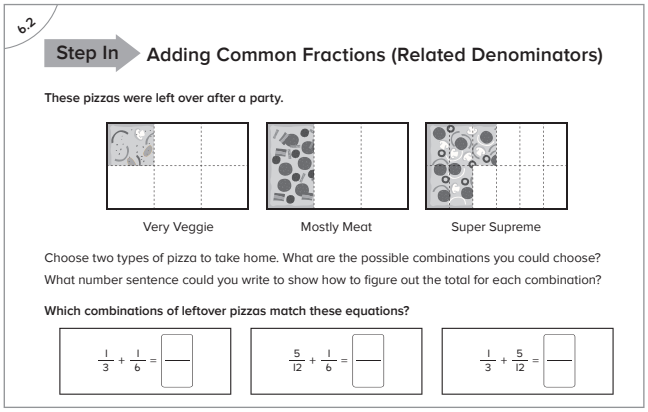
ORIGO STEPPING STONES TEXAS

Core Focus

- Adding common fractions and mixed numbers (same, related, and different denominators)
- Solving problems involving addition of common fractions and mixed numbers
- Converting length measurements within the metric system (between centimeters and meters, millimeters, centimeters and meters and meters and kilometers)

Adding Common Fractions

- Students make sense of fraction addition through visualization using area models (rectangles) and length models (number lines).
- The models help students identify which fractions should be rewritten to make the denominators the same, which means the fractions can easily be added.


6.2

Step In Adding Common Fractions (Related Denominators)

These pizzas were left over after a party.

Very Veggie | Mostly Meat | Super Supreme

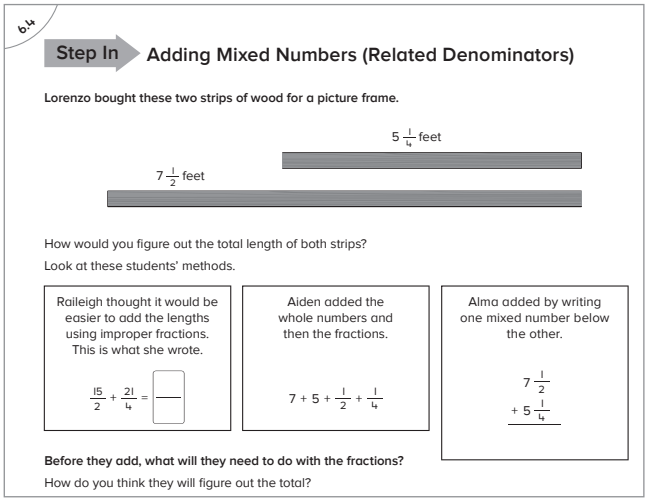
Choose two types of pizza to take home. What are the possible combinations you could choose?
What number sentence could you write to show how to figure out the total for each combination?

Which combinations of leftover pizzas match these equations?

$\frac{1}{3} + \frac{1}{6} = \square$ $\quad \frac{5}{12} + \frac{1}{6} = \square$ $\quad \frac{1}{3} + \frac{5}{12} = \square$

In this lesson, students use area models to help add fractions with different but related denominators.

- When adding fractions that have different, unrelated denominators, such as $\frac{1}{3} + \frac{1}{4}$, students think of multiples for each denominator to figure out a common denominator. In this case, each fraction could be rewritten with 12ths as the common denominator (i.e. $\frac{4}{12} + \frac{3}{12} = \frac{7}{12}$).


6.4

Step In Adding Mixed Numbers (Related Denominators)

Lorenzo bought these two strips of wood for a picture frame.

$5\frac{1}{4}$ feet

$7\frac{1}{2}$ feet

How would you figure out the total length of both strips?
Look at these students' methods.

Raileigh thought it would be easier to add the lengths using improper fractions. This is what she wrote.

$\frac{15}{2} + \frac{21}{4} = \square$

Aiden added the whole numbers and then the fractions.

$7 + 5 + \frac{1}{2} + \frac{1}{4}$

Alma added by writing one mixed number below the other.

$7\frac{1}{2}$
$+ 5\frac{1}{4}$

Before they add, what will they need to do with the fractions?
How do you think they will figure out the total?

In this lesson, students describe strategies for adding mixed numbers with related denominators.

Ideas for Home

- Finding common denominators is a key skill when working with fractions. Say two numbers less than 12 (e.g. 3 and 5) and ask your child to find a common multiple. (E.g. the multiples for 3 are 3, 6, 9, 12, 15, and the multiples for 5 are 5, 10, 15. A common multiple for 3 and 5 is 15.
- Help your child develop flexibility in thinking about fractions by talking about equivalent fractions in everyday activities. If a pizza is cut into eight equal slices and your child eats two slices, ask them to describe how much they ate (i.e. $\frac{2}{8}$ or $\frac{1}{4}$ of the pizza).

