

***Teacher's Manual***

**Support Coach** 

**3**

***TARGET***

**Foundational  
Mathematics**

**Dear Educator,**

We are pleased to provide for you the new edition of *Support Coach*. This program has been built to meet the new, higher standards for Mathematics and contains the rigor that your students will need. We believe you will find it to be an excellent resource for targeted instruction, practice, and assessment.

***The Triumph Learning Team***

**Support Coach, Target: Foundational Mathematics, First Edition, Teacher’s Manual, Grade 3**  
545NATE ISBN-13: 978-1-62928-525-2

**Triumph Learning®** 136 Madison Avenue, 7th Floor, New York, NY 10016

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Printed in the United States of America. 10 9 8 7 6 5 4 3 2 1

# Contents

<b>Student Edition Contents</b>	vi
<b>Instructional Overview</b>	viii
<b>Student Edition Overview</b>	viii
<b>Teacher's Manual: An Annotated Guide</b>	xi
<b>Lesson 1 Understanding Unit Fractions</b>	2
■ Finding Equal Parts	
■ Understanding Fractional Parts of a Number Line	
■ Understanding Unit Fractions	
<b>Lesson 2 Understanding Fractions</b>	10
■ Unit Fractions Using Shapes	
■ Unit Fractions Using a Number Line	
■ Understanding Fractions	
<b>Lesson 3 Equivalent Fractions</b>	18
■ Understanding Fractions	
■ Fractions on a Number Line	
■ Equivalent Fractions	
<b>Lesson 4 Comparing Fractions</b>	26
■ Comparing Whole Numbers	
■ Understanding Fractions	
■ Comparing Fractions	
<b>Lesson 5 Adding Whole Numbers</b>	34
■ Addition with Regrouping	
■ Adding Greater Numbers	
■ Adding Whole Numbers	
<b>Lesson 6 Subtracting Whole Numbers</b>	42
■ Subtract within 100	
■ Subtracting Greater Numbers	
■ Subtracting Whole Numbers	
<b>Lesson 7 Understanding Multiplication</b>	50
■ Adding Equal Groups	
■ Skip Counting	
■ Understanding Multiplication	
<b>Lesson 8 Multiplication Facts</b>	58
■ Repeated Addition	
■ Representing Multiplication	
■ Multiplication Facts	

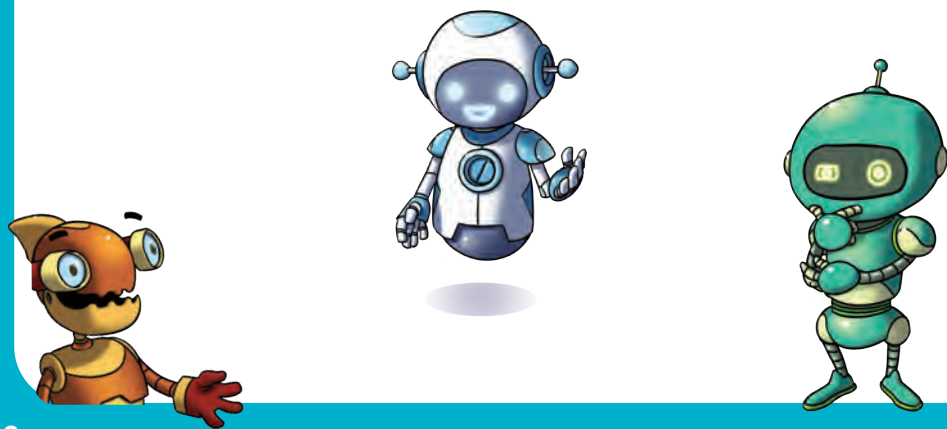
<b>Lesson 9</b>	<b>Understanding Division</b> .....	66
	■ Skip Counting Backward	
	■ Modeling Division	
	■ Understanding Division	
<b>Lesson 10</b>	<b>Division Facts</b> .....	74
	■ Understanding Multiplication	
	■ Understanding Division	
	■ Division Facts	
<b>Lesson 11</b>	<b>Solving Two-Step Word Problems</b> .....	82
	■ Rounding Whole Numbers	
	■ Adding, Subtracting, Multiplying, and Dividing	
	■ Solving Two-Step Word Problems	
<b>Lesson 12</b>	<b>Identifying Patterns</b> .....	90
	■ Odd and Even Numbers	
	■ Multiplication and Division Facts	
	■ Identifying Patterns	
<b>Lesson 13</b>	<b>Telling Time</b> .....	98
	■ Time to the Nearest 5 Minutes	
	■ Adding and Subtracting Whole Numbers	
	■ Telling Time	
<b>Lesson 14</b>	<b>Problem Solving with Mass and Capacity</b> .....	106
	■ Mass	
	■ Capacity	
	■ Problem Solving with Mass and Capacity	
<b>Lesson 15</b>	<b>Picture Graphs</b> .....	114
	■ Making a Picture Graph	
	■ Adding and Subtracting Whole Numbers	
	■ Picture Graphs	
<b>Lesson 16</b>	<b>Bar Graphs</b> .....	122
	■ Adding and Subtracting with Data	
	■ Making Bar Graphs	
	■ Bar Graphs	
<b>Lesson 17</b>	<b>Line Plots</b> .....	130
	■ Understanding Line Plots	
	■ Fractions on a Number Line	
	■ Line Plots	

<b>Lesson 18</b>	<b>Perimeter</b> . . . . .	138
	■ Measuring Figures	
	■ Measuring Perimeter	
	■ Perimeter	
<b>Lesson 19</b>	<b>Area of Rectangles</b> . . . . .	146
	■ Counting Squares	
	■ Understanding How to Measure Area	
	■ Area of Rectangles	
<b>Lesson 20</b>	<b>Classifying Shapes</b> . . . . .	154
	■ Understanding Polygons	
	■ Identifying Shapes	
	■ Classifying Shapes	
<b>White Paper: Instructional Strategies that Build Mathematical Proficiency</b> . . . . .		163
<b>Appendix: Math Tools</b> . . . . .		A
<b>Appendix: Correlations Charts</b> . . . . .		B

# Student Edition Contents

## Contents

<b>Lesson 1</b>	Understanding Unit Fractions . . . . .	4
<b>Lesson 2</b>	Understanding Fractions . . . . .	14
<b>Lesson 3</b>	Equivalent Fractions . . . . .	24
<b>Lesson 4</b>	Comparing Fractions . . . . .	34
<b>Lesson 5</b>	Adding Whole Numbers . . . . .	44
<b>Lesson 6</b>	Subtracting Whole Numbers . . . . .	54
<b>Lesson 7</b>	Understanding Multiplication . . . . .	64
<b>Lesson 8</b>	Multiplication Facts . . . . .	74
<b>Lesson 9</b>	Understanding Division . . . . .	84
<b>Lesson 10</b>	Division Facts . . . . .	94
<b>Lesson 11</b>	Solving Two-Step Word Problems . . . .	104
<b>Lesson 12</b>	Identifying Patterns . . . . .	114



