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GRADE PK • MODULE 4

Comparison of Length, Weight, Capacity, and Numbers to 5

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Note: The student sheets were created using the KG Primary Penmanship font—a clear and simple font for Pre-Kindergarteners. Please download this font to ensure accurate depiction of numerals in the Word documents.

Grade PK • Module 4

Comparison of Length, Weight, Capacity, and Numbers to 5

OVERVIEW

In the first half of this module, students identify measurable attributes of objects in terms of length, weight, and capacity. Children make their bodies *tall* like a tree and hold up a finger to show *short* like a blade of grass. The scope in which they consider objects is stretched by introducing words such as *small*, *big*, *short*, *tall*, *empty*, *full*, *heavy*, and *light* so that students will have the vocabulary needed to describe objects (PK.MD.1).

Topic A explores length using the words *tall* and *short*. Students recognize the importance of aligning endpoints to compare the lengths of two objects: “Susie isn’t really taller than the teacher; it just looks that way because she is standing on a chair!” Children then compare lengths of various objects to the length of a linking cube stick using *longer than*, *shorter than*, and *about the same as* statements. By using a linking cube stick, children are indirectly exposed to the notion that there can be no gaps or overlaps between units of measure. They might also casually notice that each unit of measure is equal or the same.

Topics B and C cover weight and volume, respectively. In each topic, vocabulary is introduced to give the students the language needed to articulate their comparisons. In Topic B, students first state which objects are heavy and light, progressing to using *heavier than*, *lighter than*, and *about the same as* statements (PK.MD.1). Finally, students learn to use a balance scale to verify some of their comparisons. To mimic the scale, students hold their arms straight out from their sides, with an object in each hand, and tip the arm down that is holding the heavier object while lifting up the other arm.

Topic C compares capacity, i.e., volume, by introducing different-sized containers for students to pour sand and water. As they explore, students respond to the questions, “Which container holds more? Which container holds less?” As in Topics A and B, children progress to using the language of comparison, *more than*, *less than*, and *about the same as*, e.g., “The blue container holds *more than* the red container.” The first half of this module culminates with students finding objects that match using length, weight, and volume comparison statements, e.g., “The pink eraser is *lighter than* the wooden block.”

The comparison of length, weight, and capacity naturally leads to discussions about quantity and number. Topic D’s three lessons focus on identifying first and last in quantities up to 5 and 10 in different configurations (PK.CC.6): scattered (2–5), linear (2–10), and circular (2–10). Measurement is connected to quantity as students reason *if there are enough* in Topic E. For example, students match teddy bear counters to chairs to see that “There are not enough chairs!” Later in the topic, students match the bears to movie theater seats to observe that there are enough seats, with some extras.

In Modules 1 and 3, students worked extensively to develop an understanding of numbers to 10. Topic F now bridges this work with number and measurement comparisons (first half of M1) to *more than*, *less than*, and *the same as* statements as students compare sets using matching and counting strategies (PK.CC.5). In Topic F lessons, students listen to story situations and compare 2 sets of 5 or fewer objects, making statements to

describe them, e.g., “There are *fewer cups than* straws.”

Comparing concrete sets leads to comparing quantities and abstract numbers in Topic G, e.g., “3 is less than 5.” Students make *greater than*, *less than*, or *equal to* statements, matching the numeral to the set, and verifying with materials, such as linking cube towers (PK.CC.5).

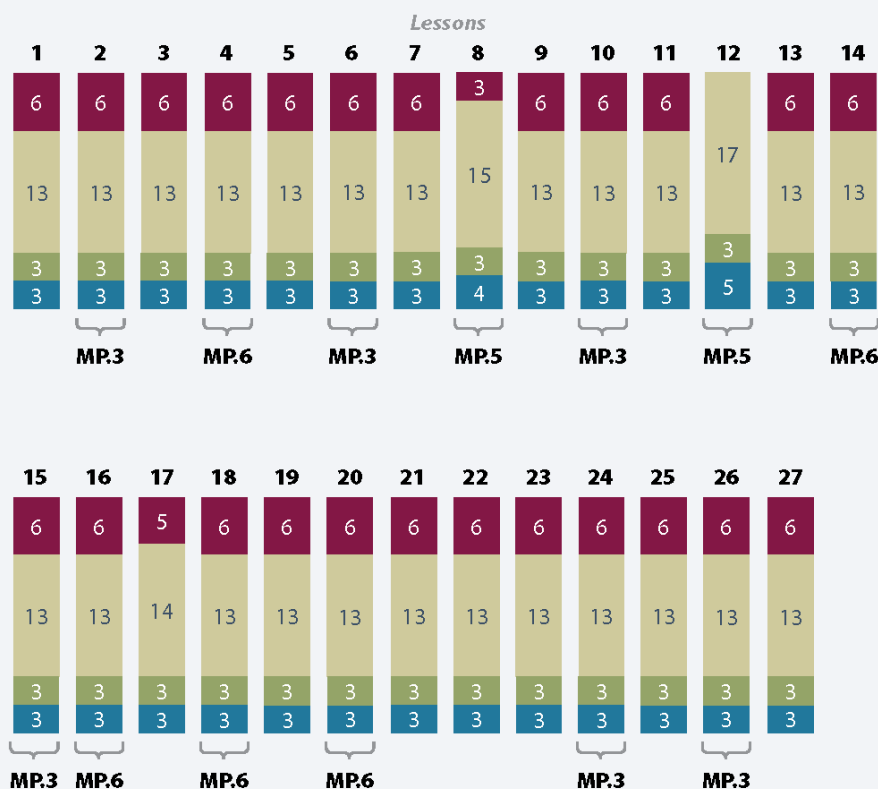
In Module 4, fluency activities focus on two core goals: touching and counting quantities to 10 and rote counting to 20. Students decompose quantities up to 5 in preparation for simple addition and subtraction stories. Also, numeral formation activities anticipate writing numerals in Module 5.



Distribution of Instructional Minutes

This diagram represents a suggested distribution of instructional minutes based on the emphasis of particular lesson components in different lessons throughout the module.

- Fluency Practice
- Concept Development
- Application Problems
- Student Debrief



MP = Mathematical Practice

Focus Grade Level Standards

Describe and compare measurable attributes.¹

- PK.MD.1** Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light).

Compare numbers.

- PK.CC.5** Identify whether the number of objects in one group is more, less, greater than, fewer, and/or equal to the number of objects in another group, e.g., by using matching and counting strategies.²
- PK.CC.6** Identify “first” and “last” related to order or position.

Foundational Standards

- PK.CC.3** Understand the relationship between numbers and quantities to 10; connect counting to cardinality.
- When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.
 - Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.
- PK.CC.4** Count to answer “how many?” questions about as many as 10 things arranged in a line, a rectangular array, or a circle, or as many as 5 things in a scattered configuration; given a number from 1–10, count out that many objects.

Focus Standards for Mathematical Practice

- MP.3** **Construct viable arguments and critique the reasoning of others.** Students learn how to defend comparisons of measurable attributes by learning how to articulate a statement about the specific attribute. With practice, students are able to confidently say that one object is *shorter than* another object after aligning endpoints and measuring by placing the objects side by side. They are also able to question another student’s comparison statement based on their observation of the measurement.
- MP.5** **Use appropriate tools strategically.** In Topics A–C, students use different tools to explore measurement. In Lesson 12, students must choose the appropriate tool to find objects that match comparison statements, e.g., “Find something that is *heavier than* this book.” Students compare weights using a balance scale or their two hands. Likewise, they compare capacity and length using different-sized containers and linking cubes, respectively.

¹PK.MD.2 is the focus standard in Pre-K, Module 1, Topic B.

²Up to 5 objects.

MP.6 **Attend to precision.** Students will informally weigh two objects by placing one object in each hand and stating which one they think is heavier or lighter. This information is charted. On the following day, the same items are weighed with a balance scale, and students cross-check their informal weight comparisons. Students see the need to be precise because some of their predictions about heavier and lighter from the previous day may be incorrect.

Overview of Module Topics and Lesson Objectives

Standards	Topics and Objectives	Days
PK.MD.1	A Comparison of Length Lesson 1: Identify the attribute of length by describing objects as <i>tall</i> or <i>short</i> . Lesson 2: Compare length using <i>taller than</i> and <i>shorter than</i> with aligned and non-aligned endpoints. Lesson 3: Compare length using <i>longer than</i> , <i>shorter than</i> , and <i>about the same as</i> with a simple straight object. Lesson 4: Compare length using <i>longer than</i> , <i>shorter than</i> , and <i>the same as</i> with a stick of linking cubes. Lesson 5: Compare length using <i>about the same as</i> with a stick of linking cubes.	5
PK.MD.1	B Comparison of Weight Lesson 6: Identify the attribute of weight by describing objects as heavy or light. Lesson 7: Compare weight using <i>heavier than</i> , <i>lighter than</i> , and <i>about the same as</i> . Lesson 8: Compare weight using <i>heavier than</i> , <i>lighter than</i> , and <i>the same as</i> with balance scales.	3
PK.MD.1	C Comparison of Volume Lesson 9: Identify the attribute of volume by describing containers as big or small. Lesson 10: Compare volume using <i>more than</i> or <i>less than</i> . Lesson 11: Compare volume using <i>the same as</i> with sand and explore conservation. Lesson 12: Find objects that match given length, weight, and volume comparison statements.	4
	Mid-Module Assessment: Topics A–C (Interview style assessment: 4 days)	4



Standards	Topics and Objectives	Days
PK.CC.6 PK.CC.4 PK.CC.3a PK.CC.3b	D First and Last Lesson 13: Identify first and last in a scattered configuration with 2–5 objects. Lesson 14: Identify first and last in a linear configuration with 2–10 objects. Lesson 15: Identify first and last in a circular configuration with 2–10 objects.	3
PK.CC.5 PK.CC.3a	E Are There Enough? Lesson 16: Compare: Match to find there are not enough. Lesson 17: Compare: Match to find there are exactly enough. Lesson 18: Compare: Match to find that there are enough, with some extras.	3
PK.CC.5 PK.CC.3a PK.CC.3b	F Comparison of Sets Up to 5 Lesson 19: Count and match to compare using <i>fewer than</i> statements. Lesson 20: Count and match to compare using <i>the same as</i> statements. Lesson 21: Count and match to compare using <i>more than</i> statements. Lesson 22: Count and match to make sets that are <i>the same as</i> a group of objects.	4
PK.CC.5 PK.CC.3a PK.CC.3b	G Comparison of Sets Including Numerals Up to 5 Lesson 23: Compare a number of objects using <i>more than</i> or <i>the same as</i> statements. Lesson 24: Compare numbers using <i>greater than</i> and <i>equal to</i> statements. Verify with materials. Lesson 25: Compare a number of objects using <i>less than</i> or <i>the same as</i> statements. Lesson 26: Compare numbers using <i>less than</i> and <i>equal to</i> statements. Verify with materials. Lesson 27: Count and match to compare two sets of linking cube towers.	5
	End-of-Module Assessment: Topics D–G (Interview style assessment: 4 days)	4
Total Number of Instructional Days		35

New Fluency Topics Appearing in Module 4 Instruction

- Rote count to 20
- Decompose numbers up to 5
- Tally numbers up to 10
- Compare quantities up to 5
- Form numerals 0–5
- Matching count to abstract numeral

Familiar Fluency

- Rote count to 10
- Count one-to-one within 10
- Count 0–10 in different formations
- Make a group of 0 to 8 objects

Terminology

New or Recently Introduced Terms

- About the same length/height/weight as (way to compare measureable attributes)
- Are there enough...? (comparative question)
- Balance scale (tool for weight measurement)
- Bigger than (volume or size comparison)
- Compare (specifically using direct comparison)
- Empty (volume comparison)
- Equal to (e.g., 5 is *equal to* 5.)
- Exactly enough/not enough (comparative term)
- Extra (leftovers)
- Fewer/fewer than (way to compare numbers of objects, e.g., “There are fewer apples than oranges.”)
- First (comparing numbers related to order or position)
- Full (volume comparison)
- Greater/greater than (number comparison)
- Heavy/heavier/heavier than (weight comparison)
- Height (measurable attribute of objects, described as tall or short)
- Last (comparing numbers related to order or position)
- Length (measureable attribute of objects, described as long or short)
- Less than (with reference to volume, numbers of objects, or numbers, e.g., 3 is *less than* 4.)
- Light/lighter/lighter than (weight comparison)

- Long/longer/longer than (length comparison)
- More than (with reference to volume and numbers of objects)
- Same (with reference to volume, holding the same amount)
- Set (group of objects)
- Short/shorter/shorter than (length comparison)
- Smaller than (volume or size comparison)
- Tall/taller than (height comparison)
- Weigh/weight (measurable attribute of objects, described as heavy or light)

Familiar Terms and Symbols³

- Big (comparative term)
- Counting the Math Way (count fingers from left pinky to right pinky)
- Exactly the same (way to analyze objects to match or sort)
- Group (objects sharing one or more attributes)
- How many (with reference to counting quantities or sets)
- Line (with reference to counting configuration)
- Match (group items that are the same or that have the same given attribute)
- Mark (with reference to starting point for count)
- More/less (with reference to number or volume comparisons)
- Position words (down, up)
- Shapes (rectangle, triangle, circle, square)
- Size (measureable attributes of objects, described as big or small)
- Small (comparative term)
- Sort (group objects according to a particular attribute)
- The same as (way to analyze objects to match or sort)
- Zero (number word)

³These are terms and symbols students have seen previously.

Suggested Tools and Representations

- 10-frames
- 5-frames
- Balance scale
- Baseball cutouts, scoreboard, small cutouts (Lesson 23 Templates 1–3)
- Big/medium/small containers (tall and short pint-sized, bucket, pitcher, bowls)
- Building blocks (various colors, rectangular, wooden or foam)
- Canoe and rowboat templates (Lesson 14 Templates 1–2)
- Chairs (Lesson 16 Template)
- Circle of rocks (Lesson 15 Template)
- Concrete materials (e.g., game pieces, pennies, paper clips, pom-poms, plastic kitchen food, pebbles, colored craft sticks, straws, cups, large/small plates, napkins, etc.)
- Creek mat (Lesson 3 Template)
- Fish-shaped crackers
- Flat shapes or paper cutouts (Fluency Practice)
- Heavy/light objects
- Hula hoops (or circles of string) for sorting
- Linking cubes
- Modeling clay
- Movie theater chairs (Lesson 18 Template)
- Dot and numeral cards 1–5
- Numeral cards (5 index cards with numbers 1–5 written on them with marker)
- Numeral formation cards (Lessons 19, 20, 22, 24, 26 Fluency Templates)
- Personal white boards with dry erase markers
- Round counters
- Sand/water/rice or beans for volume lessons
- Seesaw picture (Lesson 6 Template 1)
- Shopping bags of various sizes
- Stars and stripes (Lesson 27 Fluency Template)
- Stickers (5 different types)
- Straight object (straw, coffee stirrer, chopstick, or strip of paper)
- String (approximately 7 ft long)
- Stuffed animals
- Tall/short objects
- Teddy bear counters
- Weight collage (Lesson 6 Template 2)

Suggested Methods of Instructional Delivery

Materials Needed for Personal White Boards

- 1 heavy duty clear sheet protector
- 1 piece of stiff red tag board $11 \text{ inch} \times 8 \frac{1}{4} \text{ inch}$
- 1 piece of stiff white tag board $11 \text{ inch} \times 8 \frac{1}{4} \text{ inch}$
- 1 3 inch \times 3 inch piece of dark synthetic cloth for an eraser
- 1 dry erase crayon

Directions for Creating Personal White Boards

Cut your white and red tag to specifications. Slide into the sheet protector. Store your eraser on the red side. Store markers in a separate container to avoid stretching the sheet protector.

Frequently Asked Questions About Personal White Boards

Why is one side red and one white?

The white side of the board is the “paper.” Students generally write on it and, if working individually, then turn the board over to signal to the teacher they have completed their work. The teacher then says, “Show me your boards,” when most of the class is ready.

What are some of the benefits of a personal white board?

- The teacher can respond quickly to a hole in student understandings and skills. “Let’s draw some more of these addition stories on our personal white boards.”
- Students can erase quickly so that they do not worry about their mistakes..
- They are motivating. Students love both the drill and thrill capability and the chance to do story problems with an engaging medium.
- Checking work gives the teacher instant feedback about student understanding.

What is the benefit of this personal white board over a commercially purchased dry erase board?

- It is much less expensive.
- Templates, such as number formation sheets, can be stored between the two pieces of tag for easy access and reuse.
- Number formation sheets and other problem sets can be done without marking the paper so that students can work on the problems independently at another time.
- The red versus white side distinction clarifies your expectations. When working collaboratively, there is no need to use the red. When working independently, the students know how to keep their work private.
- The sheet protector can be removed so that student work can be projected or shared.

Scaffolds⁴

The scaffolds integrated into *A Story of Units* give alternatives for how students access information as well as express and demonstrate their learning. Strategically placed margin notes are provided within each lesson elaborating on the use of specific scaffolds at applicable times. They address many needs presented by English language learners, students with disabilities, students performing above grade level, and students performing below grade level. Many of the suggestions are organized by Universal Design for Learning (UDL) principles and are applicable to more than one population. To read more about the approach to differentiated instruction in *A Story of Units*, please refer to “How to Implement *A Story of Units*.”

Assessment Summary

Type	Administered	Format	Standards Addressed
Mid-Module Assessment Task	After Topic C	Constructed response with rubric	PK.MD.1
End-of-Module Assessment Task	After Topic G	Constructed response with rubric	PK.CC.5 PK.CC.6 PK.CC.3a PK.CC.3b PK.CC.4

⁴Students with disabilities may require Braille, large print, audio, or special digital files. Please visit the website www.p12.nysed.gov/specialed/aim for specific information on how to obtain student materials that satisfy the National Instructional Materials Accessibility Standard (NIMAS) format.

Grade PK • Module 4 • Topics A–C

Family Math Newsletter

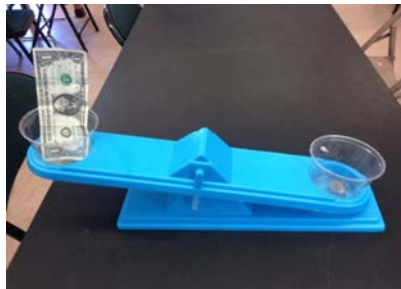
Comparison of Length, Weight, Capacity, and Numbers to 5

In Topics A–C of Module 4, students compare and explore lengths, weights, and capacities. For example, students learn to line up the endpoints when comparing length, use a balance scale to compare weight, and pour sand into containers of different sizes and shapes as they compare capacity.



(Above) Children make clay snakes that are longer than a crayon.

(Below) Students use a balance scale to compare the weight of a quarter and a dollar.



Key Standards

- Describe and compare measurable attributes of length, weight, and volume.
- Compare numbers.
- Identify *first* and *last* related to order or position.

Looking Back

In Module 3, students used what they learned about numbers to 5 to explore numbers 6–10 and 0. Using 5 as a starting point, they learned that 6 is one more than 5. They counted up to 10 objects in different arrangements, made tallies, and learned to recognize numerals to 10. Students also practiced counting *1 more* and explored different ways to take apart numbers.

Looking Ahead

In Topics D–G of Module 4, students identify first and last and compare sets of up to 5 objects.

How to Help at Home

- Play I Spy while walking or driving. Look for objects of different length or weight. “I spy something heavy and round.” (A rock!) “I spy something tall and green.” (A tree!) “I spy something shorter than a foot.” (A worm!)
- Use blocks to build *trains* of different lengths. Ask, “Which train is shorter?” Say, “Let’s try to build another train the same length!”
- Explore capacity with water play. Set out containers of different sizes and shapes. Ask, “Which container do you think can hold the most water?” or “Do you think all the water in your cup will fit in this bowl?” Pour water back and forth among the containers and make observations.
- Continue to find opportunities to count in everyday experiences. “I wonder how many steps there are. Let’s count as we walk up them!”

Suggested Words and Key Terms

- | | |
|---------------------|-----------------------------|
| ▪ About the same as | ▪ Greater than/less than |
| ▪ Are there enough? | ▪ Heavy/light |
| ▪ Balance | ▪ Heavier than/lighter than |
| ▪ scale | ▪ Length |
| ▪ Big/small | ▪ Less |
| ▪ Compare | ▪ Longer than/shorter than |
| ▪ Exactly | ▪ More |
| ▪ Extra | ▪ More than/less than |
| ▪ Fewer | ▪ Tall/short |
| ▪ First/last | |

Spotlight on Math Models

Children will use key mathematical models throughout their elementary years. One of these models is the linking cube tower/train, a tool Pre-K students will use to compare length and numbers.

Sample Counting Vignette

(From Module 4, Lesson 9)

Ice Cream



Teacher: I'm going to count and make a mistake on purpose. Instead of saying a number, I'll say "ice cream!" Isn't that silly? Listen closely and see if you can tell what number I should've said.

1, 2, ice cream!

Students: 3.

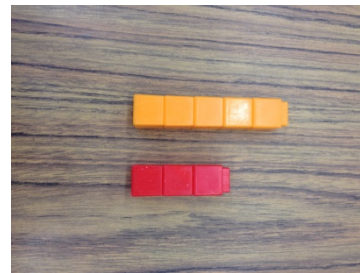
Teacher: Very good. Listen again: 1, 2, 3, 4, ice cream!

Students: 5.

Teacher: Excellent. This one will be a bit of a challenge. Ready? 1, 2, ice cream, 4, 5.

At this point in the year, students are steadily gaining mastery of the counting sequence. This activity challenges them to detect an error in the familiar order of numbers. Teachers work within a range that is comfortable for all students, and slowly build up.

Linking Cube Tower and Linking Cube Train



The linking cube tower and train are powerful tools that are used through Grade 2. In the first half of Module 4, students simply hold the towers (linking cubes situated vertically) next to each other to make *longer than*, *shorter than*, and *same as* statements. Informally, students notice that each tower is built from equal units, an important measurement concept setting the foundation for the ruler, number line, and fractions.

Toward the end of this module, students use the linking cube trains (linking cubes situated horizontally) to compare numbers. They count the cubes, and then build each train. From their work comparing towers and trains, they can say, "5 is more than 3."

Because young children commonly use the words *big* and *small* to describe most objects, this module focuses on teaching students vocabulary that allows them to be more precise in their description of objects. Learning and using comparative statements like *longer or shorter than*, *heavier or lighter than*, and *more or less than* with objects is a bridge to comparison of number—*greater or less than*. Using number towers and trains is one of the first concrete steps in this process.

Grade PK • Module 4 • Topics D–G

Family Math Newsletter

Comparison of Length, Weight, Capacity, and Numbers to 5

The second half of Module 4 begins with an exploration of *first* and *last* when objects are counted in linear, array, circular, and scattered arrangements. Students use the language of comparison they began to develop when working with length, weight, and capacity as they compare sets of up to 5 objects. This module culminates with students counting to compare sets of objects, “4 cats is more than 3 cats” and finally, numbers, “4 is greater than 3.”

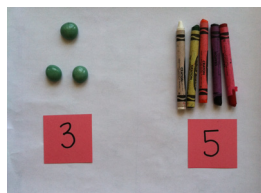


(Above)

Students compare game pieces.

(Below)

Attaching number to sets gradually leads students to compare numbers alone.



Key Standards

- Compare numbers.
- Identify *first* and *last* related to order or position.

Looking Back

In the first half of Module 4, students compared and explored length, weight, and capacity.

Looking Ahead

In Module 5, students will learn to write numbers to 5, explore addition and subtraction stories, and count to 20.

Suggested Words and Key Terms

- Are there enough?
- Compare
- Equal to
- Exactly enough
- Exactly the same
- Extra
- Fewer
- Fewer than
- First
- Greater
- Greater than
- How many?
- Last
- Less
- Less than
- Match
- More
- More than
- Set
- The same as

How to Help at Home

- Before counting some tomatoes with your child, decide which tomato to count first and which to count last. After counting, make a new decision and see that the count is the same!
- Count toys and compare sets during play. Ask, “How many cars do you have?” “How many trucks?” “I wonder if you have fewer cars or trucks. Let’s line them up and see!”
- When walking, make comparison statements, “My steps are longer than your steps.” “I take fewer steps than you to go places.” “I took 4 steps and you took 5 steps.” “4 is less than 5.”
- Read counting books or recite nursery rhymes and encourage the child to count images. By the end of Pre-Kindergarten, students should be able to count to 20 by rote (on their own), but if they can touch and count to 20, that’s terrific!

Spotlight on Math Vocabulary

Children will use key mathematical vocabulary throughout their elementary years. The language of comparison (greater than and less than) is vocabulary Pre-K students will use to compare numbers.

Sample Activity

(From Module 4, Lesson 20)

Clay Numeral 2

Teacher: Take your clay and roll it into a long, skinny, snake.

Students: (Manipulate clay.)

Teacher: Put your snake on the 2, starting at the star.



Students: (Use their clay to first make the curved part of the 2, and then the straight part.)

Teacher: If you finish early, use your finger to trace the 2, starting at the star.

This activity anticipates writing numerals in Module 5 and is intended to familiarize students with correct numeral formation. In addition, students use their fine motor skills to manipulate the clay.

A Focus on Models of Comparison

In the first half of this module, children compared length, weight, and capacity. Now, they transition into comparing numbers by matching two groups of objects and considering if there are **enough**, **not enough**, or **more than enough**. For example, the model below shows the following statement to be true, “There are not enough crayons for each paper.”



