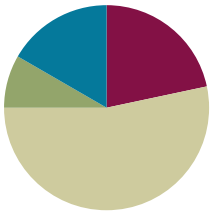
Lesson 2

Objective: Compare length using indirect comparison by finding objects *longer than*, *shorter than*, and *equal in length to* that of a string.

Suggested Lesson Structure

Fluency Practice	(13 minutes)
Application Problem	(5 minutes)
Concept Development	(32 minutes)
Student Debrief	(10 minutes)
Total Time	**(60 minutes)**



Fluency Practice (13 minutes)

- Happy Counting **1.OA.5, 1.NBT.5** (3 minutes)
- Hide Zero Number Sentences **1.NBT.2, 1.NBT.4** (3 minutes)
- Addition with Cards **1.NBT.6** (7 minutes)

Happy Counting (3 minutes)

Note: In the first two modules, students practiced counting by ones, tens, twos, and fives, both the regular way and the Say Ten way. Reviewing these counting patterns within 40 prepares students for Module 4 while strengthening their understanding of place value and their ability to add and subtract.

Choose a counting pattern and range based on the class's skill level. If students are proficient up to 40, start at 40, and quickly go up to 80. If they are proficient between 40 and 80, Happy Count between 80 and 120. To reinforce place value, try alternating between counting the regular way and the Say Ten way.

T:										
T/S:	ten 9	20	2 tens 1	(pause)	20	ten 9	(pause)	20	2 tens 1	22

Hide Zero Number Sentences (3 minutes)

Materials: (S) Hide Zero cards with 0–9 and 10, 20, 30, 40 (Fluency Template 1)

Note: This fluency activity strengthens the understanding of place value and prepares students for Module 4. If students already have Hide Zero cards from previous work, only the final page (10, 20, 30, 40) needs to be copied and distributed.

Show students a number from 10 to 40 with Hide Zero cards (e.g., 15). Students say an addition sentence with 10 as an addend (e.g., 10 + 5 = 15). As students say the sentence, break apart the Hide Zero cards to model the equation. Alternate asking students to say the numbers the Say Ten way and the regular way.

Use the following suggested sequence: 15, 25, 35; 14, 24, 34; and 16, 26, 36.

Addition with Cards (7 minutes)

Materials: (S) Numeral cards 0–10 (Fluency Template 2), counters (if needed)

Note: This review fluency activity strengthens students' abilities to add within and across ten. Numeral cards from previous modules can be used if they have already been produced. Numeral cards 11–15 are needed in later lessons.

Students sit in partnerships. Students shuffle or mix their numeral cards. Each partner places her deck of cards face down. Each partner flips over two cards and adds her cards together. The partner with the greater total keeps the cards played by both players that round. For example Player A draws 4 and 5 and gives the total 9. Player B draws 9 and 4 and gives the total, 13. Since 9<13, Player B keeps the cards. If the sums are equal, the cards are set aside, and the winner of the next round keeps the cards from both rounds. At the end of the game, the players will each be left with 1 card. They each flip their last card over and the player with the highest card says the sum and collects the cards. Students continue to play as time allows.

Application Problem (5 minutes)

Jordan has 3 stuffed animals: a giraffe, a bear, and a monkey. The giraffe is taller than the monkey. The bear is shorter than the monkey. Sketch the animals from shortest to tallest to show how tall each animal is.

Note: This problem directly relates to today's lesson, providing an opportunity to circulate and uncover students' prior understandings and possible misconceptions. Students' drawings should demonstrate the proper alignment of endpoints when they are sketching to show the comparison between the animals. During the Student Debrief, be sure to discuss the use of the terms taller than and longer than when comparing objects. Reinforce the connection between the two terms: that sometimes we describe length in terms of how tall something is when the length is a type of **height**, going from the ground straight up toward the sky.