<b>Lesson 13</b>	Telling Time . . . . .	124
<b>Lesson 14</b>	Problem Solving with Mass and Capacity . . . . .	134
<b>Lesson 15</b>	Picture Graphs . . . . .	144
<b>Lesson 16</b>	Bar Graphs . . . . .	154
<b>Lesson 17</b>	Line Plots . . . . .	164
<b>Lesson 18</b>	Perimeter . . . . .	174
<b>Lesson 19</b>	Area of Rectangles . . . . .	184
<b>Lesson 20</b>	Classifying Shapes . . . . .	194
<b>Glossary</b>	. . . . .	204
<b>Math Tools</b>	. . . . .	213



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# Instructional Overview

This mathematics skills and concepts program provides scaffolded instruction and support for students struggling with grade-level content required by the Virginia Standards of Learning. Aimed at students requiring strategic intervention—specifically, those students missing a critical foundation for grade-level understandings—*Support Coach* reflects a careful analysis of the prerequisites of key grade-level skills. This means that students will be able to rehearse and review prior skills that will ensure competency at a specific grade.

The program consists of three components:

- Student Edition Worktext
- Comprehensive Teacher’s Manual with reduced, annotated Student Edition pages
- Assessment Booklet containing lesson quizzes, two performance tasks for each of the five domains, and two practice tests

## Student Edition Overview

The Student Edition features 20 key lessons. While each lesson connects to prior foundational skills and concepts, it can be viewed as an independent unit of instruction. In this way, the 20 lessons allow teachers to differentiate instructions according to the requirements of each student.

Key to the philosophy behind *Support Coach* is the recognition that math skills and concepts are part of a progression that begins early in students’ lives and continues beyond their current grade level with increased complexity and depth.

For students, achieving true understanding at any grade level means mastery of prior content that connects to this grade and mastery of content that connects within the grade. Often, students who cannot cope with a specific part of their grade’s curriculum are missing one or more understandings that would allow mastery. *Support Coach* supplies the missing pieces.


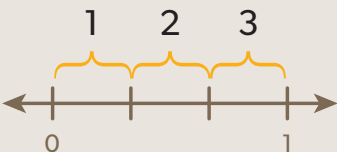

## Lesson Structure

Each lesson is divided into three parts: **Plug In**, **Power Up**, and **Ready to Go**. The first two parts provide students with a review and practice of the prerequisite content necessary for success at the targeted grade level standard. The **Plug In** component acquaints students with skills and concepts that are foundational to performing an grade level. **Power Up** picks up from **Plug In** and identifies the layers of prerequisite content that are necessary for a smooth transition to **Ready to Go**. This section affords an opportunity for instructional and the grade level standard. Each part highlights key vocabulary and supplies sufficient practice to grade mastery before moving forward. **Ready to Go**, the on-grade level portion of the lesson, ends with an important emphasis on problem solving.

PLUG IN	POWER UP	GO!
Foundational skill remediating specific content	Transitional skill connects Foundational skill to Target skill	Target skill on grade level

A Lesson Link is included to show both teachers and students how these standards connect!

### LESSON LINK

PLUG IN	POWER UP	GO!
<p>Shapes can be broken into equal parts.</p>  <p>3 equal parts</p>	<p>A number line can be divided into equal parts.</p>  <p>3 thirds</p>	<p>I get it! I can model unit fractions with shapes or number lines.</p> 

## Using Support in the Classroom

The broad outline of *Support Coach*'s features suggests that the best way to use it in your classroom is to take advantage of its versatility. This means that even as *Support Coach* aims to help bring students to grade-level competency, there are many ways to implement it:

- *Support Coach* can be used with any other set of materials you are using for Mathematics.
- The lessons do not have to be taught in a particular sequence.
- You can use *Support Coach* with one or many students at any given time.
- *Support Coach* can be used in the classroom, at home, in after-school programs, and in summer programs.
- You can use several levels of *Support Coach* at any grade to assist students who have missed earlier skills.

The most important aspect of *Support Coach* is that it digs to uncover elements that are missing from the hierarchy of math skills and concepts and assists students who have forgotten or never mastered these elements. This applies to any student who struggles when encountering new content.



# Teacher's Manual: An Annotated Guide

*Support Coach Teacher's Manual* provides all the instructional support you need to help your students achieve mastery of key grade-level skills.

Lessons in this Teacher's Manual include the following features:

- A **Lesson Overview** chart detailing objectives for each section, concepts and skills, and key vocabulary terms
- A list of required and suggested **Materials**
- **Spotlight on Mathematical Practice** notes that support teachers at point-of-use to develop strong mathematical behaviors in their students
- **Spotlight on Mathematical Language** provides a series of prompts using appropriate mathematical language and terms that are designed to elicit similar mathematical language from students
- **English Language Learner** notes included at point-of-use to prepare teachers for the diverse needs of the student population
- **Common Error** notes that provide insight into student misconceptions at point-of-use
- Robust **Discussion Support** that includes Prompts and Sentence Starters to facilitate mathematical discourse
- **Observation-Action tables** that outline how teachers can address specific student needs during independent practice
- A **Lesson Link** that outlines how each section of the lesson connects and works to bring the student to the on-level standard

**Introduce and Model**  
outlines how to  
introduce a topic and  
model thinking and  
problem solving. —

LESSON

5

# Adding Whole Numbers

## PLUG IN Adding Whole Numbers

**► PLUG IN**

**Addition with Regrouping**  
Student Edition  
pp. 44–45

**POWER UP**

**Adding Greater Numbers**

**OBJECTIVES**

- Add within 100.
- Regroup to add whole numbers.

**CONCEPTS AND SKILLS**

Use place value to add whole numbers within 100, regrouping ones when appropriate.  
**SOL:** 2.6.b

**VOCABULARY**

- add
- regroup
- place-value chart

**READY TO GO**

**Adding Whole Numbers**

- Add within 1,000.
- Regroup to add whole numbers.

Use place value to add whole numbers within 1,000, regrouping tens and ones when appropriate.  
**SOL:** 3.4

**MATERIALS**

- Math Tool: Place-Value Charts, p. A15 (Student Edition p. 239)
- Math Tool: Place-Value Models, p. A19 (Student Edition p. 247)
- Math Tools: Counters, p. A20 (Student Edition p. 249)

### Build Background

- Talk to students about reasons to add whole numbers in real life. For example, a market had 26 customers on Saturday and 18 customers on Sunday. The market needs at least 40 customers to stay open on weekends. Will the market stay open on weekends? Explain that adding numbers helps answer the question.
- Have students discuss additional examples of real situations that involve adding whole numbers.
- Tell students they will use place value to add numbers, regrouping when necessary.

