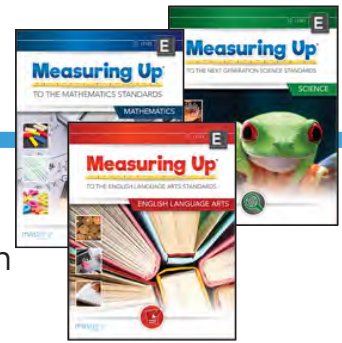# Try It Out! Sample Pack | Math | Grade 4 | Lesson 10
Measuring Up to the Standards

The **Try It Out!** sample pack features:

- 1 full student lesson with complete Teacher Edition lesson
- 1 full Table of Contents for your grade level
- Correlation to the standards

Developed to meet the rigor of the standards, *Measuring Up* employs support for using and applying critical thinking skills with direct standards instruction that elevate and engage student thinking.

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- ✔ Vocabulary in Action
- ✔ Relevant real-world connections
- ✔ Clearly identified learning goals
- ✔ Connections to prior learning

Guided Instruction and Independent Learning strengthen learning with:

- ✔ Deep thinking prompts
- ✔ Collaborative learning
- ✔ Self-evaluation
- ✔ Demonstration of problem-solving logic
- ✔ Application of higher-order thinking

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Lesson 10

SOLVE MULTI-STEP WORD PROBLEMS

4.OA.A.3

INTRODUCTION

Real-World Connection

Melissa went to meet her aunt. She spent $9 on snacks for the trip and $11 on her lunch. Then she bought a scarf for her aunt for $15. Melissa's aunt gave Melissa $20 for her birthday. Melissa had $45 when she left home. How much money did she have when she returned home from her aunt's house? Let's practice the skills in the **Guided Instruction** and **Independent Practice**. At the end of the lesson, we'll see how Melissa finds her balance!

What I Am Going to Learn

- How to solve multi-step word problems with the four basic arithmetic operations

What I May Already Know

3.OA.A.1, 4.OA.A.1, 4.NF.B.4.c

- I know how to multiply and divide whole numbers and fractions.

- I know how to add and subtract whole numbers and fractions.

- I know how to simplify using the order of operations.

Vocabulary in Action

- **Multi-step word problems** take more than one step to solve. You need to answer a few questions to find the solution. Make sure to read the problem carefully to figure out exactly what is being asked.

- It is always a good idea to estimate an answer before actually solving a problem. Figure out when to use **estimation**, or a good guess. Then, select a method for estimating. If your answer is close to your estimate, you will know that your answer is about right.

▶ **TIPS AND TRICKS**

Highlight important parts of the question. Find out what questions need to be answered to find the solution.

- Multi-step word problems can be solved using more than one **strategy**. You might add several values and then subtract the sum from another value. Or, you may find it easier to subtract those values in turn.

EXAMPLE

Lindsay bought two packages of sugar-free gum. Each pack has 82 pieces of gum. She put 7 pieces of gum in each party-favor bag. About how many party-favor bags did Lindsay make?

Step One Begin by estimating the total number of pieces of gum.

Each package has about 80 pieces of gum. Two packages have about $2 \times 80 = 160$ pieces.

Step Two Divide to find about how many bags Lindsay made.

The total number of party-favor bags with 7 pieces in each bag is $160 \div 7$. We know that $160 \div 8 = 20$. So, Lindsay made about 20 party favor bags.

EXAMPLE

What was the exact number of party favor bags Lindsay made?

Step One Write an expression for the total number of pieces of gum.

She has two packages of gum. Each pack contains 82 pieces.

2×82

Step Two Write an expression for the pieces in each bag.

She needs to divide all of the pieces of gum into 7 bags.

$(2 \times 82) \div 7$

Step Three Write an equation.

Use x to represent the number of pieces of gum in each bag.

$x = (2 \times 82) \div 7$

Step Four Solve the equation.

Multiply and then divide.

$x = (2 \times 82) \div 7$

$x = 164 \div 7$

$x = 23 \text{ R}3$

Step Five Answer the question.

Lindsay made 23 party favor bags, with 3 pieces of gum left over.