The next step in comparing numbers is to match the objects in each group to find out if there are “**more** crayons **than** papers,” “**fewer** crayons **than** papers,” or “the **same** number of crayons **as** papers.” At this point, the students are counting and saying the number of each group, but making their comparison statement as they match the two groups of objects.

In the culminating lessons of this module, students attach a number card to each group of objects to make **greater than** or **less than** statements. For example, “3 is greater than 2” or “2 is less than 3.” Finally, students are shown a pair of number cards (up to 5) and are asked to make greater than or less than statements without objects. Then, they verify their statements by making linking cube towers/trains.

Working to compare by using the abstract (number cards) and the concrete (linking cube towers) develops students’ number sense as they relate numbers to each other. This point is emphasized, so when students work on comparison, they can answer questions such as, “How many **more** apples does Maria have **than** Armen?” A solid foundation is being carefully laid right now! Together, everyone can!



Topic A

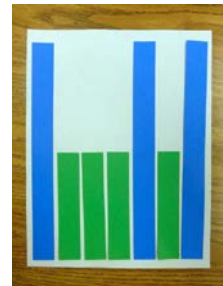
Comparison of Length

PK.MD.1

Focus Standard:	PK.MD.1	Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light).
Instructional Days:	5	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

In the first half of Module 4, students describe and compare measurable attributes of length, weight and volume (**PK.MD.1**). To begin, students use correct vocabulary, *tall* or *short*, to describe length. Because Pre-Kindergarten students entering school might describe most objects as *big* or *small*, Lesson 1 helps students refine their descriptors using examples of tall things (buildings, trees, flagpole) and short things (scissors, a used crayon or pencil, a puppet). Children practice using their new vocabulary as they build tall and short buildings with blocks, and then move to the pictorial using strips of paper to create a city with tall and short buildings.

Discussing *tall* and *short* naturally leads children to compare their height to someone else's. Lesson 2 uses this context to demonstrate the importance of aligning endpoints when measuring. Students see that David isn't taller than the teacher when he is standing on a chair. They practice comparing classroom objects (pen and marker) by aligning endpoints to a line drawn on a piece of paper, and then stating which object is *taller*, *longer*, or *shorter than* another object (**PK.MD.1**). Students learn to differentiate between *tall* and *long*. When something is standing up, it is usually described as *tall*; whereas, when something is lying flat, it is usually described as *long*.



In Lesson 3, students explore the classroom, comparing and aligning endpoints to find objects that are *longer than*, *shorter than*, or *about the same length as* a simple, straight object (strip of paper, straw, chopstick). Then, students practice making clay *snakes* that are *longer than*, *shorter than*, or *about the same length as* their straight object. Using a straight object, and later a linking cube tower, helps students to see indirectly that they are iterating a unit and that units of measure can be divided to make comparisons more precise.

Lessons 4 and 5 transition into comparing length with linking cube trains and towers. In both lessons, students are given differing amounts of linking cubes (3 to 10 cubes) that they count and connect. Once they have built their train in Lesson 4, students compare it to a friend's train by making *longer than*, *shorter than*, or *the same as* statements. They record their comparison by drawing both trains. In Lesson 5, students take their towers/trains and go on a classroom search for a *museum piece* that is *about the same*



length/height as their cubes. They record their discoveries by drawing their tower/train and their object to be displayed in The About the Same Museum.

In Topic A Fluency Practice, students practice new vocabulary (*long, short, tall*) by playfully acting out the words to a chant. They continue to count with one-to-one correspondence and practice rote counting to 15 by means of movement (the Number Cha-Cha) and sound (Counting Drumbeats). In addition, students play Say Ten basketball, counting to 15 (ten 5) the *Say Ten Way*. This facilitates rote counting to 20 by the end of the year.

A Teaching Sequence Toward Mastery of Comparison of Length

Objective 1: Identify the attribute of length by describing objects as *tall* or *short*.
(Lesson 1)

Objective 2: Compare length using *taller than* and *shorter than* with aligned and non-aligned endpoints.
(Lesson 2)

Objective 3: Compare length using *longer than*, *shorter than*, and *about the same as* with a simple straight object.
(Lesson 3)

Objective 4: Compare length using *longer than*, *shorter than* and *the same as* with a stick of linking cubes.
(Lesson 4)

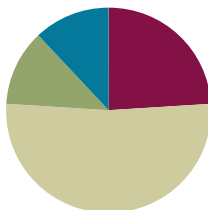
Objective 5: Compare using *about the same as* with linking cubes.
(Lesson 5)

Lesson 1

Objective: Identify the attribute of length by describing objects as *tall* or *short*.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Mystery Shape **PK.G.2** (4 minutes)
- Number Cha-Cha **PK.CC.1** (2 minutes)

Mystery Shape (4 minutes)

Materials: (S) For each pair: a brown paper bag containing a paper shape cutout or a plastic flat shape

Note: This activity reviews students' knowledge of shapes from Module 2.

1. Divide students into pairs seated in a circle on the rug. Distribute a bag to each pair.
2. Without looking, one student reaches into the bag and examines the shape by touch, describes it to his or her partner, and names it if possible.
3. The other partner does the same; then, they both peek into the bag and see if they were correct.
4. Partners pass their bag to the right and repeat.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Choose heterogeneous pairs for language-based activities, such that students with stronger verbal skills can model for those who are still developing the language and the confidence to describe the mystery shape.

Number Cha-Cha (2 minutes)

Materials: (T) Instrumental music with a cha-cha beat (optional)

Note: This activity extends students' rote counting skills to develop fluidity in the counting sequence to 15.

As before in Module 1, students attach the counting sequence to dance steps, but they now extend the count to 15.

1 (hand out), 2 (other hand out), 3, 4, 5 (stepping in place rhythmically).

6 (hand out), 7 (other hand out), 8, 9, 10 (stepping in place rhythmically).



This is a possible stopping point for today. Consider extending the count to 20 by challenging the students, "Shall we continue counting to 20?"

Application Problem (3 minutes)

Materials: (T) Instrumental music with a slow cha-cha beat

Play the music and demonstrate how students will move. Guide them to move to the beat, crouching down low (beat 1), then lower (beat 2), and then high (beat 3), higher (beat 4), higher (beat 5).

Ask them to use their imagination: they're a flower going to sleep for the night as they close up, making themselves small and then smaller. Then, the sun shines, and they're stretching as high as they can (rhythmically) to touch the sky. Encourage them to really stretch, standing on tippy-toes and reaching their fingers as high as they can, as if they could touch the sky!

Note: This activity flows out of the fluency activity Number Cha-Cha and leads into today's Concept Development because students physically experience the idea of tall and short before being formally introduced to the terms.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Two chart papers (one labeled *tall* and one labeled *short*), pictures of tall and short things, basket of blocks (wooden or foam) (S) 6–8 blocks per pair

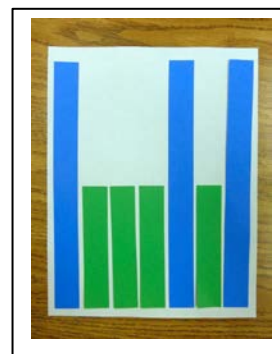
1. Say, “Close your eyes and think about a time when you looked up toward the sky and saw something that was **tall**. What did you see that was tall?” Draw some of the students’ responses on the *tall* chart.
2. Show pictures of some other tall things, discuss, and tape them to the *tall* chart.
3. Say, “Look around the room and find **short** things.” Ask, “What did you find that was short?” Draw some of the students’ responses on the *short* chart.
4. Show pictures of some other short things, discuss, and tape them to the *short* chart.
5. Make two towers of blocks, one short and one tall. Say, “Look at these two buildings. What word can you use to tell about this one? How about this one?” Guide students to use their new *tall* and *short* vocabulary.
6. With children still seated in a circle, give each pair 6–8 blocks. Encourage them to work together to build a tall building and a short building. Invite those who finish quickly to tell *how many* blocks were used to make each building.

Part 2: Practice

Materials: (T) A picture of a city (S) Approximately 7 paper strips (3 10-inch × 1-inch paper strips and 4 5-inch × 1-inch paper strips), 1 plain piece of paper for gluing strips, glue, crayons

Students will glue the strips of paper side by side to make a *city* with short and tall buildings. Tables should be prepared with materials before students start the Practice. A city picture could be displayed at each table to support students in making their *city*.

1. Say, “You are going to make your own special city today.” (Hold up the tall strips.) “These will be just like the tall buildings you made.” (Hold up the short strips.) “These will be just like the short buildings you made.”
2. Say, “You can glue your tall and short strips in any order you want. Try to make your city different from your neighbor’s city.”
3. Allow time for students to make their cities.
4. Say, “Look at my city. I built it like this, tall-short-short-short-tall-short-tall.”
5. Say, “Tell your neighbor how you built your city.”
6. Have students decorate or add windows to their buildings with crayons.



Student Debrief (3 minutes)

Lesson Objective: Identify the attribute of length by describing objects as *tall* or *short*.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**tall**, **short**).

- Stand up and stretch high, high into the sky like a tree. What word did you use today to tell about the tree? If you were a **tall** tree, what would look **short**?
- Crouch down very low, low to the ground like a flower. What word that you used today would tell about a flower? If you were a *short* flower, what would look *tall*?
- Who can show us what it means to be *tall* or *short*? (Invite students to act out an animal that is *short* or *tall*.)

**CENTER CONNECTION:**

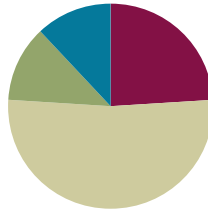
At the block center, invite children to build tall buildings. Provide people or animal figurines to place around the buildings to encourage the use of the word short. By placing the people and animals next to the buildings, the students are preparing for comparison of length in the next lessons.

Lesson 2

Objective: Compare length using *taller than* and *shorter than* with aligned and non-aligned endpoints.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Counting Drumbeats **PK.CC.3b** (3 minutes)
- Tall and Short Chant **PK.MD.1** (3 minutes)

Counting Drumbeats (3 minutes)

Materials: (T) Toy drum or coffee can with lid and unsharpened pencil or other object to use as drumstick

Note: This activity challenges students to hone their listening skills and to count by sound alone, or use fingers to keep track of the count.

- T: I'm going to play my drum, and I want you to count the beats. So, if I play this (tap the drum once), that's 1. If I play this (tap twice), that's 2. You can keep track on your fingers if you'd like. Ready? (Play 2 distinct taps, one immediately after the other.) How many beats did I play?
- S: 2 beats!
- T: Very good! Now, listen again. (Play 3 distinct taps, each one immediately after the other.) How many beats did I play?
- S: 3 beats!



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Provide a variety of ways for students to track the number of drumbeats. Students who have difficulty tracking the beats with their fingers may benefit from having a cube or bean to place in front of them each time a drumbeat is heard.

Let students know that the counting sequence will not necessarily be followed. As students become acquainted with the activity, experiment with the musicality of the beats. For example, try long pauses, short pauses, or a combination between the beats. Make today's goal to work within 3, including 0.

Tall and Short Chant (3 minutes)

Materials: (T) Objects, or pictures of objects (giraffe, cat) named in the chant (optional)

Note: The chant and corresponding movements activate students' prior knowledge, preparing them to use the vocabulary in today's lesson.

T: Remember yesterday, we used the words *tall* and *short* to describe things? (Show a picture of a giraffe.) Look at this giraffe. Is it tall or short?

S: Tall.

T: Listen to my chant. I can make myself tall, tall, tall (emphasize with movement). Tall like a giraffe! Now, you try it.

S: I can make myself tall, tall, tall (standing up straight, on tip-toes). Tall like a giraffe!

T: (Show a picture of a cat.) Look at this cat. Is it tall or short?

S: Short.

T: Listen to my chant. I can make myself short, short, short (emphasize with movement). Short like a cat! Now, you try it.

S: I can make myself short, short, short (crouching down, kneeling, other movement indicating shortness). Short like a cat!

T: Sounds great! Let's put it all together.

S: I can make myself tall, tall, tall. Tall like a giraffe! I can make myself short, short, short. Short like a cat!

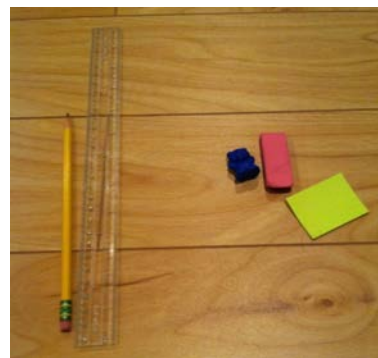
Continue a few more times with objects that lend themselves to comparison of height and that would be familiar to students. For example, city students might relate to a skyscraper or an apartment building, whereas students from rural areas might be more familiar with a barn or a shed.

Application Problem (3 minutes)

Materials: (T) 5 items of tall and short objects

Show students the 5 objects and say, "Sort these into two groups." Then, ask students to tell about how they sorted the objects. If students sort in a way other than tall and short, let them explain their reasoning, then sort the items by tall and short. Then ask, "Now how are the objects sorted?" Listen for the vocabulary students use, e.g., *bigger* and *smaller*, *taller* and *shorter*. Have them count how many objects are tall and how many are short.

Note: This activity leads into today's Concept Development as students compare length in an informal manner. It also provides an opportunity for them to discover naturally the importance of aligned endpoints



Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 1 chair, pen, marker, paper with straight line drawn across the bottom

1. Call on a student to stand next to you, back-to-back. Ask the class, “Who is **taller**? Who is **shorter**?”
2. Say, “Yes, I am *taller than* David” and “Yes! David is *shorter than* I am.” Guide students to repeat, using the sentence frame: “_____ is *taller/shorter than* _____.” Explain that these words are used when wanting to **compare height**.
3. Help David onto a chair so that it appears he is taller than you. Ask, “Am I shorter than David now?” Discuss that you are still taller than David. Have students use new vocabulary with the sentence frame from Step 2.
4. Explain that length cannot be compared unless starting from the same place—the floor. This is also true when comparing a pen and a marker. Demonstrate moving the endpoint with the pen and marker, playfully announcing, “Oh, look! Now, the pen is longer!” “Is that correct?” “Why?” Again, have students practice using new vocabulary with the sentence frame from Step 2.
5. Discuss that, when something is standing up, it is usually described as **tall**; whereas, when something is lying flat, it is usually described as **long**. “Would we describe a snake as long or tall?” “Would we describe a rope as long or tall?”
6. Say, “I’m going to lay this pen and marker down on this piece of paper so that the bottom of both objects is touching this line. Which one is *longer*?”
7. Encourage students to use the sentence frame to compare the marker and pen: “The _____ is *longer than* the _____.”



Part 2: Practice

Materials: (S) Box of objects to compare

Prepare each table with a box of several objects to compare.

1. Pair students and send them to a table to compare their heights using the statement, “I am *taller than/shorter than* _____.” Comment while listening to students using new vocabulary.
2. Invite students to compare the objects in the box. Encourage students to make *longer than*, *taller than*, and *shorter than* statements as they work.
3. Notice if students align the endpoints. Use parallel talk to describe their actions: “Rhonda is standing both animals up on the table to see which one is taller.”

MP.3

Student Debrief (3 minutes)

Lesson Objective: Compare length using *taller than* and *shorter than* with aligned and non-aligned endpoints.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**compare, height, taller, taller than, shorter, shorter than**).

- Which is *longer*, your arm or your leg? Which is **taller**, a baby giraffe or a mama giraffe? What other pairs of objects can you think of that are taller and **shorter**? (Guide students to respond with the sentence frame.)
- Which do you think will be shorter, a brand new pencil or a pencil that you have been writing with all week? Which do you think will be longer, a brand new crayon or a crayon that you have been using for a week?
- Why does it matter that we put objects at the same starting point when we want to know which one is longer or taller?
- Can you use our new words to **compare** the **height** of 2 objects or people?

**CENTER CONNECTION:**

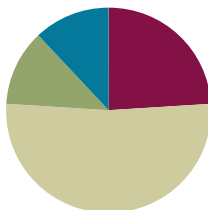
Place several paper strips and yarn of different lengths at the art center table. Allow students to use scissors to cut the strips and yarn to show *longer*, *taller*, and *shorter*. Students can also simply compare the strips and yarn to each other.

Lesson 3

Objective: Compare length using *longer than*, *shorter than*, and *about the same as* with a simple straight object.

Suggested Lesson Structure

Fluency Practice	(6 minutes)
Application Problem	(3 minutes)
Concept Development	(13 minutes)
Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Touch and Count Rocks **PK.CC.1** (4 minutes)
- Say Ten Basketball **PK.CC.1** (2 minutes)

Touch and Count Rocks (4 minutes)

Materials: (S) Creek mat (Template), up to 5 small counters per student

Note: Students count from 7–10 objects. Students who struggle with touching and counting beyond 5 might be partnered with stronger students for this activity so that they have a chance to observe precision.

Conduct activity as described in Lesson 2. Have students count the 5 rocks that appear on the template. Add a counter, and count all to find the new total. Some students may eventually realize that they don't need to recount each time. Ask them to *hold the number in their minds* while waiting for others to count all.

Continue building incrementally to 10 if students show mastery.

Say Ten Basketball (2 minutes)

Note: This activity functions as a scaffold as students work toward counting the Say Ten Way in the next lesson.

- T: Let's play basketball! Bounce your imaginary basketball 10 times. We're a team, so let's stay together as we count. Ready?
- S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (one bounce per number).
- T: Ready, play again. (Circulate to support students as needed.)

Application Problem (3 minutes)

Materials: (T) Water bottle (or other object of similar height)

Place the water bottle on the floor. Tell students that you will name different objects and ask students to stand up if the object named is taller than the bottle, and sit down if it is shorter than the bottle (e.g., "tree," students stand up; "crayon," students sit down.) As students stand or sit, have them say the phrase—*taller than* or *shorter than*.

Note: Standing and sitting helps reinforce the concepts of tall and short as students make a kinesthetic connection through body movement.



Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Straw, crayon (about the same length as straw), music (S) 1 straight object per student, (e.g., straw, coffee stirrer, 1 chopstick, strip of paper)

Note: Using a variety of straight objects will naturally guide students to find different things that are *longer than*, *shorter than*, or *about the same length as* the straight objects.

1. Say, "I'm going to be a detective today! I'm going to find something in our room that is longer than this straw, and you can agree or disagree with me."
2. Walk around the room stealthily, pick up a crayon, and hold the crayon so it appears to be longer than the straw and say, "Aha! The crayon is **longer than** my straw!"
3. As the students disagree, follow their advice to align the two endpoints to determine which object is longer.
4. Say, "Let me try again." This time, position the straw next to the crayon so that the endpoints are aligned. Use the sentence frame: "The crayon is **about the same length as the straw**." *About the same as* means one object can be a little bit longer or a little bit shorter than the other one; they do not have to be exactly the same length."
5. Model a few more comparisons. Then, give each student a straight object. Say, "When the music starts, walk around the room and find something that is longer than your object. When the music stops, freeze next to what you found."
6. When the music stops, call on a few students to make *longer than* statements to compare their two objects, e.g., "The table is *longer than* my stick." If time permits, have students prove it by aligning endpoints.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Provide scaffolds for students who may not feel comfortable sharing their comparison statement with the large group. Give students an opportunity to practice their comparison statement with the teacher before the music stops, which can help them feel more comfortable sharing with the whole class. Celebrate the student's success with the comparison statement.

7. Start the music again and repeat for *shorter than*.
8. When students are comparing objects that are about the same, provide the correct vocabulary. "We use the word **length** when we are comparing if two objects are longer or shorter than the other. If the objects are really close in length, we can say "They are about the same length. For example, the book is about the same length as my stick." "When comparing objects that are not taller or shorter but are about the same, we use the term *height*. For example, Kate is about the same height as Lacy."

Part 2: Practice

Materials: (S) Crayon, small ball of clay

1. Give each student a small ball of clay and send them to their tables with a crayon.
2. Say, "Put your crayon on the table. Roll your clay into a skinny snake that is longer than your crayon."
3. Allow students time to work. Circulate and provide assistance to struggling students.
4. Encourage students to use *longer than* to talk about their snakes, e.g., "My snake is longer than my crayon."
5. Say, "Roll your clay into a ball again. This time, make a fat snake that is shorter than your crayon."
6. Encourage students to use *shorter than* to talk about their snakes, e.g., "My snake is shorter than my crayon."
7. Repeat for *about the same length as*.



Student Debrief (3 minutes)

Lesson Objective: Compare length using *longer than*, *shorter than*, and *about the same as* with a simple straight object.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**about the same length/height as**, **length**, **longer than**).

- Tell your partner things that are taller than, shorter

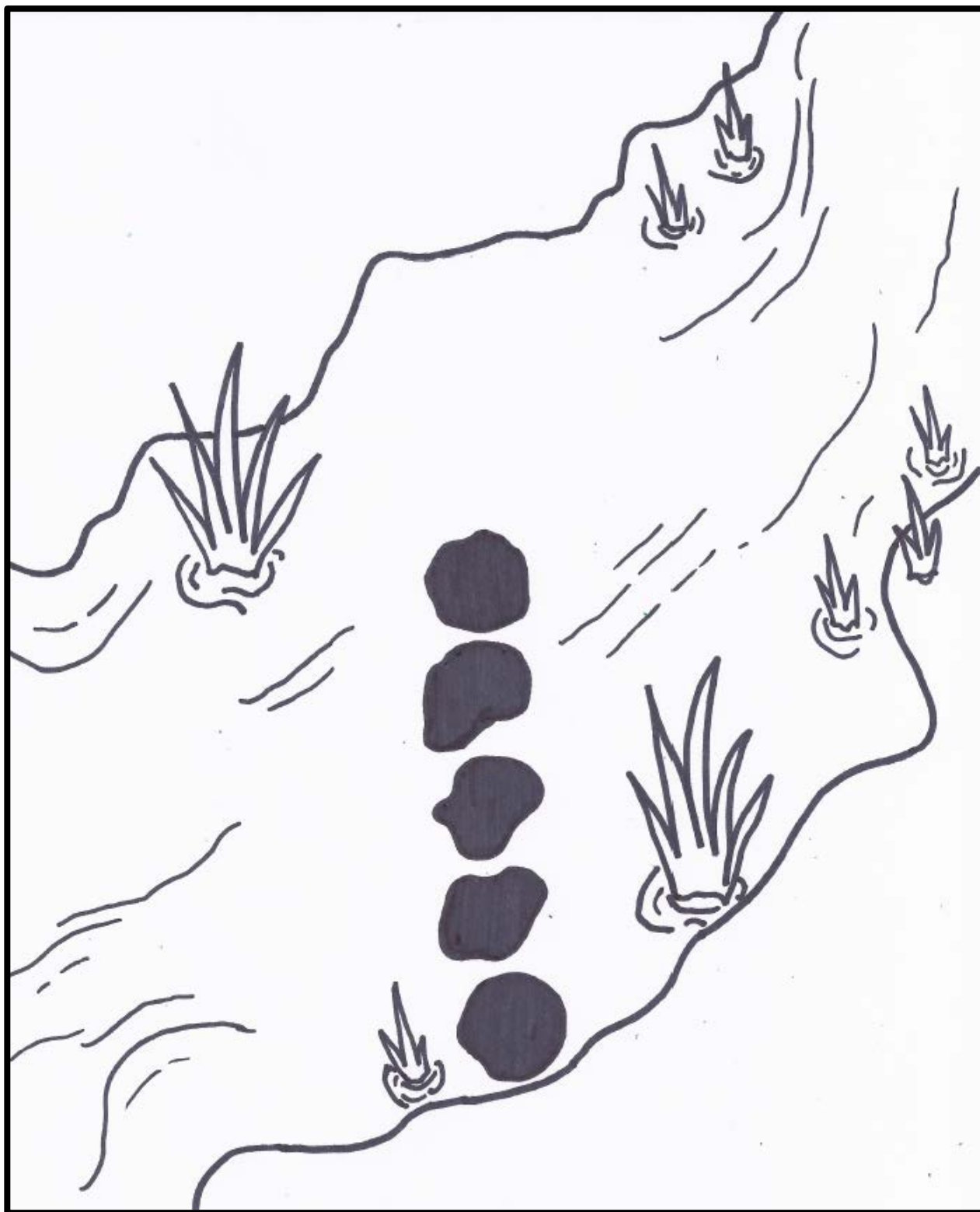


CENTER CONNECTION:

Place several picture books and paper strips in the reading center. A-B-C books in which the pictures are prominent would be ideal. The paper strips should be precut so they are shorter or longer than the pictures in the books. Have students compare the paper strips to the pictures in the books. Listen for *longer than*, *shorter than*, and *about the same as* statements.

than, and **about the same height as** you.

- Picture the story, *Goldilocks and the Three Bears*. Can you use *longer than*, *shorter than*, and *about the same length* to describe the three beds? (Show a picture from the book if possible.)
- What were some of the things around the room that were longer than your straight object? Shorter? About the same length?
- (Hold up the straw and the crayon from the lesson.) What math words did we use today to compare the straw and the crayon? (**Length** and **height**.)



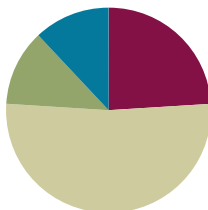
creek mat

Lesson 4

Objective: Compare length using *longer than*, *shorter than*, and *the same as* with linking cubes.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Long and Short Chant **PK.MD.1** (3 minutes)
- Say Ten Basketball **PK.CC.1** (3 minutes)

Long and Short Chant (3 minutes)

Note: The chant and corresponding movements prepare students to use the vocabulary in today's lesson.