### Introduce and Model

- **Introduce Concepts and Vocabulary** Guide students through the information about addition with regrouping. Emphasize that the place-value chart can help them add numbers. Use **Words to Know** to clarify their understanding of vocabulary. Have students explain when they would regroup ones when adding.
- **Support Discussion** Have partners discuss briefly before group discussion. As needed, remind students to look at the sum of the digits in the ones place when adding and use **Words to Know** to explain.

**Prompt:** What do you notice about the sum when you add the digits in the ones place?

**Sentence Starter:** When I add the ones digits, I see that the sum is ...

**ENGLISH LANGUAGE LEARNERS**

ELL students may need extra support for understanding the terms **add** and **regroup**. Use real objects to demonstrate joining sets of objects together to add. Break apart a set of 15 objects to demonstrate regrouping, and use phrasing that names regrouping into 1 ten and 5 ones.

34 LESSON 5

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- Each section's concepts and skills are aligned to the **State Standards for Mathematics**.

— The **Build Background** section provides suggested activities to set up the lesson and assess student preparedness.

Support is included for guiding students through the gradual release of modeling to independent practice.

Each section of the student lesson culminates in an independent practice set. \_\_\_\_\_

Lesson 5

5

Adding Whole Numbers

PLUG IN Addition with Regrouping

When you **add** whole numbers, you **regroup** tens.

$$42 + 3 = 45$$

**Plug In**

**add**  
to put together or  
join

**regroup**  
to make sure you group  
of tens

Write the problem in a **place-value chart**. **Add**

**place-value chart**

Tens	Ones
4	2
+	3
5	5

There are 4 tens.

Regroup 10 ones.

4 tens + 20 = 6 tens.

**Add** the tens.

**place-value chart**

Tens	Ones
5	5
+	0
5	5

There are 5 tens.

Regroup 10 ones.

5 tens + 0 = 5 tens.

**add**  
to put together or  
join

**regroup**  
to make sure you group  
of tens

**place-value chart**

to make sure you group  
of tens

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**add**  
to put together or  
join

**regroup**  
to make sure you group  
of tens

**place-value chart**

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- The **Observation-Action table** offers suggestions for addressing certain behaviors students may exhibit during independent practice.



## ► Ready to Go Pages

READY TO GO

Adding Whole Numbers

		OBJECTIVES	CONCEPTS AND SKILLS	VOCABULARY
FOUNDATIONAL UNDERSTANDING	<b>PLUG IN</b> Adding with Regrouping	<ul style="list-style-type: none"><li>Add within 100.</li><li>Regroup to add whole numbers.</li></ul>	Use place value to add whole numbers within 100, regrouping ones when appropriate. <b>SOL:</b> 2.6.b	<ul style="list-style-type: none"><li>add</li><li>regroup</li><li>place-value chart</li></ul>
	<b>POWER UP</b> Adding Greater Numbers	<ul style="list-style-type: none"><li>Add two 3-digit numbers without regrouping.</li></ul>	Use place value to add whole numbers within 1,000, without regrouping. <b>SOL:</b> 2.6.b	
ON-LEVEL TARGET	<b>► READY TO GO</b> Adding Whole Numbers Student Edition pp. 48–53	<ul style="list-style-type: none"><li>Add within 1,000.</li><li>Regroup to add whole numbers.</li></ul>	Use place value to add whole numbers within 1,000, regrouping tens and ones when appropriate. <b>SOL:</b> 3.4	

**MATERIALS**

- Lesson 5 Quiz, Assessment Manual pp. 12–13
- Lesson 5 Quiz Answer Key, Assessment Manual
- Math Tool: Place-Value Models, p. A2 (Student Edition p. 213)
- Blank paper (suggested)

**Build Background**

- Talk to students about reasons to add greater numbers with regrouping in real life. For example, Myesha earned \$216 in June and she earned \$175 in July. How much did Myesha earn in two months? Explain that adding greater numbers can be used to answer this question.
- Have students discuss additional examples of real situations that require the addition of greater numbers.
- Tell students they will use regrouping to add greater whole numbers.

**Introduce and Model**

- Introduce Concepts** Guide students through the information about having to regroup when adding greater numbers. Emphasize that whenever a column has 10 or more, students must be sure to mark the number in the next column to show regrouping.
- Support Discussion** Have partners discuss briefly before group discussion. If students are struggling, suggest they draw a place-value chart and rewrite the addition problem in the chart.

**Prompt:** Do any columns have a sum of 10 or more?

**Sentence Starter:** I can add the digits in each column to find ...

**LESSON LINK**

**Connect to Foundational Understanding** Skills learned in the **Plug In**

**In and Power Up** are referenced in the **Lesson Link**. Explain that what students learned about regrouping in order to add 2-digit numbers can also be used to regroup in order to add greater numbers.

38 LESSON 5

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- The **Lesson Link** connects the foundational skills from the Plug In and Power Up sections to the on-level standard in the Ready to Go section.

**The Support Coach  
Avatars model  
exemplary student  
thinking, questioning,  
and problem solving!**

LESSON 5

# READY TO GO

## Adding Whole Numbers

Sometimes you need regrouping when adding 3-digit numbers.

$$4 \text{ } \overline{) 72} + 1 \text{ } \overline{) 8} =$$

Tens	Ones
7	2
1	8

There are 5 hundreds, 8 tens, and 1 one.

Hundreds	Tens	Ones
4	7	2
1	8	1

Look! There are 5 tens, so we need to regroup 1 hundred (10 tens) and 0 ones.

OK, the robot did it!

Other place value problems for adding 389 + 288: Explain.

**Problem 1:** Explain how to regroup the tens because there are more than 10 tens (10 tens = 100).

### PLACE VALUE

Sometimes you need to regroup to add 3-digit numbers.

$$\begin{array}{r} 100 \\ + 20 \\ + 8 \end{array}$$

### POWER UP

Addition with 3-digit numbers looks a lot like addition with 2-digit numbers.

Look! 10 tens and 8 ones don't regroup, so it's an easy problem to solve.

## WORK TOGETHER

Use place value models to show addition.

- Show 129 + 135.
- Group by place value.
- Regroup if needed.
- There are 2 hundreds, 6 tens, and 4 ones.
- The sum is 265.

### Use place value models.

- Add 129 + 135.
- Show 129 + 135 with models.
- Group all hundreds, all tens, and all ones.
- Regroup if needed.
- Find the sum.

### Adding Whole Numbers

Look and tell if you are adding groups.

### Use a place value chart to add 3-digit numbers.

- Add 129 + 135.
- Add ones. Regroup if needed.
- Add tens. Regroup if needed.
- Add hundreds.
- Find the sum.

Hundreds	Tens	Ones
1	2	9
1	3	5
2	5	4

There are 2 hundreds, 6 tens, and 4 ones. The sum is 264.