Glossary

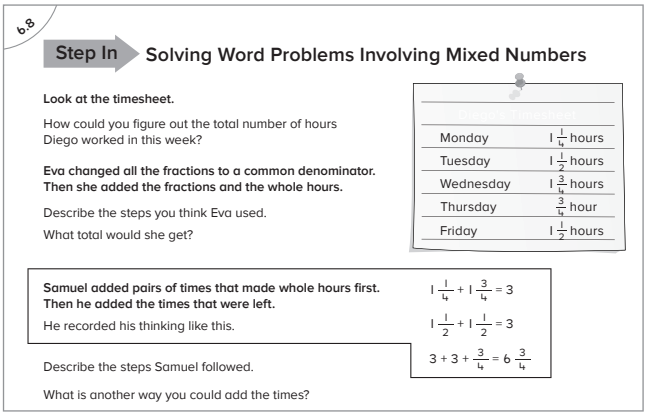
Add improper fractions

$1\frac{3}{4} + 2\frac{5}{8}$
$\frac{7}{4} + 2\frac{5}{8}$
$\frac{14}{8} + \frac{21}{8}$
$= \frac{35}{8}$

Add whole numbers and fractions

$1\frac{3}{4} + 2\frac{5}{8}$
$1\frac{6}{8} + 2\frac{5}{8}$
$(1 + 2) + (\frac{6}{8} + \frac{5}{8})$
$= 3\frac{11}{8}$

- Students think about strategies for adding fractions that are greater than 1 (improper fractions such as $\frac{12}{5}$, or mixed numbers such as $2\frac{2}{5}$).
- Students choose whether to add the whole numbers and fractions separately, or to change the mixed numbers to improper fractions before adding.
- Depending on which strategy students use to add mixed numbers, the answer will be a mixed number or an improper fraction. Students see that both methods result in equivalent answers.


6.8

Step In Solving Word Problems Involving Mixed Numbers

Look at the timesheet.

How could you figure out the total number of hours Diego worked in this week?

Eva changed all the fractions to a common denominator. Then she added the fractions and the whole hours.

Describe the steps you think Eva used.

What total would she get?

Monday	$1\frac{1}{4}$ hours
Tuesday	$1\frac{1}{2}$ hours
Wednesday	$1\frac{3}{4}$ hours
Thursday	$\frac{3}{4}$ hour
Friday	$1\frac{1}{2}$ hours

Samuel added pairs of times that made whole hours first. Then he added the times that were left.

He recorded his thinking like this.

$1\frac{1}{4} + 1\frac{3}{4} = 3$

$1\frac{1}{2} + 1\frac{1}{2} = 3$

$3 + 3 + \frac{3}{4} = 6\frac{3}{4}$

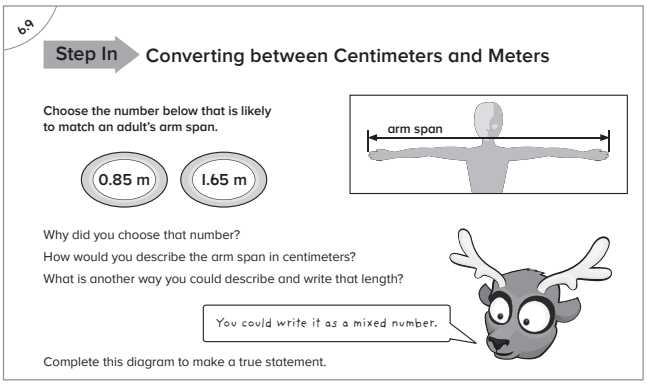
Describe the steps Samuel followed.

What is another way you could add the times?

In this lesson, students solve everyday situations that involve adding fractions and mixed numbers.

Measurement

- In Grade 5, students convert length measurements within the metric system. In earlier grades, students explored the relationships among various measurements of length in the metric system and learned that a **centimeter** (cm) is about the width of a finger, and a **meter** (m) is a little longer than a yard, and that 100 cm = 1 m.
- Since the metric system is a base-10 system, the conversions are easier to work with than the customary US measurement system. Relationships like 10 millimeters = 1 centimeter or 100 centimeters = 1 meter are more convenient than 12 inches = 1 foot or 3 feet = 1 yard.
- Understanding the metric system gives a real-world context for multiplying and dividing by magnitudes of 10.


6.9

Step In Converting between Centimeters and Meters

Choose the number below that is likely to match an adult's arm span.

0.85 m

1.65 m

Why did you choose that number?

How would you describe the arm span in centimeters?

What is another way you could describe and write that length?

Complete this diagram to make a true statement.

In this lesson, students convert between centimeters and meters, and use different ways to describe length, such as a fraction of a meter or decimal fraction.

Ideas for Home

- Find objects around the house that are longer than a meter, e.g. bookcase, curtain, rug, and kitchen table, and record the measurement in different ways (fraction of a meter and decimal fractions). Convert the length into millimeters and centimeters.
- Use real world situations to demonstrate how to convert between units of length e.g. " I need to cut this paper 35 cm or 350mm in length, the pool is 50 meters or 5000 cm in length, "Today, we drove 27 kilometers, how much would that be in meters?" Talk about which unit of length best fits the situation and why.

Glossary

Customary Units of Length		Metric Units of Length	
12 inches	1 foot	10 millimeters	1 centimeter
3 feet	1 yard	100 centimeters	1 meter
1,760 yards	1 mile	1,000 meters	1 kilometer

- The **millimeter** (mm) is a tiny measure of length (one-thousandth of a meter, or one-tenth of a centimeter). The prefix "milli-" means one-thousandth.
- The prefix "centi-" in **centimeter** means one-hundredth. A **centimeter** is one-hundredth of a meter.
- The **meter** is the fundamental unit of length in the metric system.
- The prefix "kilo" is derived from a Greek word which means "thousand." A **kilometer** is 1 thousand meters just as a kilogram is 1 thousand grams.

100915