Topic D
Strategies for Counting On

1.OA.5, 1.OA.8, 1.OA.6

Focus Standard: 1.OA.5
1.OA.8

Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ − 3, 6 + 6 = □.

Instructional Days: 3

Coherence -Links from: GK–M4 Number Pairs, Addition and Subtraction of Numbers to 10
-Links to: G2–M4 Addition and Subtraction of Numbers Within 200 with Two-Step Word Problems to 100

Topic D affords students the opportunity to solve problems within the simplicity of equations, moving on from the context of story problems. Continuing on the momentum gained with counting on as it relates to addition in Topic C, students begin Topic D with tracking the number of counts on from a given number by using their fingers and 5-group cards (1.OA.5).

In Lessons 14 and 15, students begin with an embedded quantity represented by both a picture and a numeral, and then tap pictures, tap the dots on their 5-group cards, draw more, and finally, replace these pictorial strategies to extending their fingers as an effective strategy for keeping track of the change. They apply these strategies to track changes of 0, 1, 2, and 3, thus limiting their use of tracking to quantities that will maintain efficiency. Students use these same strategies in Lesson 16, in both result unknown and the more complex change unknown equations, solving problems such as 4 + ___ = 7 as they say, “5, 6, 7” (1.OA.8).

A Teaching Sequence Towards Mastery of Strategies for Counting On

Objective 1: Count on up to 3 more using numeral and 5-group cards and fingers to track the change. (Lesson 14–15)

Objective 2: Count on to find the unknown part in missing addend equations such as 6 + ___ = 9. Answer, “How many more to make 6, 7, 8, 9, and 10?” (Lesson 16)

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Lesson 14

Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Suggested Lesson Structure

<table>
<thead>
<tr>
<th>Activity</th>
<th>Duration</th>
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<tbody>
<tr>
<td>Fluency Practice</td>
<td>(11 minutes)</td>
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<tr>
<td>Application Problem</td>
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<tr>
<td>Concept Development</td>
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<tr>
<td>Student Debrief</td>
<td>(15 minutes)</td>
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<td><strong>Total Time</strong></td>
<td><strong>(60 minutes)</strong></td>
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**Fluency Practice (11 minutes)**

- Skip-Counting Squats: Forward and Back to 20 **1.OA.5** (2 minutes)
- Count On Cheers: 2 More **1.OA.5** (3 minutes)
- Mind Reader: Partners to 10 **1.OA.6** (6 minutes)

**Skip-Counting Squats (2 minutes)**

Note: This activity supports the connection of counting on by 2 and adding 2, and counting back by 2 and subtracting 2.

Have students count from 0-20 and back 2 times, squatting down and touching the floor on odd numbers, and standing up for even numbers.

- For the first count, instruct students to whisper when they squat and talk normally when they stand.
- On the second count, encourage students to try thinking of the numbers in their heads when they squat and whisper when they stand.

**Count On Cheers: 2 More (3 minutes)**

Note: This activity supports the connection of counting on by 2 and adding 2, and counting back by 2 and subtracting 2.

Teacher says number aloud. Students repeat the number, touching their heads and counting on as they put their fists in the air, one at a time. Alternately, students can count on with boxing punches. Extend the game by counting back 2.

fiiiiive  six  seven
Lesson 14

Missing Part: Make 10 (6 minutes)

Materials: (S) 5-group cards

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Students work with a partner, using 5-group cards. Each student puts a card his or her forehead. The partner tells how many more to make 10. Students must guess the cards on their foreheads. Partners can play simultaneously, each putting a card to his or her forehead. If appropriate, remind students that they may use their fingers to help.

Application Problem (4 minutes)

Beth went apple picking. She picked 7 apples and put them in her basket. Two more apples fell out of the tree right into her basket! How many apples does she have in her basket now? Draw a math picture and write a number bond and number sentence to match the story.

Note: This serves as a bridge from the change unknown stories of the previous topic, the concept development of this lesson which focuses on strategies for counting on.

Concept Development (30 minutes)

Materials: (T) Pictures of crayon and hot dog problems for projecting (S) 5-group cards, personal white boards and markers

T: Today, let’s try some of those same great strategies to help us solve missing numbers in math sentences. What are some of the ways we figured out the mystery number in our bear stories? Turn and talk with a partner.

T: (Give time for partner sharing, then call on students to share strategies such as counting on, using 5-group cards, and drawing.)