### Use a place value chart to check for 389 + 288.

Look and tell if you have enough to check for adding. Then use the place value chart to regroup if there are 10 ones or 10 tens. The correct answer is 677.

42

- **Work Together** Explain that students will use Math Tools: Place-Value Models to model addition. Point out how the ones, tens, and hundreds blocks are lined up as an addition problem. Monitor whether students understand how to regroup base-ten blocks. If needed, draw base-ten blocks on the board and model regrouping 10 ones for 1 ten and 10 tens for 1 hundred.

- **DO** Monitor students as they use the model to add the numbers. If needed, remind students to circle 10 ones. Then explain that these 10 ones will become 1 ten.
- **DO** Guide students through adding the numbers in the correct order. Monitor that students understand the place value of each digit in the sum.

- **Support Discussion** Have partners discuss briefly before group discussion. As needed, have students use their Math Tool: Place-Value Models to make a model.

**Prompt:** Is there more than one way to check the answer?  
**Sentence Starter:** I can check the answer by using...

## COMMON ERRORS

When using place-value models, students may forget to exchange 10 tens for 1 hundred. Help students recall that just as they regroup 10 ones as 1 ten, they must also regroup 10 tens as 1 hundred. Model for students how to exchange the place-value models when regrouping.

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ADDING WHOLE NUMBERS 39

The **Ready to Go** section of the **Ready to Go** section furnishes an opportunity for students to work together to build a firm base for the on-level standard.

Alongside instruction, teachers are alerted to **Common Errors** they might encounter in student work or discussion. Suggestions are included for addressing the misconceptions that might cause these errors.

## ► Ready to Go Pages

Suggestions for **Additional Practice** are provided for each lesson.

Full support is provided for modeling the **Four-Step Method** for problem solving in the context of each lesson.

A three-part **Observation-Action table** can be used to determine whether students need more time with the lesson content or can move on to the Lesson Quiz.

The Ready to Go part of each lesson includes a robust section of **Independent Practice**.

To help **Support Independent Practice**, teachers are supplied with suggestions for helping students who are struggling with specific items.

Two full pages are dedicated to **Problem Solving**, giving students the opportunity to apply their newly acquired conceptual understandings and procedural fluencies to contextualized problem situations.

**READY TO GO**

**PRACTICE**

Do you need to regroup? Write yes or no.

1.  $256 + 123$

2.  $124 + 321$

Use the place-value charts. Add to find the sums.

3.  $252 + 460$

4.  $425 + 127$

5.  $378 + 244$

6.  $572 + 94$

**FOCUS ON FLUENCY**

Use place-value models to have students practice regrouping. Students can work in pairs to create 3-digit addition problems that require regrouping. Monitor pairs to ensure they are correctly regrouping ones and tens as needed to accurately solve the addition problems.

**ADDITIONAL PRACTICE**

Provide students with additional practice to model and solve:

$369 + 214$     $173 + 335$   
 $254 + 126$     $444 + 183$

**Support Independent Practice**

1-2 Remind students to read the **HINT**. If needed, ask: How can you rewrite the addition problem to help you answer the question?

3-4 How do you regroup when there are 10 or more tens?

5-6 Remind students to read the **REMEMBER**. Which place value do you need to regroup?

7-8 What tools and strategies can you use to solve the problems?

**Support Discussion** Have partners find the missing numbers and discuss before sharing. As needed, have students use Math Tool: Place-Value Models to model each sentence.

**Prompt:** Do the sentences have anything in common?  
**Sentence Starter:** The pattern is that ...

**Problem Solving**

**Model the Four-Step Method** Guide students through the four-step method using think-aloud strategies. Point out the addition clue words in all.

**Think Aloud** In the tens place, I add 1 and 9. Since the sum is 10, I need to regroup.

40 LESSON 5

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**READY TO GO**

**PROBLEM SOLVING**

**COLLECTING CANS**

**READ** Mr. Lopez's class collected 252 cans for recycling. Mrs. Wright's class collected 183 cans. How many cans did the classes collect in all?

**FC-50**

• What is the problem asking you to find?

You need to find how many 252 the classes collected in all.

• What do you need to know to solve the problem?

How many cans did Mr. Lopez's class collect? 252 cans  
 How many cans did Mrs. Wright's class collect? 183 cans

• How can you show the addition?

You can use a place-value chart or place-value models.

**SOLVE**

Use place-value models.

$252 + 183 = 435$

**CHECK**

Use a place-value chart.

The classes collected 435 cans in all.

**PRACTICE**

Use the problem-solving steps to help you.

1.  $345 + 123$

2.  $567 + 890$

3.  $123 + 456$

4.  $789 + 012$

5.  $234 + 567$

6.  $890 + 123$

7.  $456 + 789$

8.  $012 + 345$

9.  $678 + 901$

10.  $901 + 234$

11.  $345 + 678$

12.  $901 + 567$

13.  $234 + 890$

14.  $567 + 123$

15.  $890 + 456$

16.  $123 + 789$

17.  $456 + 012$

18.  $789 + 345$

19.  $012 + 678$

20.  $678 + 901$

21.  $901 + 234$

22.  $234 + 567$

23.  $567 + 890$

24.  $890 + 123$

25.  $123 + 456$

26.  $456 + 789$

27.  $789 + 012$

28.  $012 + 345$

29.  $345 + 678$

30.  $678 + 901$

31.  $901 + 234$

32.  $234 + 567$

33.  $567 + 890$

34.  $890 + 123$

35.  $123 + 456$

36.  $456 + 789$

37.  $789 + 012$

38.  $012 + 345$

39.  $345 + 678$

40.  $678 + 901$

41.  $901 + 234$

42.  $234 + 567$

43.  $567 + 890$

44.  $890 + 123$

45.  $123 + 456$

46.  $456 + 789$

47.  $789 + 012$

48.  $012 + 345$

49.  $345 + 678$

50.  $678 + 901$

51.  $901 + 234$

52.  $234 + 567$

53.  $567 + 890$

54.  $890 + 123$

55.  $123 + 456$

56.  $456 + 789$

57.  $789 + 012$

58.  $012 + 345$

59.  $345 + 678$

60.  $678 + 901$

61.  $901 + 234$

62.  $234 + 567$

63.  $567 + 890$

64.  $890 + 123$

65.  $123 + 456$

66.  $456 + 789$

67.  $789 + 012$

68.  $012 + 345$

69.  $345 + 678$

70.  $678 + 901$

71.  $901 + 234$

72.  $234 + 567$

73.  $567 + 890$

74.  $890 + 123$

75.  $123 + 456$

76.  $456 + 789$

77.  $789 + 012$

78.  $012 + 345$

79.  $345 + 678$

80.  $678 + 901$

81.  $901 + 234$

82.  $234 + 567$

83.  $567 + 890$

84.  $890 + 123$

85.  $123 + 456$

86.  $456 + 789$

87.  $789 + 012$

88.  $012 + 345$

89.  $345 + 678$

90.  $678 + 901$

91.  $901 + 234$

92.  $234 + 567$

93.  $567 + 890$

94.  $890 + 123$

95.  $123 + 456$

96.  $456 + 789$

97.  $789 + 012$

98.  $012 + 345$

99.  $345 + 678$

100.  $678 + 901$

**Support Problem-Solving Practice** Have students use the Checklist as they complete each step.

**Prompt:** Circle the clue words in each problem.  
**Prompt:** How will you write the problem?  
**Prompt:** Can you model the problem for me?

