

## Student Lesson Walkthrough

Lessons consist of three different types of sessions: Explore, Develop, and Refine. The following is a walkthrough of a Develop session. Through this walkthrough we are outlining the role of both the student and the teacher with respect to the Try-Discuss-Connect instructional routine.

### Research says . . .

“Effective teaching of mathematics consistently provides students, individually and collectively, with opportunities and supports to engage in **productive struggle** as they grapple with mathematical ideas and relationships.”

—NCTM, 2014

### Try It & Discuss It (Whole Class)

#### Student's Role

- Students make sense of the scene presented and find multiple examples that support the lesson's content focus.
- Each time a student identifies an element of the scene, classmates will be asked to restate the idea or explain how the students' ideas connect to the mathematics of the lesson. This is done to give all students time to process and critique others' thinking. Sometimes, students may be asked to turn and talk about another students' idea if it is more complex or requires more processing time.

#### Teacher's Role

- Teachers ask students to describe the context and what they see in the picture before launching into the concepts of the lesson and giving students time to identify mathematical connections in the picture. Teachers have students then describe their thinking to their peers, frequently asking the rest of the class to restate what was said or show if they agree or disagree with what was said.
- The *Discuss It* in the Student Worktext, the discourse questions, and prompts in the Teacher's Guide provide ongoing opportunities to promote thoughtful dialogue and connect mathematical ideas. Teachers encourage the exchange of ideas among students by having them explain how the questions and their responses connect to the visual representation.

LESSON 17

Develop Adding Within 5

SESSION 2 ● ● ● ● ●



**Discuss It** How is the group of sheep like the group of pigs?

Encourage children to describe addition problems for each group of animals. Provide an example, such as 3 little pigs and 1 big pig is 4 pigs. Have children circle the two groups of animals that show 3 plus 1.

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Lesson 17 Add Within 5 335

## Research says . . .

“The mathematical practices call on students to make sense of, connect, model with, and use as tools a **range of** concrete and abstract **mathematical representations**. This offers multiple entry points for students with different processing strengths.”

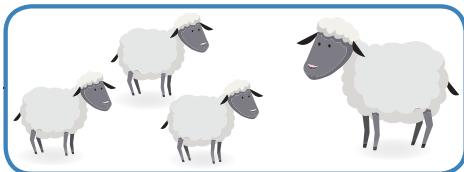
— Creighton et al., 2016



LESSON 17 DEVELOP

SESSION 2 ● ● ● ● ●

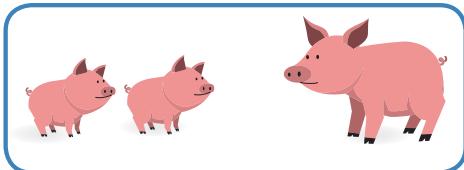
### Connect It



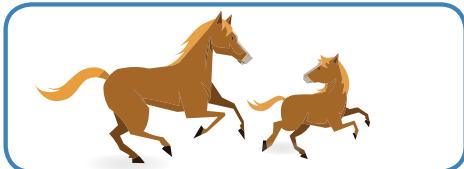
### Math Toolkit

• counters

$$2 + 1 = 3$$



$$1 + 1 = 2$$



$$3 + 1 = 4$$

**Have children match pictures to equations.** Have children tell the number of large and small animals and the total in each picture. Then have them say each equation aloud, use counters to model it, and draw a line from the picture to the equation that matches.

**Discuss It** How are the addition equations alike?  
How are they different?

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### Connect It (Whole Class)

#### Student's Role

- Students who use concrete materials to make connections between visual representations and symbolic representations are able to do so as they apply what they have learned to solve similar problems.
- Making and defending conjectures helps students understand their own progress as they look for approaches that work best for them.

#### Teacher's Role

- Teachers help students make sense of what they are doing and provide access to concrete manipulatives for students to use, as needed, to complete this page. Teachers give students time to think on their own or with a partner about which representations they would connect before discussing together as a class.
- Teachers have a few students share their thinking about each *Connect It* with the class before moving to the next one. Each time, classmates share if they agree or disagree with the connections being made and explain why they agree or disagree. During this time students often make connections among concrete, visual, and symbolic representations.
- The *Deepen Understanding* in the Teacher's Guide is used to help students deepen understanding of the content, critically analyze information, and apply complex cognitive thinking.

