TEACHER'S GUIDE **Overview** *continued*

i-Ready Classroom Mathematics lessons consist of three types of sessions: Explore, Develop, and Refine. The following is a walkthrough of the planning and support features within the Teacher's Guide for a Develop session. You will find many of the same features in the Explore and Refine sessions.

Lesson Overview provides information for use in planning whole class instruction, small group differentiation, and independent learning opportunities.

Content Objectives identify the mathematical learning goals for the lesson, while **Language Objectives** indicate the language students are expected to understand and produce as they work on those goals.

Prior Knowledge are opportunities to monitor understanding and identify students' learning needs.

Math Vocabulary is defined in the context of lessons, and academic words can be explored using the **Academic Vocabulary** Routine.

Learning Progression sets context for the mathematics of the lesson, providing information on how the content fits across and within grade levels—what students previously learned, what they are learning now, and what they will be learning next.

LESSON 14

Overview │ Add and Subtract in Word Problems

STANDARDS FOR MATHEMATICAL PRACTICE (SMP)

SMP 1, 2, 3, 4, 5, and 6 are integrated into the Try-Discuss-Connect framework.*
This lesson provides additional support for:

5 Use appropriate tools strategically.

6 Attend to precision.

7 Look for and make use of structure.

* See page 1q to learn how every lesson includes these SMP.

Objectives

Content Objectives

- Add and subtract fractions and mixed numbers with unlike denominators to solve word problems.
- Add and subtract decimals to hundredths to solve word problems.
- Use benchmark fractions to estimate fraction sums and differences.
- Use rounded decimals to estimate decimal sums and differences.
- Use estimation to check whether a solution is reasonable.

Language Objectives

- Discuss a strategy for solving word problems involving addition and subtraction of mixed numbers or decimals.
- Justify the reasonableness of a sum or difference by comparing it to an estimate.
- Disagree with an idea and explain why during partner discussion.

Prior Knowledge

- Compare a fraction to a benchmark fraction.
- Add and subtract fractions and mixed numbers with unlike denominators.
- Round and compare decimals.
- Add and subtract decimals to hundredths.
- Write equations to represent and solve word problems.

Vocabulary

Math Vocabulary

There is no new vocabulary. Review the following key terms.

benchmark fraction a common fraction that you might compare other fractions to. For example, $\frac{1}{4}$, $\frac{1}{2}$, $\frac{2}{3}$, and $\frac{3}{4}$ are often used as benchmark fractions.

common denominator a number that is a common multiple of the denominators of two or more fractions.

equivalent fractions two or more different fractions that name the same part of a whole or the same point on a number line.

Academic Vocabulary

actual real; precise.

reasonable sensible; makes sense.

Learning Progression

In previous lessons students added and subtracted fractions and mixed numbers with unlike denominators. They found a common denominator and wrote equivalent fractions in order to add and subtract. Students also rounded decimals to given place values, and added and subtracted decimals to hundredths.

➤

In this lesson students apply their understanding of adding and subtracting fractions with unlike denominators and decimals to solving word problems. They estimate sums and differences of fractions and mixed numbers, add and subtract fractions and mixed numbers with unlike denominators, and check whether the results are reasonable. They use estimation strategies based on benchmark fractions and rounded decimals.

➤

In later grades students will solve word problems involving adding and subtracting rational numbers.

269a Lesson 14 Add and Subtract in Word Problems

Pacing Guide

Items marked with ⓓ are available on the **Teacher Toolbox**.