**Explore Student Thinking** Invite students to explain how they chose to solve each problem and why. Have partners compare their work on a problem and discuss their results.

**Assess**

Use the table below to observe whether students accurately regroup to add greater numbers, and to address any difficulties as needed before the quiz.

When all students are ready, assign the Lesson 5 Quiz.

Observation	Action
1. Errors in regrouping are frequent; general confusion about adding greater numbers.	Have students practice regrouping ones and tens using place-value models.
2. Makes occasional errors when regrouping; some understanding of adding greater numbers.	Provide additional practice problems for adding greater numbers with regrouping. Encourage students to model the problems.
3. Writes, models, and solves addition sentences (including regrouping) accurately.	Assign the Lesson 5 Quiz.

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ADDING WHOLE NUMBERS 41

## Assessments

The Assessment Booklet contains lesson quizzes, two performance tasks for each of the five domains, and two practice tests.

Each **Lesson Quiz** helps you evaluate students' understanding of the State Standards taught in the lesson and determine whether they are prepared to move on to new material.

There are ten Performance Tasks in the Assessment Booklet. The two Performance Tasks have a task-specific rubric. The first of the two tasks is a bit easier than the second—which allows teachers to differentiate instruction on performance task practice.


Practice Test 1 can be administered before students begin the lessons in the Student Edition. The results allow you to establish a baseline measure of students' mathematics proficiency before starting the Student Edition lessons. You can then use Practice Test 2 to measure students' progress after completing the program.

The answer keys for the Lesson Quizzes, Performance Tasks, and Practice Tests identify the correct answers, and the **Math Standards** of each Standard assessed.

LESSON
2
Quiz

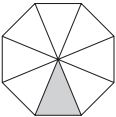
Write the fraction for the shaded part.

1.



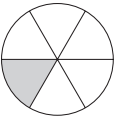
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2.



\_\_\_\_\_

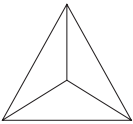
3.



\_\_\_\_\_

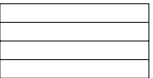
Shade one part. Write the fraction for the shaded part.

4.



\_\_\_\_\_

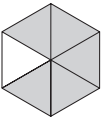
5.



\_\_\_\_\_


Write the fraction for the part that is shaded.

6.



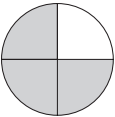
\_\_\_\_\_

7.



\_\_\_\_\_

8.



\_\_\_\_\_

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6

Lesson 2 Quiz

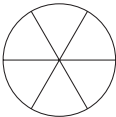
Lesson 2 Quiz

Shade the figure to show the fraction.

9.  $\frac{3}{8}$



10.  $\frac{4}{6}$



Choose the best answer.

11. Selena cut a watermelon into 8 equal pieces. Five pieces were eaten during lunch. What fraction of the watermelon was eaten?

A.  $\frac{5}{8}$       C.  $\frac{8}{5}$   
 B.  $\frac{3}{8}$       D.  $\frac{8}{3}$

12. Mr. Tao divided a hexagon into 6 equal parts. He colored 4 parts blue. What fraction of the hexagon did Mr. Tao color blue?

A.  $\frac{2}{6}$       C.  $\frac{4}{6}$   
 B.  $\frac{6}{4}$       D.  $\frac{2}{6}$

Solve.

13. Marco is using a number line to show the fraction  $\frac{5}{6}$ . He begins by separating the number line into 5 equal parts. Can Marco show  $\frac{5}{6}$  on his number line? Explain.

\_\_\_\_\_

\_\_\_\_\_

14. Elin showed the fraction  $\frac{3}{6}$  by drawing a square, separating it into 3 equal parts, and shading all 3 parts. Is Elin correct? If not, explain what fraction Elin's model shows.

\_\_\_\_\_

\_\_\_\_\_

7



# Understanding Unit Fractions

## PLUG IN Finding Equal Parts

		OBJECTIVES	CONCEPTS AND SKILLS	VOCABULARY
FOUNDATIONAL UNDERSTANDING	<b>► PLUG IN</b> <b>Finding Equal Parts</b> Student Edition pp. 4–5	<ul style="list-style-type: none"> <li>Find equal parts in a whole.</li> <li>Decide if parts in a whole are equal.</li> </ul>	Use a visual representation to show fractional parts of a whole and describe each part. Recognize that equal parts need not have the same shape. <b>MAFS.2.G.1.3</b>	<ul style="list-style-type: none"> <li><b>equal parts</b></li> </ul>
	<b>POWER UP</b> <b>Understanding Fractional Parts of a Number Line</b>	<ul style="list-style-type: none"> <li>Show fractional parts between 0 and 1 on a number line.</li> </ul>	Use a number line to show fractional parts between 0 and 1. <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>number line</b></li> </ul>
ON-LEVEL TARGET	<b>READY TO GO</b> <b>Understanding Unit Fractions</b>	<ul style="list-style-type: none"> <li>Model unit fractions.</li> <li>Write the unit fraction shown by a model.</li> </ul>	Use a visual representation, including a number line, to model unit fractions and identify the unit fraction modeled. <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>unit fraction</b></li> <li><b>denominator</b></li> <li><b>numerator</b></li> </ul>

### MATERIALS

- Math Tool: Fraction Strips, p. A13 (Student Edition p. 235)
- Crayons or colored pencils (*suggested*)
- Paper (*suggested*)

### Build Background

- Talk to students about reasons to find equal parts of a whole in real life. For example, you need to share a pizza and want each person to get the same size slice. Explain how cutting the pizza into equal slices is a way to make equal parts of a whole.
- Have students discuss additional examples of real situations that involve finding equal parts of a whole.
- Tell students they will find equal parts in shapes and decide if the parts of the shape are equal.

### Introduce and Model

- Introduce Concepts and Vocabulary** Guide students through the information about equal parts of a whole. Emphasize that equal parts in a whole are the same size. Use **Words to Know** to clarify their understanding of vocabulary. Have students demonstrate to a partner their understanding of *equal parts*.
- Support Discussion** Have partners discuss briefly before group discussion. Encourage students to make a model of the rectangle.