T: Remember yesterday, we used the words *longer* and *shorter* to describe things? (Show a picture of a snake and a worm.) Look at the snake. Is it longer or shorter than the worm?

S: Longer.

T: Listen to my chant. I can make my arm like a long, long, long snake. (Use an outstretched arm to model the snake.) Now, you try it. Pretend your arm is the long snake.

S: I can make my arm like a long, long, long snake! (Stretch arm.)

T: (Show the picture of the worm again.) Look at this worm. Is it longer or shorter than the snake?

S: Shorter.

T: Listen to my chant. I can make my finger like a short, short, short worm! (Wiggle a finger to model the worm.) Now, you try it. Pretend your finger is the short snake.

S: I can make my finger like a short, short, short worm. (Wiggle a finger.)

T: Sounds great. Let's put it all together!

S: I can make my arm like a long, long, long snake. I can make my finger like a short, short, short worm.

Continue with other examples such as their entire body being a long shark and their toe being a short fish.

Say Ten Basketball (3 minutes)

Note: Counting the Say Ten Way will facilitate rote counting to 20 by the end of Pre-Kindergarten.

- T: Let's play basketball! Bounce your imaginary ball 10 times. We're a team, so let's stay together as we count. Ready?
- S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10 (one bounce per number).
- T: We don't have to stop counting at 10. Watch how I count more bounces. (Demonstrate bouncing the imaginary ball 15 times while counting to ten 5.) 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ten 1, ten 2, ten 3, ten 4, ten 5. It's your turn. Remember, we're a team, so let's stay together as we count to ten 5. Ready?
- S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ten 1, ten 2, ten 3, ten 4, ten 5 (one bounce per number).
- T: That was great! Let's do it again. (Circulate to support students as needed and continue counting up to ten 5.)

Application Problem (3 minutes)

Materials: (T) A train of 4 linking cubes, 3–5 loose linking cubes (S) 6 loose cubes.

Hold up the train of 4 linking cubes. Ask students, "How can we make this train shorter?" As students see that, they can remove cubes. Invite them to come up and do so. Reassemble the 4 cubes. Ask, "How can we make this train longer?" and reverse the process.

Return the stick to 4 cubes again and ask, "Can you make another train that is exactly the same length as this one?" Invite students to take turns putting cubes together to create a train of exactly the same length.



Note: Although some students may count cubes, this activity provides an opportunity for students to experience the connection between length and addition and subtraction without an explicit connection. As students add more cubes, their trains become longer; as they remove cubes, their trains become shorter. This problem also lays the foundation for their work with comparison of numbers in Topics F and G.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (S) 3–10 linking cubes per student (There should be approximately 3 of each tower length: 3 towers with 4 cubes, 3 towers with 5 cubes, etc.)

Note: Keep redirecting student statements to *longer than*, *shorter than*, and *the same as* if students focus heavily on the number of cubes. Number comparison is coming in Topics F and G.

1. Help students make 2 lines, facing each other so they are looking at a partner (teacher plays if necessary).
2. Give each student 3–10 loose linking cubes. (Students will have different length trains.) Say, "Put your cubes together to make a train to play a game. Your trains will be different."
3. Say, "Place your train next to your partner's." Let's listen to each pair compare their trains:

MP.6

- If your train is longer than your partner's train, hold it in the air and say, "My train is longer than my partner's."
 - If your train is shorter than your partner's train, sit down and say, "My train is shorter than my partner's."
 - If you and your partner's trains are exactly the same length, jump once and say, "My train is the same as my partner's."
4. To play again, have one line stand still. Shift the other line one person to the right, with the last person moving to the front of the line. Everyone should have a new partner.
 5. Students repeat the process with their new partner.
 6. As time permits, continue shifting the line to the right to allow for more practice.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Highlight the vocabulary used in the lesson. Call on students to explain their movement choice. For example, "I jumped once because my tower and my partner's tower were the same" or "I sat down; my tower was shorter than my partner's tower." Providing a language model highlights the appropriate use of the vocabulary from this lesson.

Part 2: Practice

Materials: (S) 1 piece of paper per student, linking cube trains from the Concept Introduction.

1. Students remain with their last partner from the Part 1 game. Instruct partners to go to a table together with their linking cube trains.
2. Give each student a piece of paper.
3. Say, "Place your trains so that both of you can see them. Draw each train on your paper."
4. When everyone is done drawing, say:

Circle the longer train.

Put a line under the shorter train.

If the trains are the same, put a box around both of them.

5. Say, "Share your drawings with your partner. Tell your partner about them." Guide students to use *longer than*, *shorter than*, or *the same as*.



Student Debrief (3 minutes)

Lesson Objective: Compare length using *longer than*, *shorter than*, and *the same as* with linking cubes.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- (Make a train of 5 cubes and a tower of 5 cubes.) How is the train of cubes the same as the tower of cubes?
- (Make a train of 6 and a train of 8.) Use your words to compare these trains. How can you make them the same?
- Explain to your partner how, at the start of today's lesson, you made my train longer and shorter.

**CENTER CONNECTION:**

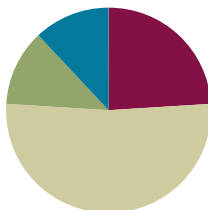
Place tubs of same-size items (toy cars, teddy bear counters, square tiles, linking cubes) on the tables. Have students make two lines of cars (or other same-size objects), comparing the lines. By using like items, students will informally see equal units of measure.

Lesson 5

Objective: Compare length using *about the same as* with a stick of linking cubes.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Counting Drumbeats **PK.CC.3b** (3 minutes)
- Number Cha-Cha **PK.CC.1** (3 minutes)

Counting Drumbeats (3 minutes)

Materials: (T) Toy drum or coffee can with lid and unsharpened pencil to use as a drumstick

Note: This activity challenges students to hone their listening skills and to count by sound alone, or use fingers to keep track of the count.

As before, in Lesson 2, play a number of beats and ask students *how many*. They can keep track on fingers if necessary. Vary the pace, and if available, vary the musical instrument (xylophone, keyboard, drum).

Number Cha-Cha (3 minutes)

Materials: (T) Instrumental music with a cha-cha beat (optional)

Note: This activity extends students' rote counting skills and challenges them to develop fluidity in the counting sequence. The movements facilitate memorization and get everyone moving.

As before in Lesson 1, students attach the counting sequence to dance steps, extending the count to 15 if ready:

- 1 (hand out), 2 (other hand out), 3, 4, 5 (stepping in place, rhythmically).
- 6 (hand out), 7 (other hand out), 8, 9, 10 (stepping in place, rhythmically).

Application Problem (3 minutes)

Materials: (T) Stuffed animal, small pieces of paper *tickets* for each student

Help students get into two lines. Make one line five students longer than the other line.

Say, “Pretend you are standing in line to see a movie. Here are your tickets (handing a ticket to each student). Rebecca Rabbit wants to see the movie, too. Which line should she stand in if she wants to get into the theater the fastest?” Acknowledge suggestions and give Rebecca Rabbit to the student at the end of the line that students suggest (the shorter line). Act out taking tickets from each student, alternating between each line. Have each student sit down after his or her ticket is taken. Ask, “Did Rebecca Rabbit stand in the right line to get her into the theater the fastest? Why?”

Repeat activity and put Rebecca Rabbit in the longer line.

Note: This is a playful way to engage students in the comparison of length through movement, and it leads into their work with comparison during the Concept Development.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (S) 3–10 linking cubes per student
(approximately 3 of each tower/train length—
3 towers of 4 cubes, 3 towers of 5 cubes, etc.)

Prepare the room for the *museum pieces* by placing a piece of construction paper (11" × 18") for each child on the tables.

1. Say, “We are going to take a trip to a math museum today! But first, we have to find things to put in the museum.”
2. Give each student 3–10 loose linking cubes. (Students will have different heights/lengths of their towers/trains.) Say, “Put your cubes together. Your towers/trains will be different. We will use our towers/trains to find things to put in our museum.”
3. Say, “To find things for our museum, walk around the room and find something that is about the same length as your tower/train. Remember, *about the same as* means it does not have to be exactly the same length/height.”
4. Model by using a tower/train and finding something that is *about the same length/height as*, demonstrating that the object they find can be a little longer or shorter.
5. Once students have found an object (preferably a portable one like a book, pencil, eraser, paperclip, paper, etc.) direct them to use a *museum mat* to display their tower/train and *museum piece*.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Often students learn math concepts in an isolated fashion and do not transfer them to new situations. Throughout the day, call attention to examples of comparison statements (e.g., “The cafeteria table is longer than our snack table”). Encourage students to use comparison statements in a variety of situations.

Part 2: Practice

Materials: (S) Crayons, a piece of paper, clipboard (optional)

1. Say, "Let's go on a gallery walk through *The About the Same Museum!*" Students walk around the room, observing their classmates' displays.
2. Encourage students to make statements like, "This train and book are almost the same length as each other," "This train is a little bit longer than the eraser, but they are about the same length as each other," or "Wow, this tower and this water bottle are exactly the same height as each other!"
3. Give students paper and crayons and say, "Choose an *about the same as* display to draw."
4. Allow students time to work, reminding them that they need to draw the tower/train and the object next to each other.
5. Circulate and ask students to tell about their drawings, encouraging them to use the sentence starter, "The tower/train is *about the same height/length as* _____."

**Student Debrief (3 minutes)**

Lesson Objective: Compare length using *about the same as* with a stick of linking cubes.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress towards meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- Think about *Goldilocks and the Three Bears*. She said Baby Bear's bed was just right for her. Do you think the length of the bed was longer than, shorter than, or about the same size as Goldilocks? Why?
- Lacy, MJ, and Kate each put a paper clip in their museum. What does that tell you about the length/height of their trains/towers.
- Would you want to wear shoes that are longer than, shorter than, or about the same length as your feet? Why?
- (Hold up a marker or similar length object.) I'm going to name an object. Say, "longer than, shorter than, or about the same length/height as" this marker (e.g., desk, door, crayon, pencil, eraser, penny).

**CENTER CONNECTION:**

In the block center, encourage students to build buildings that are *the same* or *about the same as* each other. Challenge students to make buildings that are about the same height as each other using different blocks to form each building.

Topic B

Comparison of Weight

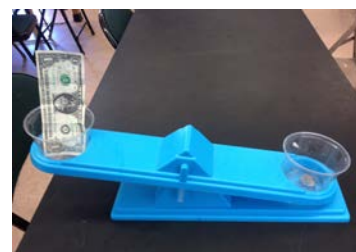
PK.MD.1

Focus Standard:	PK.MD.1	Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light).
Instructional Days:	3	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

Topic B begins with children using correct vocabulary, *heavy* and *light*, to describe weight (again, as opposed to *big* and *small*). In Lesson 6, students choose an object from a prepared bin of heavy and light objects (brick, stuffed animal, feather, mallet, etc.) and describe it as heavy or light (**PK.MD.1**), “This brick is heavy; it is hard to pick up!” Afterward, students work cooperatively to find or draw pictures of heavy and light things and to sort objects into a collage.

Students use their new vocabulary to compare weights in Lesson 7 using *heavier than*, *lighter than*, and *about the same weight as* statements. Students hold two objects, one in each hand, and state, e.g., “The quarter feels *heavier than* the dollar.” Students are led to lower the hand with the heavier object as a precursor to using a balance in Lesson 8. The teacher records these informal comparisons on a chart to use in the following lesson.

In Lesson 8, students check the informal weight comparisons charted from the previous day by weighing the same objects using a balance scale. This process highlights the need to use appropriate tools strategically and attend to precision (MP.5, MP.6). The lesson is intentionally designed such that students discover that some of their informal comparisons (Lesson 7) were incorrect. Students record one of their findings by drawing the two objects being compared on a balance scale template.



In Topic B Fluency Practice, students count and record quantities up to 10 with tallies; establishing these prewriting skills lays the foundations for writing numerals in Module 5. Students also continue rote counting to 15 by counting drumbeats, which encourages them to keep track of the count mentally.

A Teaching Sequence Toward Mastery of Comparison of Weight

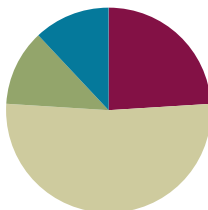
- Objective 1:** Identify the attribute of weight by describing objects as heavy or light.
(Lesson 6)
- Objective 2:** Compare weight using *heavier than*, *lighter than*, and *about the same as*.
(Lesson 7)
- Objective 3:** Compare weight using *heavier than*, *lighter than*, and *the same as* with balance scales.
(Lesson 8)

Lesson 6

Objective: Identify the attribute of weight by describing objects as heavy or light.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Tally Objects **PK.CC.3a** (4 minutes)
- Say Ten Basketball **PK.CC.1** (2 minutes)

Tally Objects (4 minutes)

Materials: (S) Bags of up to 10 objects, blank piece of paper to use as a recording sheet

Note: This activity maintains students' ability to tally objects, which was taught in the previous module. Providing students with this additional practice fosters efficiency and improves the students' ability to count and record quantities with tallies.

1. Distribute bags and a pencil to each student.
2. Have them line up the objects, count them, and record the quantity in tallies.
3. Exchange with another student for a different number of objects.

There are many opportunities for differentiation: number of objects, choice of writing instruments, and grouping of students (independent, partner, or small group with support from the teacher). Students who are not ready for writing, or who require a more concrete experience, can tally with craft sticks.

Say Ten Basketball (2 minutes)

Note: Counting the Say Ten Way will facilitate rote counting to 20 by the end of Pre-Kindergarten.

As in Lesson 4, students bounce an imaginary ball 15 times, once for each number: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, ten 1, ten 2, ten 3, ten 4, ten 5.

Application Problem (3 minutes)

Materials: (T) Seesaw picture (Template 1)

Show students the picture of the elephant and the ant on a seesaw. Encourage sharing about what they know about seesaws by asking questions such as, "Where have you seen them?" "Have you ever ridden one?" "How do they work?" Then, ask students to think about and share why the elephant is down low and the ant is way up high.



Note: Allowing students to uncover and analyze connections between real world experiences and math concepts, such as *heavy* and *light*, deepens their understanding of these concepts when they are formally introduced. It also provides insight into students' prior knowledge of *heavy* and *light* and anticipates work with the balance scale in Lesson 8.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Box of heavy and light items, enough for each student (feather, brick, pencil, big book, stuffed animal, etc.), 2 hula hoops or circles made of string for sorting objects

Note: When preparing the heavy and light items, include things that are big but light (a big piece of foam or an empty shoe box). Also include things that are small but heavy (a bag of marbles or a small bottle of water).

1. Pull a brick out of the box of heavy and light things. Say, "This is a brick. When I pick it up, it feels **heavy** (playfully exaggerating how heavy it is by lowering arms to the ground). I am going to put it in this hula hoop to make a group of heavy things."
2. Call on a student to pick another item from the box. Use parallel talk to guide students to identify the object, describe it as heavy or **light**, and sort it into the correct group.
3. Repeat until all the items have been identified as heavy or light and have been sorted.
4. Say, "We made a group of heavy things (pointing to the group), and a group of light things (pointing to the group). *Heavy* and *light* tell us about their **weight**."
5. Say, "We are going to look for some more heavy and light things at our tables."



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Facilitate student analysis. Use parallel talk to model questioning and encourage analysis of group collage choices. For example, "Why did you choose to place the car on the heavy collage?" "Why didn't you choose to put the book on the heavy collage?" After examples of model questions, encourage students to analyze their own work or other group members' work using the modeled questions.

Part 2: Practice

Materials: (S) Magazines, newspapers, or weight collage (Template 2), 2 or 4 pieces of butcher paper with large circles drawn on them labeled *heavy* and *light*, crayons, glue, scissors

Note: To facilitate cutting out pictures, preselect pages from magazines or portions of a newspaper that have heavy and light items (cars, insects, leaves, food items, etc.). Rip the pages from the magazine or cut the newspaper into manageable pieces and spread them out on the tables. Place heavy and light items on both tables so that students reason about weight as they make their collage.

MP.3

1. Depending on class size, divide the students into 2-4 groups. Direct students to sit with their small group at a table.
2. Say, "Find or draw pictures to put on your group paper that show heavy things (pointing to group) or light things (pointing to group)."
3. Provide work time. For their group sort, allow students to cut out pictures or draw items from the ones sorted during the Concept Introduction. Lead a discussion: "Which pictures were tricky to sort on your chart? Did you have any disagreements?"
4. Provide groups with time to revise their sort and to move some pictures from heavy to light, or vice versa.

Student Debrief (3 minutes)

Lesson Objective: Identify the attribute of weight by describing objects as heavy or light.

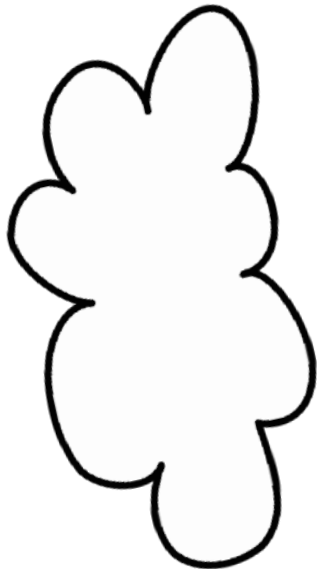
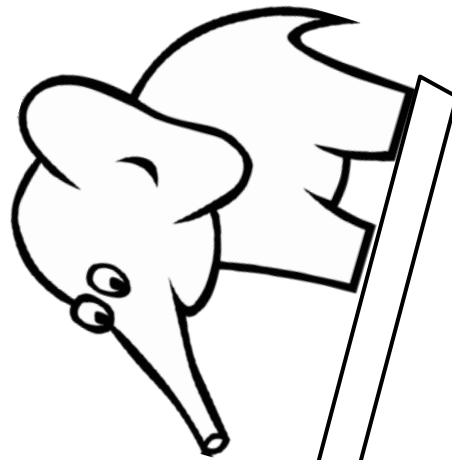
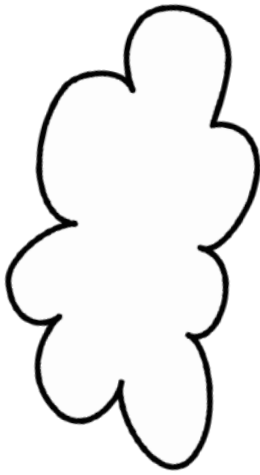
The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief. You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**heavy**, **light**, **weight**).

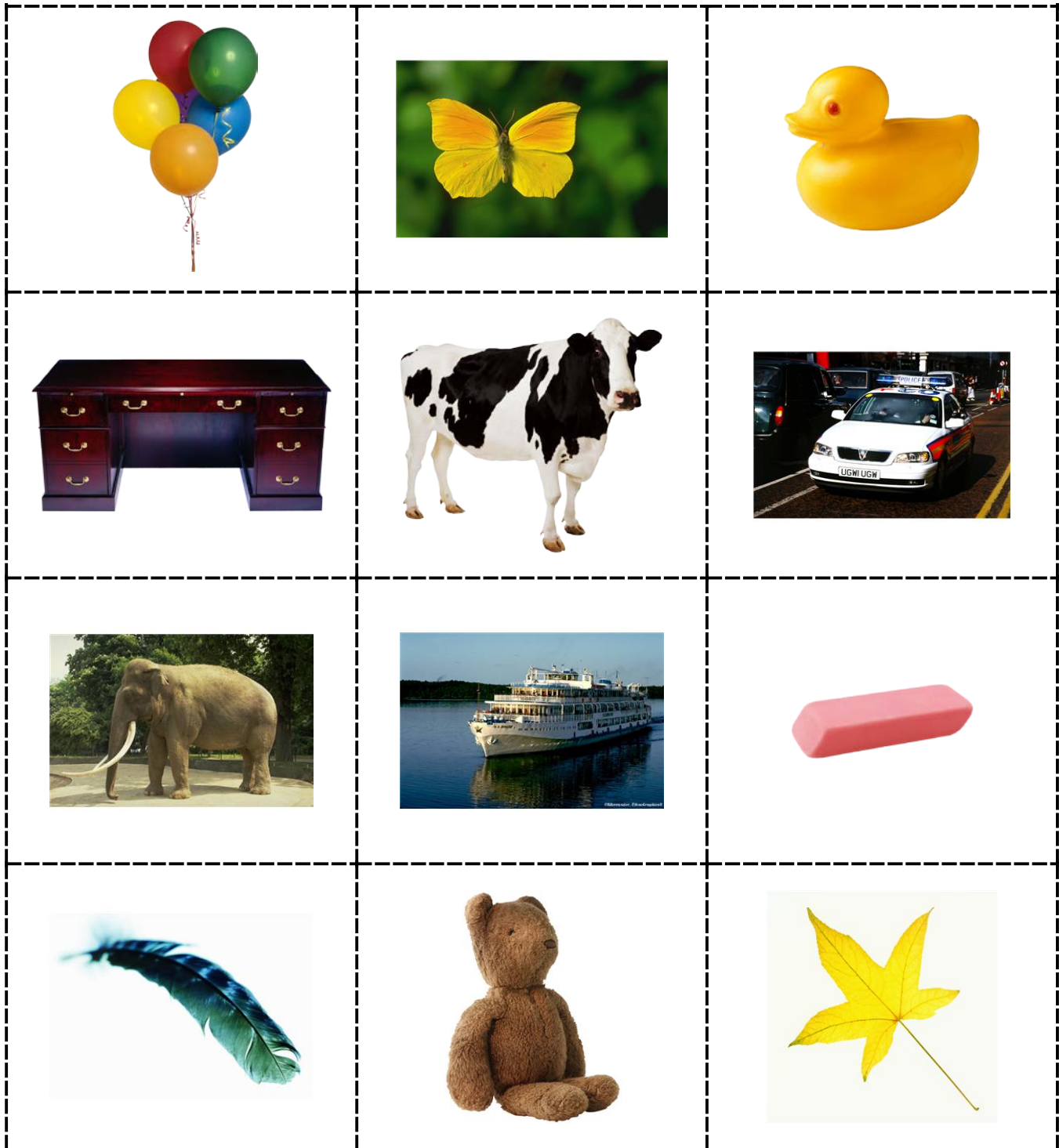
- What new words did we learn today? Can you use them to tell about these things (e.g., car, ring, pencil, feather, desk)?
- If one of you sat on a seesaw, and then I sat on the other end, which one of us would go up in the air, and which one of us would stay on the ground? Why?
- When you sorted objects as **heavy** or **light**, were all the heavy objects big and all the light objects small?
- Can something that is heavy get lighter? Can something that is light get heavier?
- What would Superman think was heavy? What would a baby think was heavy? Can the same object be light to one person and heavy to another?

**CENTER CONNECTION:**

Place weight collage templates, crayons, and paper at the art table. Allow students to draw or cut out pictures to make their own collage or simply to make a scene with heavy and light objects. As always, listen for students using appropriate or new vocabulary when they are working in a non-structured setting.



seesaw picture



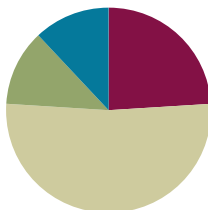
weight collage

Lesson 7

Objective: Compare weight using *heavier than*, *lighter than*, and *about the same as*.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Super Straight Lines **PK.MD.1** (4 minutes)
- Farmer Brown **PK.OA.2** (2 minutes)

Super Straight Lines (4 minutes)

Materials: (S) Rectangular block

Note: The practice of using a straight edge to make a line develops the mathematical practice of using tools for precision.

1. Tell the students that they will use a tool to make straight short and long lines.
2. Demonstrate how to use a rectangular block as a straight edge as you draw a line. Model having difficulty, holding the block while tracing. Let it slide around a little and solicit suggestions from the class.
3. Have a student volunteer to hold the block for you while you make a straight line. Stop short of the end of the block.
4. Using the block, say, "I am going to make another line longer than this one. Tell me when to stop drawing my line when it is longer than the first line."
5. Repeat step 4 using *shorter than*.

Distribute blocks. Have students practice at their seats with help from a buddy to hold the block.

Farmer Brown (2 minutes)

Materials: (T) CD *Growing Up with Ella* by Ella Jenkins (optional), picture of a tree, 5 green paper apples

Note: The familiar context and the repetition in the lyrics develop fluency in counting down. Note that students include the number zero.

Similar to GPK–M1–Lesson 34, place 5 apples on the tree, and remove one at a time. To begin, ask students how many apples Farmer Brown will have at the end. Sing the last verse, replacing the words *no more apples* with *zero apples*.

Farmer Brown had 5 green apples hanging on the tree. (Twice.)

Then, he took 1 apple and he ate it greedily, leaving 4 green apples hanging on the tree.

(Continue each verse, counting down.)

Application Problem (3 minutes)

Materials: (T) Large empty gift box, small gift box filled with toys

Show students the box and say, "Look at this enormous gift! What do you think is inside?" After a few guesses, ask students if they think the gift is heavy (most will). Pass the box around and ask if it is heavy or light. Then, ask students to talk about how such a big gift could be so light. (It's empty!) Say, "Hmm...I wonder if the gift will get heavier if we add more things to it?" Add some small toys and discuss. Then say, "What will happen if I remove some toys?" (The gift will be lighter!)

Repeat the process with a small gift that is quite heavy, first asking students to think about whether it is heavy or light, then passing it around. Guide students to the realization that size does not determine weight.

Note: Today's activity helps students discover through hands-on experience that small objects aren't always light, and large objects aren't always heavy, reinforcing learning from Lesson 6. This discovery broadens their understanding as they develop concepts about weight and make comparisons (heavier, lighter).



Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Stack of paper cups, a set of keys on a ring, two objects that feel about the same weight as each other



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

English language learners may benefit from holding the objects in order to compare the weight of the two objects. Provide students with an opportunity to hold each object, thus connecting the concrete object to the new comparison vocabulary (heavier and lighter).

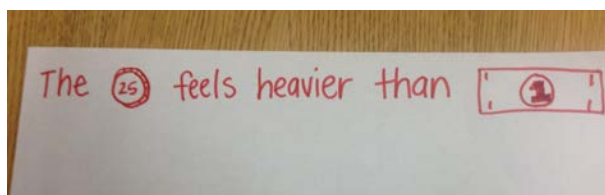
1. Hold a stack of paper cups in one hand: "This stack of cups feels light to me. I wonder how it will feel if I remove some cups from the stack?" (**Lighter!**) Ask, "Now, what if I add some more cups? Is my stack lighter or **heavier**?"
2. Repeat Step 1 with a set of keys, adding and removing some to the key ring to discuss lighter and heavier.
3. Now, hold a paper cup in one hand and the set of keys in the other hand. Say, "This cup feels **lighter than** the keys." Raise the hand holding the cup. Students turn to a partner and take turns repeating the *lighter than* statement.
4. Repeat Step 3 using **heavier than** with the paper cup and keys: "These keys feel heavier than the cup." Lower the hand holding the keys. Students turn to a partner and take turns repeating the *heavier than* statement.
5. Choose two objects that are about the same weight. Say, "These feel **about the same weight as** each other. I'm going to hold my hands at the same level like this to show that they feel about the same weight."

Part 2: Practice

Materials: (T) Chart paper to record weight comparison (*see below*) (S) Per pair: pair of objects to compare weight (quarter and dollar bill, crayon and marker, block and white board eraser, paper cup and keys, a counter and canned food, etc.)

Note: The objects gathered for today's lesson will also be used for Lesson 8. The objects must be small enough to be held in the students' hands (Lesson 7) and to fit on a balance scale (Lesson 8). Intentionally choose items that are nearly the same weight (quarter and eraser), but different enough for a balance scale to detect the difference. Also, choose items such that the smaller item is heavier (quarter and dollar bill). This provides the opportunity to clarify misconceptions about weight in Lesson 8.

1. Give each pair of students two objects to compare. Say, "With your partner, decide which object is heavier. As I walk around, show me which object feels heavier by lowering the hand with the heavier object."
2. Give students time to confer, and then walk around as students show you with their hand which object is heavier.
3. Say, "Now, when I walk around, I want the other partner to show me which object feels lighter by raising the hand with the lighter object."
4. Call each pair to the front of the room and encourage all students to listen carefully as each student makes a *heavier than*, *lighter than*, or *about the same weight as* statement about their two objects.
5. Chart their informal weight comparisons by writing rebus sentences on the chart paper such as, "The quarter feels heavier than the dollar bill. The dollar bill feels lighter than the quarter." Students will check these comparisons using a balance in the next lesson.



Student Debrief (3 minutes)

Lesson Objective: Compare weight using *heavier than*, *lighter than*, and *about the same as*.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**heavier/heavier than, lighter/lighter than, about the same weight as**).

- Did anything surprise you when you were guessing which objects were heavy and which were light? Why?
- Explain to a partner how a gigantic box could be **lighter than** a small box.
- Can you use **heavier than** and **lighter than** to tell your partner about the ant and the elephant on the seesaw from yesterday?
- Can you think of other objects that feel **about the same weight as** a _____ (e.g., marshmallow, grape, brick, desk)?

**CENTER CONNECTION:**

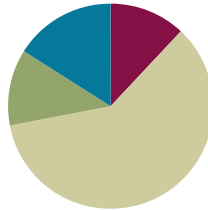
Place a bin of heavy and light objects used during the lesson on the rug area. Allow students to explore the items, comparing different objects than were paired during the lesson. This will give students an opportunity to feel and compare all of the objects using their new vocabulary.

Lesson 8

Objective: Compare weight using *heavier than*, *lighter than*, and *the same as* with balance scales.

Suggested Lesson Structure

■ Fluency Practice	(3 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(15 minutes)
■ Student Debrief	(4 minutes)
Total Time	(25 minutes)



Fluency Practice (3 minutes)

- Counting Drumbeats **PK.CC.3b** (3 minutes)

Counting Drumbeats (3 minutes)

Materials: (T) Toy drum or coffee can with lid and unsharpened pencil to use as drumstick

Note: This activity extends students' rote counting to 15 within the context of a familiar fluency activity.

T: I'm going to play my drum, and I want you to count the beats. So, if I play this (tap the drum once), that's 1. If I play this (tap twice), that's 2. Ready? (Play 2 distinct taps, one immediately after the other). How many beats did I play?

S: 2 beats!

T: Very good! Now, listen again. (Play 3 distinct taps, one immediately after the other.) How many beats did I play?

S: 3 beats!

T: Let's continue with beats up to 15.

Because of the higher count, keep the beats evenly timed and rhythmic so that rote counting is easier and more fluid even with the higher numbers.

Application Problem (3 minutes)

Materials: (T) Music: *Carnival of the Animals* by Camille Saint-Saens (optional) (S) Scarves (or tissues)

Tell students, "Let's use these scarves to act out *heavy* and *light*. Use your imagination! The scarves can be anything you want them to be! Butterfly wings, a feather, a leaf. Or they can be a giant rock or a huge watermelon." Encourage students to be dramatic. "Roll the scarf into a ball and pretend it's a rock as you stagger under the weight of it; throw it to a partner who pretends it's really heavy when she catches it."

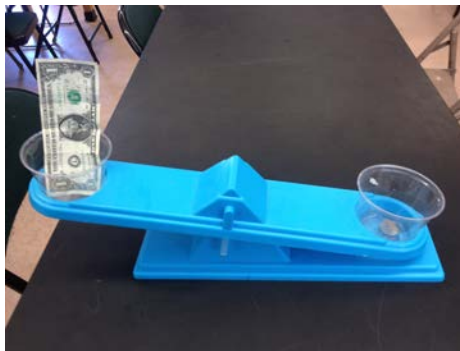
Alternately, or in addition, encourage students to move to the music to show *heavy* and *light*. Children can be colorful fish as they swim about, light and quick (to *Aquarium*), or they can move in a heavy, plodding manner as they listen to *Elephant* or *People with Long Ears* from *Carnival of the Animals*.

Note: Incorporating movement and music helps children internalize concepts. It is also a fun way to celebrate their learning!

Concept Development (15 minutes)

Part 1: Concept Introduction

Materials: (T) A balance scale, weight chart from Lesson 7, pairs of objects from Lesson 7, red and green markers



1. Review the rebus sentences from Lesson 7 by making *heavier than*, *lighter than*, and *about the same weight as* statements about the objects the students informally weighed with their hands.
2. Say, "Today, we are going to use a **balance scale** (show it) to **weigh** the objects that we compared yesterday with our hands. Our chart will help us to remember which objects we thought were *heavier than*, *lighter than*, or *about the same weight as* each other."
3. Start with the first items from the chart. Put the quarter and dollar bill in your hands. Say, "Yesterday, we thought the dollar bill was *lighter than* the quarter." Raise the hand with the dollar bill, and lower the hand with the quarter as students do the same.
4. Ask, "What do you think will happen when I put them on the balance scale?" Pause to discuss. Place both items on the balance scale, noticing how it's similar to the seesaw.
5. Exclaim, "Look! The balance scale lowers on the side of the heavier object! That means the quarter is heavier than the dollar bill."
6. Students turn to a partner and repeat comparison statements: "The quarter is *heavier than* the dollar bill. The balance scale is lower on that side. The dollar bill is *lighter than* the quarter. The balance scale is higher on that side." Repeat with different pairs of objects.
7. Continue checking all the items from the chart (Steps 3–5). Circle the correct informal weight comparisons in green on the chart. Cross out and re-write the incorrect weight comparisons in red on the chart. When the balance scale proves one of the comparisons wrong, discuss how tools helps increase precision.

MP.5

Part 2: Practice

Materials: (S) 4 balance scales, objects to compare weight (the same objects from the chart with a few more objects added), Problem Set, crayons

Note: Prepare tables with objects and balance scales (as many as possible).

1. Say, "It's your turn to practice weighing objects on the balance scale and to decide which objects are *heavier than*, *lighter than*, or *about the same weight as* each other."
2. Monitor group work to facilitate taking turns; hence, more balance scales will make for more hands-on practice.
3. After students have had time to notice what happens to the balance scale when something is *heavier than*, *lighter than*, or *about the same weight as*, distribute the Problem Set.
4. Say, "Choose a pair of objects that you weighed. Draw where they belong on the balance."
5. As students are working, circulate and ask students to make *heavier than*, *lighter than*, or *about the same weight as* statements about their drawing. Then ask, for example, "How does the balance show you that _____ is *lighter than* _____?"



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Encouraging students to make predictions and to test their hypothesis sparks interest and motivation. As an extension, ask students to find two objects in the classroom and to make a prediction about their weights using a comparison statement. Then, invite students to test their hypothesis by using the balance scale.

Student Debrief (4 minutes)

Lesson Objective: Compare weight using *heavier than*, *lighter than*, and *the same as* with balance scales.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

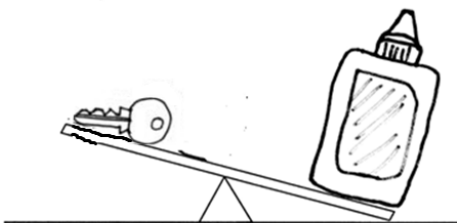
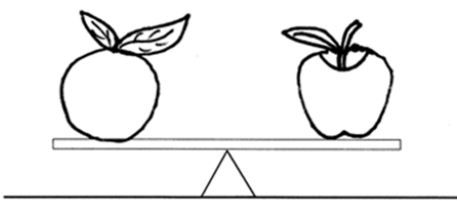
As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**balance scale**, **weigh**).

- How did you **weigh** the objects today? How is a seesaw like a **balance scale**?

NYS COMMON CORE MATHEMATICS CURRICULUM Lesson 8 Problem Set

Name Lacy Date _____

COMMON CORE Lesson 8: Compare objects using heavier than, lighter than, and the same as with balance scales. 9/5/14 engage^{ny} 4.B.15

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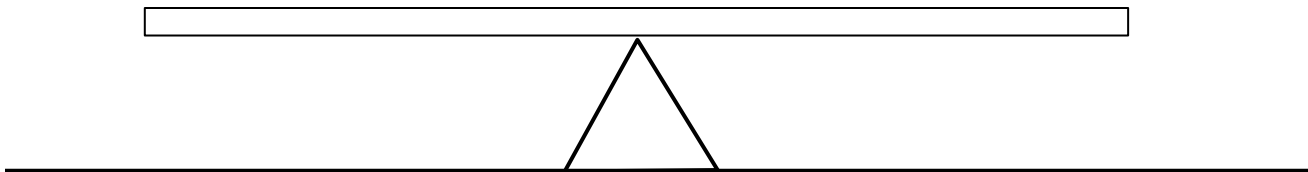
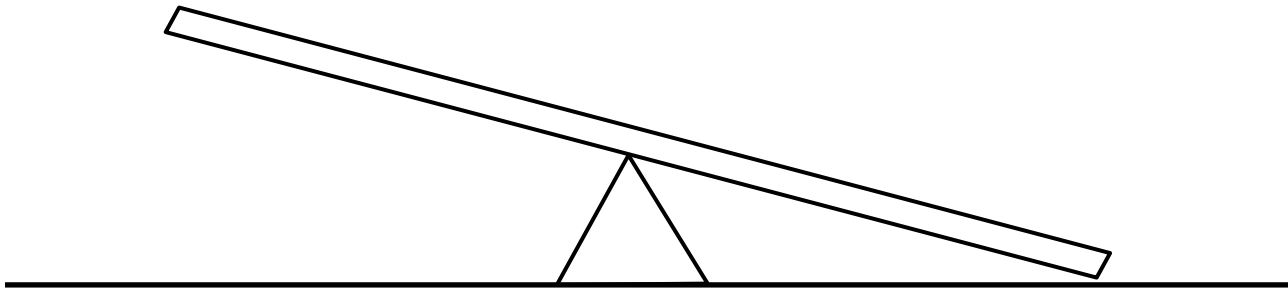
- What animals do you think of as being light? What animals do you think of as being heavy? Can you think of a heavy animal that is really fast? Really slow? Can you think of a light animal that is really fast? Really slow?
- Use the words *heavier than/lighter than* to tell your partner about the pictures you drew on your Problem Set.
- What happens on a balance scale when two things are about the same weight?

**CENTER CONNECTION:**

Set up a few balance scales and a tub of pennies on a table. Let students use the like units (pennies) to explore comparison of weight. Comparing like units supports number comparison in the second half of this module.

Name _____

Date _____





Topic C

Comparison of Volume

PK.MD.1

Focus Standard:	PK.MD.1	Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light).
Instructional Days:	4	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

The concept of volume for Pre-K students and the vocabulary used to describe and compare it (*big, small, more, and less*) is perhaps the most familiar to young children, compared to the previous topics of length and weight. The language used to describe volume bridges directly into the language used to compare numbers using *more than* or *less than* (with *more than* eventually giving way to *greater than*). In Lesson 9, students pack various grocery items in a big and small grocery bag and say, e.g., “This cereal box fits in the big bag.”

In Lesson 10, students compare the capacity of different-sized containers at the sand and water tables, exploring which container holds more and which one holds less. First, students pour between identical containers to see that they hold the same amount. Second, they pour the same amount between different containers to see that the same amount looks different. Third, students pour a full container into another larger or smaller container to see that either it doesn't fill the larger container all the way, or it spills over the edge of the smaller container. Students may observe, “This cup holds more than that one because look, some of the water is spilling!” or “This cup holds less than that one because it doesn't fill up.”

After students have explored volume in terms of *big, small (PK.MD.1)*, *more than*, and *less than*, they investigate the concept of conservation and *the same as* in the context of volume.

Lesson 11 begins with students filling two identical plastic cups with the same amount of sand. Next, students pour each cup of sand into two different pint-sized containers (one tall and thin, one short and wide). They respond to the question, “Do these containers still hold the same amount of sand?” “Yes!” Students continue to pour the sand back and forth from containers to cups and vice versa to prove that the amount of sand is the same regardless of its container; hence, the amount is conserved.



Comparison of length, weight, and volume concludes with Lesson 12 as students find objects that match given comparison statements using the game *I Spy*: “I spy with my little eye something that is *heavier than* this book.” Students celebrate their learning by visiting length, weight, and volume stations. At the stations, they use new math vocabulary to compare measurements (straight objects and cubes), weights (balance scales), and capacity (containers with rice or beans).

In Topic C Fluency Practice, students gain mastery of the counting sequence as they now identify errors in the count. They *count all* with totals within 10, which serves as a precursor to understanding simple addition stories. In addition, they continue to practice drawing tallies, this time in the sand, to prepare for writing numerals in Module 5.

A Teaching Sequence Toward Mastery of Comparison of Volume

Objective 1: Identify the attribute of volume by describing containers as big or small.
(Lesson 9)

Objective 2: Compare volume using *more than* or *less than*.
(Lesson 10)

Objective 3: Compare volume using *the same as* with sand and explore conservation.
(Lesson 11)

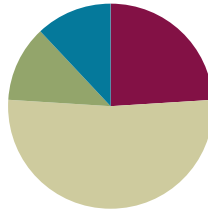
Objective 4: Find objects that match length, weight, and volume comparison statements.
(Lesson 12)

Lesson 9

Objective: Identify the attribute of volume by describing containers as big or small.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Ice Cream **PK.CC.3a** (3 minutes)
- Balance Scale **PK.MD.1** (3 minutes)

Ice Cream (3 minutes)

Materials: (T) Puppet or stuffed animal (optional)

Note: At this point in the school year, students are gaining mastery of the counting sequence. This activity challenges them to detect an error in the familiar order of number names. Work within a range that is comfortable for all students and slowly build up to a more challenging sequence.

- T: I'm going to count, and instead of saying a number, I'll say "ice cream!" Isn't that silly? Listen closely and see if you can tell what number I should've said. (If you prefer, the puppet or stuffed animal can play this role.) 1, 2, ice cream!
- S: 3.
- T: Very good. Listen again: 1, 2, 3, 4, ice cream!
- S: 5.
- T: Excellent. This one will be a bit of a challenge. Ready? 1, 2, ice cream, 4, 5.
- S: 3.

Continue working, starting the next one with "ice cream," for example. For a real challenge a bit beyond the standards, try starting the sequence at a number other than 1: "4, 5, ice cream, 7." Scale back if students struggle or hesitate. Praise students for knowing so much about counting that they are now able to notice mistakes.

Balance Scale (3 minutes)

Materials: (S) Objects for comparing weight from previous lessons, balance scale

Note: The use of kinesthetic activities prepares students to *read* the balance scale in today's lesson.

Prior to starting the activity, be sure that students are facing the same direction, so that no one views, or models the movement of the scale in reverse.

- T: Pretend you are a balance scale. (Show the scale, and model arms outstretched.)
- S: (Arms outstretched.)
- T: When I put these objects onto the scale, I want you to show me how the scale moves. (Place 2 objects of dramatically different weights onto the scale, such as a feather and a rock.)
- S: (Mimic the motion of the scale. Drop the arm that is in line with the heavier object down to the side. Raise the arm that is in line with the lighter object.)

Continue with other objects, being cognizant of making the distinction between size and weight. Include objects that are about the same weight.



NOTES ON MULTIPLE MEANS FOR ENGAGEMENT:

Challenge advanced students by asking them to make a prediction about the movement of the scale before you put the objects on it. "Show me what you think the scale will look like if I put a cotton ball on this side and a rock on this side."

Application Problem (3 minutes)

Materials: (T) Large box, very small box, assortment of large and small objects, (e.g., key, ping pong or golf ball, penny, ring, bean, basketball, blanket, backpack)

Lay out the objects and the large and small boxes. Encourage a conversation about the size of the objects and the boxes. Ask why one box would be better for packing a particular object. Invite each student to *pack* an object as the discussion continues. Listen for the use of *big* and *small* to informally assess student understanding before the introduction of these terms during the Concept Development to describe volume.

Anticipate that some students will place a small object inside the large box. A discussion about their choice encourages the articulation of the idea that larger containers hold more than smaller containers and allows for exploration of smaller parts inside a larger whole in a real world context.

Note: This activity leads into today's Concept Development as it activates students' prior knowledge about size and prepares them to learn the meaning of *big* and *small*.



Concept Development (13 minutes)**Part 1: Concept Introduction**

Materials: (T) Grocery bag, lunch-sized bag, plastic food toys, basket

Note: It may be helpful to ask parents to send in food containers or boxes for this exercise.

Set up the lesson by laying the plastic food toys out. Be sure to have some empty cereal boxes or other larger items to be able to fill up the big bag.

1. Say, "Let's go grocery shopping." Put plastic food toys in your basket, dramatizing your shopping trip. "I need some eggs, some chicken for dinner, and a bottle of water," etc. Get enough food items to fill the big bag."
2. Place the two bags so that students can see them. Say, "Look at my groceries. Which bag should I use to take my groceries home?"
3. Call on a student to choose a bag and explain why she chose that size, e.g., "You need to use the big bag because all your food won't fit in the other bag." Call on students to fill up the big bag with the plastic food from the basket.
4. Repeat the shopping experience, but this time, only put three items in the basket. Repeat Steps 2 and 3 using the small bag.
5. Hold up the big bag filled with groceries. Say, "Use the word **big** to tell your neighbor about the bag."
6. Hold up the small bag filled with groceries. Say, "Use the word **small** to tell your neighbor about the bag."

Part 2: Practice

Materials: (T) Big and small grocery bags, gallon of milk, cup of yogurt. (S) Per table: big and small grocery bag (or shopping, gift bags); groceries from kitchen center or home, for example, empty cereal boxes, juice or milk containers, yogurt, fruit, vegetables

Allow students to work in groups of three or four at tables. Prepare each table with various grocery items in the center, some big (e.g., empty milk gallon, egg carton) and some small (e.g., plastic apple, slice of cheese). Place two bags on each table, one big and one small.

1. Show a few grocery items of varied sizes in front of you. Tell students they need to pack them all in two bags, one big and one small.
2. Holding the gallon of milk, say, "Tell your neighbor: What kind of bag do I need to fit this milk container?" Guide students to say, "You need a big bag."
3. "What items do you see that would fit in the small bag?" Guide students to say things such as, "The yogurt can fit in the small bag." (Note: If students disagree, acknowledge that the big bag would work too, but the small bag is the better choice.)
4. Say, "Work with your group to fill a big bag and a small bag with the groceries on your table."
5. After the groups have finished putting groceries into bags, invite them to share 1–2 items in the bags, saying, "This cereal box fits in the big bag" or "This pudding fits in the small bag."

Student Debrief (3 minutes)

Lesson Objective: Identify the attribute of volume by describing containers as big or small.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**big, small**).

- (Place an assortment of different-sized containers in the center of the circle, e.g., bucket, pitcher, glasses, bowls, measuring cups, teaspoon.) What words did we learn today to tell about the size of these containers? Which ones are big/small?
- (Hold up a gallon of milk and a juice box.) Could this gallon of milk fit inside the **small** bag? Why? Could a juice box fit inside the **big** bag? Why?
- Can you think of some animals that fit in big cages? How about small cages?
- Hold up a picture of a cage. Would a mouse think this is a big cage? Would an elephant think this is a big cage?

**CENTER CONNECTION:**

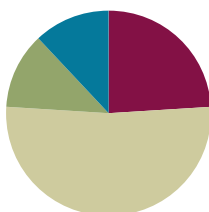
Place different-sized containers (bags, boxes, plastic food storage containers, etc.) in the kitchen or block center. Allow children to pack the containers, discovering that the big containers hold more and the small containers hold less. *More than* and *less than* is a precursor to Lesson 10.

Lesson 10

Objective: Compare volume using *more than* or *less than*.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Ready, Set, Count! **PK.CC.3ab** (4 minutes)
- Counting Stretch **PK.CC.3ac, PK.MD.1** (2 minutes)

Ready, Set, Count! (4 minutes)

Note: This activity anticipates addition in GPK–Module 5 as they count all (or count on if able) to find the total of 2 sets.

1. Assign partners. (Demonstrate with a student if playing for the first time.)
2. Each partner makes a fist with one hand and pounds the palm of the other hand three times (same motion as *rock, paper, scissors*) while saying, “Ready, set, count.”
3. On the third tap, both partners show a number of fingers. Zero can be represented as a closed fist.
4. Both partners count all of their fingers to find the total.
5. Differentiate by having partners use two hands, increasing the totals to 5–10. Observe students’ counting strategies and encourage them to count on if able, but do not expect, or require them to do so.

Counting Stretch (2 minutes)

Note: The movement helps students to associate length and height with increasing quantity.

- T: Start with your hands together, like this.
- S: (Hands clasped.)
- T: As we count, slowly pull your hands away from each other, like pulling a long stretchy rubber band. (Demonstrate.) We’ll stop at 10. (Select an appropriate stopping point for your class.) Ready?
- S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. (By the time they reach 10, arms are fully outstretched.) If students are able to, they can count down as the return to the starting position.

T: This time, pretend you are a little seed. As we count, you grow into a plant, getting taller and taller!

S: (Begin crouched down.)

T: Ready?

S: 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. (By the time they reach 10, students are standing up straight.)

If students are able to count down, consider substituting the metaphor of riding an elevator up and down to provide context.

Application Problem (3 minutes)

Materials: (T) Assortment of different-sized containers (e.g., bucket, pitcher, glasses, bowls, measuring cups, teaspoon)

Display the containers in random order and ask students to name those that they recognize and tell about how they are used. Name any unknown containers and talk about how they are used as well. Ask students to talk about the size of the containers and to tell which containers they think will hold the most. Many students will make the connection that the bucket holds the most because it is the biggest. Ask students to arrange the containers by size, starting with the one that holds the most. Invite students to compare the size of the containers, e.g., “This bucket is bigger than this pitcher.” or “This glass is smaller than this pitcher.”

Note: This activity builds schema for work with capacity and comparative language in the Concept Development.



Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Three plastic bowls or food storage containers (small, medium, and big), tray (to catch rice spillage), uncooked rice

1. Show the medium bowl on a tray filled to the brim with rice. Say, “A boy was having rice for dinner. The bowl was so **full** that his mother worried that he might spill the rice.”
2. Pour the medium bowl of rice into the large bowl as students observe. Say, “His mother poured the rice into this **empty** bowl so he wouldn’t spill.”
3. Ask, “How do you know that the new bowl holds **more than** the first bowl?” Guide responses, e.g., “The new bowl holds *more than* the first bowl because there is room above the rice.” “In the first bowl, the rice went to the top.” “In the big bowl, there is space for more rice.”



4. Hold up both bowls and ask, “Does this bowl hold **less than**/more than this bowl?” Guide students to answer in a complete sentence using the words *less than*/*more than* in their response. Pour rice back and forth between bowls to confirm student statements.
5. Pour the big bowl of rice into a small bowl, letting it spill over as you continue telling the story, “Oh no! The boy tried to pour his big bowl of rice into a small bowl!”
6. Ask, “Why did the rice spill all over?” Guide responses, e.g., “That bowl is too small.” or “That bowl holds less than the big bowl.”
7. Conclude by calling students forward and giving them two containers (small, medium, or big) used in the story. Help students make *more than* and *less than* statements to compare how much each bowl holds. “This big bowl holds *more than* this one. This small bowl holds *less than* this bowl.”