> ◀ **TIPS AND TRICKS**
>
> Before starting to solve a multi-step problem, make a list of steps. This will help to prevent you from forgetting a step.

GUIDED INSTRUCTION

▶ **SKETCH IT**

If you have trouble deciding which operations to use for the problem, try drawing a picture.

1. Dana earned $8 an hour babysitting and $6 an hour running errands for his mom. Last month, he babysat for 12 hours and ran errands for 5 hours. He wants to buy a building set that costs $250. Does he have enough money to buy the set? If not, how much more money does he need?

   Step One Write an equation for the total amount Dana earned.

   Multiply to find how much he earned from babysitting.

   8×12

   Multiply to find how much he earned from running errands.

   6×5

   Write the equation. Use m to represent the amount of money Dang made last month.

   $m = (8 \times 12) + (6 \times 5)$

   Step Two Solve the equation.

   $m = 96 + 30$

   $m = 126$

   Dana made $126 last month.

   Step Three Answer the first question: Does Dana have enough to buy the building set?

   $126 < 250$

   The amount of money he made last month is less than the cost of the building set. Dana does not have enough money.

   Step Four Answer the second question: How much more money does Dana need to buy the building set?

   Find the difference.

   Write the equation. Use b to represent the amount of money he needs.

   $b = 250 - 126$

Step Five Solve the equation.

$b =$ [ ]

Step Six Interpret the answer.

Dana needs $ [ ] more to buy the building set.

2. Ashton made 30 ounces of tuna salad. He shared $\frac{1}{6}$ of it with his friends, and $\frac{2}{5}$ of it with his family. How much tuna salad was left over?

Step One Understand the problem.

Ashton starts with 30 ounces. Since he gave some away, use subtraction. The *left over* amount is the result when the amount shared is subtracted from 30.

Step Two Write an expression for the amount of tuna salad that Ashton shared.

He gave away $\frac{1}{6}$ of the salad and $\frac{2}{5}$ of the salad.

He gave away $\frac{1}{6} + \frac{2}{5}$ of the salad in all.

Multiply the fraction of salad that he gave away by the total amount of salad he made.

$\left(\frac{1}{6} + \frac{2}{5}\right) \times 30$

Step Three Write an equation.

Use *t* to represent the amount of tuna salad that he shared with friends and family.

$t = \left(\frac{1}{6} + \frac{2}{5}\right) \times 30$, where *t* is a quantity, in ounces.

◀ TURN AND TALK

Why would the expression $30 - \frac{1}{6} - \frac{2}{5}$ be incorrect?

▶ **THINK ABOUT IT**

Multiply $\frac{1}{6}$ by $\frac{5}{5}$. Multiply $\frac{2}{5}$ by $\frac{6}{6}$.

Step Four   Solve this equation to find the actual amount that he shared.

Add the fractions by finding a common multiple of 6 and 5.

$$t = \left(\frac{1}{6} + \frac{2}{5}\right) \times 30$$

$$t = \left(\frac{5}{30} + \frac{12}{30}\right) \times 30$$

$$t = \left(\frac{17}{30}\right) \times 30$$

$$t = 17$$

Ashton gave away ⬚ ounces of tuna salad.

Step Five   Now find the amount that was left over.

Write the equation. Use r to represent the remaining tuna salad.

$$r = 30 - t$$

$$r = 30 - 17$$

$$r = \boxed{}$$

Step Six   Interpret the answer.

Ashton had ⬚ ounces of tuna salad left over.

▶ **HINT, HINT**

Add the number of pounds of carrots and pounds of potatoes together, and then multiply by 3 to get the amount that Bill grew.

3. Johnny grew 58 pounds of carrots and 40 pounds of potatoes on his farm. Bill grew 3 times as many pounds of carrots and potatoes as Johnny. Bill sold half of his carrots and potatoes to a grocery store. How many pounds of vegetables did he sell?

Ⓐ   49

Ⓑ   107

Ⓒ   147

Ⓓ   294

Ⓔ   588

How Am I Doing?

What questions do you have?

_____

_____

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How do you decide which operations are needed to solve a

multi-step problem?