	MATERIALS	DIFFERENTIATION
SESSION 1 **Explore** Adding and Subtracting in Word Problems (35–50 min)		
• **Start** (5 min) • **Try It** (5–10 min) • **Discuss It** (10–15 min) • **Connect It** (10–15 min) • **Close: Exit Ticket** (5 min) **Additional Practice** (pages 273–274)	Math Toolkit fraction bars, fraction circles, fraction models, fraction tiles, grid paper, number lines Presentation Slides ⓓ	**PREPARE** Interactive Tutorial **RETEACH or REINFORCE** Visual Model **Materials** For each student: Activity Sheet *Number Lines* ⓓ
SESSION 2 **Develop** Estimating in Word Problems with Fractions (45–60 min)		
• **Start** (5 min) • **Try It** (10–15 min) • **Discuss It** (10–15 min) • **Connect It** (15–20 min) • **Close: Exit Ticket** (5 min) **Additional Practice** (pages 279–280)	Math Toolkit fraction bars, fraction circles, fraction models, fraction tiles, grid paper, number lines Presentation Slides ⓓ	**RETEACH or REINFORCE** Hands-On Activity **Materials** For each pair: 1 set of fraction tiles **REINFORCE** Fluency & Skills Practice ⓓ **EXTEND** Deepen Understanding
SESSION 3 **Develop** Using Estimation with Decimals (45–60 min)		
• **Start** (5 min) • **Try It** (10–15 min) • **Discuss It** (10–15 min) • **Connect It** (15–20 min) • **Close: Exit Ticket** (5 min) **Additional Practice** (pages 285–286)	Math Toolkit base-ten blocks, base-ten grid paper, decimal grids, number lines, thousandths decimal place-value charts Presentation Slides ⓓ	**RETEACH or REINFORCE** Hands-On Activity **Materials** For each pair: play money (6 dollar bills, 15 dimes, 5 quarters) **REINFORCE** Fluency & Skills Practice ⓓ **EXTEND** Deepen Understanding
SESSION 4 **Refine** Adding and Subtracting in Word Problems (45–60 min)		
• **Start** (5 min) • **Monitor & Guide** (15–20 min) • **Group & Differentiate** (20–30 min) • **Close: Exit Ticket** (5 min)	Math Toolkit Have items from previous sessions available for students. Presentation Slides ⓓ	**RETEACH** Hands-On Activity **Materials** For each group: fraction circles (3 wholes, 4 one-fourths, 16 one-eighths) **REINFORCE** Problems 4–6 **EXTEND** Challenge ◆ i-Ready **Personalized Instruction**
Lesson 14 Quiz ⓓ or **Digital Comprehension Check**		**RETEACH** Tools for Instruction ⓓ **REINFORCE** Math Center Activity ⓓ **EXTEND** Enrichment Activity ⓓ

Lesson 14 Add and Subtract in Word Problems   **269b**

TEACHER'S GUIDE **Overview** *continued*

Purpose provides a roadmap of what students will be learning and doing across the session.

Start establishes a clear and accessible entry point for each session, engaging students mathematically with prerequisite content. It frequently is an opportunity to have students engage in a math talk.

Develop Academic Language provides language support for all students and is especially useful in helping EL students use and produce academic language.

Support Partner Discussion provides teachers with prompts to help students engage in meaningful peer discourse.

Make Sense of the Problem uses a language routine to help students understand the problem. See the Language Routines section on the Teacher Toolbox (under the Program Implementation tab) for suggestions on how to integrate language routines, teacher moves, and conversation tips during instruction.

LESSON 14 | SESSION 3 ■ ■ ■ ☐

Develop

Purpose
• **Develop** strategies for estimating solutions for word problems involving decimal addition or subtraction.
• **Recognize** that a decimal sum or difference is reasonable if the actual answer is close to an estimate.

START ▶ **CONNECT TO PRIOR KNOWLEDGE**

Same and Different

3.5 + 3.5	3.67 + 3.33
	A B
	C D
2.42 + 4.58	3.25 + 3.75

Possible Solutions

All have decimal number addends with sums equal to 7.

B, C, and D all have decimals parts in the hundredths.

A and D have decimal parts that are easier to work with.

WHY? Support students' facility with recognizing decimals that are easier to work with.

DEVELOP ACADEMIC LANGUAGE

WHY? Deepen understanding about *estimate* and *estimation*.