Concept Development (32 minutes)

Materials: (T) 2 feet of string, 9 cm long strip of paper, scissors, various classroom objects shorter and longer than the teacher's foot (e.g., board eraser, piece of 9" × 12" construction paper, 8½" × 11" paper on a bulletin board) (S) 1 foot of string, scissors, various classroom objects for measuring length, personal white board with indirect comparison statements (Template), 9 cm long strips (e.g., paper, pipe cleaners, or twist ties)

Have students place their personal white boards at their tables and sit in the meeting area in a semicircle.

T: (Place the string and a strip of paper on the floor for students to see.) I'm looking to see if I can find any items that are longer than or shorter than my foot. Oh, I see one! I really want to compare the length of the paper on the bulletin board to my foot. (Walk over to the bulletin board, and hoist up foot to compare.) Wow. I really want to compare, but it's not easy. What should I do? Talk with your partner to come up with a plan for how I can compare the length of my foot to the length of the paper on the bulletin board. (Answers may vary.)

T: (If students do not mention using a string as a tool to measure the teacher's foot, direct their attention to the activity materials.) Wow. Those were some great ideas! I wonder if using any of these items might also help me. I'm going to get some string and cut it so that it is equal in length to my foot. A string is much easier to use than trying to put my foot against everything I want to compare it to!

T: (Demonstrate measuring foot with a string and cut.) So, this is the same length as…?

S: Your foot!

T: Now, I can walk over to the bulletin board and compare to see if the paper is longer or shorter than my foot. What do I need to do to make sure that we have an accurate comparison?

S: Line up the endpoints!

T: (Align endpoints and measure.) Which is longer, the string or the paper?

S: The paper.

T: So, the paper is longer than the string, and the string is the same length as my foot. So, which is longer, my foot or the paper?

S: The paper is longer than your foot.

T: (Write on the board: The paper is longer than my foot.) I wonder if I can find something that's shorter than my foot. Oh, the white board eraser! Let's check. (Hold up the string.) This string is the same length as…?

S: Your foot.

T: Can I use the string to see if my foot is longer or shorter than the eraser?

S: Yes.

NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Some students benefit from extra practice when determining which objects are *longer than*, *shorter than,* or *equal in length to.* These students may still be trying to comprehend the idea of an endpoint, so the extra practice helps secure their understanding of these terms.

T: I need to make sure…?

S: The endpoints line up!

T: (Align endpoints and measure.) What do you see?

S: The string is longer than the eraser. → That means your foot is longer than the eraser. → The eraser is shorter than your foot.

T: (Write on the board: The eraser is shorter than my foot.) Great! The string was such an easy way to compare the length of my foot to the length of the other objects. Can we figure out which is longer, the paper or the eraser? Turn and talk to your partner, and explain your thinking.

MP.7

S: The paper is longer than the eraser.

T: We didn't compare the paper and the eraser by lining them up by their endpoints. How did you know which was longer?

S: The paper was longer than your foot, but the eraser was shorter than your foot, so the paper has to be longer than the eraser!

T: Let's check. (Bring the eraser to the paper on the bulletin board, line up the endpoints, and compare.) You are correct!

T: (Write on the board: The paper is longer than the eraser.) Great thinking!

T: (Hold up a piece of construction paper.) This piece of construction paper is longer than my foot. The paper from the board was longer than my foot, too. Can I tell which type of paper is longer now that I've compared both with my foot? Talk with your partner.

S: (Discuss.) No, you can't tell. → They are both longer, so you don't know which one is the longest. → You would have to have something that's in between the two sizes.

T: That's right. Both the pieces of paper are longer than my foot, but I cannot tell if the construction paper is longer than the paper on the board.

T: Now it's your turn. You'll go on a scavenger hunt to find three items, one that is longer than your foot, one that is shorter than your foot, and lastly, one that is about the same length as your foot. But you won't be able to use your foot to measure! Instead, I will give you a piece of string to use!

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Provide challenging extensions for students who are able to compare length indirectly with a string. Offer them a longer string to use with longer objects, and have them present their findings to the class. Alternatively, students can use their foot length to compare two items that are both longer than their foot, or students can compare objects that are close in length.