Part 2: Practice

Materials: (S) Water table and sand box, several containers of all sizes (cups, food storage containers, buckets)

Note: If the weather does not permit use of the water table and sand box outside, fill large plastic containers of water or tubs of rice, beans, or sand to use in the classroom.

1. Say, “It’s your turn to test containers to see which ones hold more and which ones hold less.”
2. Send students to the water table and sand box with many containers laid out for them to explore.
3. As students fill containers, encourage them to pour sand or water back and forth between different containers and make *more than/less than* statements.
4. Circulate and ask questions such as:

MP.3

- When you poured that small cup of water into that big empty bucket, did the bucket fill to the top? Can the bucket hold more than the cup?
- What happened when you poured that big bowl of water into that small empty bowl? Does the small bowl hold more than or less than the big bowl?
- Show me a big container that holds *more than* this cup.
- Show me a small container that holds *less than* this tub.
- Show me two containers that hold about the same as each other when they are full. How do you know they hold the same amount?



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Cultivate excitement by providing challenging extensions for students who are ready. For example, include containers that may appear to hold more but do not. Often students will think a container that is taller holds more than a container that is wider. This extension will challenge students to test their hypotheses and evaluate their thinking.

Student Debrief (3 minutes)

Lesson Objective: Compare volume using *more than* or *less than*.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**empty**, **full**, **more than**, **less than**).

- (Hold up one container.) Show a container that holds **more than/less than** this one.
- (Fill a cup with rice. Then, pour it into a larger bowl.) Watch me fill this **empty** bowl. Why isn't this bowl **full**? Did the amount of rice change?
- If we had to fill up a bathtub with water, which container would be best to use? Why?
- (Show the bowls used in the Concept Introduction.) Which bowl would you want to fill with ice cream? Why?

**CENTER CONNECTION:**

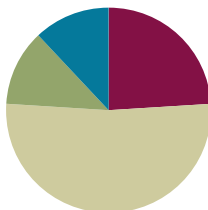
Place several different-sized rectangular plastic food containers and linking cubes on a table. Let students explore which containers hold more or less by *packing* the containers with linking cubes. Highlight what happens when the cubes are neatly packed in a container as opposed to when they are dumped in. Listen as students grapple with which container holds more or less because some containers will be *heaping* with cubes.

Lesson 11

Objective: Compare volume using *the same as* with sand and explore conservation.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Sand Observations **PK.MD.1** (3 minutes)
- Tallies in the Sand **PK.CC.3a** (3 minutes)

Sand Observations (3 minutes)

Materials: (S) Sand, trays, shoebox lid or other similar wide flat container for working in the sand

Note: This activity introduces working with sand to provide exploration time in a cognitively *light* task before focusing on the tasks of today's Concept Development.

1. Distribute the trays of sand, establish guidelines, and model the care of usage of the materials.
2. Direct students to carefully sweep the sand to one side of the tray with their hand and then the other. Have them redistribute it to cover the bottom of the tray.
3. As they work, let them observe that the same amount of sand can take on various forms.

Tallies in the Sand (3 minutes)

Materials: (S) Sand, trays, shoebox lid or other similar wide flat container for working in the sand

Note: This activity gives students additional time to get acquainted with the sand while drawing tallies.

1. Begin with sand covering the bottom of the tray so that students will have a large enough writing surface.
2. Show a number of objects and have students tally them as they did on paper.
3. If using a shoebox lid or other rectangular tray, encourage them to *bump* the top and bottom when they draw their tallies as they would if using handwriting lines.

Application Problem (3 minutes)

Materials: (T) Tall, thin glass; short, wide glass (both glasses should hold the same amount); rice

Show students both glasses and encourage students to reason about which container holds more. Then, fill the taller glass with rice. Ask students what they think will happen when you pour the contents from the tall container into the shorter container. Will it overflow? Will there be more room above the rice? Will it fill the container to the top? Guide students to see that both containers hold the same amount and encourage a discussion as to why this is so.



Note: This activity leads into the Concept Development as it gets at the misconception that a taller container must hold more than a shorter container. In the Concept Development, students discover that the contents may look different in different-sized or -shaped containers, but the amount is conserved.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Two clear plastic cups with smiley faces drawn; a tall, thin container and a short, wide container; sand in a bucket; clear plastic shampoo and drink container (for Student Debrief)

Note: Choose containers carefully. Be sure that all of the sand in the plastic cups fits into the tall and short pint containers.

1. Show a plastic cup filled with sand. Say, "This is Mr. Cup. Here is his wife Mrs. Cup." Show an empty, identical plastic cup.
2. Pour the sand from the plastic cup (Mr. Cup) into the identical plastic cup (Mrs. Cup). Pour the sand back and forth: "Look! They hold the **same** amount of sand!"
3. Say, "Tell your neighbor about Mr. and Mrs. Cup." Lead students to say things such as, "Mr. Cup holds the **same** amount of sand **as** Mrs. Cup."
4. Show two pints: a tall, thin container and a short, wide container. Call on two students to pour one of the cups of sand into the tall container and the other cup of sand into the short container.
5. Ask, "Do these containers still hold the same amount of sand?" Allow for discussion and debate.
6. Then, verify that the amount of sand is still the same by inviting students to pour the sand back and forth between containers. Allow for discussion each time: "Did we add more sand?" (No.) "Did we take some sand away?" (No.) "The amount of sand stays the same even when it is poured into different containers."



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Facilitate partner discussions using turn and talk. Turn and talk provides students who are developing language a model and an opportunity to ask questions. Also, a partner discussion allows the teacher to check for understanding of students who may shy away from sharing within the large group.

Part 2: Practice

Materials: (S) Several sets of two clear plastic cups; two clear pints: a tall, thin container and a short, wide container; bag or bucket of sand

Note: Set up tables so that groups of 2 or 3 have a set of materials.

1. Say, "In your groups, put the same amount of sand into Mr. and Mrs. Cup."
2. Say, "Pour the sand into the other containers and talk about what happens."
3. As the students manipulate the sand, circulate and describe what they are doing, using parallel talk, e.g., "Marin is noticing that the tall container holds the same amount of sand as the short container or Ryan says that even though it looks different, the amount of sand stays the same."

**Student Debrief (3 minutes)**

Lesson Objective: Compare volume using *the same* with sand and explore conservation.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**same**).

- Talk with a neighbor about what happened when we poured the **same** amount of sand into a tall, thin container and a short, wide container.
- Think about the tall, thin container and the short, wide container. If you were really thirsty, would the tall, thin container be better to use or would the short, wide container be better? Why?
- (Hold up a clear shampoo container and a clear drink container.) How can we figure out which one holds more?
- How do you think grown-ups know how much is in a container?

**CENTER CONNECTION:**

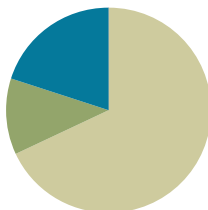
Place several different containers at the sand and water tables. Be sure to include tall, thin containers, as well as short, wide containers. Allow children to pour between containers, experiencing conservation as they witness that the volume of a substance doesn't change when transferred to a new container.

Lesson 12

Objective: Find objects that match given length, weight, and volume comparison statements.

Suggested Lesson Structure

■ Application Problem	(3 minutes)
■ Concept Development	(17 minutes)
■ Student Debrief	(5 minutes)
Total Time	(25 minutes)



Application Problem (3 minutes)

- Play a game of *I Spy* using length, weight, and volume comparison statements.
- Model how to play, beginning with length: “I spy with my little eye something that is *shorter than* my pointer finger.” Students take turns guessing the correct object in the classroom.
- Continue playing with length (*longer than*, *shorter than*, *about the same length as*), weight (*heavier than*, *lighter than*, *the same weight as*), and volume (*more than*, *less than*, *the same amount as*).
- Continue as many games as time allows.



Note: Today’s Application Problem serves as a fun way to briefly review comparative statements about length, weight, and volume as students practice using new vocabulary.

Concept Development (17 minutes)

Materials: Listed below in the description of each station

Note: Today’s Concept Development is not divided into 2 parts. Rather, the entire time is devoted to students rotating through various stations for a hands-on experience with length, weight, and volume.

Station Setup: At each station, set up a focus item by placing the item in a shoebox lid or other *special* place.

- Length station:** brand new pencil (focus item), basket of linking cubes



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Provide a direction card with a visual model of the task at each station to support students. This will limit teacher talk and encourage student autonomy with the task.

- **Weight station:** a pink eraser (focus item), 4 balance scales, a container of objects to compare to the pink eraser (paper clips, coins, wooden or foam blocks, paper plate or cups, plastic spoons, etc.)
 - **Volume station:** small plastic cups filled with beans per student (focus item), several other containers of all sizes
1. Explain each station to the students. Say, "We get to explore and compare things using all of our new words!"
 2. At the length station, say, "You will make three linking cube trains: One that is shorter than this pencil, one that is longer than this pencil, and one that is about the same length as this pencil." When you have made each train, tell another person in your group, "I made a train that is *longer than/shorter than/about the same length as* the pencil." Review the important words students will use.
 3. At the weight station, say, "You will use the balance scale to weigh three objects: One that is heavier than this pink eraser, one that is lighter than this pink eraser, and one that is about the same weight as this pink eraser." When you have weighed each object, tell another person in your group, "This is *heavier than/lighter than/about the same weight as* the pink eraser." Review the important words students will use.
 4. At the volume station, say, "You will use this small cup of beans to fill three containers: One that holds more beans than this cup, one that holds less beans than this cup, and one that holds about the same amount of beans as this cup." When you have filled each container, tell another person in your group, "This container holds *more than/less than/about the same amount of* beans as the cup."
 5. Divide the students into three groups and assign each group to a station. Rotate the groups after about four minutes at each station.

MP.5



Student Debrief (5 minutes)

Lesson Objective: Find objects that match given length, weight, and volume comparison statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- (Show a train of 10 linking cubes.) How can you use your words to compare this linking cube train to the pencil? At the length center, how many cubes were



CENTER CONNECTION:

Today's lesson incorporates length, weight, and volume centers. These centers can be used on subsequent days to reinforce comparison of length, weight, and volume.

about the same length as the pencil?

- What objects were heavier than/lighter than/about the same weight as the pink eraser?
- Can you think of things that are as light as a feather? As heavy as an elephant?
- (Invite students to use their bodies to show their understanding of long, short, tall, heavy, light, big, small.)



Topic D

First and Last

PK.CC.6, PK.CC.4, PK.CC.3a, PK.CC.3b

Focus Standard:	PK.CC.6	Identify “first” and “last” related to order or position.
Instructional Days:	3	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

The comparison of length, weight, and volume in the first half of the module naturally leads to discussions about quantity and number. Topic D begins by building upon the work of Module 1 by having students count 5 bears in a scattered configuration while identifying the *first* and *last* bear counted (**PK.CC.6**). This concept is a prelude to thinking about *enough* in Topic E. Students mark the first and last bear counted in a scattered configuration by underlining them and by *connecting* the bears in the order counted with a path (**PK.CC.3a**). By comparing different paths, students discover that there is more than one way to count the same number of objects.

Work with identifying first and last continues in Lesson 14 as up to 10 students form a line (**PK.CC.4**), with the first and last students exclaiming, “I am first!” or “I am last!” When students turn around, they observe that, when counting from the other direction, the first becomes last, and vice versa. Students practice identifying the first and last bear in a linear configuration as they manipulate 4, 6, 8, or 10 bears in and out of a canoe and a rowboat (to show an array formation). Again, students see that, although the configurations and positions may change, the number of bears stays the same.



Finally, students see the importance of marking the first and last object counted as they revisit counting as many as ten objects in a circular configuration (**PK.CC.4**). “Let’s see how many children are in the circle.” The teacher will start counting around the circle and continue until students realize the *mistake*. “No, there aren’t 15 people in the circle! You counted some people twice!” Marking the first object counted reinforces that the last number named tells the number of objects counted (**PK.CC.3b**).

In Topic D Fluency Practice, students practice counting in scattered and circular configurations. Through familiar activities (*Number Cha-Cha* and *Say Ten Basketball*), they extend counting to 15. Students also recall the 0–5 numerals and remain attentive to the counting sequence and its corresponding finger representations, i.e., counting the Math Way.

A Teaching Sequence Toward Mastery of First and Last

Objective 1: Identify first and last in a scattered configuration with 2–5 objects.
(Lesson 13)

Objective 2: Identify first and last in a linear configuration with 2–10 objects.
(Lesson 14)

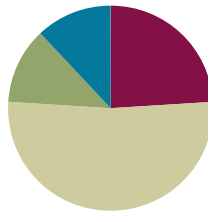
Objective 3: Identify first and last in a circular configuration with 2–10 objects.
(Lesson 15)

Lesson 13

Objective: Identify first and last in a scattered configuration with 2–5 objects.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Scattered Touch and Count **PK.CC.3b, PK.CC.4** (4 minutes)
- Hop Hop **PK.CC.2** (2 minutes)

Scattered Touch and Count (4 minutes)

Materials: (S) 3–5 teddy bear counters

Note: Counting in scattered configurations prepares students for advancing this work in today's Concept Development.

- T: Imagine that the teddy bears are playing at recess. You are the teacher. Your table is the play area. Show me how they play.
- S: (Shuffling the teddy bears around as if playing, verbalizing, modeling actions.) Wee! I'm going down the slide. I'm on the swings.
- T: Then you, the teacher, whistles to say recess is over, and all the bears freeze! Count your students to make sure all the bears are there. Use your finger to touch and count.
- S: 1, 2, 3, 4, 5 (as they touch and count).
- T: It's the next day; they're out playing again.
- S: (Use the bears to act out play.)
- T: Freeze! It's time to touch and count.
- S: (Touch and count again with the bears in a different arrangement.)
- T: Are there the same number of bears as before?
- S: Yes.

Repeat a few more times. Differentiate with the number of bears: 3, 4, or 5.

Hop Hop (2 minutes)

Materials: (T) Numeral cards 0–5 (write numbers 0–5 on paper)

Note: This activity maintains students' abilities to recognize numerals 0–5.

1. Show a numeral card. Tell students to *hold* the number in their minds rather than say it aloud.
2. On the teacher's signal, students hop that many times while counting aloud.
3. Including 0 as one of the options can be fun, but perhaps clarify the action (or lack thereof) before showing that numeral.

By instructing students not to say the number, the teacher will be able to see which students can recall the numeral when they hop and count. This is a quick way to assess retention.

Application Problem (3 minutes)

Materials: (T/S) Blank index card, 5 different types of stickers

Give each student an index card and 5 stickers. Tell students they can arrange their stickers any way they choose on their cards. Ask them to tell a neighbor which sticker they will use first. When finished placing all 5 stickers, invite students to share their designs and the sticker they placed first. Have the class start the count from that sticker. After several students have shared, guide students to see that the number of stickers does not change no matter how they are organized or counted.



Note: Pre-teaching vocabulary in a natural context ensures greater access during the Concept Introduction.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Piece of string or yarn long enough for 5 students to hold, 5 pieces of construction paper (mats), 15 linking cubes in different colors for each number tower 1–5 (GPK–M1–Lesson 31)

Place 5 pieces of construction paper in a scattered configuration on the rug.

1. Call 5 volunteers to come forward and say, “Find a construction paper mat to stand on.”
2. Hold the piece of string and say, “Let’s count our friends. Count each friend as they hold on to this string.” Give one end of the string to the first student, then “thread” the string to each student while counting until the last student is holding the other end of the string.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

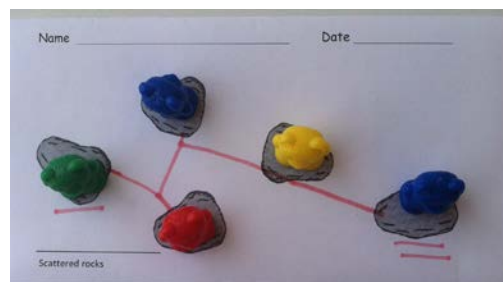
Highlight math vocabulary throughout the day. For example, call attention to who is *first* and *last* in line when walking to lunch. Consider incorporating previously learned position words, such as *in front of*, *next to*, *behind*. Encourage students to use math vocabulary in their daily discussions.

3. Ask, “How many friends are holding the string? Who is the **first** student we counted? Who is the **last** student we counted? How do you know who we counted first and who we counted last?”
4. Without moving the construction paper mats, call forward 5 new volunteers. Repeat Step 2; however, this time, start and end with students standing on different mats so the string shows a different counting path.
5. Ask the questions from Step 3. Lead students to answer in a complete sentence, “_____ is the first/last student we counted.”
6. Then add, “What was the same about the two times we counted our friends? What was different?”

Part 2: Practice

Materials: (S) Scattered rocks (Template), 5 teddy bear counters, 1 crayon

1. Distribute the problem set to the students. Say, “Put one teddy bear on a rock. Tell your neighbor, ‘This is my first bear.’ Use your crayon to draw a line under him.”
2. Say, “Now, put bears on the rest of the rocks. When you put your last bear on a rock, tell your neighbor, ‘This is my last bear!’ Use your crayon to draw two lines under him.”
3. Say, “Use your crayon to draw a string between the bears to show how you put them on the rocks.”
4. Say, “Count your bears, starting with the first bear and ending with the last bear. Follow the string that you drew.”
5. If time permits, have students identify the first and last bear on their neighbor’s paper and count the bears following their neighbor’s counting path.



Student Debrief (3 minutes)

Lesson Objective: Identify first and last in a scattered configuration with 2–5 objects.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child’s progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**first**, **last**).



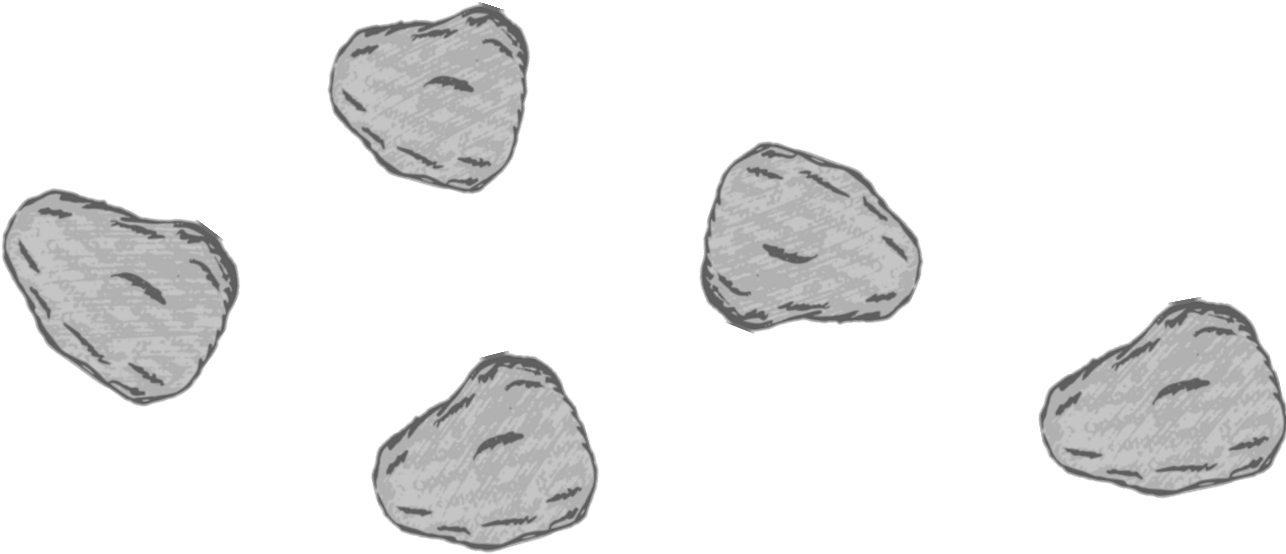
CENTER CONNECTION:

In the sensory center, place 2 differently colored balls of clay. Students make 5 balls, the first and last balls in one color and the rest in the other color. Then, they count them in a scattered configuration and rearrange them. They count again, starting and ending with the two balls of a different color. Students see different paths and realize that the total stays the same.

- Tell a neighbor: What is the *first* thing you do when you get up in the morning? What is the *last* thing you do before you go to bed at night?
- Does the number of objects change when we change their order?
- (Show the 1–5 linking cube staircase.) Remind students of Bear, who wanted to climb the stairs to his classroom. How many blocks were in the first stair and last stair when he climbed the stairs? Then, Bear wanted to come down from the treehouse to go home. How many blocks were in the first and last stair when he went down?
- (Refer to the Application Problem.) Use the new vocabulary words, *first* and *last*, to explain how you arranged and counted the stickers on your index card.

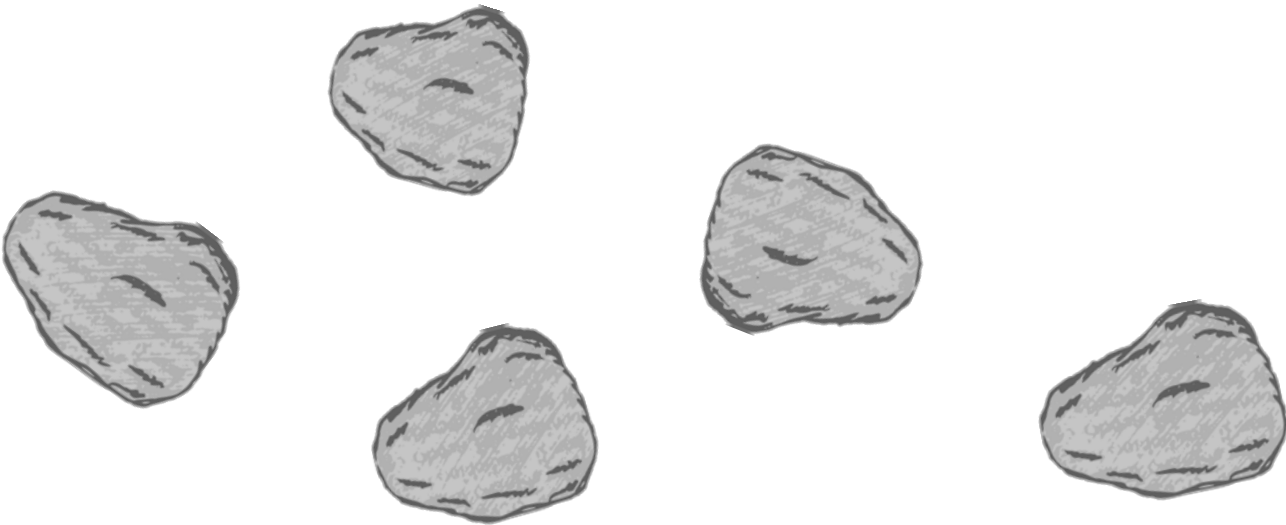
Name _____

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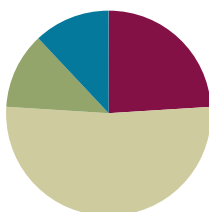
scattered rocks

Lesson 14

Objective: Identify first and last in a linear configuration with 2–10 objects.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Stop and Go Finger Counting **PK.CC.2, PK.CC.3b** (4 minutes)
- Say Ten Basketball **PK.CC.1** (2 minutes)

Stop and Go Finger Counting (4 minutes)

Materials: (T) Numeral cards 0–5 (write numbers 0–5 on paper)

Note: Students' counting behaviors often become so automatic that they recite numbers as if singing a song. This activity challenges students to remain attentive to the counting sequence and corresponding finger representation.

Briefly review counting on fingers the *Math Way*. Then, proceed with the following vignette:

T: (Show a numeral card). Say the number.

S: 3.

T: We're going to count on our fingers the *Math Way*, and when we get to 3, we'll stop (emphasize with a hand gesture or even a real stop sign). What are we going to do when we get to 3?

S: Stop!

T: Ready? Go!

S: 1 (show pinky of left hand), 2 (show pinky and ring finger of left hand), 3 (show pinky, ring, and middle finger of left hand).



Some students will inevitably continue counting beyond 3 out of habit. Maintain a playful mood, while being careful not to encourage intentional mistakes. Insist that they repeat the task if a mistake occurs.

Say Ten Basketball (2 minutes)

Note: Counting the *Say Ten Way* facilitates rote counting to 20 by the end of Pre-Kindergarten.

As in Lesson 6, students bounce an imaginary ball 15 times, once for each number while counting the *Say Ten Way* (i.e., ten 1, ten 2, ten 3).

If a change of movement is desired, adapt to a different sport or activity, such as kicking a soccer ball or hitting a tennis ball.

Application Problem (3 minutes)

Seat students in a circle and teach them how to play *Duck, Duck, Goose*. Tap 4 students on the head, saying “Duck, duck, duck, goose!” Ask, “Who was the first person I tapped?” and have that student stand. Ask, “Who was the last child I tapped?” and have that child stand. Have the class count from the first to last students.

Reverse the direction, starting at the last student tapped with “Duck, duck, duck, goose!” Ask students, “Now, who’s first and who’s last?” Have the students stand again as the class counts.

Note: This activity anticipates Lesson 15’s work with circular configurations. It also allows children to identify *first* and *last* and see that, when switching directions, the student who is last becomes first and vice versa.

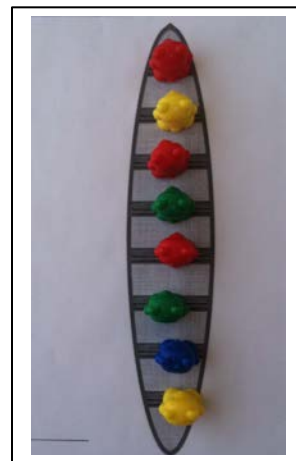
Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Canoe (Template 1), rowboat (Template 2)

Note: Depending on class size, consider substituting different paddlers so all students can actively participate in the linear (canoe) or array (rowboat) formation. Or, if time permits, repeat Part 1 with a new set (4–10) of students.