T: Let’s use those strategies with this situation. (Project a picture of a box of crayons, labeled 4 on the outside and 2 more crayons.) Look at this picture. How many crayons are outside of the box?

S: 2!

T: Let’s use our fingers to keep track of these. As I point, put out your fingers to follow along.

S/T: (Teacher touches crayons on projection.) Oonenee (puts out one finger), 2 (puts out another finger).

T: How many fingers do you have out?

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

As the class is counting, support those students who may need visual or auditory help. Using physical cues such as body movements (pointing, nodding the head, eye blinking, or foot tapping) will help students who need visual help. Using auditory cues such as a snap, clap, or stomp will help those students who need auditory support.
Lesson 14: Count on up to 3 more using numeral and 5-group tiles and fingers

Date: 5/9/13

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:
When students are having difficulty counting on with fingers or 5-group cards, continue with more examples together on the carpet. Some students need to move forward in small steps and regular opportunities to practice what they are learning will eventually get them to abstract level thinking.

Problem Set (10 minutes)
Students should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.
Student Debrief (15 minutes)

Lesson Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- For which problems did you need to add one? Let’s list those number sentences.
- What do you notice about these problems? Is there a pattern you can find?
- Look at the first 3 problems. What do you notice about what we are adding each time? Why might we be only counting on 1, 2 or 3 more with our fingers?
- Are there any problems that have the same total? Let’s list those number sentences.
- How can the totals be the same if we counted on different amounts?

Exit Ticket

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
Lesson 14: Count on up to 3 more using numeral and 5-group tiles and fingers to track the change.

Date: 5/9/13

Name ___________________________ Date _________________

1. Count on to add.

There are ____ flowers altogether.

2. ______ oranges in all.

There are ____ oranges in all.

3. There is a total of ____ crayons.
Lesson 14: Count on up to 3 more using numeral and 5-group tiles and fingers to track the change.

Date: 5/9/13

1. Use your 5-group cards to count on to add. Try to use as few dot cards as you can.

4. Use your 5-group cards to count on to add. Try to use as few dot cards as you can.

\[
\begin{align*}
6 + 1 &= \\
6 + 3 &= \\
7 + 2 &= \\
\hline
5 + 3 &= \\
\end{align*}
\]

5. Use your 5-group cards, your fingers or your known facts to count on to add.

\[
\begin{align*}
8 + 2 &= \\
\hline
4 + 1 &= \\
4 + 3 &= \\
\hline
6 + 3 &= \\
\end{align*}
\]
Name ___________________________________________  Date ______________

Count on to solve the number sentences.

6 + 2 =

I counted ______ more hats.

7 + 3 =

8 + 2 =
Count on to add.

\[
\begin{align*}
5 + 1 &= \boxed{} \\
5 + 2 &= \boxed{} \\
7 + 2 &= \boxed{} \\
\boxed{} &= 6 + 3 \\
\boxed{} &= 7 + \boxed{}
\end{align*}
\]
Lesson 14: Count on up to 3 more using numeral and 5-group tiles and fingers to track the change.

Date: 5/9/13
Lesson 15

Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Suggested Lesson Structure

- Fluency Practice (15 minutes)
- Application Problem (5 minutes)
- Concept Development (25 minutes)
- Student Debrief (15 minutes)
- Total Time (60 minutes)

Fluency Practice (15 minutes)

- Happy Counting: Tens 1.OA.5 (2 minutes)
- Sprint: Counting On 1.OA.5 (13 minutes)

Happy Counting: Tens (2 minutes)

Note: By providing students with ongoing counting practice throughout the year, they build and maintain their counting skills, which are foundational for later first grade work with adding and subtracting tens.

Do Happy Counting activity from Lesson 3, counting by tens the Say Ten way. First count from 0-50 and back. Then count from 7-77 and back.

Sprint: Counting On (13 minutes)

Materials: (S) Counting On Sprint

Note: This activity provides continued practice relating counting to addition.

Application Problem (5 minutes)

Joshua and Rebecca were eating raisins. Joshua had 7 raisins and took 2 more from the box. Rebecca had 9 raisins and took 2 more from the box. Who had a greater number of raisins, Joshua or Rebecca? Draw math drawings, write number bonds or number sentences to show how you know.
Lesson 15: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Date: 5/9/13

Note: This problem provides a bridge from the previous day’s lesson to today’s as students solve problems by using the Level 2 strategy of counting on.