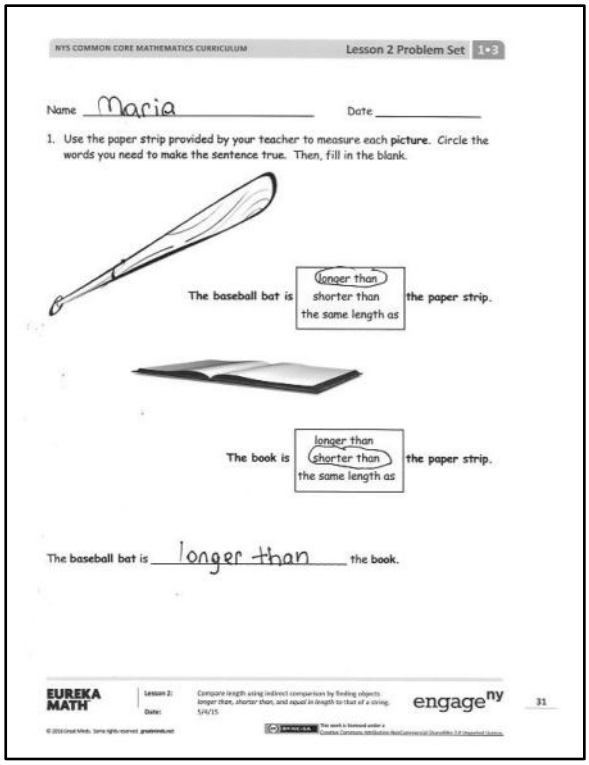
Demonstrate how students can work with their partners to measure and cut their piece of string to match their foot (or shoe). Allow five minutes for students to prepare the strings and to look for their items. Have students then return to their seats to fill in their comparison statements on their personal white boards and share their findings with a partner. Have them repeat this process as time allows.

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 should solve these problems using the RDW approach used for Application Problems.

Note: Students use a 9 cm paper strip, pipe cleaner, or twist tie instead of a string to measure each picture in the Problem Set. Explain to students that the paper strip is used in the same fashion as the string, as a measuring tool. Model measuring the first picture (baseball bat) using the paper strip. Prepare today's Problem Set on two separate pieces of paper to avoid having students flip over their papers as they use information from Page 1 to complete Page 2.

Note that students need to take a paper strip home to complete the homework.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set 1•3

Name Maria Date

1. Use the paper strip provided by your teacher to measure each picture. Circle the words you need to make the sentence true. Then, fill in the blank.

The baseball bat is (longer than / shorter than / the same length as) the paper strip.

The book is (longer than / shorter than / the same length as) the paper strip.

The baseball bat is longer than the book.

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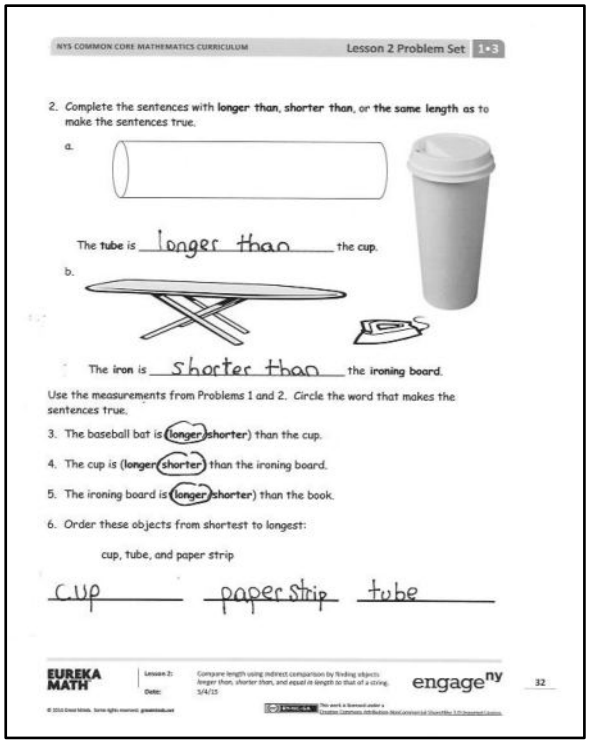
Student Debrief (10 minutes)

Lesson Objective: Compare length using indirect comparison by finding objects *longer than, shorter than,* and *equal in length to* that of a string.

