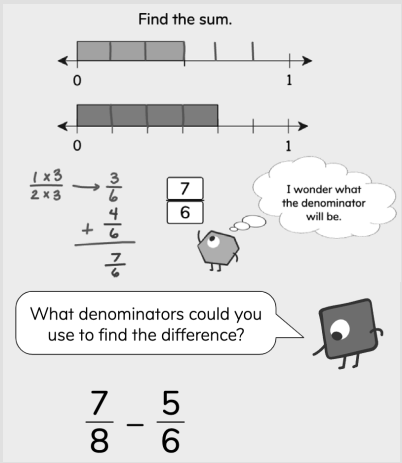
InsightMath California

Extending Equivalence, Addition, and Subtraction to Fractions

Family Guide | Grade 5 | Unit 5

Your student is exploring how quantities can be added and subtracted when the units are the same size.

Key Math Ideas

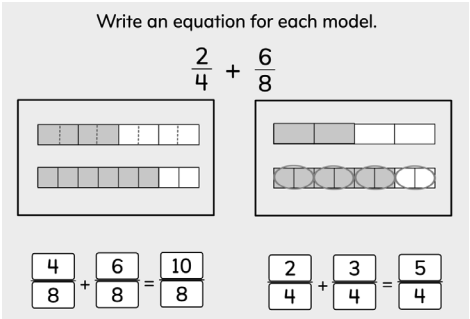


In this unit your student will build on their foundational understanding from grade 4 that for fractions to be added or subtracted, their parts must be the same size or have a common denominator. Students recognize that they can add and subtract fractions and mixed numbers with denominators that are not common by finding equivalent fractions with common denominators. For example, in the problem below to the left, students multiply the numerator and denominator of $\frac{2}{3}$ by 3 to rewrite it as the equivalent fraction $\frac{6}{9}$. Then students can add $\frac{6}{9} + \frac{10}{9}$ because they have the same denominator and same-sized parts.

Students also recognize that they can find equivalent fractions by multiplying the denominators by each other or by finding a common multiple of both denominators. For example, in the problem to the right, students could choose to use the denominator 48 (8 × 6 = 48) or the denominator 24 (8 × 3 = 24 and 6 × 4 = 24).

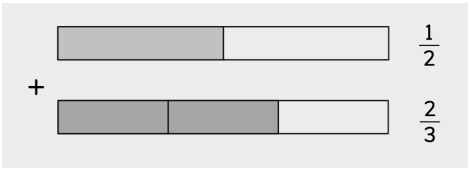
→ In the beginning of the unit, your student will learn to

- solve word problems involving the addition and subtraction of fractions and mixed numbers with a common denominator;
- use estimation to explain why their answer is or is not reasonable (for example, "I think a reasonable estimate for $\frac{3}{8} + \frac{5}{8}$ is about 1 because $\frac{3}{8}$ is about half and $\frac{5}{8}$ is also about half.



→ In the middle of the unit, your student will learn to

- explain why fractions and mixed numbers need to have the same-sized parts (common denominators) to add or subtract;
- add and subtract fractions and mixed numbers with denominators that are not common but one is a multiple of the other.



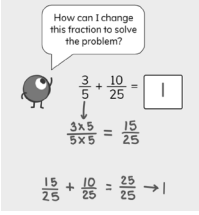
In this problem, since 2 and 3 are not multiples of each other,

→ By the end of the unit, your student will learn to

- explain how multiplication can be used to find equivalent fractions before adding or subtracting fractions with denominators that are not common;
- add and subtract fractions and mixed numbers with denominators that are not common and neither is a multiple of the other.

Helpful Hint

Sometimes equivalent fractions can be found by dividing, providing fractions that are easier to work with. For example, the problem to right could also be solved by reducing $\frac{10}{25}$ to $\frac{2}{5}$ by dividing the numerator and denominator by 5. This would allow students to add $\frac{3}{5} + \frac{2}{5}$ instead of $\frac{15}{25} + \frac{10}{25}$.



Tips for Supporting Your Student at Home

Questions to Ask Your Student

→ In the beginning of the unit:

- How can you add or subtract fractions with same denominators? *(hint: try the same question with mixed numbers)*
- How do you know if your answer is reasonable??

→ In the middle of the unit:

- How can you add and subtract fractions when the denominators are related? (hint: try the same question with mixed numbers)
- How do you know if your answer is reasonable?

→ By the end of the unit:

- How can you add and subtract fractions when the denominators are unrelated? (hint: try the same question with mixed numbers)
- How can you use what we know about multiplication facts to make denominators common?

If...	Try...
while adding mixed numbers your student just adds the whole numbers and does not understand what to do with the fractions . . .	ask your student to estimate first. For example, when adding $3\frac{3}{4} + \frac{1}{3}$, they recognize that $3\frac{3}{4}$ is close to 4 and $1\frac{1}{3}$ is close to 1 so they estimate that $3\frac{3}{4} + 1\frac{1}{3}$ should be about 5.

Student Strengths Spotlight

I take time to understand the problem and look for entry points.	Before starting to solve, students take time to understand and make sense of the problem.
I do not give up, even when a problem is challenging.	Challenging problems help students expand their thinking and reasoning. Students recognize that challenges can help them learn!
I use math to represent real-life situations, and I create contexts to match the given math.	In this unit, students represent real world situations involving addition and subtraction of fractions.
I notice patterns and try to apply them.	Recognizing patterns in fractions supports students to think flexibly and expand their strategies.

Try This Together!

- **Recipe Fractions:** Try out a recipe with your student and use the opportunity to ask them questions involving addition or subtraction of fractions or mixed numbers. Here are some ideas:
- **Find the Total:** In a recipe with different but similar ingredients, ask students to find the total. For example, if the recipe calls for $\frac{3}{4}$ cup white sugar and $\frac{2}{3}$ cup brown sugar, ask your student how much total sugar does the recipe use?
- **How Much More?** Compare amounts in a recipe. For example, ask "Does the recipe uses more sugar or flour? How much more?" Ask your student to share their subtraction strategy.
- **Tower of Books**. Ask your student to choose 3 books they would want to use to make a tower. Ask them to measure each book, writing the measurements in inches as mixed numbers. First, have them estimate to find an estimate of the height of the 3 books if stacked on top of one another. Then have your student add the measurements and explain their addition strategy. Compare their estimate to their actual sum, then extend by having them try to actually make the book tower and measure it with a tape measure. This can be done with other objects, too!