HOW? Tell students that an *estimate* or an *estimation* is an approximation. Have students find the word *estimation* in Apply It problem 8 and paraphrase the sentence using *estimate*. Then ask *When in your life can you use estimation? When in your life do you need an exact answer?*

TRY IT   SMP 1, 2, 4, 5, 6

Make Sense of the Problem
Before students work on Try It, use **Say It Another Way** to help them make sense of the problem. Confirm that students understand that they are asked to both estimate and calculate the amount of liquid in the container and that they can use the estimate to see if their solution is reasonable.

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LESSON 14   **SESSION 3** ● ● ● ○

Develop Using Estimation with Decimals

Read and try to solve the problem below.

Bobby is conducting a science experiment. He has 3.74 liters of Liquid A and 3.65 liters of Liquid B. He pours both liquids into a container.

How much liquid is in the container? Estimate and solve. Tell if your answer is reasonable.

TRY IT   🖥 Math Toolkit
Possible student work: • base-ten blocks
                                              • base-ten grid paper
Sample A   • decimal grids
                                              • number lines
Estimate: **Actual sum:**   • thousandths decimal
3.74 and 3.65 are   place-value charts
both about 4.0.
$4 + 4 = 8$ $3.74 + 3.65 = (3.0 + 0.7 + 0.04) + (3.0 + 0.6 + 0.05)$
                $= 3.0 + 3.0 + 0.7 + 0.6 + 0.04 + 0.05$
                $= 6 + 1.3 + 0.09$
                $= 7.39$

The container has 7.39 liters of liquid. Since 7.39 is close to 8.0, my answer is reasonable.

Sample B
Estimate: **Actual sum:**
3.74 and 3.65 rounded to the
nearest tenth are both 3.7. $\overset{1}{3.74}$
$3.7 + 3.7 = (3.0 + 0.7) + (3.0 + 0.7)$ $+ 3.65$
        $= 3.0 + 3.0 + 0.7 + 0.7$ $\overline{7.39}$
        $= 6.0 + 1.4$
        $= 7.4$

DISCUSS IT
Ask your partner: Can you explain that again?
Tell your partner: I agree with you about . . . because . . .

The container has 7.39 liters of liquid. Since 7.39 is close to 7.4, my answer is reasonable.

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DISCUSS IT   SMP 2, 3, 6

Support Partner Discussion
Encourage students to use the term *about* when discussing estimated solutions.

Support as needed with questions such as:
• Why did you choose the estimation strategy you used?
• What operation did you use? Why?

Common Misconception Look for students who choose decimals that are still difficult to compute with when estimating. Ask: *What decimals are equivalent to benchmark fractions? What decimals might be easier to add or subtract with? Why?* Encourage students to choose numbers they can add mentally.

Select and Sequence Student Strategies
One possible order for whole class discussion:
• concrete models to show estimates and/or the sum
• drawings to show estimates and/or the sum
• number lines used to find estimates and/or the sum
• equations used to find estimates and/or the sum

Common Misconception identifies misconceptions that lead to errors in understanding, which can then be addressed in whole class discussion as students are prompted to explain their reasoning.

Select and Sequence Student Solutions gives a range of possible strategies—from concrete to representational to abstract—for use in monitoring student work and facilitating discourse. This information can be used to make decisions about which models and strategies to share and discuss as a class.

Facilitate Whole Class Discussion

Call on students to share selected strategies. Allow time for students to think by themselves before starting the discussion.

Guide students to **Compare and Connect** the representations. Remind students to suggest other reasons that they know the solution is correct or reasonable.

ASK *How did you choose numbers for your estimate?*

LISTEN FOR Students should see that good estimates use numbers that are easy to add and close to the actual addends. They may round to the nearest whole number, tenth, or 0.25.

ASK *What strategy did you use to find the actual sum?*

LISTEN FOR Student may describe a range of models and strategies based on place value and properties of operations.