_____

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What is an example of a multi-step problem that uses both

multiplication and subtraction? How about both addition

and division?

_____

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_____

◀ TURN AND TALK

Ebony has 6 packages of stickers. Each package has 8 stickers. She uses 12 stickers for each page in her scrapbook. Is it reasonable that Ebony can make 5 scrapbook pages from her stickers? Discuss with a partner. Use math to explain your answer.

Color in the traffic signal that shows how you are doing with the skill.

I am stuck.

I almost have it.

I understand the skill.

WORK SPACE

INDEPENDENT PRACTICE

Answer the questions.

1. Nishka had $85 to shop for clothes. She bought 2 tops for $12 each, 3 pairs of leggings for $10 each, and a jacket for $25. How much money does Nishka have left to spend?

    (A) $2

    (B) $6

    (C) $33

    (D) $38

2. Bruce's mom has a budget of $550 to spend on his birthday party. The cost for a cake and decorations is $14 per child. The food will cost $3 for each child. The party favor bags will cost $7 per child.

    Circle the number that correctly completes the statement.

    Bruce's mom can invite [8 14 22 30 40] children, including Bruce, to his party.

3. An ice cream company has 565 machines. 150 machines make vanilla ice cream. The rest of the machines make chocolate ice cream. 12 of the chocolate ice cream machines are out of order. Estimate the number of chocolate ice cream machines that are working.

    Is each estimate reasonable? Choose Yes or No.

    a.   310   ◯ Yes   ◯ No

    b.   400   ◯ Yes   ◯ No

    c.   410   ◯ Yes   ◯ No

    d.   450   ◯ Yes   ◯ No

4. Caleb wants to share some stickers with his class. He has 6 bags of stickers with 12 stickers in each bag. He has 1 bag of stickers with 18 stickers in it. There are 18 students in the class. How many stickers will each student receive?

Draw a line to show the order of each step in solving the problem.

$x = 90 \div 18$
$x = [72 + 18] \div 18$
$x = [(6 \times 12) + 18] \div 18$
$x = 5$

Step 1

Step 2

Step 3

Step 4

WORK SPACE

5. Kelly has 26 coloring sheets and 26 sketching sheets. She wants to store an equal number of each type of sheet in 3 folders. How many sheets can Kelly store in each folder? Use x to represent the number of sheets in each folder.

Use the numbers and variable in the box to complete the equation. Numbers can be used more than once. Write each symbol in the appropriate box to complete the equation for the problem.

3	26	x

$$\boxed{} = \frac{\boxed{} + \boxed{}}{\boxed{}}$$

6. There are four restaurants on Main Street. One week, each restaurant served exactly 65 customers for lunch and 65 customers for dinner each day. How many customers visited a restaurant on Main Street that week? Choose the correct equation and solution.

(A) 910; $C = 65 \times 2 \times 7$

(B) 1,820; $C = (65 + 65) \times 2 \times 7$

(C) 3,640; $C = (65 + 65) \times 7 \times 4$

(D) 7,280; $C = (65 + 65) \times 7 \times 4 \times 2$

▶ HINT, HINT

Read the problem carefully. Break the problem into steps.

WORK SPACE

7. **Part A**

Josh can sew 3 shirts from a piece of 18-meter fabric. How many complete shirts can he sew from 53 meters of fabric?

Write your answer in the box.

> [!NOTE]
> ⬚ shirts

Part B

Josh wants to sew a jacket from the leftover fabric. Each jacket needs 3 meters of fabric. Does Josh have enough fabric to sew the jacket? Explain how you got your answer.

_____

_____

_____

_____

_____

8. A swim club is organizing groups for summer swim classes. Each group can have up to 4 people. 135 boys, 168 girls, and 16 adults have enrolled for the classes. How many groups does the swim club have to make to get everyone in a class? Will every group have the same number of students? Explain how you got your answer.

_____

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EXIT TICKET

Now that you have mastered solving multi-step word problems, let's solve the problem in the Real-World Connection.