1. Call forward 8 volunteers. “Let’s make a line and pretend we’re some paddlers going down a river in a canoe.” Show a picture of a canoe (Template 1) and help arrange paddlers in a line, one by one, all facing the front of the boat.
2. Say, “Let’s count how many paddlers are in the canoe, starting at the front.” Students count chorally.
3. Ask, “Who is first and who is last in the canoe?” Have the first and last person exclaim, “I am first” or “I am last.”
4. Say, “Now, turn around, and pretend this (opposite end) is the front of the canoe. Who is first now? Who is last?” Let’s count the paddlers again, starting with the first. (Students count chorally.)
5. Say, “Now the 8 paddlers decide to go down the river in a rowboat.” Show a picture of a rowboat (Template 2) and help arrange students side by side (in an array formation), all facing the front of the boat.



- Repeat Steps 2–4, replacing the canoe with the rowboat. This time, count across the rows from left to right and front to back.

Part 2: Practice

Materials: (S) Per student: canoe (Template 1), rowboat (Template 2), 10 teddy bear counters

Prepare tables with a canoe (Template 1), a rowboat (Template 2), and 10 teddy bear counters per student.

- Say, “You are going to take your bears on two boat rides today.” Show Templates 1 and 2.
- Say, “Count six bears into your canoe, all facing the front of the boat. Tell your neighbor which bear is first and which bear is last.” Keep it playful by encouraging students to use little bear voices and announce, “I am first” or “I am last.”
- Students turn their bears around and pretend the opposite end is the front. They count their bears again, identifying which bear is currently first and which bear is last. As in Step 2, encourage playful voices.
- Say, “Now take the six bears on a ride in the rowboat. Make sure they are all facing the front of the boat. Put them side by side so they can row the boat.” Circulate while students work, modeling how to count across the rows from left to right and front to back.
- Students count their bears, identifying which bear is first and which bear is last. Encourage playful voices.
- Repeat Step 3.
- Repeat using a different number of bears as time permits.

MP.6

Note: As you circulate, notice that, when counting the bears in the canoe, bears at either end of the canoe were counted first. In the rowboat, however, bears in different positions were counted first.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Differentiate the task by varying the number of bears that students manipulate in the line and array formations. While 10 bears are appropriate for some students, 6 bears are just right for others to meet the objective.



CENTER CONNECTION:

In the dramatic play center, use fabric or butcher paper to create a long, skinny canoe and a short, wide rowboat. Invite students to dramatize that they are in either boat. Encourage them to identify who is first and last. Remind them to switch places so everyone can sit in different positions and announce, “I am first” or “I am last.”

Student Debrief (3 minutes)

Lesson Objective: Identify first and last in a linear configuration with 2–10 objects.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- When the bears faced a different direction in the canoe, did the first and last bears stay the same?
- When you moved the bears from one boat to another, did the number of bears change? How do you know?
- When we counted the bears in the canoe, did everyone count the front bear first? What happened when we counted the bears in the row boat? Did you start counting with a bear in the front, middle, back, or corner?



canoe



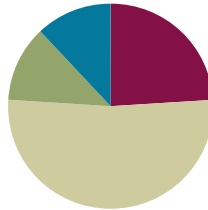
rowboat

Lesson 15

Objective: Identify first and last in a circular configuration with 2–10 objects.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Merry-Go-Round **PK.CC.4** (4 minutes)
- Number Cha-Cha **PK.CC.1** (2 minutes)

Merry-Go-Round (4 minutes)

Materials: (S) Dice, a counter or sticker to mark the starting point

Note: Counting in circular configurations prepares students for today's Concept Development.

1. Gather students in the meeting area in rows.
2. Roll a die.
3. Have that number of students come to the front and arrange themselves in a circular formation to ride on the *merry-go-round*.
4. Place the counter or sticker on the rug to mark the starting point.
5. Have students go for a ride on the merry-go-round (walking in a circle, moving up and down as if they are on a merry-go-round).
6. When the ride is finished (teacher picks a good stopping point), have students decide who will be first and last in the count (based on where the sticker or counter is placed).
7. Play again as time allows.

Number Cha-Cha (2 minutes)

Materials: (T) Instrumental music with a cha-cha beat (optional)

Note: This activity expands students' rote counting skills and challenges them to develop fluidity in the counting sequence. The movements facilitate memorization and get everyone moving.

Similar to Lesson 1, students attach the counting sequence to dance steps, extending the count to 15 if ready:

- 1 (hand out), 2 (other hand out), 3, 4, 5 (stepping in place rhythmically).
- 6 (hand out), 7 (other hand out), 8, 9, 10 (stepping in place rhythmically).

**NOTES ON
MULTIPLE MEANS
OF REPRESENTATION:**

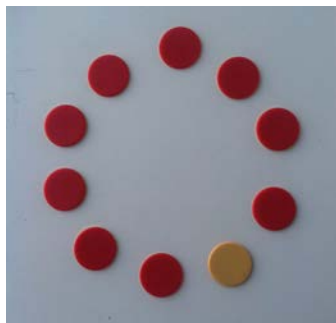
Students who are ready to count beyond 10 begin by counting the Say Ten Way (ten 1, ten 2, etc.) because it allows students to directly relate their known counting to 10 to counting to 20. While students will also leave Pre-K counting to 20 the regular way, the Say Ten Way supports number sense and lays the foundation for place value understanding in future grades.

If extending the count beyond 10 for the number cha-cha, use a slower beat to allow the Say Ten Way.

Application Problem (3 minutes)

Materials: (S) Bag of 9 counters with 1 of a different color (or shape) per pair of students

Pair students at tables and distribute 10 counters per pair. Invite students to imagine that their counters are friends playing *Duck, Duck, Goose*. Instruct Partner A to arrange the counters in a circle. Then, instruct Partner B to count how many friends are playing, beginning the count with the different colored counter. Switch roles and play again with a different number of counters, reminding students to always include the different counter.



Note: This activity supports the strategy of identifying *first* to count accurately when objects are arranged in a circular configuration.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Stuffed animal

MP.3

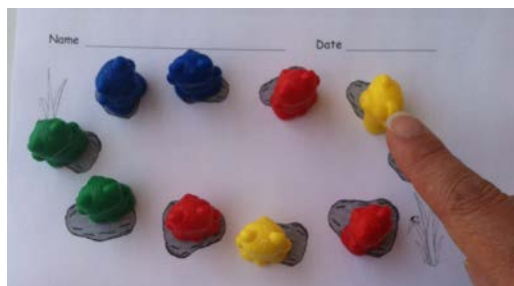
1. Separate the class into 2 groups and have each group sit in a circle. Say, “Hmmm... I wonder how many students are in each of my circles. I’m going to count each one of you so I can find out.”
2. Dramatize walking around the circle, counting all of the students. Don’t stop counting until the students start to protest and say stop.
3. Say the inaccurate number: “There are _____ students in this circle!” Allow students to challenge the statement and discuss the reasons why they think the statement is incorrect.
4. Acknowledge the mistake and ask for suggestions to count the students in the circle accurately. Students might respond as follows: “Give something to the first person so you know to stop when you get there.” “We could all get in a line; that would make it easier to count.”
5. Say, “Let me try again. This time, when I start counting, I will give the first person I count this stuffed animal. Count with me.”
6. Count all of the students, stopping right before getting to the stuffed animal. Have the first and last students counted exclaim, “I am first” or “I am last.”
7. Repeat several times, changing the position of the stuffed animal.

Part 2: Practice

Materials: (S) Circle of rocks (Template), 10 teddy bear counters

Place a template and 10 teddy bear counters at each student’s seat.

1. Say, “Our bears are playing *Duck, Duck, Goose* in a circle today! Put the bears on the rocks.”
2. Say, “Point to the first bear you put on a rock and say, ‘This is the first bear.’ Point to the last bear put on a rock and say, ‘This is the last bear.’”
3. Ask, “How many bears are playing *Duck, Duck, Goose* on the rocks?” Let students count independently. Observe counting strategies. Suggest strategies to struggling students.
4. Once students are finished, ask again, “How many bears are playing on the rocks?” If there are different answers, ascertain why by watching students with different answers count.
5. To close the practice, remove all of the bears from the tables. Say, “Let’s count the rocks!” As students realize that they can’t move the rocks as they did the bears, encourage other strategies using what they have learned about first and last.



Note: The teacher may wish to draw students’ attention to the grass around the rocks as one means of accurately keeping track of the count.

Student Debrief (3 minutes)

Lesson Objective: Identify first and last in a circular configuration with 2–10 objects.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

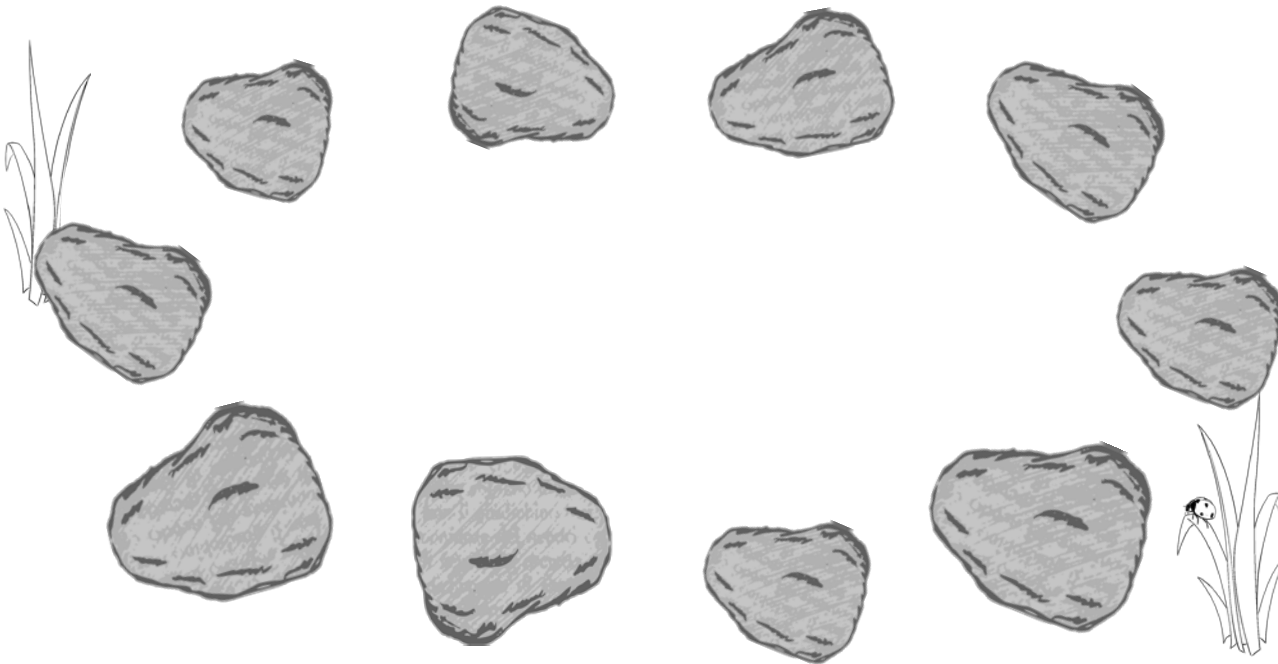
- Is it easier to keep track of the first object when things are arranged in a line or circle? Why?
- How did the different counters and stuffed animal help you count when things were arranged in a circle?
- When you play *Duck, Duck, Goose*, can anyone be first? Last? How close together are the first and last people? Is it different when people are in a line?
- What are some other ways that could help you keep track of where you started when you count objects in a circle?

**CENTER CONNECTION:**

Place 4–10 beans and small paper plates on a table at the center. Let students explore by placing beans around the edge of the small paper plate. Encourage students to strategize about how to count the beans around their plate. Ask them how they know they didn't miss any beans when they counted. Ask them how they know they didn't count any beans twice.

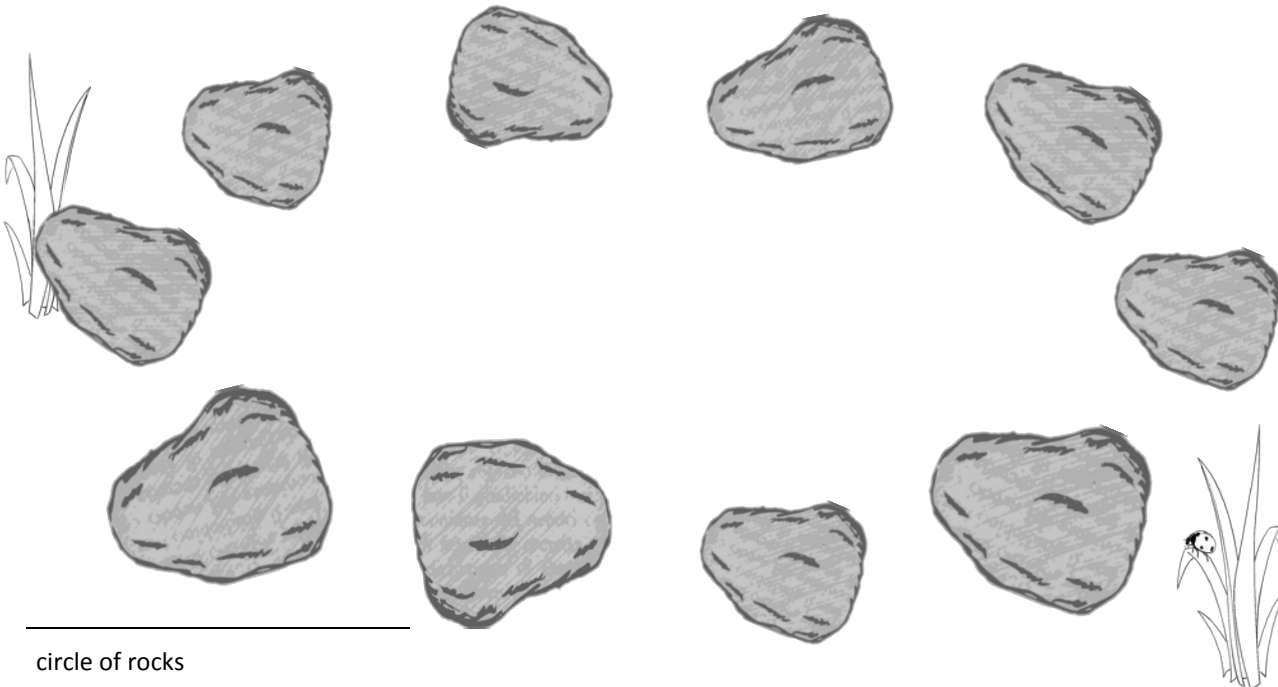
Name _____

Date _____



Name _____

Date _____



circle of rocks



Topic E

Are There Enough?

PK.CC.5, PK.CC.3a

Focus Standard:	PK.CC.5	Identify whether the number of objects in one group is more, less, greater than, fewer, and/or equal to the number of objects in another group, e.g., by using matching and counting strategies. 1 (1: up to 5 objects)
Instructional Days:	3	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

So far, Pre-Kindergarten students have done a lot of one-to-one counting, have compared measurable attributes, and have identified the first and last in a group of objects. Topic E brings these concepts together as students identify if a group of objects is more, less, or equal to another (**PK.CC.5**). In Lesson 16, students play musical chairs, seeing in a meaningful context that “There are not enough chairs!” Students might inadvertently observe that they need more to make enough, thus revisiting the concept of *one more*.

Lesson 17 continues the progression as students match a snack, drink, napkin, and plate to each student to find there are *exactly* enough of these items. Then, students take their bears to a party to find there are exactly enough pretend plates, napkins, and pieces of cake for each bear.

Lessons in Topic E progress from *not enough* to *exactly enough*, and finally, to *enough* and some *extras*. In Lesson 18, students use their counting and matching strategies to discover that all the bears have a seat at the movie theater, and there are even some extra seats. Again, this naturally leads students to answer the question, “How many extra seats are there?” The lessons in this topic help set the stage for children to understand comparison of number (Topics F and G), which leads to addition and subtraction concepts in Module 5.



In Topic E Fluency Practice, students continue to match a count to an abstract numeral, and they practice touching and counting 10 objects, a core fluency goal of Pre-K. Students also see smaller quantities embedded in larger numbers as they decompose 5 in playful scenarios.

A Teaching Sequence Toward Mastery of Are There Enough

Objective 1: Compare: Match to find there are not enough.
(Lesson 16)

Objective 2: Compare: Match to find there are exactly enough.
(Lesson 17)

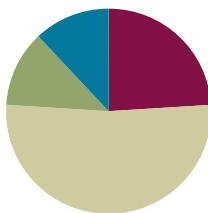
Objective 3: Compare: Match to find that there are enough, with some extras.
(Lesson 18)

Lesson 16

Objective: Compare: Match to find there are not enough.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Decompose 5 **PK.CC.5** (4 minutes)
- Balance Challenge **PK.CC.1** (2 minutes)

Decompose 5 (4 minutes)

Materials: (T) 3 paper plates (1 large, 2 small), 5 pom-poms, numeral card for 5 (index card with the number 5 written on it)

Note: Students have been working consistently with the composition and decomposition of numbers 0–5. As the year draws to a close, fluency work will provide continued practice with matching a count to the abstract numeral and seeing the smaller amounts embedded within larger numbers. This lays a strong foundation for work with composition and decomposition of numbers to 10, an essential Kindergarten standard.

T: I want to share these pom-poms with a friend. Let's count them. (Touch as students count.)

S: 1, 2, 3, 4, 5.

T: That is the numeral I have here! (Place the numeral 5 on the larger plate.) What are some ways I can share?

S: (Make suggestions.) Give your friend 1. → Give your friend 2.

T: Okay, let's start by just sharing 1. (Decompose the group of 5 pom-poms by placing 1 pom-pom on 1 smaller plate. Have students count as you move the rest to the other plate.)

T: Let's put them back together and share them in a different way. (Recount and repeat as time allows.)

Balance Challenge (2 minutes)

Note: This activity addresses one of the core fluency goals for the grade, rote count to 20. Count up to the number that is appropriate for your students.

- T: Let me hear you count the Say Ten Way. Stop at ten 3. Ready?
- S: 1, 2, 3,...9, ten, ten 1, ten 2, ten 3.
- T: You might know another way, the regular way of counting. After 10 comes 11, 12, 13. Let me hear you say 10, 11, 12, 13.
- S: 10, 11, 12, 13.
- T: Let's balance on one foot while we count to 13 the regular way. Ready?
- S: 1, 2, 3...13.

Application Problem (3 minutes)

Materials: (S) Bags of craft sticks and colored pom-poms in unequal numbers so there are more sticks than pom-poms (no more than 5 of either object)

- T: The materials in your bag are for making lollipops... pretend, of course! Line up all of the sticks, then put a candy (show pom-pom) on top of each stick. Tell me what you notice.
- S: (Assembling pretend lollipops by matching pom-poms to sticks.)
- T: What's the matter? (Invite students to share their observations.)
- S: This one doesn't have a candy. → I wouldn't want to get that one.
→ I need 2 more candies.



Have the students mix up the sticks and pom-poms, rearrange them, and count again. Repeat a few more times.

Note: Students will be introduced to the language of *enough* in the Concept Development. For now, simply encourage them to recognize visually and through 1:1 matching (rather than through counting) that something is missing. Students can note the absence of the objects through everyday language.

Concept Development (13 minutes)**Part 1: Concept Introduction**

Materials: (T) Music, 9 chairs

Note: Set up 9 chairs back-to-back in a line to play musical chairs. (Adjust the number of chairs according to the class size, e.g., if there are 20 students, 10 play the first round and 10 play the second round. Assess the students' attention as they wait to play the game and adjust the number of rounds played with each group. For example, stop the first group when there are still six chairs remaining. Students having difficulty waiting their turn could be given a job, such as turning off the music, or removing a chair.)

1. Choose the first 10 students to play musical chairs. Explain the game, and tell students that everyone will have the chance to play.
2. Begin the music and play the game. Ask, “**Are there enough** chairs for each person playing the game?” (No.)
3. Say, “You’re right! There are **not enough**.”
4. Invite those students who are sitting in a chair to stand, one at a time, and call out “1, 2... 9” as they do so. Point out that 9 students are matched with a chair.
5. Ask the students who are observing, “How many students have a matching chair? Are there enough chairs for all 10 students?”
6. Have students repeat, “There are not enough!”
7. Repeat Steps 2–6 as time allows so that a second game may be played with different students.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Provide visual signals, such as a stop sign, to alert students who are deaf or hard of hearing that the music has stopped so they can participate in the game.

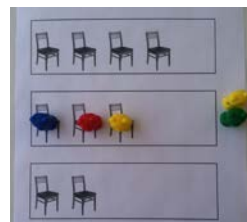
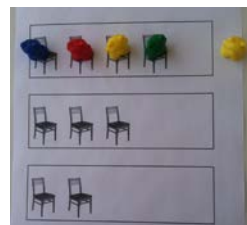
Part 2: Practice

Materials: (S) Chairs (Template), 5 teddy bear counters

Note: Save this template because it will be used again in Lesson 19.

1. Distribute the chairs template and 5 teddy bear counters to each student. Say, “Some bears are playing musical chairs. Count your bears.”
2. Encourage students to move bears playfully around the top row of chairs: “When I say ‘Stop,’ put each bear in a chair to find if there are enough chairs.” “Stop.” (Pause.)
3. Ask, “Are there enough chairs? Tell your neighbor in a complete sentence.”
4. Repeat Steps 2–3 for the second row of 3 chairs and third row of 2 chairs on the Template.

MP.6



Student Debrief (3 minutes)

Lesson Objective: Compare: Match to find there are not enough.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child’s progress toward meeting the lesson objective.

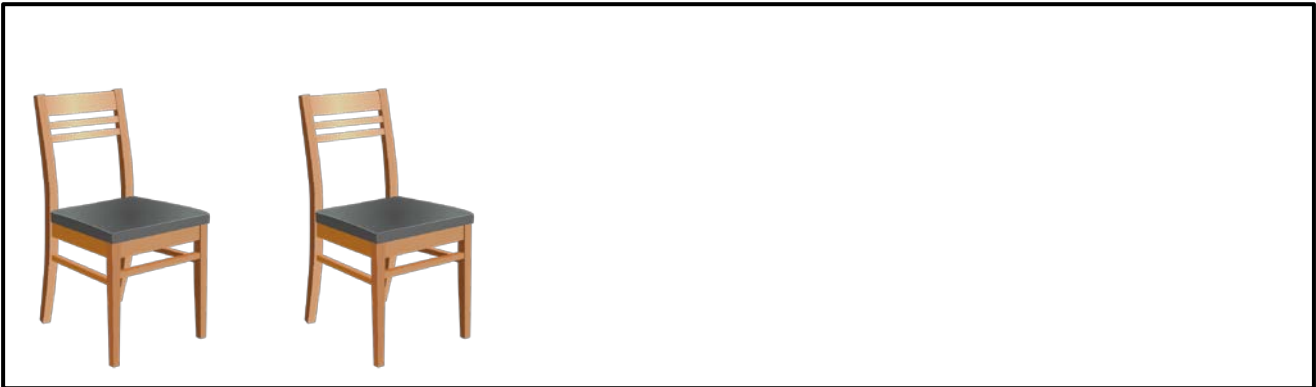
As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**Are there enough? Not enough**).

- What was the same about the people and chairs and bears and chairs? What important question did you ask?
- How did you know that there were *not enough* chairs?
- Tell about what happens when there are not enough?
- What can you do to fix the problem of not enough chairs?

**CENTER CONNECTION:**

Put egg cartons (or other sectioned containers) and 11 plastic eggs in a center. Let students match one egg to each of section of the container and say, for example, “There are not enough eggs.”



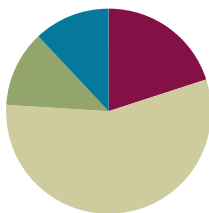
chairs

Lesson 17

Objective: Compare: Match to find there are exactly enough.

Suggested Lesson Structure

■ Fluency Practice	(5 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(14 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (5 minutes)

- Clap and Count to 13 **PK.CC.1** (2 minutes)
- Count 10 Objects **PK.CC.4** (3 minutes)

Clap and Count to 13 (2 minutes)

Note: This activity addresses one of the core fluency goals for the grade, rote count to 20. Count up to the number that is appropriate for your students. Encourage students to count once for each number. This will help them understand that *ten 1* is one number, not two.

- T: Let me hear you clap and count the regular way. Stop at 13. Ready?
- S: (While clapping.) 1, 2, 3...13.
- T: You know another way, the Say Ten Way of counting. After 10 comes ten 1, ten 2, ten 3. Let me hear you say ten 1, ten 2, ten 3.
- S: Ten 1, ten 2, ten 3.
- T: Let's clap and count to 13 the Say Ten Way. Ready?
- S: 1, 2, 3...9, ten, ten 1, ten 2, ten 3.

Count 10 Objects (3 minutes)

Note: This activity addresses the second core fluency goal for the grade, touching and counting to 10. Students see both sticks and pom-poms. Some students may want to start the count again once they get to the pom-poms. Guide them to count past the change in materials to find how many altogether.

Materials: (S) Bag of 5 craft sticks and 5-colored pom-poms per student (extras if increasing the count beyond 10)

- T: Count your sticks.
S: 1, 2, 3, 4, 5.
T: Add a pom-pom. Count how many things altogether.
S: 1, 2, 3, 4, 5, 6.
T: Add another pom-pom. Count how many things altogether.
S: 1, 2, 3, 4, 5, 6, 7.