Picture It & Model It

If no student presented these models, have students analyze key features and then point out the ways each model represents:
- the addends in the problem
- a way to estimate the sum

ASK *How do the decimal grids and number line model show the addends in the problem?*

LISTEN FOR The decimal grids use shading to show the whole number and hundredths in each number. The number line shows each addend as a point.

For the decimals grids, prompt students to think about how the picture supports estimating.
- *How do decimal grids show whole numbers?*
- *Between which two whole numbers is each addend?*
- *How do the grids show which whole number is closer to the addend?*

For the number line model, prompt students to consider how the labels support estimating.
- *What does each tick mark on the number line represent? Which tick marks are labeled with numbers?*
- *Between which two labeled tick marks does the point for each addend lie?*
- *How can you tell if each addend is closer to 3.5 or to 4.0?*

Explore different ways to understand estimating with decimals.

> Bobby is conducting a science experiment. He has 3.74 liters of Liquid A and 3.65 liters of Liquid B. He pours both liquids into a container.
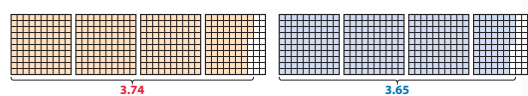>
> How much liquid is in the container? Estimate and solve. Tell if your answer is reasonable.

PICTURE IT

You can picture an estimate of the problem using decimal grids.

Both 3.74 liters and 3.65 liters are about 4 liters.
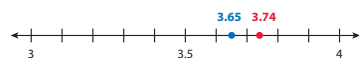

3.74   3.65

An estimate of the sum is 4 + 4.

The actual sum can be found by finding 3.74 + 3.65.

MODEL IT

You can use a number line to help estimate.

3.74 and 3.65 are both between 3.5 and 4.

3.65   3.74

3   3.5   4

An estimate of the sum is 3.5 + 3.5.

The actual sum can be found by finding 3.74 + 3.65.

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DIFFERENTIATION | EXTEND

  Deepen Understanding   `SMP 6`
Number Line Model

Prompt students to consider how to use the number line model to look at the precision of the estimates in Picture It and Model It.

ASK *Which sum, 4.0 + 4.0 or 3.5 + 3.5, produces an estimate closer to the actual sum 3.74 + 3.65? How could the number line help you decide?*

LISTEN FOR You can estimate the sum using either 4 + 4 or 3.5 + 3.5. The number line shows that both 3.65 and 3.74 are closer to 3.5 than to 4.0. Because each addend is closer to 3.5, the sum 3.5 + 3.5, or 7.0, is a more precise estimate than the sum 4 + 4, or 8.

Generalize *Is it always better to choose numbers closer to the actual addends when estimating? Think about the actual addends 3.74 and 3.65 again. What would be the pros and cons of using 3.7 + 3.7 for estimating instead of 3.5 + 3.5?* Have students explain their reasoning. Listen for understanding that 3.7 + 3.7 would produce a closer estimate than 3.5 + 3.5, but that the sum 3.7 + 3.7 is not as easy to find with mental math.

Ask/Listen for are mathematical discourse questions followed by expected student responses that support and facilitate whole class discussion.

As students share their thinking, the discourse questions can be used to make connections between student approaches and different models and representations, prompt justifications and critiques of approaches and solutions, and check conceptual understanding.

Standards for Mathematical Practice (SMP) are infused throughout the instructional model.

Deepen Understanding is a consistent opportunity to build conceptual understanding of a key lesson concept by extending mathematical discourse. The content connects a particular aspect of lesson learning to an SMP, showing how it looks in the classroom.

TEACHER'S GUIDE **Overview** *continued*

LESSON 14 | SESSION 3 ■ ■ ■ □

Develop

CONNECT IT   `SMP 2, 4, 5, 6`

- Remind students that one thing that is alike about all the representations is they show ways to replace the original addends with numbers that are easier to compute with.
- Explain that on this page, they will use those numbers to explain how to check the reasonableness of a decimal sum.