Melissa went to meet her aunt. She spent $9 on snacks for the trip and $11 on her lunch. Then she bought a scarf for her aunt for $15. Melissa's aunt gave Melissa $20 for her birthday. Melissa had $45 when she left home. How much money did she have when she returned home from her aunt's house?

ANNOTATED
TEACHER EDITION

CONTENTS

Introduction

Chapter 1   NUMBERS AND ALGEBRAIC THINKING

Chapter 2 OPERATIONS AND ALGEBRAIC THINKING

Chapter 3 FRACTIONS

CONTENTS

Chapter 4 MEASUREMENT AND DATA

Chapter 5 MEASUREMENT AND GEOMETRY

References

CORRELATIONS

Correlation to the Common Core State Standards

This worktext is customized to the Common Core State Standards for Mathematics.
Most lessons focus on one content standard for in-depth review.
Mathematical Practices are interwoven throughout each lesson to connect practices to content
at point-of-use and promote depth of understanding.

Common Core State Standards	Lessons
4.OA Operations and Algebraic Thinking	
A. Use the four operations with whole numbers to solve problems.	
1. Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.	3
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	9
3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	10
B. Gain familiarity with factors and multiples.	
4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	4
C. Generate and analyze patterns.	
5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	5
4.NBT Number and Operations in Base Ten	
A. Generalize place value understanding for multi-digit whole numbers.	
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	1
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	1
3. Use place value understanding to round multi-digit whole numbers to any place.	2
B. Use place value understanding and properties of operations to perform multi-digit arithmetic.	
4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.	6
5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	7
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	8

Common Core State Standards	Lessons
4.NF Number and Operations-Fractions	
A. Extend understanding of fraction equivalence and ordering.	
1. Explain why a fraction $\frac{a}{b}$ is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	11
2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	12
B. Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	
3. Understand a fraction $\frac{a}{b}$ with $a > 1$ as a sum of fractions $\frac{1}{b}$.	13, 14, 15, 17
a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	13
b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples:* $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.	14
c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	15
d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	17
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	16, 17
a. Understand a fraction $\frac{a}{b}$ as a multiple of $\frac{1}{b}$. *For example, use a visual fraction model to represent $\frac{5}{4}$ as the product $5 \times (\frac{1}{4})$, recording the conclusion by the equation $\frac{5}{4} = 5 \times (\frac{1}{4})$.*	16
b. Understand a multiple of $\frac{a}{b}$ as a multiple of $\frac{1}{b}$, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express $3 \times (\frac{2}{5})$ as $6 \times (\frac{1}{5})$, recognizing this product as $\frac{6}{5}$. (In general, $n \times (\frac{a}{b}) = \frac{(n \times a)}{b}$) .*	16
c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat $\frac{3}{8}$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	17
C. Understand decimal notation for fractions, and compare decimal fractions.	
5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express $\frac{3}{10}$ as $\frac{30}{100}$, and add $\frac{3}{10} + \frac{4}{100} = \frac{34}{100}$.*	18
6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	18
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	19

Common Core State Standards	Lessons
4.MD Measurement and Data	
A. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	
1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*	20, 21
2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	22, 23
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	24
B. Represent and interpret data.	
4. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}, \frac{1}{4}, \frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	25
C. Geometric measurement: understand concepts of angle and measure angles.	
5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	26
a.　An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.	26
b.　An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	26
6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	27
7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	28
4.G Geometry	
A. Draw and identify lines and angles, and classify shapes by properties of their lines and angles.	
1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	29
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	30
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	31

- Multi-step word problems can be solved using more than one strategy. You might add several values and then subtract the sum from another value. Or, you may find it easier to subtract those values in turn.

EXAMPLE

Lindsay bought two packages of sugar-free gum. Each pack has 82 pieces of gum. She put 7 pieces of gum in each party-favor bag. About how many party-favor bags did Lindsay make?

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What was the exact number of party favor bags Lindsay made?

Step One Write an expression for the total number of pieces of gum.

She has two packages of gum. Each pack contains 82 pieces.

2×82

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She needs to divide all of the pieces of gum into 7 bags.

$(2 \times 82) \div 7$

Step Three Write an equation.

Use x to represent the number of pieces of gum in each bag.

