Standard 5.NF.2 Solve real-world problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators by, for example, using visual fraction models or equations to represent the problem. Use **benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers.** example: 2/5 + 1/2 < 1
Essential skill mentally adding fraction to an approximate sum.

Misconception/Error
The student does not have an effective strategy for using benchmark fractions to locate and compare the fractions.

*Provide direct instruction on the meaning of fractions (between zero and one). Explicitly describe the meaning of the numerator and the denominator in fractions. Use number lines as a context for understanding fractions and their relative sizes.

*Use fraction tiles to demonstrate for the student that the larger the denominator, the smaller the part of the whole. Line up the tiles representing ½ is larger than ⅓ is larger than, ¼ is larger than, ⅕ is larger than, ⅙ is larger than, ⅛ is larger than 1/10.

Ask the student, "How does the size of the part change as the denominator increases?"

*Guide the student to scale a number line and place fractions on a number line. Once the student is able to correctly scale a number line, have the student use the number line to compare fractions.

Instructional Implications

- **Model how to represent two fractions with different denominators on a number line. Explain to the student how to use benchmark fractions to help in locating fractions on a number line.**
  - **Learnzillion: https://learnzillion.com/lesson_plans/5380-place-unit-fractions-on-a-number-line**

Use equivalent fractions as a strategy to add and subtract fractions (Standards 5.NF.1–2).

Key Elements:
http://www.cpalms.org/Public/PreviewResourceLesson/Preview/49761

Prior Knowledge: What prior knowledge should students have for this lesson?

- **Students need to be able to compare fractions with like denominators.**

- Students need experiences using fraction circles and/or fraction tiles as models for fractions.
- Students need experience working with equivalent fractions and comparing fractions.
- Students need to understand that a fraction with the same numerator and denominator is equivalent to 1 whole (4/4=1 whole or 9/9=1 whole).
- Students need to be able to use manipulatives to model fractions 3/4 using fraction tiles as three 1/4 tiles, as well as on a number line.
- Students need to know what half of a number is, such as: 4,6,8,10,12 and that this is found by dividing a number by 2.

Guiding Questions: What are the guiding questions for this lesson?

1. How do you say this fraction?
2. What does this fraction mean?
3. How can this fraction be shown using a model?
4. How can fractions be compared?
5. How is one whole shown as a fraction?
6. What is common to all fractions that are equivalent to 1/2?
7. What does it mean to estimate?
8. Why estimate?
9. What are some real world examples that would require estimation?
10. What are some real world examples that would require estimation of fractions?
11. What is a benchmark fraction and how does it help to estimate?
12. What is a strategy you can use to estimate a fraction using the benchmarks 0, 1/2, or 1 whole?
13. How did you decide which benchmark fraction to use to estimate?

Name _____
Date _____
Directions: Put a checkmark in the box under the benchmark number (0, ½, or 1) that is closest to each fraction.

Fraction	½	

Difficulty writing equations

Extra Help If students are having difficulty writing an equation, ask them to write word equations before they write symbolic equations.

For example, for Problem 16.

before diet − decrease = after diet

$$2\frac{3}{4} \quad - \quad x \quad = \quad 1\frac{7}{8}$$

Missing Numbers   Activity Card 1-12 ●

Work: In Pairs

1. **Explain** When the numbers are filled in, will this problem be an addition problem or a subtraction problem? Explain how you know.

1. Possible answer: Addition because you need to combine the two distances to get the total distance.

> Tomás is riding his bike from his home to school. He has gone _____ miles so far, and he has _____ miles left to go. What is the distance from Tomás's home to his school?

2. Fill in the blanks with appropriate mixed numbers and then solve the word problem. **Answers will vary.**

3. **Explain** When the numbers are filled in, will this problem be an addition problem or a subtraction problem? Explain.

3. Possible answer: Subtraction because you are taking an amount away from a starting amount.

> A carton contains _____ cups of milk. Lucy drinks _____ cups with her lunch. How much milk is left in the carton?

4. Fill in the blanks with appropriate mixed numbers and then solve the word problem. **Answers will vary.**

Unit 1, Lesson 12

Difficulty with benchmark and rounding to benchmark

Write "$5\frac{7}{8}$ *rounds* to 6" on the board. Say: $5\frac{7}{8}$, rounded to the nearest whole number, is 6 because $\frac{7}{8}$ is greater than $\frac{1}{2}$.

BEGINNING

Say: We round $5\frac{7}{8}$ to 6 because $\frac{7}{8}$ is greater than $\frac{1}{2}$. Have students repeat.

INTERMEDIATE

Ask: Why is $5\frac{7}{8}$, rounded to the nearest whole number, equal to 6? $\frac{7}{8}$ is greater than $\frac{1}{2}$

ADVANCED

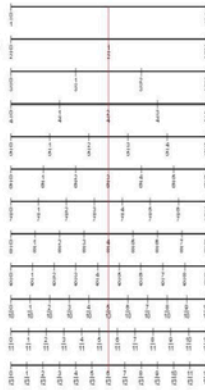Ask students to explain how to round $5\frac{7}{8}$ to the nearest whole number.

Benchmarks and Number Lines

Work: In Pairs

Use:

- Equivalent Fractions (TRB M46)
- Ruler

1. Put the edge of your ruler on $\frac{1}{2}$ on the halves number line and $\frac{6}{12}$ on the twelfths number line. Draw a line through these two points. This line marks the point equivalent to $\frac{1}{2}$ on each number line.

2. Locate each fraction on a number line. Then determine whether the fraction is closer to 0, closer to $\frac{1}{2}$, or closer to 1.

   $\frac{9}{10}$ **1** $\frac{5}{8}$ $\frac{1}{2}$ $\frac{2}{9}$ **0** $\frac{8}{11}$ $\frac{1}{2}$

3. For each problem, determine whether each addend is closer to 0, closer to $\frac{1}{2}$, or closer to 1. Then estimate the sum.

   $\frac{8}{9} + \frac{1}{12}$ **1** $\frac{2}{7} + \frac{5}{6}$ **$1\frac{1}{2}$** $\frac{5}{11} + \frac{1}{5}$ **$\frac{1}{2}$**