## Student Lesson Walkthrough

continued

### Research says . . .

Using and **connecting representations** lead students to deeper understanding. Different representations, including concrete models, pictures, words, and numbers, should be introduced, discussed, and connected to support students in explaining their thinking.

— Gojak, L. et al., 2010

### Try It (Whole Class/Individual)

#### Student's Role

- Students work together as a class to make sense of what they are being asked to do and then persevere with a partner or on their own to develop strategies to address each problem. During this time students may choose appropriate tools and manipulatives to use to represent their thinking, as applicable.
- Selected students discuss their representations and thinking with the class while other classmates restate or explain the presenter's thinking as a way to process and understand the mathematical ideas being shared.
- By being asked to explain their thinking, students develop the understanding that there are many ways to approach solving mathematical problems. Listening to and critiquing the approaches of others prompts them to look at each problem from multiple perspectives, enriching their understanding of the mathematics and helping them make connections.

#### Teacher's Role

- Teachers encourage students to explain their own thinking as well as those of their classmates. The discourse questions in the Teacher's Guide support teachers in asking probing questions that require students to elaborate on important information and summarize their thinking.

LESSON 17
SESSION 3 ●●●○

Develop Adding Within 5

**Math Toolkit**  
• counters

**Try It**

$$2 + 1 = \underline{\quad}$$

$$3 + 1 = \underline{\quad}$$

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$$2 + 2 = \underline{\quad}$$

$$2 + 3 = \underline{\quad}$$

**Discuss It** What is  $2 + 2$ ? What is  $2 + 3$ ? How can you tell?

**Have children make up a story for each addition equation and use counters to act out the story.** Have them count the counters and write the total. Read the equation aloud and connect it back to the counters and the story.

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Lesson 17 Add Within 5 **339**



## Research says . . .

“When you learn an idea in mathematics, it is helpful to reinforce that idea, and the best way to do this is by using it in different ways.”

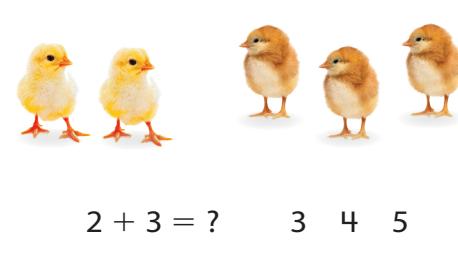
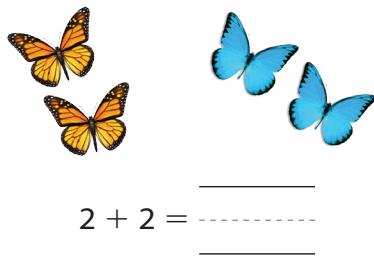
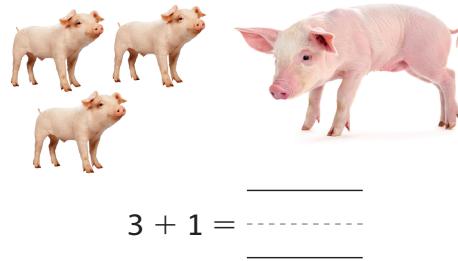
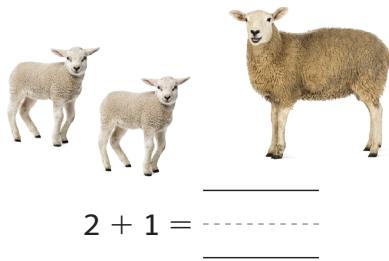
— Boaler, 2016



LESSON 17 DEVELOP

SESSION 3 ●●●○○

### Connect It



Have children compare each equation with the pictured addition problem and then count and write the total. Have them read the completed equation aloud. Have them relate the written total to the number of animals shown.