Monitor and Confirm Understanding

2 and **4** Check for understanding that:
- the actual sum is 7.39 L
- if both addends in the estimated sum are greater than the actual addends, the estimated sum will also be greater than the actual sum
- if both addends in the estimated sum are less than the actual addends, the estimated sum will also be less than the actual sum

Facilitate Whole Class Discussion

1 and **3** Tell students that these problems will prepare them to provide the explanation required in problem 5.

Be sure students understand the problems by asking them to think about what numbers to use when estimating.

ASK *Both problems ask why a number is good to use as an addend for an estimate of the sum. How can different numbers, 4 and 3.5, both be good numbers to use for an estimated sum for this problem?*

LISTEN FOR Good numbers are ones that are close to the actual addends but easy to compute with. The numbers 4 and 3.5 are both close to 3.74 and 3.65 and are easy to add. Different numbers can be used for estimating.

5 Look for the idea that you should estimate with numbers close to the actual numbers in the problem to find an estimated sum or difference. Students should explain that if the actual sum or difference is close to their estimate, then the answer is reasonable.

6 Reflect Have all students focus on the strategies used to solve this problem. If time allows, have students share their preferences with a partner.

Callout boxes

Monitor and Confirm Understanding is a way to ensure that students have made sense of mathematical learning goals.

Facilitate Whole Class Discussion provides a series of related discourse questions that illuminate the mathematical ideas of the lesson, prompting students to make connections and use that understanding to solve problems leading to abstract reasoning. These questions help students learn how to articulate a generalization of the mathematical concept.

Hands-On Activities occur consistently at strategic points in the lesson after teachers have acquired understanding of students' learning through observation and their work on questions in the Student Worktext. The activities support students who are unsure of the concept and are an opportunity for small group reteaching while other students work independently. Use of concrete objects lets students access understanding in a different way.

Student worktext page

SESSION 3 ● ● ● ○

CONNECT IT

Now you will use the problem from the previous page to help you understand how to estimate with decimals.

1 Look at **Picture It**. Why is 4 a good number to use for each addend in an estimated sum?
> **Possible answer: Each addend is close to 4, and 4 is an easy number to use for adding.**

2 Is the actual sum of the measures of Liquids A and B in **Picture It** less than or greater than the estimated sum? Why?
> **Less than; Possible answer: The actual sum is 7.39 liters. The estimated sum is 8 liters. Each addend in the estimated sum is greater than the corresponding addend in the actual sum, so this will be a high estimate of the actual sum.**

3 Look at **Model It**. Why is 3.5 a good number to use for each addend in an estimated sum?
> **Possible answer: Each addend is close to 3.5, and 3.5 is an easy number to use for adding.**

4 Is the actual sum of the measures of Liquids A and B in **Model It** less than or greater than the estimated sum? Why?
> **Greater than; Possible answer: The actual sum is 7.39 liters. The estimated sum is 7 liters. Each addend in the estimated sum is less than the corresponding addend in the actual sum, so this will be a low estimate of the actual sum.**

5 Explain how you can check if a decimal sum or difference is reasonable.
> **Possible answer: Estimate the sum or difference using numbers near the actual decimals that are easier to compute with. Compare the actual answer to the estimate. If the answer is close to the estimate, it is reasonable.**

6 REFLECT
Look back at your **Try It**, strategies by classmates, and **Picture It** and **Model It**. Which models or strategies do you like best for estimating with decimals? Explain.
> **Possible answer: I like using a number line because I can find numbers that are close to the numbers that I am adding.**

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DIFFERENTIATION | EXTEND

Hands-On Activity
Use money to model estimating with decimals.

If students have difficulty estimating decimal sums and differences, then use this activity to relate decimal amounts to money.