**Prompt:** How do you know?

**Sentence Starter:** Thirds means ...

### SPOTLIGHT ON MATHEMATICAL LANGUAGE

Support students in using mathematical language as they work:

- Tell how many *equal parts* there are.
- The shape is broken into *equal parts*.

## PLUG IN Finding Equal Parts

A whole can be broken into **equal parts**.



4 fourths

Each part of the square is a part of the whole.



1 fourth

This square also has 4 equal parts.



4 fourths

The whole square is broken into 4 equal parts, or 4 fourths.



Each part is 1 fourth of the whole.

I see! Equal parts of the same whole may not have the same shape.

Words to Know

**equal parts**  
parts that are the same size



DISCUSS

Wes draws a rectangle to show thirds. What does thirds mean? Responses may vary, but should reference a whole being broken into 3 equal parts.

**A** You can break a shape into equal parts.

**DO** Break the shape into thirds.



1 How many parts?

3 parts

2 Are the parts equal? Write yes or no.

equal: **yes**

3 How many thirds?

The whole rectangle is equal to 3 thirds.

4 Tell about each part.

Each part is 1 third of the whole.

**B** A shape can be broken into equal parts in more than one way.

**DO**

1 Count equal parts.

2 Compare equal parts.



Rectangle A

Rectangle B

Rectangle A: 3 equal parts

Rectangle B: 3 equal parts

Are the equal parts in Rectangle A the same as those in Rectangle B? **no**

Be careful! Equal parts of the same whole are not always the same.



**C** You can draw lines to break a shape into equal parts.

**DO**

1 Break the circle into halves.

2 How many equal parts?



2 equal parts

3 Count the halves.

The whole circle is equal to 2 halves.

4 Tell about each part.

Each part is 1 half of the whole.

## PRACTICE

You can show fourths in different ways.

1



Rectangle A

Rectangle B

Rectangle A: 4 equal parts

Rectangle B: 4 equal parts

Are the equal parts in Rectangle A the same as those in Rectangle B? **no**

**2** Draw lines to break the rectangle into fourths. Then write the answers. Possible drawing shown.



How many equal parts? 4

The whole rectangle is equal to 4 fourths. Each part is 1 fourth of the whole.

## Model Application

**DO** **A** Guide students through the steps. Monitor that students count each part of the rectangle and write the correct amounts.

**DO** **B** Explain that equal parts of the same whole can have different sizes. Guide students as they compare the parts of each rectangle.

**DO** **C** Have students draw a line to model halves. Monitor the placement of the line. Model equal parts if necessary.

## Practice and Assess

- Ask students to complete practice items 1 and 2 on page 5 independently or in pairs. Monitor ongoing work.
- Observe whether students can identify equal parts in a shape. Use the chart below as needed to address any difficulties.

### Observation

Students have difficulty identifying equal parts in a shape.

### Action

Provide students with a fraction strip. Have them fold the fraction strip in half. Ask students to describe the two parts of the fraction strip.

## ENGLISH LANGUAGE LEARNERS

Allow students the opportunity to create a physical model of equal parts by folding a piece of paper into halves and then fourths. Emphasize the number of equal parts in the whole for each fold.

# POWER UP

## Understanding Fractional Parts of a Number Line

		OBJECTIVES	CONCEPTS AND SKILLS	VOCABULARY
FOUNDATIONAL UNDERSTANDING	<b>PLUG IN</b> <b>Finding Equal Parts</b>	<ul style="list-style-type: none"> <li>Find equal parts in a whole.</li> <li>Decide if parts in a whole are equal.</li> </ul>	Use a visual representation to show fractional parts of a whole and describe each part. Recognize that equal parts need not have the same shape. <b>MAFS.2.G.1.3</b>	<ul style="list-style-type: none"> <li><b>equal parts</b></li> </ul>
	<b>POWER UP</b> <b>Understanding Fractional Parts of a Number Line</b> Student Edition pp. 6–7	<ul style="list-style-type: none"> <li>Show fractional parts between 0 and 1 on a number line.</li> </ul>	Use a number line to show fractional parts between 0 and 1. <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>number line</b></li> </ul>
ON-LEVEL TARGET	<b>READY TO GO</b> <b>Understanding Unit Fractions</b>	<ul style="list-style-type: none"> <li>Model unit fractions.</li> <li>Write the unit fraction shown by a model.</li> </ul>	Use a visual representation, including a number line, to model unit fractions and identify the unit fraction modeled. <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>unit fraction</b></li> <li><b>denominator</b></li> <li><b>numerator</b></li> </ul>

### MATERIALS

- Math Tool: Blank Number Lines, p. A18 (Student Edition p. 245)
- Math Tool: Fraction Strips, p. A13 (Student Edition p. 235)
- Crayons or colored pencils (*suggested*)
- Paper (*suggested*)

### Build Background

- Talk to students about reasons to show fractional parts on a number line. For example, you have one hour to spend at a zoo. You want to spend the same amount of time seeing each of 4 animals. Explain that by using a number line, you can model the hour separated into 4 equal parts.
- Have students discuss additional examples of real situations in which they can use a number line to show fractional parts.
- Tell students they will use a number line to show fractional parts between 0 and 1.

### Introduce and Model

- Introduce Concepts and Vocabulary** Guide students through the information about using a number line to show equal parts of a whole. Point out that each part of the whole is marked by two tic marks. Use **Words to Know** to clarify their understanding of vocabulary. Have students describe *number line* to a partner.
- Support Discussion** Have partners discuss briefly before group discussion. Students can use the number line at the top of the page for support. As needed, work together to show there are 4 equal parts.

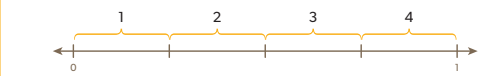
**Prompt:** Describe how the number line is divided.

**Sentence Starter:** The number line shows ...

### ENGLISH LANGUAGE LEARNERS

ELL students may need additional support naming fractional parts. Draw 3 squares. Divide one into halves, one into thirds, and one into fourths. Label the squares *halves*, *thirds*, and *fourths* to describe the fractional parts.

## POWER UP Understanding Fractional Parts of a Number Line



A **number line** can be divided into smaller equal parts of the whole. Each part of the number line is a part of the whole.

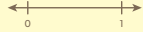
The number line is divided into 4 equal parts, or fourths.

Each part is 1 fourth of the whole.

### Words to Know

#### number line

a line with equally placed tic marks named by numbers



**DISCUSS** What does it mean to say a number line is divided into fourths? Responses may vary, but should reference a number line being divided into 4 equal parts.

**A** A number line between 0 and 1 can be divided into equal parts.

### DO

- Count the equal parts between 0 and 1 on the number line.
- Label each equal part of the number line.



- Count the thirds.
- Tell about each part.

$\underline{3}$  equal parts  
The whole number line is equal to  $\underline{3}$  thirds.  
Each part is  $\underline{1}$  third of the whole.