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.


NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set 1•3

2. Complete the sentences with **longer than, shorter than,** or **the same length as** to make the sentences true.

a.

The tube is longer than the cup.

b.

The iron is shorter than the ironing board.

Use the measurements from Problems 1 and 2. Circle the word that makes the sentences true.

3. The baseball bat is (longer / shorter) than the cup.
4. The cup is (longer / shorter) than the ironing board.
5. The ironing board is (longer / shorter) than the book.
6. Order these objects from shortest to longest:

cup, tube, and paper strip

cup paper strip tube

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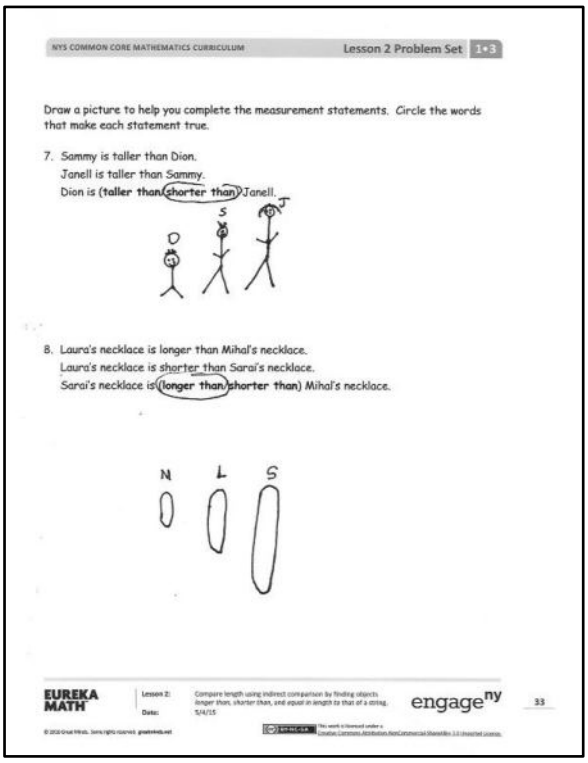
Any combination of the questions below may be used to lead the discussion.

- What did we use to compare the length of different objects? (A string and a paper strip.) How were these tools helpful?
- How were you able to figure out the length of different objects when you didn't compare them side by side?
  The index card is longer than the string.
  The sticky note is shorter than the string.
  Which is longer, the index card or the sticky note?
- The marker is shorter than the string. The string is shorter than the crayon. Which is shorter, the marker or the crayon?
- The folder is longer than the string. The book is longer than the string. Which is longer, the folder or the book? (We can't tell.) Explain how you know this.

- How was using the paper strip in the Problem Set similar to or different from using the string? How did using the paper strip help you compare the objects in the pictures? Use an example from the Problem Set to explain your thinking.
- Look at the pictures from Page 1. Can we compare the baseball bat and the tube? Why or why not?
- Look at Problem 2(a). How did you set up your paper strip when you measured the cup compared to the tube? Are you still measuring the length of each object? (Yes. It still tells us how long something is. We can measure length in different directions.)
- In the Application Problem today, we were comparing the lengths of three stuffed animals, which can also be considered their **heights**. When we measure length from the ground toward the sky, we usually call that the height. Did any of you compare the length of two objects based on their height? Share your example.



NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 2 Problem Set 1•3

Draw a picture to help you complete the measurement statements. Circle the words that make each statement true.

7. Sammy is taller than Dion.
   Janell is taller than Sammy.
   Dion is (**taller than**/**shorter than**) Janell.

8. Laura's necklace is longer than Mihal's necklace.
   Laura's necklace is shorter than Sarai's necklace.
   Sarai's necklace is (**longer than**/**shorter than**) Mihal's necklace.