Materials For each pair: play money (6 dollar bills, 15 dimes, 5 quarters)
- Display the problem 2.13 + 3.84. Tell students that they can estimate the sum by thinking about rounding amounts of money to find $2.13 + $3.84.
- Ask: *What place value are you rounding to when you round to the nearest dollar? To the nearest dime?* [ones; tenths] *When you round to the nearest quarter, are you rounding to a place value?* [No; you are rounding to the nearest $\frac{1}{4}$ of a dollar.]
- Have students model an estimate for 2.13 + 3.84 using dollars and dimes. [5 dollars and 9 dimes, or 5.90] If needed, ask: *Is $2.13 closer to $2.10 or $2.20? Is $3.84 closer to $3.80 or $3.90?*
- Have students model an estimate for 2.13 + 3.84 using dollars and quarters. [5 dollars and 4 quarters, or 6 dollars; 6] If needed, ask: *Is $2.13 closer to $2.00 or $2.25? Is $3.84 closer to $3.75 or to $4.00?*
- Repeat for other decimal sums, such as 1.42 + 2.79 and 4.31 + 0.96.

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Apply It

For all problems, encourage students to think about whether a whole number or decimal would be better to use for estimating the sum or difference.

7 Estimate: 3 meters or other reasonable amount; Actual: 3.25 meters; See possible work on the Student Worktext page. Students may also use $16 - 12.5 = 3.5$ as an estimate. When finding the actual difference, students may also count on from 12.6 to 15.85 to find how many more meters of fencing Carlos needs.

8 Zaila does not need to pick more apples; See possible explanation on the Student Worktext page. Explanations should include reasoning that supports whether an actual sum, $2.56 + 1.18 + 2.79 = 6.53$, needs to be found.

CLOSE ▸ EXIT TICKET

9 See *Connect to Culture* to support student engagement.

Hugo does not have enough money; See possible work on the Student Worktext page. Students may also choose to find the actual sum, $\$8.57 + \$2.34 + \$5.25 = \$16.16$, to determine whether Hugo has enough money.

Students' solutions should indicate understanding of:

- computing estimated or actual decimal sums
- choosing appropriate addends to use for estimating
- comparing numbers, including decimals

Error Alert If students say Hugo has enough money based on their estimate of $15, **then** have them compare each addend in their estimated sum with the actual addends. Ask them to explain if their estimate is a low estimate or a high estimate. With a low estimate, discuss how the actual cost of the material for Hugo's mask is higher than $15.

APPLY IT

Use what you just learned to solve these problems.

7 Carlos has 12.6 meters of garden fencing. He needs 15.85 meters to enclose his garden. How many more meters of fencing does Carlos need to buy? Estimate to tell if your solution is reasonable. Show your work. **Possible student work:**

Estimate: $16 - 13 = 3$
3.25 is close to 3. My answer is reasonable.

Solution:
```
  15.85
- 12.60
   3.25
```

Carlos needs ___3.25___ meters more of garden fencing.

8 Zaila wants at least 6 kilograms of apples for a recipe. She picks a 2.56-kilogram bag of red apples, a 1.18-kilogram bag of green apples, and a 2.79-kilogram bag of yellow apples. Does Zaila need to pick more apples?

Use estimation only to decide. Then explain if you are confident in your estimate or if you need to find an actual sum. Show your work.

Students' reasons for estimating or finding actual sums may vary. Check that estimates are accurate. Possible student work: A low estimate for the sum is 2.5 + 1 + 2.5 = 6.0. Since the actual mass of each bag of apples is more than its estimate, Zaila will have more than 6 kilograms. I do not need to add the actual numbers.

Zaila ___does not need___ to pick more apples.

9 Hugo buys supplies to make masks for Mardi Gras. He has $15 in his pocket. He chooses green material for $8.57 and purple material for $2.34. He also wants to buy a bag of gold bells for $5.25. Does he have enough money? Estimate or find an exact answer to solve. Show your work.

Possible student work:
I can use an estimate to figure out if Hugo has enough money. Even if I use a low estimate for each item, it comes out to $8 + $2 + $5 = $15. Since the actual price of each item is more than the estimate, I know that Hugo does not have enough money.

Hugo ___does not have___ enough money.

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TEACHER'S GUIDE **Overview** *continued*

Additional Practice can be used as in-class small group work, after class work, or at-home learning.

