can illustrate adding mixed numbers, but this module focuses on using the number line. It is a more flexible model that easily demonstrates various composing and decomposing strategies for adding mixed numbers.



In this lesson, students add mixed numbers.

- In this module, students also focus on subtracting common fractions, and using a number line to find the difference between **mixed numbers**.

Ideas for Home

- Encourage your child to draw pictures of fractions to better understand addition. A common error is to add across the numerators and the denominators (e.g. $\frac{4}{10} + \frac{2}{10} = \frac{6}{20}$). Drawing pictures can help prevent this error.
- Point out mixed numbers in recipes, and ask your child to convert mixed numbers to improper fractions. E.g. $2\frac{2}{3}$ is equivalent to $\frac{8}{3}$.
- Talk about mixed numbers and the ways they can be explained: by talking about them, by drawing pictures, and by writing them as improper fractions.
- Encourage your child to explain the number line representations, and also to think about and draw number lines or other pictures whenever they are working with fractions.
- Practice subtracting mixed numbers that require decomposing. E.g. $7\frac{2}{5} - 4\frac{4}{5}$. Decompose $7\frac{2}{5}$ into $6 + \frac{5}{5} + \frac{2}{5}$, which equals $6\frac{7}{5}$. Then subtract $6\frac{7}{5} - 4\frac{4}{5}$, which results in $2\frac{3}{5}$.

Glossary

- A **mixed number** is a whole number and a common fraction added together and written as a single number without the addition symbol.