**Discuss It** Which is more,  $2 + 1$  or  $3 + 1$ ? How can you tell?

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### Connect It (Whole Class/Individual)

#### Student's Role

- Students work together as a class to make sense of what they are being asked to do and then persevere with a partner or on their own to develop strategies to address each problem.
- Students reinforce their learning by reflecting on the classroom discussion. As students explain their solution pathways to others and respond to clarifying questions, they examine their ideas, build logical arguments, and refine their understanding.
- Justifying their thinking engages students in learning that requires them to connect what they have learned in the lesson to new situations.

#### Teacher's Role

- Teachers monitor student understanding by asking open-ended discourse questions that provide consistent opportunities for students to share their reasoning.
- The *Hands-On Activity* in the Teacher's Guide is used to model different ways of representing a given problem. This encourages students to think flexibly. Accessing content through another, concrete approach also helps ELL and other students visualize concepts.
- The *Close* slide in the Teacher's Guide serves as an Exit Ticket. Teachers look for errors in student thinking and use the *Common Misconception* to provide on-the-spot support.





## Student Lesson Walkthrough

continued

### Research says . . .

Effective teaching of mathematics **builds fluency with procedures** on a foundation of conceptual understanding so that students, over time, become skillful in using procedures flexibly as they solve contextual and mathematical problems.

— NCTM, 2014

### Practice (Individual)

#### Student's Role

- Students work independently, actively participating in completing problems that support them in applying learning to new situations and to demonstrate their understanding. Students have access to, and choose, appropriate tools and concrete objects to represent the problems as they work.
- As students respond to and solve new problems, their written work encourages them to reflect on their approaches and understanding and to monitor their progress toward learning goals.

#### Teacher's Role

- Teachers observe student responses, looking for indications that students are engaging with content to gain understanding. The solutions in the Teacher's Guide provide some examples of how students may approach these problems.

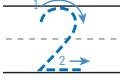
Name: \_\_\_\_\_

LESSON 17 SESSION 3

### Practice Adding Within 5

**Example**




$1 + 1 =$  



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$1 + 2 =$  \_\_\_\_\_  
 \_\_\_\_\_

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$1 + 3 =$  \_\_\_\_\_  
 \_\_\_\_\_

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$1 + 4 =$  \_\_\_\_\_  
 \_\_\_\_\_

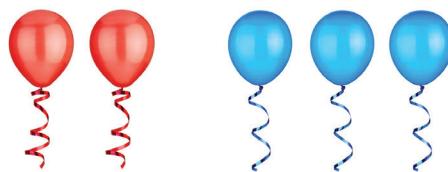
**Have children compare each equation with the pictured addition problem and then count and write the total.** Have children read the completed equation aloud. Have them relate the written total to the number of objects shown.

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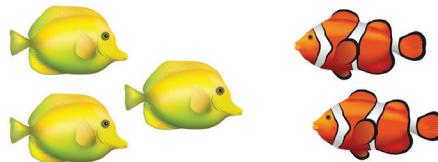
$$2 + 1 = \underline{\quad}$$



$$2 + 3 = \underline{\quad}$$



$$2 + 2 = \underline{\quad}$$



$$3 + 2 = \underline{\quad}$$

Have children compare each equation with the pictured addition problem and then complete the equation. Have children read the completed

equation aloud. Have them relate the written total to the number of objects shown.

## Practice (Individual)

### Student's Role

- As students work on solving new problems, they begin to generalize about how specific approaches can be applied to work more broadly.
- They continue to build procedural fluency by describing and making mathematical choices about how to represent the problems and considering the appropriateness of those choices.

### Teacher's Role

- The practice problems are an additional opportunity for formative assessment. Teachers use student responses as a means to interpret student thinking and gather evidence of student understanding.
- As time allows, the teacher may want to have students compare their strategies and answers with a partner or discuss select questions with the whole class.

## Practice and Fluency

*Ready Classroom Mathematics* is designed so that students are practicing mathematics and building fluency not by learning and repeating procedures, but by reasoning strategically, solving problems, and discussing with peers.