**Concept Development (25 minutes)**

Materials: (S) 5-group cards, a set of number sentence cards from Lesson 11 (with sticky note covering the total) per pair, personal white boards and markers

T: Today, let’s use our strategies for counting on to play the partner game Count On! We will need to use counting on with our fingers and counting with 5-group cards to play.

T: (Project 6 + 3 = □ on the board.) Show how we use counting on with our fingers to solve this.

S: Siiiix, 7, 8, 9. (Extend fingers as they count on.)

T: Show how to use our 5-group cards to solve this.

S: Siiiix, 7, 8, 9. (Put out 5-group cards with 6 on numeral side and 3 on dot side. Touch as they count.)

T: Why did they get the same answer?

S: Both are ways to keep track of the part we are counting on.

T: This is a type of a shortcut. It is a fast or efficient strategy. Today, you will work with a partner to practice using these shortcuts or strategies to play Count On!

T: Here are the directions:

1. Partners A and B lay all of the number sentence cards in front of you.
2. Partner A, you touch the card you want to take.
3. Count on or use the 5-group cards to solve for the total under the sticky note.
4. When you do, your partner lifts the sticky. If you are right, your partner says, “Go ahead and take it!”
5. Partner B takes a turn. Continue until all the cards are taken.

S: (Play Count On! with their partner. Teacher circulates, listens, and observes, providing support as necessary.)

**NOTES ON MULTIPLE MEANS OF REPRESENTATION:**

Reading aloud word problems facilitates problem solving for those students who have difficulty reading the text they are presented with. Hearing the word problem also helps students who are auditory learners.

**NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**

For students who are ready for more challenging numbers, alter the number sentence cards as you see fit. For example, 23 + 2 = ? may be more appropriate for some students, as they track the change.

**NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**

When a skill is not automatic, provide support so students can practice and refine their skill. Repeated practice with 5-group cards and fingers will help students develop automaticity of their addition facts.
Activity Worksheet (10 minutes)

Review the term shortcut with students, if necessary, explaining that this is simply a fast or efficient strategy. If the second page seems overwhelming for the students, have them fold the paper in half. This way, they will only see 7 number sentences at a time.

Students should do their personal best to complete the problem set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

Student Debrief (15 minutes)

Lesson Objective: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

- How are #1 and #2 similar? How are they different? Can one of these help you solve the other? How?
- What shortcuts did you find to add from page 2 of the worksheet? Explain your thinking.
- How do shortcuts or strategies help us?
- Look at 7 + 1 and 6 + 2. Why is the total the same? How does counting on 1 relate to counting on 2?
- Which method do you prefer to use to keep track when you are counting on? Demonstrate what you do, using a number sentence from the worksheet.
- Is there another way to solve these problems besides counting on? (e.g., visualizing, knowing related
facts, just knowing the fact.)

Exit Ticket

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today and plan more effectively for future lessons. You may read the questions aloud to the students.
**Lesson 15: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.**

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**Number correct:**
**Lesson 15 Sprint**

**Name** ________________________________  **Date** ________________

*Count and write the number.*

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Number correct: **B**
Name _________________________________ Date _____________

1. Count on to add.

There are ____ crayons altogether.

There are a total of ____ balloons.

In all, there are ____ pencils.
2. What shortcut or efficient strategy can you find to add?

- $4 + 1 = \square$
- $4 + 3 = \square$
- $7 + 1 = \square$
- $\square = 6 + 2$
- $\square = 5 + 3$
- $\square = 3 + 6$
- $\square = 3 + 7$
- $2 + 5 = \square$
- $7 + 2 = \square$
- $7 + 3 = \square$
- $\square = 4 + 2$
- $\square = 2 + 5$
- $\square = 6 + 2$
- $\square = 2 + 8$
Name ____________________________ Date ______________

Use the picture to add.

Show the shortcut you used to add.

\[ \square + \square = \square \]

There are ________ eggs total.
Lesson 15: Count on up to 3 more using numeral and 5-group cards and fingers to track the change.

Use your 5-group cards or your fingers to count on to solve.

Show the shortcut you used to add.

\[
\begin{align*}
5 + 3 &= \square \\
6 + 2 &= \square \\
7 + 3 &= \square \\
6 + 2 &= \square
\end{align*}
\]

Show the strategy you used to add.

\[
\begin{align*}
\square &= 8 + 2 \\
\square &= 6 + 3 \\
\square &= 7 + 2
\end{align*}
\]
Lesson 16

Objective: *Count on* to find the unknown part in missing addend equations such as 6 + __ = 9. Answer, “How many more to make 6, 7, 8, 9, and 10?”