Continue to 10. Keep the materials for the Application Problem.

Application Problem (3 minutes)

Materials: (S) Same as *Counting 10 Objects* fluency activity

- T: The materials in your bag are for making lollipops...pretend, of course! Line up all of the sticks. Then, put a candy on top of each stick. (Show pom-pom.) Tell me if you notice something as you work.
S: (Assembling pretend lollipops by matching pom-poms to sticks.)
T: What do you notice?
S: Today we have enough. → They all match. → There are some different flavors.



Have the students mix up the sticks and pom-poms, rearrange them, and count again. Repeat a few more times.

Note: Students will be introduced to the language of **exactly enough** in the Concept Development. For now, simply encourage students to recognize visually and through 1:1 matching (rather than through counting) that they have just the right amount to make 5 lollipops.

Concept Development (14 minutes)

Part 1: Concept Introduction

Materials: (S) 1 cup, napkin, graham cracker (or other appropriate snack) for each student

Today's Concept Introduction can be done during the students' regular snack or nutrition time. If this is not convenient, then a party context can be used. Prepare tables with exactly the right amount (preferably in groups of 5 because Pre-K students are required to compare up to 5 objects) of cups, napkins, and snacks, e.g., graham crackers, so that each student gets 1 with no extras. Stack each item in the middle of the table.

1. Have students sit at tables. Say, "When I tap you on the head, stand up." (Tapped students stand.)
2. Say, "Give 1 napkin to each person at your table. Don't forget to leave a napkin for yourself."

3. Ask, “Are there enough napkins for each person at your table?” “Yes.” “Are there any extra napkins?” “No.”
4. Use parallel talk and say with the class, “There are **exactly enough** napkins.”
5. Repeat Steps 1–3 for the cups and graham crackers.
6. Pour juice or water and eat graham crackers. Say, “I’m so glad that we had exactly enough snacks today.”
7. Repeat Step 1 to collect and throw away the napkins and cups so that each student in the group can experience “exactly enough.”

Part 2: Practice

Materials: (S) Per student: baggie with 5 teddy bear counters, 5 beans (pieces of cake), 5 round counters (plates), sheet of construction paper for a work mat

Prepare tables with a tub of bears and beans in the center so students can count out what they need.

1. Say, “The bears are having a party today.” Pretend the bears are sitting in a circle in the party room, waiting to have cake.
2. Say, “Give one plate (round counter) to each teddy bear in the circle.”
3. Ask, “Are there enough plates for each bear? Tell your neighbor in a complete sentence.”
4. As the students work, circulate and describe what they are doing, e.g., “Christopher matched all the plates and teddy bears. Carly said, ‘There are exactly enough plates.’”
5. Repeat Steps 2–4 with the cake (beans).
6. Say, “I’m so glad we had exactly enough for the bears’ party today.”



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Circulate and listen as the students work with the bears and beans. Ask questions, such as “Do you have enough?” or “Do you have any extra?” Model the appropriate response if students are having difficulty answering using the vocabulary or a complete sentence.

Student Debrief (3 minutes)

Lesson Objective: Compare: Match to find there are exactly enough.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**exactly enough**).

- Would you prefer to go to a party where there was *exactly enough* food or not enough? Why?
- If there was exactly enough food at the party and more friends came, how could you solve the problem?
- What would happen if you had exactly enough food for the party but not all of the people came?

**CENTER CONNECTION:**

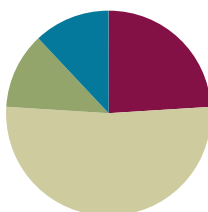
Put paper plates, bowls, and plastic spoons and forks in the kitchen center. Invite students to play with the dishes and utensils by *setting* a table for dinner. Encourage students to say things, such as “There are not enough forks for all the plates.” and “There are exactly enough bowls and spoons for everyone.”

Lesson 18

Objective: Compare: Match to find there are enough, with some extras.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Hide and Seek: Friends and Chairs **PK.CC.5** (4 minutes)
- Number Walk **PK.CC.1** (2 minutes)

Hide and Seek: Friends and Chairs (4 minutes)

Materials: (T) 5 chairs

Note: This activity provides practice with seeing embedded numbers (in this case, within 5). The empty chair(s) in this activity shows the missing part, therefore developing familiarity with the decompositions of 5.

Set up 5 chairs in the front of the classroom and invite 5 students to take seats.

T: Let's count the friends. Ready?

S: 1, 2, 3, 4, 5.

T: Close your eyes. (Tell one of the students seated on a chair to hide in a designated location in the room.)

S: (Eyes closed.)

T: Open your eyes. How many friends do you see now?

S: 4.

T: How many are hiding?

S: 1.

T/S: Come out, come out, wherever you are. (The student comes out from hiding and returns to his or her seat.) Let's count to see how many now.

S: 1, 2, 3, 4, 5. Just like before.

Number Walk (2 minutes)

Materials: (T) Bell

Note: This activity challenges students to remain attentive to the counting sequence by stopping at a given number.

T: Let's go on a number walk. We'll take one step for each number, like this (take a step crisply and deliberately as you say each number): 1 (step), 2 (step), 3 (step, and then pause dramatically, as if *frozen*). What number did I stop at?

S: 3.

T: Now, it's your turn. When I ring the bell, start the number walk. Stop when you get to 3. (Ring the bell.)

S: 1 (step), 2 (step), 3 (step).

T: Very good. On our next number walk, I want you to stop at 5. What number do you stop at?

S: 5.

T: (Ring the bell.)

S: 1 (step), 2 (step), 3 (step), 4 (step), 5 (step).

Repeat to 7, then to 10.

Inevitably, some students will count beyond the designated stopping number. Maintain a playful attitude, while being cautious not to encourage deliberate mistakes. Insist that students repeat the task to correct their mistakes.

Application Problem (3 minutes)

Materials: (S) Movie theater chairs (Template) folded to show only 5 chairs, 2 teddy bear counters

T: Some bears are going to the movies. They are going to sit next to each other. Match each of your bears to a seat in the theater. Tell me if you notice something as you work.

S: (Matching 2 bears to 2 seats.)

T: What do you notice? (Invite students to share their observations.)

S: Three seats are empty. → More friends can come, too. → There are more seats left.

Note: Students will be introduced to the language of *enough with extras* in the Concept Development. For now, simply encourage students to recognize visually and through 1:1 matching (rather than through counting) that they have more than necessary.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (S) Small pieces of paper (tickets), 2 rows of 5 chairs

Prepare the room by placing 2 rows of 5 chairs facing the students on the rug. This chair formation mirrors the ten-frame that students will be using during the Practice portion of the Concept Development.

1. Call on 8 students to form a line and give each student a ticket. Say, “These boys and girls are going to the movies. Let’s see if there are enough seats in the movie theater for all of them.”
2. Dramatize taking a ticket from each student as he or she takes a seat in the theater. Guide students to fill up the back row first and sit in order from back to front and left to right, without leaving any chairs between them.
3. Ask the rest of the class, “Are there enough chairs in the theater for everyone?” “Yes.” “Are there some **extra** seats?” “Yes.”
4. Say, “Let’s count the extra seats together: 1, 2.”
5. Say and repeat with the class, “There are enough seats. There are 2 extra seats.”
6. Repeat Steps 1–5, varying the number of students (up to 9) going to the movies each time.

Continue until every student has a chance to go to the movies.

Part 2: Practice

Materials: (S) 9 teddy bear counters, movie theater chairs (Template) unfolded paper after use in the Application Problem

1. Give each student a set of 10 movie theater chairs and 9 bear counters.
2. Say, “Yesterday our bears had a party. Today they are going to the movies.”
3. Say, “Take 5 bears to the movies and put them in their seats. Put the first bear in the seat with the star and fill in the row like we did together on the rug.”
4. Ask, “Are there enough seats in the theater for each bear? Tell your neighbor in a complete sentence.” (There are enough seats.)
5. Then ask, “Are there extra seats? Count and tell your neighbor how many in a complete sentence.” (There are 5 extra seats.)
6. Guide students to say, “There are enough seats. There are 5 extra seats!”

MP.6



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Provide hand-over-hand assistance for students having difficulty counting the bears using one-to-one correspondence or matching them to the movie theater chairs on the template. Remove this assistance as students become more comfortable with the task.

Repeat as time allows.

Student Debrief (3 minutes)

Lesson Objective: Compare: Match to find there are enough, with some extras.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**extra**).

- If you have enough crackers with some *extras*, can you share with more friends? Why?
- If you have exactly enough crackers for your friends, would you be able to share with more friends? Why?
- If there are not enough crackers for all of your friends, how could you solve the problem?
- I have 5 tickets to the movies, but 6 friends want to go. How many tickets do I still need to buy?

**CENTER CONNECTION:**

Make 5 *wallets* (small plastic bags) with 10 pennies in each. Place the pennies in the kitchen/dramatic play center. Invite students to play store, buying food. The storekeeper must price all of the goods at 9 cents or less. Remind students that, after buying something, they should count to see how much extra they have. They can continue shopping if they have enough pennies for another item.

Distribute one set of 10 chairs to each student. (Folded for the Application Problem to show only 5.)



movie theater chairs



Topic F

Comparison of Sets Up to 5

PK.CC.5, PK.CC.3a, PK.CC.3b

Focus Standard:	PK.CC.5	Identify whether the number of objects in one group is more, less, greater than, fewer, and/or equal to the number of objects in another group, e.g., by using matching and counting strategies. 1 (1: up to 5 objects)
Instructional Days:	4	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

In Modules 1 and 3 students did extensive work to develop understanding of numbers to 10. The first half of Module 4 was dedicated to comparison of measurement. Topic F brings together this work with number and measurement comparison as students compare sets. In Lessons 19-21, students engage in story situations involving two sets of things (bears/chairs, children/crackers, pencils/students, cups/straws) up to 5. They touch, count, and match each group and then proclaim, “There are *fewer* chairs *than* bears! There are the *same* number of crackers *as* children! There are *more* straws *than* cups! (PK.CC.5)” Counting each group separately and then making *fewer than*, *more than*, and *the same as* statements gradually connects concrete sets to abstract number comparisons forthcoming in Topic G, e.g., “3 is less than 5.”



Lesson 22 focuses students on number and set comparisons by asking students to construct a building that has the same number of blocks as a pre-constructed building. During the Practice, students count out a group of linking cubes (from a tub) and match those cubes to a linking cube tower that is composed of up to five cubes. “I counted to make a tower that has the same number of cubes as this other one.” Counting cubes from a larger set adds rigor and pushes students to know the count of each set to complete the matching task.

In Topic F Fluency Practice, students use numeral formation cards (0–3) to practice forming numerals with clay in anticipation of writing numerals in Module 5. Students also swim and count to 15, then 17 both the regular way and the Say Ten way. Students continue to decompose 5, which is foundational to the work of addition and subtraction in Module 5.

A Teaching Sequence Toward Mastery of Comparison of Sets Up to 5

Objective 1: Count and match to compare using *fewer than* statements.
(Lesson 19)

Objective 2: Count and match to compare using *the same as* statements.
(Lesson 20)

Objective 3: Count and match to compare using *more than* statements.
(Lesson 21)

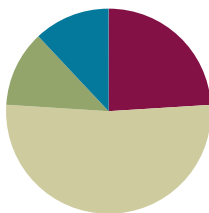
Objective 4: Count and match to make sets that are *the same as* a group of objects.
(Lesson 22)

Lesson 19

Objective: Count and match to compare using *fewer than* statements.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



NOTES ON COMPARATIVE LANGUAGE:

In the next group of lessons, students compare groups of objects. When comparing objects independent of number, the terms *more* or *fewer* should be used rather than *greater* or *less*. For example, when comparing a group of bears and chairs, the correct language is “There are more bears than chairs” or “There are fewer chairs than bears.” Model the use of these terms for students. It is not expected for students to understand the difference between the use of the terms *more* and *greater* and *fewer* and *less*; however, it is important to model the use of the appropriate term.

Fluency Practice (6 minutes)

- Clay Numerals 0 (and 1) **PK.CC.2** (4 minutes)
- Balance Challenge **PK.CC.1** (2 minutes)

Clay Numerals 0 (and 1) (4 minutes)

Materials: (S) Numeral formation cards (Fluency Template), clay

Note: This activity anticipates writing numerals in Module 5 and is intended to familiarize students with numeral formation.

Demonstrate how to roll the clay into a long snake and lay it on top of Numeral 1 on the template, starting at the star. Guide students to use one continuous piece (rather than attaching several smaller pieces together) to encourage proper numeral formation. Instruct students to pinch off any excess clay and set it aside. Early finishers can trace the clay numeral with their fingers while saying the number name, or they can remove the clay and make the numeral again.

As time allows, repeat the process with Numeral 0. If rolling out clay is too challenging, have students use their fingers to trace the template, beginning with the star.

Balance Challenge (2 minutes)

Note: This activity addresses one of the core fluency goals for the grade, rote counting to 20. Count up to the number that is appropriate for students.

T: After 10 comes 11, 12, 13, 14. Let me hear you say 10, 11, 12, 13, 14.

S: 10, 11, 12, 13, 14.

T: Let's balance on one foot while we count to 14. Ready?

S: 1, 2, 3...14.

Application Problem (3 minutes)

Materials: (T) 1 large and 2 small paper plates, numeral card 5 (index card with the number 5 written on it), 5 raspberries (or other small fruit)

Have students count while briskly placing 5 raspberries on the larger plate. Place the numeral 5 on the plate with the 5 raspberries. Immediately set the 2 smaller plates in front of the larger plate and ask students to tell different ways of sharing the 5 raspberries between the two smaller plates, e.g., 0 and 5, 1 and 4, 3 and 2. For each decomposition, ask students which plate has fewer raspberries. Have students count and clap while putting the 5 raspberries back on the large plate.



Note: This problem lays a piece of the foundation for thinking of numbers in terms of the part-whole relationship. The plates form the image of a number bond, a model that students will see and use throughout Kindergarten and beyond.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 5 pieces of paper, 5 crayons

Have students form a U on the rug so that they can count and see objects laid out on the rug.

1. Call on a student and hand her 3 pieces of paper (in a stack). Say, "Let's count as Shelia puts each paper in a row on the rug."
2. Ask, "How many pieces of paper did we count in the **set**?"
3. Call on another student and hand him 2 crayons. Say, "Let's count as Martin puts a crayon on each paper."
4. Ask, "How many crayons did we count in the set?"
5. After students answer "2," say, "Hmmm...look at the papers and the crayons. What do you notice?" Encourage a discussion about not enough crayons or needing another crayon for the last piece of paper.
6. Culminate the discussion using parallel talk to conclude, "You noticed that there are **fewer** crayons **than** papers." As parallel talk is repeated with more examples, e.g., 2 pieces of paper and 3 crayons, encourage students to make *fewer than* statements.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Provide opportunities throughout the day for students to use the vocabulary *fewer than*. Some opportunities might include comparing the number of rainy, snowy, or sunny days, or the number of students absent each day. Students are more apt to internalize new vocabulary if they experience it during a variety of situations.



Counting each group separately and then making *fewer than* statements gradually connects concrete sets to abstract number comparisons forthcoming in Topic G, e.g., *3 is less than 5*.

Part 2: Practice

Materials: (S) Chairs (Lesson 16 Template), 5 teddy bear counters

1. Distribute the Lesson 16 Template and 5 teddy bear counters to each student. Say, “Our bears want to sit down again. Count the bears in your set. Count the first row of chairs (pointing).”
2. Ask, “How many bears?” (5.) “How many chairs?” (4.)
3. Say, “Put each bear in a chair.” (Pause.)
4. Ask, “Are there fewer bears or chairs?” Guide students to respond, “There are fewer chairs than bears!”
5. Repeat Steps 2–3 for the second row of 3 chairs and third row of 2 chairs on the Lesson 16 Template.

Student Debrief (3 minutes)

Lesson Objective: Count and match to compare using *fewer than* statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child’s progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**set**, **fewer than**).

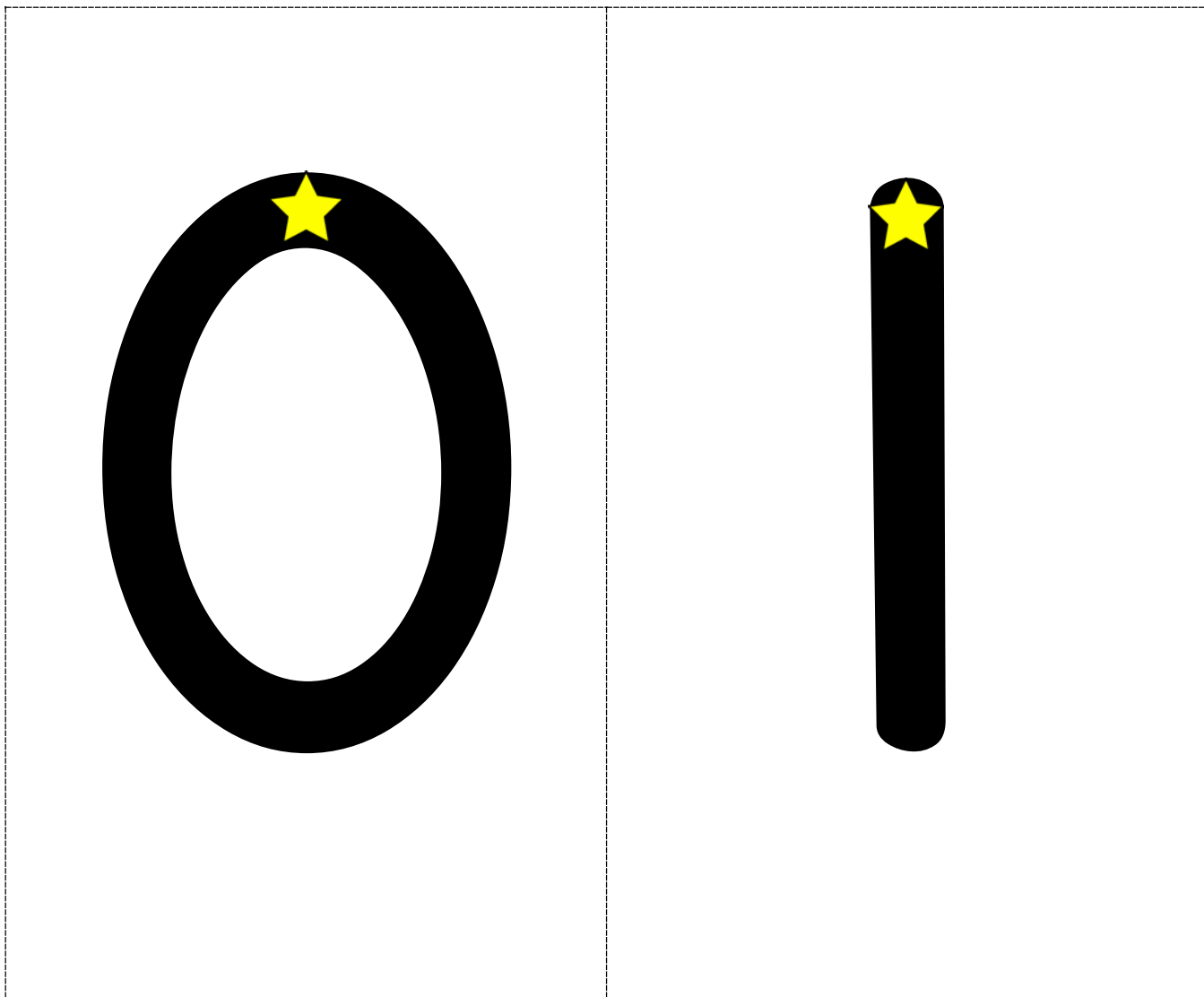
- Today, you had *fewer* chairs *than* bears. What could you have done so that all of the bears could sit down?
- Today, I had fewer pencils than papers. Did I have enough pencils in my *set*? How do you know?
- Use your *math muscles* and think of a time when you had fewer of something than someone else. Tell your neighbor about it. How did you feel?



CENTER CONNECTION:

Place several groups of different counting objects (up to 5) at the center: 3 blocks, 4 nickels, 1 pencil, 2 erasers, 5 fuzzy balls, 3 sticky notes, etc., Invite students to count the different groups of objects and make *fewer than* comparison statements between the groups of objects. Students might also make *more than* and *the same as* statements, which is a precursor to the next two lessons.

Cut along dashed lines.



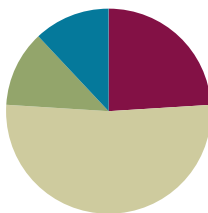
numeral formation cards

Lesson 20

Objective: Count and match to compare using *the same as* statements.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Clay Numeral 2 **PK.CC.2** (4 minutes)
- Swim and Count to 15 **PK.CC.1** (2 minutes)

Clay Numeral 2 (4 minutes)

Materials: (S) Numeral formation card (Fluency Template), clay

Note: This activity anticipates writing numerals in Module 5 and is intended to familiarize students with numeral formation.

Ask students to again roll the clay into a long snake and lay it on top of the curved segment of the 2 on the template, starting at the star. Guide students to use one piece (rather than attaching several smaller pieces together) to encourage proper numeral formation. Instruct students to pinch off any excess clay and repeat the process for the part at the bottom to complete Numeral 2. Early finishers can trace the clay numeral with their finger while saying the number name, or they can remove the clay and make the numeral again.



Swim and Count to 15 (2 minutes)

Note: Varying the movement keeps this counting exercise fresh and challenges students to remain attentive to the counting sequence, while learning a new physical exercise.

T: Stand up, put your swim goggles on, and dive into the pool!

S: (Pretending.)

T: We're going to swim and count. We'll do one swim stroke for each number, like this (demonstrate making 1 distinct arm movement while saying each number name). Stop when you get to 15 the regular way.

S: 1, 2, 3...15 (with arm movements).

T: Great counting. Hold your nose. Let's dive under water.

If time permits, repeat the Say Ten Way.

Application Problem (3 minutes)

Materials: (T) 4 small paper plates, 4 raspberries (or other small fruit)

Have students count while briskly laying out 3 plates. Put 1 raspberry on each plate as students count and ask, "Is there a raspberry on each plate?" (Yes.) Lay out another plate and have students count the plates again. Ask, "Are there fewer plates or raspberries?" Guide students to say, "There are fewer raspberries than plates." Place a raspberry on the plate and ask students to count the raspberries again. Ask, "Is there a raspberry on each plate now?" (Yes.) Repeat the process as time allows.

Note: Recognizing that there is one raspberry for each plate leads into the Concept Development, where students learn to compare sets using the language *same as*. This activity also reviews *fewer than*.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 1 Package of fish-shaped crackers, 1 plate

1. Hold a package of fish-shaped crackers and say, "Count the crackers as I put them on this plate." Count and put 3 crackers on the plate.
2. Ask, "How many students can come up so that there are the same number of students as crackers?"
3. Call on 3 students. Ask, "How many crackers in this set?" (3.) "How many students in this set?" (3.)
4. Using parallel talk, say, "You counted *the same* number of crackers *as* students!" Let each student eat one cracker and then sit down.
5. Repeat counting crackers and then students (Steps 1–4) until every student has had a chance to come forward and eat a cracker. Vary the number of crackers and students up to 5.

Part 2: Practice

Materials: (S) Problem Set, crayon

As students count and match, they realize that there are the same number of bears and fish in each set, even when the bears and fish are not aligned in the second example.

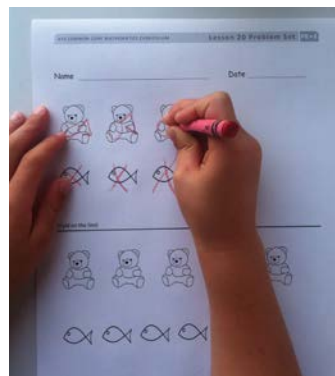


NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Circulate during the Practice and ask, "What do you think will happen if you put the 3 bears on one side of a balance scale and the 3 fish on the other side of the balance scale?" This helps the students see that the fish and bears share three-ness but not weight!

MP.6

1. Distribute the Problem Set to each student. Say, "Some bears went fishing for dinner. Each bear caught 1 fish."
2. Ask, "How many bears are there in the set?" (3.) "How many fish are there in the set?" (3.) "Tell your neighbor."
3. Say, "Use the words *the same as* to tell your neighbor about the number of bears and fish in each set."
4. Say, "Let each bear eat 1 fish. With your crayon, cross out the fish as the bear gobbles it up, and then draw the fish in the bear's tummy."
5. Repeat Steps 2–4 with the second set of 5 bears.



Student Debrief (3 minutes)

Lesson Objective: Count and match to compare using *the same as* statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- There are 3 raspberries and 3 plates. Use the words *the same as* to tell a neighbor about the number of plates and raspberries.
- Jason has 5 bears. Cedric has the same number of bears as Jason. How many bears does Cedric have? How do you know?
- What was tricky about the second set of bears on your Problem Set? Were there fewer fish than bears?
- Did you like having the same number of crackers as students today? What if there were fewer crackers than students? What might happen if there were extra crackers?



CENTER CONNECTION:

Place stamps, ink pads, stickers, dot paint bottles, crayons, etc., in the art center. Invite students to make two sets that have the same number of objects/images. Students can also make a scene with several sets that have the same number of objects, e.g., 3 trees, 3 birds, and 3 flowers.