### Lesson Structure

A significant amount of practice is built into the program at the lesson level. Teachers should implement lesson practice as part of every session and assess student learning before assigning optional practice.

Every lesson is divided into **Explore**, **Develop**, and **Refine** sessions:

	Explore	Develop	Refine
<b>Grades K–1</b>	1 session	2 sessions	2 sessions
<b>Grade 2</b>	1 session	1–3 sessions	2 sessions
<b>Grades 3–5</b>	1 session	1–3 sessions	1 session

### Explore Sessions

Students make connections to prior knowledge and begin to build an understanding of why procedures work and how they can be applied. Students are simultaneously learning about new strategies and approaches while practicing previously learned ones.

Name: \_\_\_\_\_ LESSON 17 SESSION 1

### Prepare for Adding Within 5

Have children show what it means to add. Have children fill in each of the boxes to show the meaning of addition (joining). Encourage them to use pictures, words, and numbers. Tell children to think of as many different ways as they can.

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Every Explore session has **Additional Practice** that reinforces essential mathematical vocabulary. A **graphic organizer** is provided for students to develop deeper understanding of key terms.

### Building Fluency

**Practice rote counting by 10s to 100.**

**Materials** none, children use motions

While children are standing in line, at the start of the day, or at circle time, have them count by tens with actions. They might clap hands, tap feet, or alternate raising hands while counting.

**Building Fluency** activities (Grade K) are fun and repeatable activities that provide ongoing fluency practice.

## Develop Sessions

Students connect ideas they have previously learned with new concepts they are beginning to learn to strengthen their mathematical understanding.

LESSON 17 SESSION 2

	$2 + 1 = 3$
	$4 + 1 = 5$
	$1 + 1 = 2$

Have children match pictures to addition equations. Have children tell the number of large and small animals, as well as the total, in each picture. Read each addition equation aloud together. Then have children draw lines to match each picture to its addition equation.

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### Fluency Practice

#### Practice facts within 10.

**Materials** For each child: Activity Sheet *Facts Practice 4*

- Have children complete Activity Sheet *Facts Practice 4*. Then have pairs work together to review the facts. One partner reads two addends and the other partner gives the sum.
- Children should go “out of order” for this, skipping around the worksheet and choosing addition equations with different sums.

**Additional Practice** allows students to demonstrate a flexible use of strategies and solution methods, to explain their thinking about the strategies they are using, and to apply those ideas appropriately and efficiently.

In **Grades K–1**, the foundations for counting and cardinality are especially important. **Fluency Practice** are brief and fun activities for students to practice mathematical procedures and operations.

## Refine Sessions

The Refine sessions in every lesson provide two full days entirely devoted to deepening understanding and practicing skills in *Apply It*.

LESSON 17 **Refine** Adding Within 5 SESSION 4

**Apply It**

**Math Toolkit**  
• Counters  
• Crayons

2 	<input type="text"/>	$2 + 1 =$ _____
1 	<input type="text"/>	$2 + 1 =$ _____
3 	<input type="text"/>	$3 + 1 =$ _____
1 	<input type="text"/>	$3 + 1 =$ _____
3 	<input type="text"/>	$3 + 2 =$ _____
2 	<input type="text"/>	$3 + 2 =$ _____

Have children make up a story problem for each situation, use counters to act out the story, and then color the 5-frame to model the story. Read the equation aloud, and connect it back to the counters and the story.

**Discuss It** Which problem has a total of 4? How can you tell?

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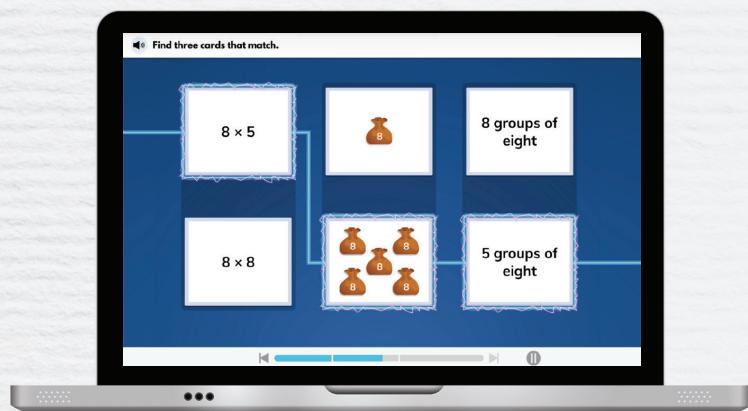
In **Apply It**, rich practice problems provide multiple opportunities for students to practice the concept they are learning by applying it repeatedly to new problems.