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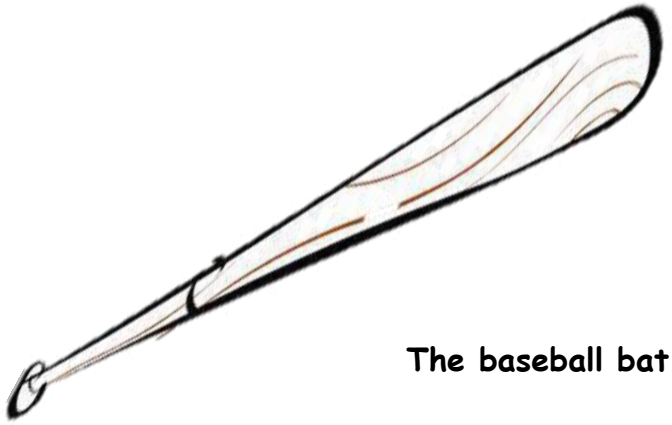
Exit Ticket (3 minutes)

After the Student Debrief, instruct students to complete the Exit Ticket. A review of their work will help with assessing students' understanding of the concepts that were presented in today's lesson and planning more effectively for future lessons. The questions may be read aloud to the students.

Name _____ Date _____

1. Use the paper strip provided by your teacher to measure each **picture**. Circle the words you need to make the sentence true. Then, fill in the blank.



The baseball bat is | longer than / shorter than / the same length as | **the paper strip.**

The book is | longer than / shorter than / the same length as | **the paper strip.**

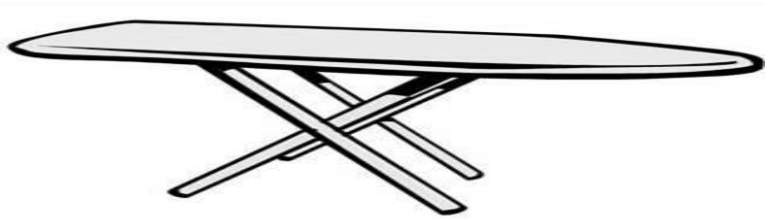
The **baseball bat** is _____ the **book.**

2. Complete the sentences with **longer than**, **shorter than**, or **the same length as** to make the sentences true.

a.

The **tube** is _____ the **cup**.

b.



The **iron** is _____ the **ironing board**.

Use the measurements from Problems 1 and 2. Circle the word that makes the sentences true.

3. The baseball bat is (**longer/shorter**) than the cup.

4. The cup is (**longer/shorter**) than the ironing board.

5. The ironing board is (**longer/shorter**) than the book.

6. Order these objects from shortest to longest:

cup, tube, and paper strip

_____ _____ _____

Draw a picture to help you complete the measurement statements. Circle the words that make each statement true.

7. Sammy is taller than Dion.
   Janell is taller than Sammy.
   Dion is (**taller than/shorter than**) Janell.

8. Laura's necklace is longer than Mihal's necklace.
   Laura's necklace is shorter than Sarai's necklace.
   Sarai's necklace is (**longer than/shorter than**) Mihal's necklace.

Name _____ Date _____

Draw a picture to help you complete the measurement statements. Circle the words that make each statement true.

Tanya's doll is shorter than Aline's doll.

Mira's doll is taller than Aline's doll.

Tanya's doll is (**taller than/shorter than**) Mira's doll.

Name _____ Date _____

Use the paper strip provided by your teacher to measure each **picture**. Circle the words you need to make the sentence true. Then, fill in the blank.

1.

The sundae is [longer than / shorter than / the same length as] **the paper strip.**

The spoon is [longer than / shorter than / the same length as] **the paper strip.**

The **spoon** is _____ the **sundae**.

2.

The **balloon** is _____ the **cake**.

3.

The **ball** is shorter than the paper strip.

So, the **shoe** is _____ the **ball**.

Use the measurements from Problems 1–3. Circle the word that makes the sentences true.