$x = (2 \times 82) \div 7$

Step Four Solve the equation.

Multiply and then divide.

$x = (2 \times 82) \div 7$

$x = 164 \div 7$

$x = 23$ R3

Step Five Answer the question.

Lindsay made 23 party favor bags, with 3 pieces of gum left over.

▼ **TIPS AND TRICKS**

Before starting to solve a multi-step problem, make a list of steps. This will help to prevent you from forgetting a step.

CHAPTER 2

Lesson 10

SOLVE MULTI-STEP WORD PROBLEMS

4.OA.A.3

WORDS TO KNOW
multi-step word problem
estimation
strategy

INTRODUCTION

Real-World Connection

Melissa went to meet her aunt. She spent $9 on snacks for the trip and $11 on her lunch. Then she bought a scarf for her aunt for $15. Melissa's aunt gave Melissa $20 for her birthday. Melissa had $45 when she left home. How much money did she have when she returned home from her aunt's house? Let's practice the skills in the Guided Instruction and Independent Practice. At the end of the lesson, we'll see how Melissa finds her balance!

What I Am Going to Learn

- How to solve multi-step word problems with the four basic arithmetic operations

What I May Already Know

3.OA.A.1, 4.OA.A.1, 4.NF.B.4.c

- I know how to multiply and divide whole numbers and fractions.
- I know how to add and subtract whole numbers and fractions.
- I know how to simplify using the order of operations.

Vocabulary in Action

- Multi-step word problems take more than one step to solve. You need to answer a few questions to find the solution. Make sure to read the problem carefully to figure out exactly what is being asked.
- It is always a good idea to estimate an answer before actually solving a problem. Figure out when to use estimation, or a good guess. Then, select a method for estimating. If your answer is close to your estimate, you will know that your answer is about right.

▲ **TIPS AND TRICKS**

Highlight important parts of the question. Find out what questions need to be answered to find the solution.

GUIDED INSTRUCTION

▲ SKETCH IT

If you have trouble deciding which operations to use for the problem, try drawing a picture.

1. Dana earned $8 an hour babysitting and $6 an hour running errands for his mom. Last month, he babysat for 12 hours and ran errands for 5 hours. He wants to buy a building set that costs $250. Does he have enough money to buy the set? If not, how much more money does he need?

Step One Write an equation for the total amount Dana earned.

Multiply to find how much he earned from babysitting.

8×12

Multiply to find how much he earned from running errands.

6×5

Write the equation. Use m to represent the amount of money Dang made last month.

$m = (8 \times 12) + (6 \times 5)$

Step Two Solve the equation.

$m = 96 + 30$

$m = 126$

Dana made $126 last month.

Step Three Answer the first question: Does Dana have enough to buy the building set?

$126 < 250$

The amount of money he made last month is less than the cost of the building set. Dana does not have enough money.

Step Four Answer the second question: How much more money does Dana need to buy the building set?

Find the difference.

Write the equation. Use b to represent the amount of money he needs.

$b = 250 - 126$

Step Five Solve the equation.

$b = \boxed{124}$

Step Six Interpret the answer.

Dana needs $ $\boxed{124}$ more to buy the building set.

2. Ashton made 30 ounces of tuna salad. He shared $\frac{1}{6}$ of it with his friends, and $\frac{2}{5}$ of it with his family. How much tuna salad was left over?

Step One Understand the problem.

Ashton starts with 30 ounces. Since he gave some away, use subtraction. The *left over* amount is the result when the amount shared is subtracted from 30.

Step Two Write an expression for the amount of tuna salad that Ashton shared.

He gave away $\frac{1}{6}$ of the salad and $\frac{2}{5}$ of the salad.

He gave away $\frac{1}{6} + \frac{2}{5}$ of the salad in all.

Multiply the fraction of salad that he gave away by the total amount of salad he made.

$\left(\frac{1}{6} + \frac{2}{5}\right) \times 30$

Step Three Write an equation.

Use t to represent the amount of tuna salad that he shared with friends and family.

$t = \left(\frac{1}{6} + \frac{2}{5}\right) \times 30$, where t is a quantity, in ounces.