## Practice and Fluency

continued

### Additional Lesson-Level Practice

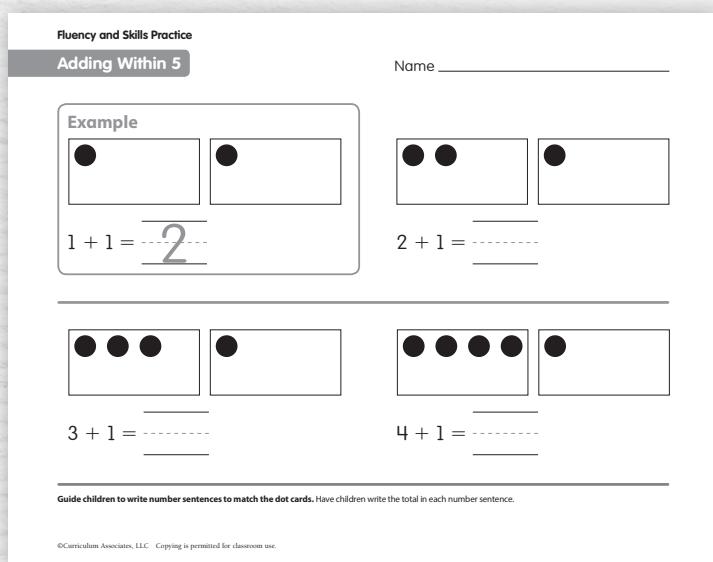
*Ready Classroom Mathematics* provides targeted practice that teachers can apply flexibly throughout the lesson where it is introduced and as spiraled review in future classes.



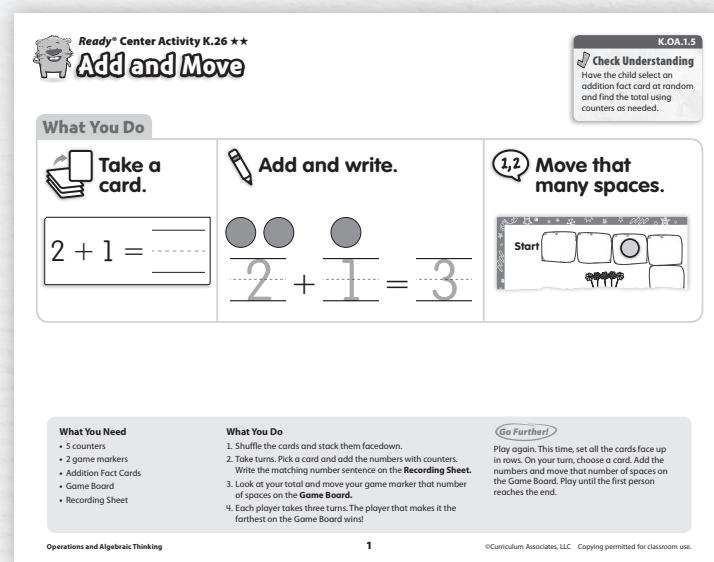
Assignable **Interactive Practice** provides targeted practice for skills recently learned.



**Learning Games** provide engaging fluency practice across a wide range of content. The games provide novel ways for students to visualize different procedures and concepts and, critically, give students a safe space to fail.



**Fluency and Skills Practice** pages, on the Teacher Toolbox, are for brief and targeted practice of that session's content. These include pages that focus on repeated reasoning to build number sense and mental math skills.



**Math Center Activities** provide practice for every lesson as students work collaboratively to apply skills, strategies, and procedures through differentiated activities. Use to reinforce lesson skills in a rotation classroom model, as a differentiated activity after a lesson.