4. The spoon is (**longer/shorter**) than the cake.

5. The balloon is (**longer/shorter**) than the sundae.

6. The shoe is (**longer/shorter**) than the balloon.

7. Order these objects from shortest to longest:

   cake, spoon, and paper strip

_____ _____ _____

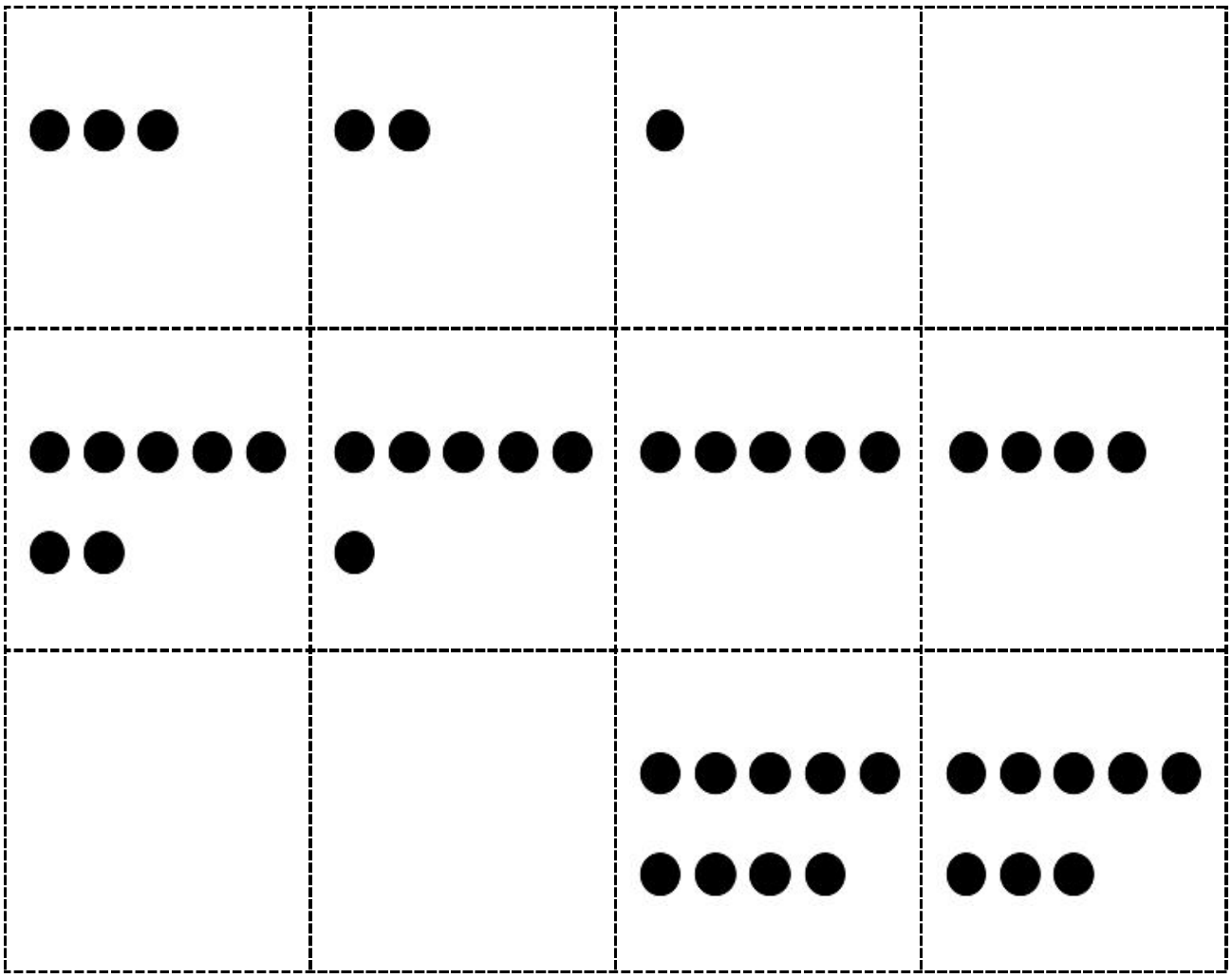
Draw a picture to help you complete the measurement statements. Circle the word that makes each statement true.