▼ TURN AND TALK

Why would the expression
$30 - \frac{1}{6} - \frac{2}{5}$ be incorrect?

▲ THINK ABOUT IT

Multiply $\frac{1}{6}$ by $\frac{5}{5}$. Multiply $\frac{2}{5}$ by $\frac{6}{6}$.

Step Four Solve this equation to find the actual amount that he shared.

Add the fractions by finding a common multiple of 6 and 5.

$t = \left(\frac{1}{6} + \frac{2}{5}\right) \times 30$

$t = \left(\frac{5}{30} + \frac{12}{30}\right) \times 30$

$t = \left(\frac{17}{30}\right) \times 30$

$t = 17$

Ashton gave away [17] ounces of tuna salad.

Step Five Now find the amount that was left over.

Write the equation. Use r to represent the remaining tuna salad.

$r = 30 - t$

$r = 30 - 17$

$r = [\ 13\ ]$

Step Six Interpret the answer:

Ashton had [13] ounces of tuna salad left over.

3. Johnny grew 58 pounds of carrots and 40 pounds of potatoes on his farm. Bill grew 3 times as many pounds of carrots and potatoes as Johnny. Bill sold half of his carrots and potatoes to a grocery store. How many pounds of vegetables did he sell?

Ⓐ 49
Ⓑ 107
Ⓒ 147
Ⓓ 294
Ⓔ 588

▲ HINT, HINT

Add the number of pounds of carrots and pounds of potatoes together, and then multiply by 3 to get the amount that Bill grew.

How Am I Doing?

What questions do you have?

_____

_____

How do you decide which operations are needed to solve a multi-step problem?

_____

_____

What is an example of a multi-step problem that uses both multiplication and subtraction? How about both addition and division?

_____

_____

▼ TURN AND TALK

Ebony has 6 packages of stickers. Each package has 8 stickers. She uses 12 stickers for each page in her scrapbook. Is it reasonable that Ebony can make 5 scrapbook pages from her stickers? Discuss with a partner. Use math to explain your answer.

Color in the traffic signal that shows how you are doing with the skill.

I am stuck.
I almost have it.
I understand the skill.

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INDEPENDENT PRACTICE

Answer the questions.

1. Nishka had $85 to shop for clothes. She bought 2 tops for $12 each, 3 pairs of leggings for $10 each, and a jacket for $25. How much money does Nishka have left to spend?

   Ⓐ $2
   Ⓑ $6
   Ⓒ $33
   Ⓓ $38

2. Bruce's mom has a budget of $550 to spend on his birthday party. The cost for a cake and decorations is $14 per child. The food will cost $7 per child. The party favor bags will cost $3 for each child.

   Circle the number that correctly completes the statement.

   Bruce's mom can invite ___ children, including Bruce, to his party.

   8
   14
   ⃝22
   30
   40

3. An ice cream company has 565 machines. 150 machines make vanilla ice cream. The rest of the machines make chocolate ice cream. 12 of the chocolate ice cream machines are out of order. Estimate the number of chocolate ice cream machines that are working.

   Is each estimate reasonable? Choose Yes or No.

   a. 310   ○ Yes   ● No
   b. 400   ● Yes   ○ No
   c. 410   ● Yes   ○ No
   d. 450   ○ Yes   ● No

WORK SPACE

4. Caleb wants to share some stickers with his class. He has 6 bags of stickers with 12 stickers in each bag. He has 1 bag of stickers with 18 stickers in it. There are 18 students in the class. How many stickers will each student receive?

   Draw a line to show the order of each step in solving the problem.

x = 90 ÷ 18	Step 1
x = [72 + 18] ÷ 18	Step 2
x = [(6 × 12) + 18] ÷ 18	Step 3
x = 5	Step 4

5. Kelly has 26 coloring sheets and 26 sketching sheets. She wants to store an equal number of each type of sheet in 3 folders. How many sheets can Kelly store in each folder? Use x to represent the number of sheets in each folder.