Solutions are labeled as *Basic*, *Medium*, and *Challenge* to show the relative difficulty level in relation to the questions at hand or the standard in question. Use these to support independent practice or differentiation as needed.

LESSON 14 | SESSION 3 ■ ■ ■ □

Additional Practice

Problem Notes

Assign **Practice Using Estimation with Decimals** as extra practice in class or as homework.

1 An estimate is enough; See a possible explanation on the student page.
Basic

2 2.77 liters; Subtract the amount Latasha has, 2.73 liters, from the amount she wants to have, 5.5 liters.
Medium

Name: _____ **LESSON 14 SESSION 3**

Practice Using Estimation with Decimals

Study the Example showing how to estimate a difference using decimal grids. Then solve problems 1–4.

EXAMPLE

Latasha has 2.73 liters of apple cider. She wants to have about 5.5 liters for her party. About how much more cider does Latasha need?

One way to estimate is to round to the nearest tenth.
5.5 is given to the nearest tenth. **2.73** is about **2.7**.

−2   −0.7

Latasha needs about 2.8 liters more of apple cider.

1 Look at the Example. Does this situation require an exact answer, or is the estimate enough? Explain.

An estimate is enough; Possible answer: The problem says Latasha wants about, not exactly, 5.5 L of apple cider.

2 Suppose Latasha wants to have exactly 5.5 liters of apple cider for her party. How much more apple cider does she need? Show your work.

Possible student work:
$5.5 - 2.0 = 3.5$
$3.5 - 0.7 = 2.8$
$2.80 - 0.03 = 2.77$

Latasha needs ____2.77____ liters more of apple cider.

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Fluency & Skills Practice provides ongoing opportunities for students to accurately, flexibly, and efficiently practice mathematical procedures and operations. This can be used as in-class small group work, after-class work, or at-home learning. Student pages are available in the optional Fluency and Skills Practice Book or on Teacher Toolbox. Download PDFs or editable versions, or assign to any LMS, including Google Classroom.

Fluency & Skills Practice

Assign *Using Estimation with Decimals*

In this activity students use estimation in the context of real-world problems involving the addition or subtraction of decimals. Estimation is an efficient method of solving problems in real-world situations when an exact answer is not required, as when determining the rough sum or difference of costs between differently priced goods.

FLUENCY AND SKILLS PRACTICE | Name:

Using Estimation with Decimals
LESSON 14

Solve the problems.

1 Lori needs at least 12 liters of water to fill a water cooler. She has a container with 4.35 liters of water, a container with 3.25 liters of water, and a container with 4.85 liters of water. Does she have enough water? Use estimation only to decide. Explain why you are confident in your estimate.

2 Nia wants the total weight of her luggage to be no more than 50 kilograms. She has three suitcases that weigh 15.8 kilograms, 17.42 kilograms, and 16.28 kilograms. Is the total weight within the limit? Use estimation to decide. Explain why you know your estimate gives you the correct answer.

3 Omar measures one machine part with length 4.392 centimeters and another part with length 6.82 centimeters. What is the difference in length? Use estimation to check your answer for reasonableness.

Learning Games

Cupcake   Pizza   Cloud Machine

Interactive Practice
Assign your students additional digital practice, as needed.

Cumulative Practice
Assign Cumulative Practice to review major content from previous units, as needed.

i-Ready Personalized Instruction
A personalized instruction path helps students reinforce prerequisites and build grade-level skills.

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Additional Practice Opportunities include digital Learning Games, Interactive Practice, Cumulative Practice, and i-Ready Personalized Instruction.

3 **a.** Group plan; Students may estimate the cost of each individual plan as $60 and add $60 + $60 for an estimate of $120.

b. $5.59; group; When finding the cost of two individual plans, students may also break apart decimals and combine whole numbers and decimals separately before combining results to find the sum. They may count on from the cost of the group plan to the cost of two individual plans to find the difference.
Medium

4 Any combinations of berries except raspberries, blackberries, and blueberries (1.83 + 1.72 + 1.5); See the student page for possible student work. Look for explanations that support the given combination.
Challenge

---

3 Diego and Efia are looking at cell phone plans. They could share a group plan that costs $119.95 per month, or they could each pay for an individual plan that costs $62.77 per month.

a. Estimate which choice would cost less for Diego and Efia. Explain why.