Suggested Lesson Structure

- Fluency Practice (11 minutes)
- Application Problem (5 minutes)
- Concept Development (33 minutes)
- Student Debrief (11 minutes)
- Total Time (60 minutes)

**Fluency Practice (11 minutes)**

- Shake Those Disks: 7 1.OA.6 (6 minutes)
- Count On Drums: 3 More 1.NBT.1 (3 minutes)
- 10 Bowling Pins 1.NBT.1 (2 minutes)

**Shake Those Disks: 7 (6 minutes)**

Materials: (S) 7 two-color beans (disks or pennies are also acceptable) per set of partners, Shake Those Disks boards (in plastic sleeves, 1 board for each set of partners), dry erase markers, and erasers

Note: This activity addresses the core fluency objective for Grade 1 of adding and subtracting within 10.

Break students into partners. Give each set of partners 7 two-color beans. Instruct them to take turns as the *Shaker* and the *Recorder*. The Shaker shakes the disks and tosses them on the table. The Recorder then records the roll on the Shake Those Disks graph. (For example, if the Shaker rolled 3 red and 4 white the Recorder would put an X on the graph above the 3 and 4 number bond.)

**NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**

When introducing a new game to your students modeling how the game is played is very important. Oral instructions alone are not going to help all of your class learn the game. Have two students demonstrate the *Shaker* and *Recorder* roles so that all students see and hear the way the game is played.
Lesson 16: Count on to find the unknown part in missing addend equations such as 6 + = 9. Answer, “How many more to make 6, 7, 8, 9, and 10?”

Date: 5/9/13

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

When using words that may complicate language acquisition in ELL students be sure to model as much as possible. Hearing teacher-talk along with math-they-can-see helps these students comprehend the skills they are learning. Teaching in multiple modalities will also help other learners in your class.
Lesson 16: Count on to find the unknown part in missing addend equations such as $6 + \_ = 9$. Answer, "How many more to make 6, 7, 8, 9, and 10?"

Date: 5/9/13

T: How many did we count on to get up to 7? (Keep fingers out to show the two that were used to track.)
S: Two!
T: So how many beans am I missing?
S: Two beans!
T: (Lift edge of carpet and shows the 2 beans.)
T: Use your 5-group cards to make the number sentence on your number sentence place the numeral side up. If you want to double check your number sentence turn cards to the dot-side. Remember try to turn over the fewest cards you can and count on.
S: (Create $5 + 2 = 7$ on white boards with 5-group cards. Some students flip to dot-side to count on and check. Teacher circulates and checks accuracy.)

Repeat the process using the mystery box concealing 3 of the 7 beans in the box so that students only see 4 beans. Encourage them to use their 5-group cards or track on their fingers to decide how many beans are in the mystery box. Students use the cards to make a corresponding number sentence.

T: How many beans did I place in the box?
S: 3 beans!
T: What is the number sentence you recorded?
S: $4 + 3 = 7$.
T: Circle the part that was the mystery or unknown part.
T: (Projects $5 + \square = 8$.) Use your cards to make and solve this number sentence.
S: (Students discuss and solve using cards or finger tracking to confirm.)
T: What is the mystery or unknown part of this number sentence?
S: 3!

Repeat the process with the following sequence:

- a) $5 + \_ = 6$  
- b) $6 + \_ = 7$  
- c) $7 + \_ = 8$  
- d) $8 + \_ = 9$  
- e) $9 + \_ = 10$

- a) $4 + \_ = 6$  
- b) $5 + \_ = 7$  
- c) $6 + \_ = 8$  
- d) $7 + \_ = 9$  
- e) $8 + \_ = 10$

- a) $3 + \_ = 6$  
- b) $4 + \_ = 7$  
- c) $5 + \_ = 8$  
- d) $6 + \_ = 9$  
- e) $7 + \_ = 10$

Leave the sets of number sentences on the board so that students can notice the patterns within the sequence. Explore the resulting patterns.

- What do you notice is happening?
- Image there is a fourth column (point.) What number sentence do you think I’ll add next in each row?
- How do the parts change from one number sentence to the next?
- What strategies did you use?
Problem Set (10 minutes)

Distribute Problem Set and allow students to work independently or in small groups.