   Use the numbers and variable in the box to complete the equation. Numbers can be used more than once. Write each symbol in the appropriate box to complete the equation for the problem.

   | 3 | 26 | x |

   $$x = \frac{26 + 26}{3}$$

6. There are four restaurants on Main Street. One week, each restaurant served exactly 65 customers for lunch and 65 customers for dinner each day. How many customers visited a restaurant on Main Street that week? Choose the correct equation and solution.

   Ⓐ 910; C = 65 × 2 × 7
   Ⓑ 1,820; C = (65 + 65) × 2 × 7
   Ⓒ 3,640; C = (65 + 65) × 7 × 4
   Ⓓ 7,280; C = (65 + 65) × 7 × 4 × 2

EXIT TICKET

Now that you have mastered solving multi-step word problems, let's solve the problem in the Real-World Connection.

Melissa went to meet her aunt. She spent $9 on snacks for the trip and $11 on her lunch. Then she bought a scarf for her aunt for $15. Melissa's aunt gave Melissa $20 for her birthday. Melissa had $45 when she left home. How much money did she have when she returned home from her aunt's house?

When Melissa got home, she had $30.

Figure out how much Melissa spent on the way to her aunt's house.

$9 + $11 + $15

Subtract the amount she spent from the amount she had when she left.

$45 − ($9 + $11 + $15)

Add the amount of money that her aunt gave her.

$45 − ($9 + $11 + $15) + $20

Use A to represent the total amount of money Melissa had when she got home.

A = $45 − ($9 + $11 + $15) + $20

Solve the equation.

A = $45 − ($9 + $11 + $15) + $20

A = $45 − $35 + $20

A = $10 + $20

A = $30

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▶ **HINT, HINT**

Read the problem carefully. Break the problem into steps.

7. **Part A**

Josh can sew 3 shirts from a piece of 18-meter fabric. How many complete shirts can he sew from 53 meters of fabric?

Write your answer in the box.

⎡ 8 ⎤ shirts

⭐ **Part B**

Josh wants to sew a jacket from the leftover fabric. Each jacket needs 3 meters of fabric. Does Josh have enough fabric to sew the jacket? Explain how you got your answer.

Sample answer: Yes, Josh has enough fabric to sew the jacket because 53 ÷ 6 = 8 R5. He is left with 5 meters of fabric. He only needs 3 meters to sew the jacket.

⭐ 8. A swim club is organizing groups for summer swim classes. Each group can have up to 4 people. 135 boys, 168 girls, and 16 adults have enrolled for the classes. How many groups does the swim club have to make to get everyone in a class? Will every group have the same number of students? Explain how you got your answer.

Sample answer: I added the number of people who enrolled, 135 + 168 + 16 = 319. I divided to get the number of groups, 319 ÷ 4 = 79 R3. The swim club can make 80 groups: 79 groups of 4 students each, and one group of 3 students.

WORK SPACE

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TEACHER NOTES

REAL-WORLD GOAL FOR STUDENTS

- Students will understand how to solve multi-step word problems with the four basic arithmetic operations.

TIPS FOR THE STRUGGLING LEARNER

- Struggling students may feel overwhelmed by multiple steps. Encourage them to keep organized and be patient. They could act out the problem, draw a picture, or make a list of steps. Estimation and checking answers for reasonableness will also help.

- When students are finished solving a problem, have them compare the question stem with their answer, to make sure they answered the correct question.

- Struggling learners may have trouble choosing which operations to use. Remind students to use addition for combining amounts, multiplication for combining several equal amounts, subtraction for taking away an amount or finding "how many more," and division for separating an amount into equal parts.

TIPS FOR THE ENGLISH LANGUAGE LEARNER

- English learners may struggle with the prefix *multi-*. Point out that *multi* means "many". They might recognize this prefix in words such as *multi-step*, *multiple*, *multitask*, or *multitalented*.

- English learners may struggle with interpreting the given problem. Encourage them to restate the problem in their own words, and explain what it is they are expected to find.

ACTIVITIES FOR THE ADVANCED LEARNER

- Students can extend the diagrams used in Lesson 9 to these problems. They can represent multiplication by *n* as *n* groups of boxes.

- Challenge students to solve problems in which the variable is not already isolated.