The group plan would cost less. Possible explanation: The individual plans cost more than $60 each, so two individual plans would be more than $120, which is greater than the cost of the group plan.

b. How much money could they save per month by paying for the choice that costs less instead of the choice that costs more? Show your work.

Possible student work:

$$\begin{array}{r} \overset{1}{6}\overset{1}{2}.77 \\ +\,62.77 \\ \hline 125.54 \end{array} \qquad \begin{array}{r} \overset{1\ 14\ \ 1414}{1\,2\cancel{5}.\cancel{5}\cancel{4}} \\ -\,119.95 \\ \hline 5.59 \end{array}$$

Diego and Efia can save $5.59   by choosing a(n)   group   plan.

4 Ahanu wants to make at least 4.5 pounds, but no more than 5 pounds, of berry salad. He finds a carton of raspberries that weighs 1.83 pounds, a carton of blueberries that weighs 1.5 pounds, a carton of blackberries that weighs 1.72 pounds, and a carton of strawberries that weighs 1.29 pounds. If Ahanu wants to use three different types of berries, what is one combination of cartons he could buy? Explain. Show your work.

Possible student work:
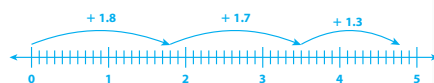
Solution Accept all combinations except raspberries, blackberries, and blueberries (5.05 pounds). Possible answer: Ahanu could buy raspberries, blackberries, and strawberries. By estimating each weight to the nearest tenth of a pound, I found a total weight of 1.8 + 1.7 + 1.3 = 4.8. The estimated weight of these three cartons is 4.8 pounds, which is between 4.5 pounds and 5 pounds.

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DIFFERENTIATION | ENGLISH LEARNERS helps teachers scaffold or amplify language in the next session so English learners can access and engage with grade-level mathematics.

DIFFERENTIATION | ENGLISH LEARNERS   Use with **Session 4** **Apply It** ▶

Levels 1–3: Reading/Writing

Use with Apply It problem 1. Read the problem aloud to students and ask them to circle the amount of blue paint and the amount of yellow paint. Have partners discuss the problem using these sentence frames:

• *Rafael has ____ ounces of blue paint.*
• *Rafael has ____ ounces of yellow paint.*
• *We need to find the amount of ____.*

Ask students to circle the term *exact answer*. Remind students that *exact answer* means they must figure out the actual or precise answer. Have partners solve the problem. Then have them record if the answer makes sense using the sentence frame:

• *Our answer makes sense because ____.*

Levels 2–4: Reading/Writing

Use with Apply It problem 1. Have students read the problem with a partner.

Have partners identify important quantities in the problem, then ask: *What are the two things you need to find?* [an estimate and an exact answer] *What do you need to explain?* [how you know the answer is reasonable]

Have students work independently then check with a partner. Then provide the following sentence frames for partners to use in discussion and writing:

• *Our estimate for the green paint is ____ because ____.*
• *Rafael makes exactly ____ ounces of green paint.*
• *Our answer is reasonable because ____.*

Levels 3–5: Reading/Writing

Use with Apply It problem 1. Have students read the problem with a partner and ask clarifying questions to make sure they understand the problem. Confirm by asking: *What 3 things does the problem ask for?* [an estimate, an exact answer, explanation why an answer is reasonable]. Then have students work independently on the problem. Partway through, remind them to show how they estimated, how they found the exact answer, and how they know the answer is reasonable.

Next, have students meet with a partner to read the explanation of why their answer is reasonable. Encourage students to make any additions or revisions needed.

Lesson 14 Add and Subtract in Word Problems   **286**