8. Marni's hair is shorter than Wesley's hair.
   Marni's hair is longer than Bita's hair.
   Bita's hair is (**longer/shorter**) than Wesley's hair

9. Elliott is shorter than Brady.
   Sinclair is shorter than Elliott.
   Brady is (**taller/shorter**) than Sinclair.

0	1	2	3
4	5	6	7
8	9		

Hide Zero cards, numeral side of ones digits (Copy double-sided with the next page.)



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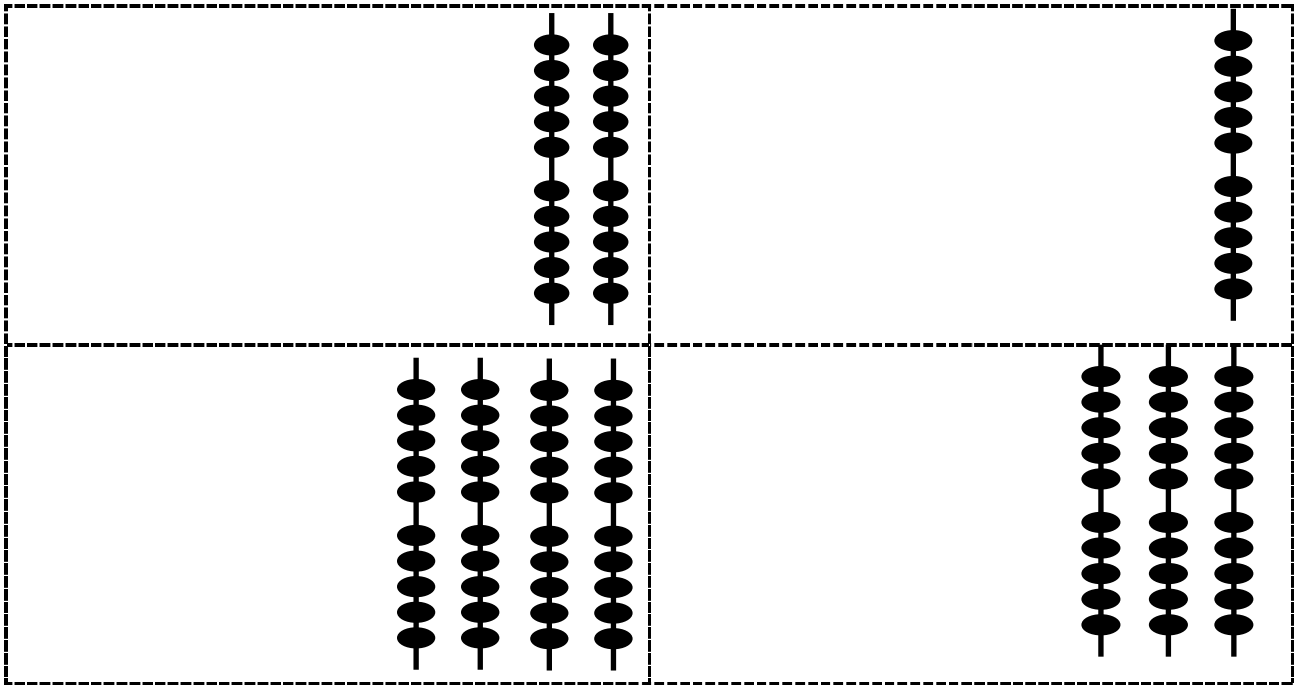
10	20
30	40

Hide Zero cards, numeral side of tens digits, 10–40 (Copy double-sided with the next page.)



Hide Zero cards, dot side of tens digits, 10–40 (Copy double-sided with the previous page.)

0	1	2	3
4	5	6	7
8	9	10	11
12	13	14	15

numeral cards

If _____ is longer than my foot and
(classroom object)

_____ is shorter than my foot, then
(classroom object)

_____ is longer than
(classroom object)

_____.
(classroom object)

My foot is about the same length as _____.
(classroom object)

indirect comparison statements