6 LESSON 1

**B** You can divide a number line into equal parts.

### DO

- Divide the number line into halves.
- How many equal parts?  $\underline{2}$  equal parts
- Count the halves.
- Tell about each part.



The whole number line is equal to  $\underline{2}$  halves.  
Each part is  $\underline{1}$  half of the whole.

A number line can show equal parts of a whole.



### DISCUSS

Sophia drew this number line. She says each part of the number line represents one fourth. What can you tell Sophia about her work?



Responses may vary, but should reference that each part cannot represent one fourth since the parts are not equal.

### PRACTICE

Answer the question about the number line.

### 1



How many equal parts?  $\underline{4}$   
The whole number line is  $\underline{4}$  fourths.  
Each part is  $\underline{1}$  fourth of the whole.

Draw marks to separate the number line into thirds. Then write the answers.

### 2



How many equal parts?  $\underline{3}$   
The whole number line is equal to  $\underline{3}$  thirds.  
Each part is  $\underline{1}$  third of the whole.

7

## Model Application

**DO** **A** Guide students through counting the parts of the number line. Monitor that students are counting the space between tic marks and writing the correct amounts.

**DO** **B** Remind students that equal parts are the same size. Guide students as they write the amounts.

**Support Discussion** Have partners discuss briefly before group discussion. As needed, direct students to the number line.

**Prompt:** How did Sophia mark the parts on the number line?

**Sentence Starter:** One fourth represents ...

## COMMON ERRORS

Students may be confused about where to start counting on the number line. Point out that the space between tic marks on the number line is the equal part. Have students color each equal part as they count it.

## Practice and Assess

- Ask students to complete practice items 1 and 2 on page 7 independently or in pairs. Monitor ongoing work.
- Observe whether students accurately count the parts of the number line and write the amounts. Use the chart below as needed to address any difficulties.

### Observation

Students have difficulty visualizing equal parts on the number line.

### Action

Use a fraction strip showing the same fractional section as the number line. Point out to students that each section on both the fraction strip and the number line show the same amount.

# READY TO GO

## Understanding Unit Fractions

		OBJECTIVES	CONCEPTS AND SKILLS	VOCABULARY
FOUNDATIONAL UNDERSTANDING	<b>PLUG IN</b> <b>Finding Equal Parts</b>	<ul style="list-style-type: none"> <li>Find equal parts in a whole.</li> <li>Decide if parts in a whole are equal.</li> </ul>	Use a visual representation to show fractional parts of a whole and describe each part. Recognize that equal parts need not have the same shape. <b>MAFS.2.G.1.3</b>	<ul style="list-style-type: none"> <li><b>equal parts</b></li> </ul>
	<b>POWER UP</b> <b>Understanding Fractional Parts of a Number Line</b>	<ul style="list-style-type: none"> <li>Show fractional parts between 0 and 1 on a number line.</li> </ul>	Use a number line to show fractional parts between 0 and 1. <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>number line</b></li> </ul>
ON-LEVEL TARGET	<b>READY TO GO</b> <b>Understanding Unit Fractions</b> Student Edition pp. 8–13	<ul style="list-style-type: none"> <li>Model unit fractions.</li> <li>Write the unit fraction shown by a model.</li> </ul>	Use a visual representation, including a number line, to model unit fractions and identify the unit fraction modeled. <b>MAFS.2.NF.1.1</b> <b>MAFS.3.NF.1.2.a</b>	<ul style="list-style-type: none"> <li><b>unit fraction</b></li> <li><b>denominator</b></li> <li><b>numerator</b></li> </ul>

### MATERIALS

- Lesson 1 Quiz, Assessment Manual pp. 4–5
- Lesson 1 Quiz Answer Key, Assessment Manual
- Math Tool: Fraction Strips, p. A13 (Student Edition p. 235)
- Math Tool: Blank Number Lines, p. A18 (Student Edition p. 245)
- Pencils (*suggested*)
- Paper (*suggested*)
- Sticky notes (*suggested*)

### COMMON ERRORS

Students may confuse the numerator and the denominator. Have them remember that *denominator* starts with *d* and so does *down*. The denominator is down on the bottom.

### Build Background

- Talk to students about models of unit fractions in real life. For example, you bake a cake and cut it into 8 equal pieces. You give your friend 1 piece. Explain that the 1 piece is the unit fraction  $\frac{1}{8}$  of the cake.
- Have students discuss additional examples of real situations that involve modeling and knowing unit fractions.
- Tell students they will use visual representations to model unit fractions and will identify unit fractions shown by a model.

### Introduce and Model

- Introduce Concepts and Vocabulary** Guide students through the information about unit fractions. Emphasize that unit fractions name one equal part of a whole. Use **Words to Know** to clarify their understanding of vocabulary. Have students explain *numerator* and *denominator* to a partner.
- Support Discussion** Have partners discuss briefly before group discussion. If students are struggling, suggest they draw a model.

**Prompt:** How would you show  $\frac{1}{2}$  on a number line?

**Sentence Starter:** The fraction  $\frac{1}{2}$  shows ...

### LESSON LINK

**Connect to Foundational Understanding** Skills learned in the **Plug In** and **Power Up** are referenced in the **Lesson Link**. Explain that shapes and number lines can be divided into equal parts. These equal parts can be used to show unit fractions.

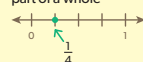
## READY TO GO Understanding Unit Fractions

A **unit fraction** names one equal part of a whole.

The dot on the number line shows a fraction.

**Words to Know**

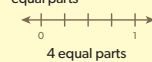
**unit fraction** names one equal part of a whole



The **denominator** tells the number of equal parts. It is the bottom number of the fraction.

The number line is separated into 4 equal parts. The denominator is 4.

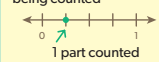
**denominator** the total number of equal parts



The **numerator** tells the number of parts you are counting. It is the top number of the fraction.

I see! I counted 1 part of the number line. The numerator is 1. So the fraction is  $\frac{1}{4}$ .

**numerator** the number of parts being counted



**DISCUSS** What does the fraction  $\frac{1}{2}$  mean?

Responses may vary, but should reference one of two equal parts.

## LESSON LINK

## PLUG IN

Shapes can be broken into equal parts.



3 equal parts

## POWER UP

A number line can be divided into equal parts.



3 thirds

I get it! I can model unit fractions with shapes or number lines.



## WORK TOGETHER

Use rectangles to show fractions.

- This rectangle shows a fraction.
- There are 4 equal parts. 1 part is shaded.
- So the fraction is  $\frac{1}{4}$ .



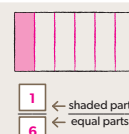
I can draw rectangles to show fractions.



**A** Model the fraction  $\frac{1}{6}$ . Possible drawing shown.

**DO**

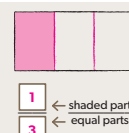
- Draw a rectangle.
- Divide the rectangle into 6 equal parts.
- Shade 1 of the parts.
- Write the unit fraction.