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to modify the assignment by specifying which problems they work on first. Some problems do not specify a method for solving. Students solve these problems using the RDW approach used for Application Problems.

Student Debrief (11 minutes)

Lesson Objective: Count on to find the unknown part in missing addend equations such as 6 + __ = 9. Answer, “How many more to make 6, 7, 8, 9 and 10?”

Student Debrief is intended to invite reflection and active processing of the total lesson experience.

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner before going over answers as a class. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson. You may choose to use any combination of the questions below to lead the discussion.

Have students bring their Problem Set and application problems to the carpet. Have them go over their Problem Set with their partner. Review the problems as a class at a rapid pace.

The following is a suggested list of questions to invite reflection and active processing of the total lesson experience. Use those that resonate for you as you consider what will best support your students’ ability to articulate the focus of the lesson.

- Look at Problems 3 and 4 on the Problem Set. What do you notice is the same about these problems? (One of the parts is the same.) What do you notice is different? (The parts are in different places in the equation.)
- How can it be true that all the unknown numbers, the mystery numbers are the same on the first page?
Lesson 16

Have students look at their work from the Application Problem with Finn’s rings and the last problem on their Problem Set.

- What strategies did you use to solve them? How are these problems the same? How are they different? How can the parts from the rings problem help you solve the last Problem Set problem?
- On the Problem Set you could pick from lots of tools or strategies. You could have kept track on your fingers, used 5-group cards, or known it in your head. Share with your partner: What do you notice about how you solved most of your problems? Why did you pick that tool or strategy the most?

Exit Ticket (3 minutes)

After the Student Debrief instruct students to complete the Exit Ticket. A quick review of their work will help you assess the students’ understanding of the concepts that were presented in the lesson today. Students have two minutes to complete the Exit Ticket. You may read the questions aloud to the students.
Lesson 16: Count on to find the unknown part in missing addend equations such as $6 + \_ = 9$. Answer, "How many more to make 6, 7, 8, 9, and 10?"

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Shake Those Disks! - 7

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Lesson 16: Count on to find the unknown part in missing addend equations such as \(6 + \_ = 9\). Answer, "How many more to make 6, 7, 8, 9, and 10?"

1. Draw more apples to solve \(4 + \_ = 6\).

\[
\begin{array}{ccc}
4 & + & \_ \\
\_ & = & 6
\end{array}
\]

I added ____ apples to the tree.

2. How many more to make 7?

\[
\begin{array}{ccc}
5 & + & \_ \\
\_ & = & 7
\end{array}
\]

3. How many more to make 8?

\[
\begin{array}{ccc}
\_ & + & 6 \\
\_ & = & 8
\end{array}
\]

4. How many more to make 9?

\[
\begin{array}{ccc}
7 & + & \_ \\
\_ & = & 9
\end{array}
\]

Date: 

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Lesson 16: Count on to find the unknown part in missing addend equations such as \(6 + \_ = 9\). Answer, "How many more to make 6, 7, 8, 9, and 10?"

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Lesson 16: Count on to find the unknown part in missing addend equations such as $6 + _ = 9$. Answer, “How many more to make 6, 7, 8, 9, and 10?”

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1. $3 + 1 = 4$

5. Count on to add. Circle the strategy you used to keep track.

   - $4 + _ = 5$
   - $4 + _ = 7$
   - $8 = 5 + _$
   - $10 = _ + 8$
   - $7 + _ = 8$
   - $+_5 = 7$
   - $8 = 6 + _$
   - $10 = _ + 7$
Lesson 16 Exit Ticket

Lesson 16: Count on to find the unknown part in missing addend equations such as $6 + _ = 9$. Answer, "How many more to make 6, 7, 8, 9, and 10?"

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Solve the number sentences. Circle the tool or strategy you used.

$5 + \underline{\hspace{1cm}} = 7$
- I counted on ______ using ______
- Or
- I just knew

$6 + \underline{\hspace{1cm}} = 9$
- I counted on ______ using ______
- Or
- I just knew
Lesson 16: Count on to find the unknown part in missing addend equations such as $6 + \_ = 9$. Answer, "How many more to make 6, 7, 8, 9, and 10?"

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1. Use simple math drawings. Draw more to solve $4 + \_ = 6$.

   $4 + \_ = 6$

2. Use your 5-group cards to solve $6 + \_ = 8$

   $6 + \_ = 8$

3. Use counting on to solve $7 + \_ = 10$

   $7 + \_ = 10$