**B** Model the fraction  $\frac{1}{3}$ . Possible drawing shown.

**DO**

- Draw a rectangle.
- Divide the rectangle into 3 equal parts.
- Shade 1 of the parts.
- Write the unit fraction.



**DISCUSS**

William wants to draw a rectangle to model the fraction  $\frac{1}{8}$ . He says the 8 parts of his rectangle do not need to be the same size. Is William correct? Explain.

No; each part must be equal in size; explanations will vary.

Remember, a fraction names equal parts of a whole.



- Work Together** Explain that students will use rectangles to show fractions. Begin by working together with students to see how a rectangle can show  $\frac{1}{4}$ . If needed, draw a rectangle on the board and divide it into fourths. Emphasize the number of equal parts and shade  $\frac{1}{4}$ .

**DO** **A** Monitor students as they model  $\frac{1}{6}$ . As needed, clarify that students will draw 5 lines. Have students look at the parts to make sure they are as equal as possible.

**DO** **B** Continue in a similar fashion for  $\frac{1}{3}$ .

- Support Discussion** Have partners discuss briefly before group discussion. As needed, suggest that students draw a rectangle and show  $\frac{1}{8}$ .

**Prompt:** What do you know about the parts of a fraction?

**Sentence Starter:** To model a fraction, you ...

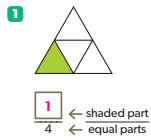
## SPOTLIGHT ON MATHEMATICAL PRACTICES

## Critiquing Others' Reasoning

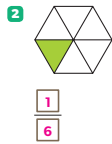
Help students think critically about William's reasoning by asking probing questions: *Did William divide the rectangle into smaller parts? Did William make equal parts?*

### PRACTICE

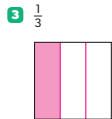
Write the fraction for the shaded part of each shape.



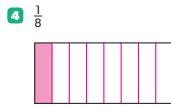
**REMEMBER**  
The numerator is the number of parts you are counting.



Model each fraction. Possible drawings shown.



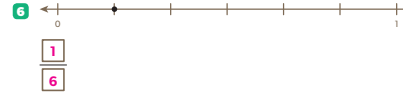
**HINT**  
The denominator is the total number of equal parts.



Write the fraction.



**REMEMBER**  
Count to find the number of equal parts.



Write the fraction.

7 Tyler divides a circle into 3 equal parts. He shades 1 part. What fraction of the circle does Tyler shade?

$\frac{1}{3}$

I'm going to make a model by drawing a shape or a number line.

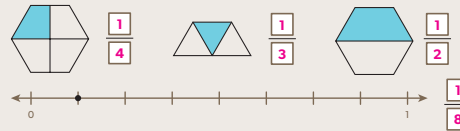
8 Mavis cuts an apple into 4 equal slices. She eats 1 slice. What fraction of the apple does Mavis eat?

$\frac{1}{4}$

### DISCUSS

#### Model with Mathematics

Kaylee found fractions for some models. Find the missing fractions.



How can a model be used to show a fraction?

Responses may vary, but should reference dividing the model into equal parts and shading to show the number being counted.

### ADDITIONAL PRACTICE

Provide students with additional practice to model on a number line:

$\frac{1}{2}$        $\frac{1}{3}$   
 $\frac{1}{4}$        $\frac{1}{6}$

## Support Independent Practice

**1–2** Remind students to read the **REMEMBER**. If needed, have them number each part as they count.

**3–4** Remind students to read the **HINT**. How many equal parts? How many parts will you shade?

**5–8** What does the numerator tell you? What does the denominator tell you?

**Support Discussion** Have partners discuss briefly before group discussion. As needed, help students count the equal parts.

**Prompt:** How many equal parts? How many parts are shaded?  
**Sentence Starter:** Fractions are used to show ...

## Problem Solving

■ **Model the Four-Step Method** Guide students through the four-step method using think-aloud strategies. Point out the fraction clue word *equal*.

**Think Aloud** 8 equal slices, 1 slice has pepperoni. That means 1 out of 8 equal slices has pepperoni.

PROBLEM SOLVING

PIZZA FRACTIONS

**READ** Mr. Hill makes a pizza. He cuts the pizza into 8 equal slices. 1 slice has pepperoni. What fraction of the pizza has pepperoni?

- PLAN**
- What is the problem asking you to find?  
You need to find the fraction of the pizza that has pepperoni.
  - What do you need to know to solve the problem?  
How many equal slices? 8  
How many slices have pepperoni? 1
  - How can you show the fraction?  
You can use a fraction model or a number line.

**SOLVE** Make a model. Write the fraction.  
Draw a circle with 8 equal parts.  
Shade 1 part.



1 shaded part      8 equal parts

**CHECK** Model the fraction another way. Use a number line.



1 part counted      8 equal parts

1  
8 of the pizza has pepperoni.

PRACTICE

Use the problem-solving steps to help you.

- 1 Chloe cuts a loaf of bread into 8 equal slices. She gives 1 slice to her friend. What fraction of the bread does Chloe give to her friend?

1  
8

- 2 A graham cracker has 6 equal pieces. Matthew eats 1 piece. What fraction of the graham cracker does he eat?

1  
6

- 3 Kuri divides her paper into 4 equal sections. Then she makes 1 section red. What fraction of the paper is colored red?

1  
4

I remember!  
I need to find  
equal parts.

CHECKLIST

☐ READ

☐ PLAN

☐ SOLVE

☐ CHECK

CHECKLIST

☐ READ

☐ PLAN

☐ SOLVE

☐ CHECK

CHECKLIST

☐ READ

☐ PLAN

☐ SOLVE

☐ CHECK

- Support Problem-Solving Practice** Have students use the Checklist as they complete each step.

**Prompt:** Can you put your finger on the number of equal parts?  
**Prompt:** Show me a fraction model for the problem.  
**Prompt:** Which number is the numerator?

- Explore Student Thinking** Invite students to describe the strategy they chose and why. Have partners compare their work on a problem and discuss their results.

ENGLISH LANGUAGE LEARNERS

Provide students with a physical model of vocabulary by dividing a circle into 4 equal parts and shading 1 part. Use sticky notes to label the denominator and numerator.

Assess

- Use the table below to observe whether students accurately represent and identify fractional parts of a whole, and to address any difficulties as needed before the quiz.
- When all students are ready, assign the Lesson 1 Quiz.

1	Observation	Action
	Errors in counting parts of the whole; no understanding of unit fractions.	Use fraction strips. Have students point as they count the equal parts in each whole.
2	Observation	Action
	Makes occasional errors when identifying fractions; some understanding of unit fractions.	Provide additional problems for modeling and identifying equal parts of a whole.
3	Observation	Action
	Models and identifies unit fractions correctly.	Assign the Lesson 1 Quiz.