Name _____

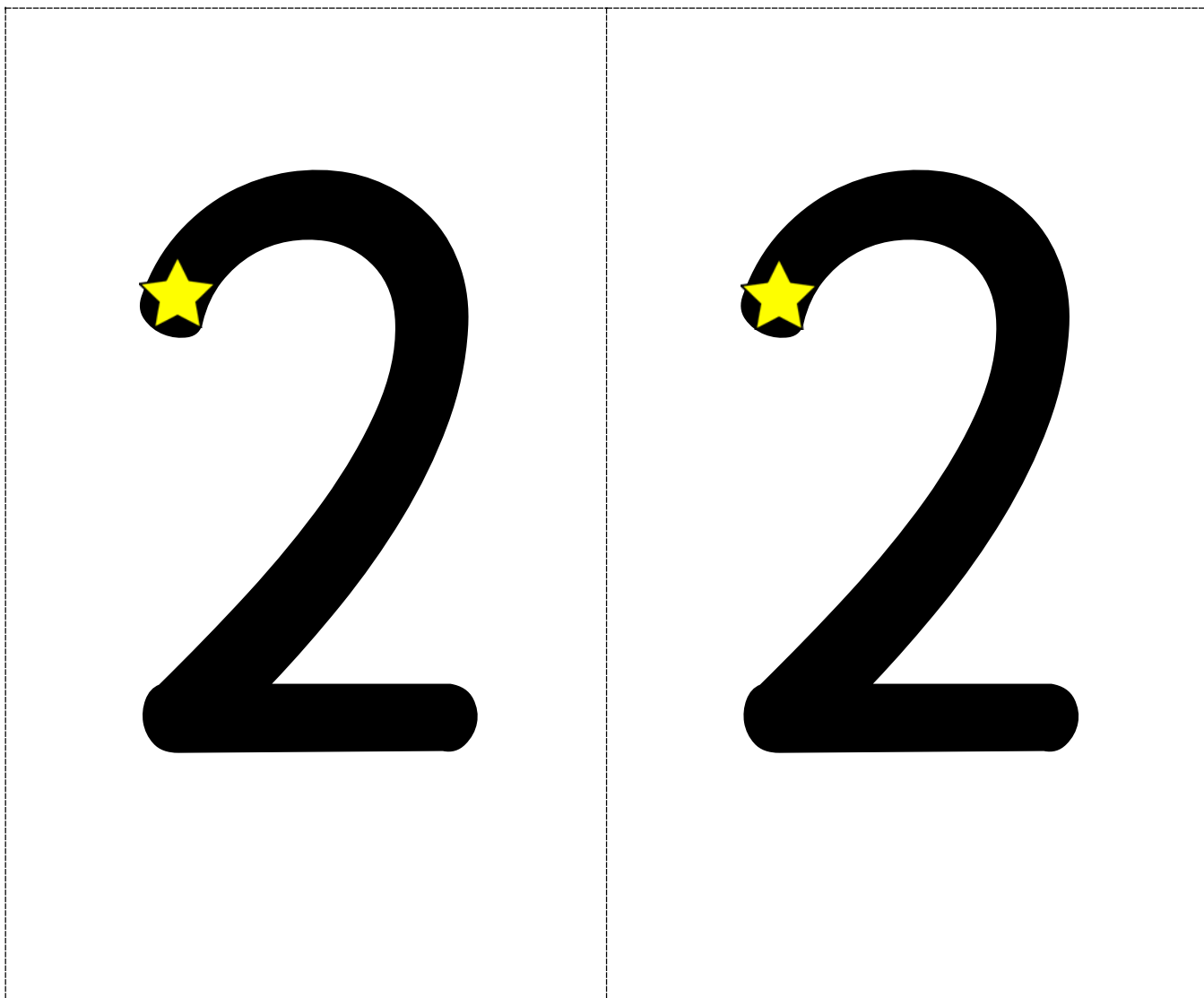
Date _____



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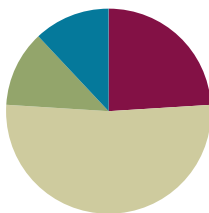
numeral formation cards

Lesson 21

Objective: Count and match to compare using *more than* statements.

Suggested Lesson Structure

Fluency Practice	(6 minutes)
Application Problem	(3 minutes)
Concept Development	(13 minutes)
Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Sort to Decompose **PK.CC.3** (4 minutes)
- Stop and Go Finger Counting **PK.CC.2, PK.CC.3b** (2 minutes)

Sort to Decompose (4 minutes)

Materials: (S) Bags of 5 pattern blocks in 2 different shapes, sizes, or colors.

Note: This activity reviews sorting and develops understanding regarding decompositions of 5, which is foundational to the work of addition and subtraction in Module 5.

- T: Open the bag. Count how many blocks there are altogether.
- S: (Sort into 2 piles by shape, size, or color.)
- T: Push the 2 piles back into 1 pile and again count how many blocks there are altogether. Notice that the total is the same as before. Now, trade bags with your neighbor and count the blocks altogether again.
- S: (Trade bag with a neighbor, repeating the process.)

Stop and Go Finger Counting (2 minutes)

Materials: (T) Numeral cards (5 index cards with numbers 1–5 written on them with marker)

Note: Students' counting behaviors often become so automatic that they recite numbers as if singing a song. This activity challenges students to remain attentive to the counting sequence and corresponding finger representation.

Briefly review counting on fingers the *Math Way*. Then, proceed with the following vignette:

- T: (Show a numeral card.) Say the number.

S: 3.

T: We're going to count on our fingers the *Math Way*, and when we get to 3, we'll stop (emphasize with a hand gesture or even a real stop sign). What are we going to do when we get to 3?

S: Stop.

T: Ready? Go.

S: 1 (show pinky of left hand), 2 (show pinky and ring finger of left hand), 3 (show pinky, ring, and middle finger of left hand).

Some students will inevitably continue counting beyond the assigned number out of habit. Maintain a playful mood, while being careful not to encourage intentional mistakes. Insist that students repeat the task if a mistake occurs.

Continue with other numbers, at first in a predictable pattern, then randomly.

Application Problem (3 minutes)

Materials: (T) 5 craft sticks

Say, "Imagine these sticks are bananas and you all are monkeys." Have students count while showing them 5 bananas. Call 2 monkeys up and have the class count while giving 1 banana to a monkey and 4 to a different monkey. Say, "Point to the monkey who got fewer bananas." Guide students to point and say, "That monkey got fewer bananas than the other monkey." Ask, "Which monkey has more bananas?" Guide students to say, "That monkey has more bananas than the other monkey." Have the class count as the students return the bananas. Call students forward to repeat the activity with other decompositions of 5.



Note: This problem reviews *fewer than* in relation to *more than*, preparing students for today's Concept Development.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 5 straws, 4 cups, 2 pieces of construction paper

Use 1 piece of construction paper as a mat to lay straws down while counting them and the other construction paper mat to display cups at the *lemonade stand*.

1. Point to the mat with the cups and say, "I just poured 4 cups of lemonade for my lemonade stand. Each cup needs a straw."



2. Say, "Let's count my straws." Show 5 straws, laying each straw down on the mat similar to drawing tallies.
3. Ask, "How many straws do I need for my cups?" (4.) "How many straws do I have?" (5.)
4. Say, "Count with me as I put each straw in a cup." Count and match one straw to one cup on the mat.
5. Hold up the extra straw and say, "I have more straws than I need for my cups! Say this with me, 'We have more straws than cups.'"

Part 2: Practice

Materials: (T) 5 pieces of construction paper to represent the lemonade stands, 1–5 cups and 1–5 straws for each of 5 stations

Prepare the room by placing the 5 pieces of construction paper on the tables. On each paper, display the cups and straws, varying the amount of each up to 5, e.g., 3 cups and 4 straws, or 5 cups and 3 straws.

1. Say, "It's your turn to work at a lemonade stand!" Help students get into pairs and position each pair at a *stand* (one of the pieces of construction paper with the cups and straws).
2. Say to the pairs, "Count your straws." (Pause.) "Count your cups." (Pause.)
3. Say, "Match 1 straw to each cup." (Pause.)
4. Say, "Tell your partner that you have more _____ than _____ (straws or cups)."
5. Help students rotate to a new stand with a different number of cups and straws. Repeat Steps 2–4. Rotate pairs through as many stands as time allows.



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

As students move to each new *lemonade stand*, offer opportunities for students to act as the teacher by limiting teacher talk and allowing the students to give directions to their partners.

Student Debrief (3 minutes)

Lesson Objective: Count and match to compare using *more than* statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.



CENTER CONNECTION:

Prepare the center with sets of teddy bear counters and linking cubes. Match the color of the bears to the same colored linking cubes, e.g., 4 red bears and 6 red cubes, 2 green bears and 4 green cubes. Have students count the bears and their hats (linking cubes). Then, have the students put the hats on the bears to discover that they have more hats than bears.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

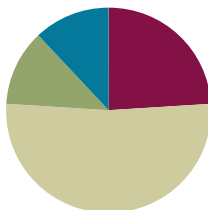
- Jake has 5 sticks. I have more. How many sticks might I have?
- Leslie has 5 sticks. I have fewer. How many sticks might I have?
- On a hot summer day, would you rather work at a lemonade stand with more cups than straws or more straws than cups? Why?

Lesson 22

Objective: Count and match to make sets that are *the same as* a group of objects.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Clay Numeral 3 **PK.CC.2** (4 minutes)
- Swim and Count to 17 **PK.CC.1** (2 minutes)

Clay Numeral 3 (4 minutes)

Materials: (S) Numeral formation card (Fluency Template), clay

Note: This activity anticipates writing numerals in Module 5 and is intended to familiarize students with numeral formation.

Demonstrate how to roll the clay into a long snake and lay it on top of the first curved part of Numeral 3 on the template, starting at the star. Guide students to use one continuous piece for each part (rather than several smaller pieces) to encourage proper numeral formation. Instruct students to pinch off any excess clay. Repeat for the second curved part at the bottom to complete Numeral 3.

Early finishers can practice making the numbers in order from 0 to 3.

Swim and Count to 17 (2 minutes)

Note: Varying the movement keeps this counting exercise fresh, and it challenges students to remain attentive to the counting sequence while learning a new physical exercise.

Similar to Lesson 20, students count while pretending to swim, but this time, they continue to 17. Keep the movement synchronous with the count. If time permits, complete the exercise counting the regular way and then counting the Say Ten Way.

Application Problem (3 minutes)

Call 3 students forward. Then ask, "How many students need to come up so our friends each have a dance partner?" Have 3 more students come forward, standing face to face with their partners. Count each line of students. Ask, "Does each child have a dance partner?" Guide them to say, "There is the same number of students in each line. Do a little dance."

Continue by calling up varying numbers of students for each line and guiding them to make statements, "This line has more than that line" or "This line has fewer than that line." Invite each set of students to do a little dance.

Note: This provides a review of *more than* and *fewer than*, as well as anticipates today's Concept Development as students count and match to find the same number in each set.



NOTES ON MULTIPLE MEANS FOR ACTION AND EXPRESSION:

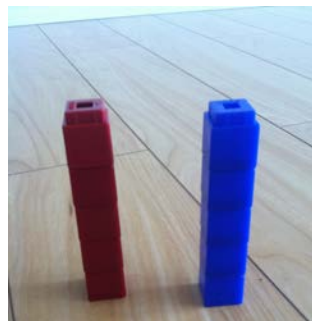
Allow students to pass if they do not feel comfortable dancing in front of the class. Also, consider recommending different types of popular dances, such as the hokey pokey, for each pair to be sure students are choosing school-appropriate dance moves.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 20 building blocks of different colors (or linking cubes)

1. Say, "We are going to be builders today and construct buildings that have the same number of blocks."
2. Say, "Count with me as I construct my building." Stack and count 5 red blocks. Say, "This red building has 5 floors."
3. Ask, "What can I do to make another building that has the same number of floors as this one?" Responses might include, "Make another building with 5 blocks" or "Keep stacking blocks on another building until it is the same as the first building."
4. Say, "Count with me as I make a building with the same number of blocks." Stack and count 5 blue blocks next to the red building.
5. Ask, "How many floors are in this blue building?" (5.) "How many floors are in this red building?" (5.) With the class, say, "This building has the same number of floors as that building."
6. Repeat Steps 1–5 with buildings of 3 and 4 if time permits. Call on students to help stack the blocks to build the buildings.



Part 2: Practice

Materials: (S) Varying linking cube towers (of the same color) to 5 for each student, tub of disconnected linking cubes at each table

Prepare a connected linking cube tower for each student (varying in height from 2 to 5 cubes). Place a tub of several disconnected linking cubes at each table.

1. At their tables, give each student a linking cube tower. Say, "Count the cubes in your tower." (Pause.)
2. Say, "It's your turn to make a different-colored tower with the same number of cubes!" (Pause while students build.)
3. Say, "Show your tower to your neighbor, so he can check to make sure it is made of the same number of cubes. If the towers are the same, say, 'I made a (color) tower that has the same number of cubes as my (color) tower.'"
4. While students check one another's towers, make note of which students count the cubes in each tower and which check by sight.
5. Instruct students to break apart one of their towers and return the cubes to the tub on the table.
6. Facilitate students passing their towers to the right at each table. Repeat Steps 2–4 as students continue to build and compare towers as time permits.

Student Debrief (3 minutes)

Lesson Objective: Count and match to make sets that are *the same* as a group of objects.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

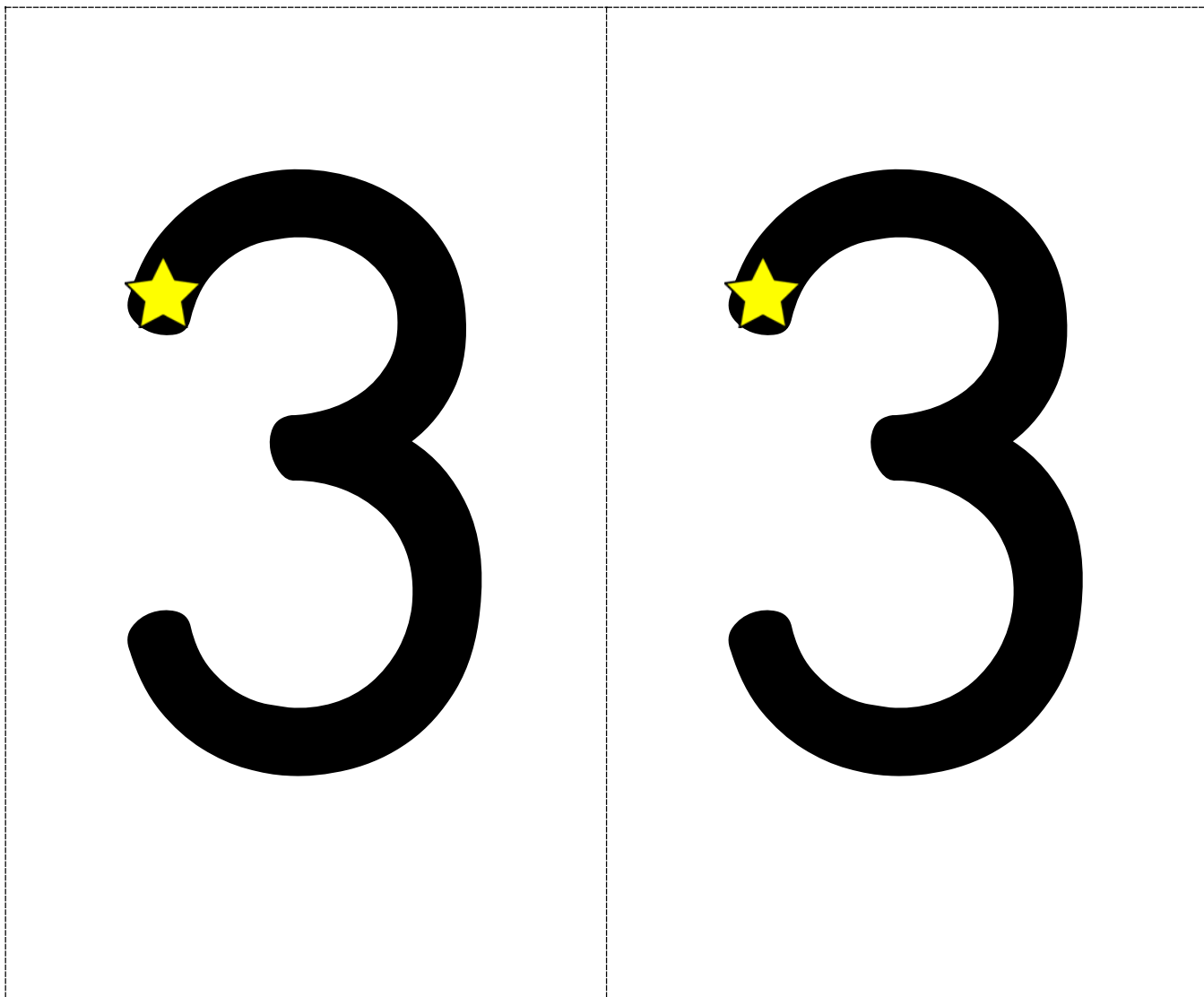
You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- Tell a neighbor about two towers you made that were the same. How were they the same?
- If one tower has 3 blocks and another has 4 blocks, how are they the same? How are they different?
- (Model with stickers, if desired.) If I have 6 friends and I want to give each friend a sticker, how many stickers do I need? Use the words *same as* to explain.

**CENTER CONNECTION:**

In the block center, encourage children to work independently or in a group to build a city with many buildings. Invite them to construct buildings that use the same number of blocks. Discuss buildings that might have the same number of blocks but different heights (different shapes), or are the same height but made of different shapes. These comparisons lead to comparing numbers in the next topic.

Cut along dashed lines.



numeral formation cards



Topic G

Comparison of Sets Including Numerals Up to 5

PK.CC.5, PK.CC.3a, PK.CC.3b

Focus Standard:	PK.CC.5	Identify whether the number of objects in one group is more, less, greater than, fewer, and/or equal to the number of objects in another group, e.g., by using matching and counting strategies. 1 (1: up to 5 objects)
Instructional Days:	5	
Coherence -Links to:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10.

In Topic G, students compare quantities using numerals by using the counting and matching strategies they have practiced throughout the module. Connecting both sets to a numeral and indirectly comparing the numbers adds a new level of complexity.

In Lesson 23, two baseball teams are playing. The blue team scores 3 runs, shown with 3 baseballs in a 5-frame. The red team scores 4 runs, also shown in the 5-frame. Students count each group of runs, match a numeral card to the count, and answer the question, “Which team scored more runs?” Students show the group that has more by matching the baseballs in the 5-frame. Then, with the numeral cards in place and the baseballs matched, students can confidently say, “4 runs is *more than* 3 runs!”

Lesson 24 moves to comparing numbers and verifying with materials. Students state, “5 is *greater than* 4,” construct 2 buildings to verify the statement, and then match a numeral to each tower. This is different from the previous lesson because students are recognizing that the number 5 is *greater than* 4 prior to checking with building blocks. It should be noted that, while using *more/fewer than* to compare sets of objects (Topic F), *greater/less than* is used when comparing numbers.



In Lesson 25, some teddy bears are playing, with 3 on the grass and 5 in the water. Students count each group, match numeral cards to the groups, and say, “3 bears is less than 5 bears.” Then, in the following lesson, using blocks and linking cube towers as scaffolds, students state, “2 is less than 4.”

In the final lesson of the module, students play a game involving counting, matching, comparing, and building with linking cubes. They play with a partner and start with a container of cubes and a deck of numeral cards to 5 (each student has his or her own deck up to 5). Partners simultaneously flip over a card, build a tower corresponding to their numeral card, compare it to their partner’s, and say, “My tower has fewer cubes than

your tower,” “4 is less than 5,” “My tower is taller than your tower,” “You have 1 more cube than I do,” or “Our towers are the same.” This game celebrates and synthesizes the learning throughout Module 4.

In Topic G Fluency Practice, students practice rote-counting skills to 20 through various engaging movements, such as making alligator snaps. They remain attentive to the counting sequence by taking a number walk to 13, then to 15. As in previous topics, students use numeral formation cards (4–5) to practice forming numerals with clay in anticipation of writing numerals in Module 5.

A Teaching Sequence Toward Mastery of Comparison of Sets Including Numerals Up to 5

Objective 1: Compare a number of objects using *more than* or *the same as* statements.
(Lesson 23)

Objective 2: Compare numbers using *greater than* and *equal to* statements. Verify with materials.
(Lesson 24)

Objective 3: Compare a number of objects using *less than* or *the same as* statements.
(Lesson 25)

Objective 4: Compare numbers using *less than* and *equal to* statements. Verify with materials.
(Lesson 26)

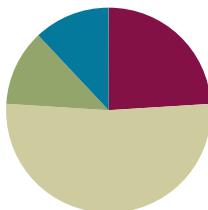
Objective 5: Count and match to compare two sets of linking cube towers.
(Lesson 27)

Lesson 23

Objective: Compare a number of objects using *more than* or *the same as* statements.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Number Walk **PK.CC.1** (2 minutes)
- Ready, Set, Compare **PK.CC.5** (4 minutes)

Number Walk (2 minutes)

Materials: (T) Bell

Note: This activity challenges students to remain attentive to the counting sequence by stopping at a given number. Similarly, as in Lesson 18, assign a number as a stopping point. Students begin walking at the teacher's signal (bell), carefully taking a step for each number as they count aloud and stopping at the designated number.

This time, select stopping points up to 13. Include counting the Say Ten Way and regular way.

Consider varying the starting point. For example, students might start at 1 and continue to 6; then, start at 6 and continue to 12. Ask, "What number are you starting with?" Then, students count on to the designated number.

Ready, Set, Compare (4 minutes)

Note: Students practice comparing quantities up to 5 visually by matching one-to-one (touch fingertips) or counting in this activity.

1. Assign partners. (Demonstrate with a student if playing for the first time.)
2. Each partner makes a fist with one hand and pounds the palm of the other hand 3 times (same motion as *rock, paper, scissors*.) while saying "Ready, set, compare."
3. On the third tap, both partners show a number of fingers. Zero can be represented as a closed fist.

- Partners take turns making comparison statements. For example, if Partner A shows 5, and Partner B shows 3, then Partner A could say, "I have more than you," and Partner B could say, "I have less than you."
- During the demonstration, elicit from students what they should say if both partners show the same number of fingers.
- Clarify that the goal is to compare, not to compete. Students are winners when they can successfully form the comparison statement.

Application Problem (3 minutes)

Materials: (T) Collections of objects (hats, markers, apples, balls) with 1–5 objects per group, dot and numeral cards 1–5

Show students one collection of objects at a time and ask them to tell how many objects they see. Provide wait time for students who still count all. Show the dot and numeral card for that quantity and ask students how many dots there are, again providing wait time. Point to the matching numeral and ask students to read it. Guide students to make statements, such as, "There are 3 buttons and 5 crayons."



Note: Students count up to 5 objects and recognize numerals 1–5 as they move from concrete to pictorial to abstract. This prepares them for today's Concept Development.

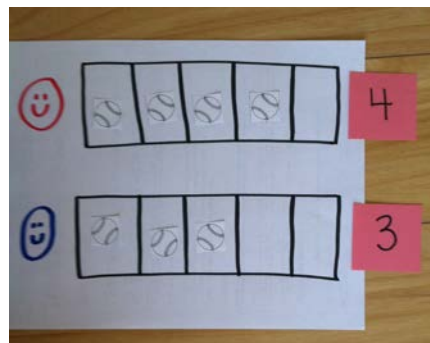
Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) Dot and numeral cards used in the Application Problem, baseball cutouts (Template 1), tape or magnets

Draw two rows of 5 frames on the board, one directly above the other. Put a red happy face next to the top row and a blue happy face next to bottom row to indicate a red and blue team.

- Say, "I went to a baseball game. The red team was playing against the blue team."
- Say, "It was a very exciting game. First, the blue team scored some runs." Tape 3 balls in the blue team's row.
- Say, "Then, the red team scored some runs, too!" Tape 4 balls in the red team's row.
- Place the numeral cards on the chalk tray and say, "Which team scored more runs?" Call on a student to choose the numeral card that matches the number of balls in each row. Tape it next to the corresponding row.



- Using parallel talk, say, "4 runs are *more than* 3 runs." Say, "But wait, the blue team scored 2 more runs." Tape 2 more balls on the blue team's scoreboard.
- Ask, "Now, which team has more runs?" Count the balls and together say, "5 runs is *more than* 4 runs."

Part 2: Practice

Materials: (S) Baseball scoreboard (Template 2), 10 small baseball cutouts (Template 3), 1–5 numeral cards

Pass out baseball cutouts, 5-frame row drawings, and number cards, and then say, "Listen as I tell you about another game between the red team and blue team."

- Say, "The red team scored 1 run. Put 1 ball in the red team's scoreboard to show 1 run. Put the 1 number card next to the scoreboard."
- Say, "The blue team scored 3 runs. Put 3 balls in the blue team's scoreboard to show 3 runs. Put the 3 number card next to the scoreboard."
- Say, "Use the words *more than* to tell your friend about the score or runs."
- Repeat by clearing the scoreboards and telling about another game. Have a tie game so that the students can use the comparison statement *the same as*.



NOTES ON MULTIPLE MEANS FOR ACTION AND ENGAGEMENT:

Scaffold for students who are having difficulty moving from concrete (balls) to abstract (numerals) by allowing them to use the dot side of the 5-group cards when matching the number of balls to the correct numeral.

Student Debrief (3 minutes)

Lesson Objective: Compare a number of objects using *more than* or *the same as* statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective. As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

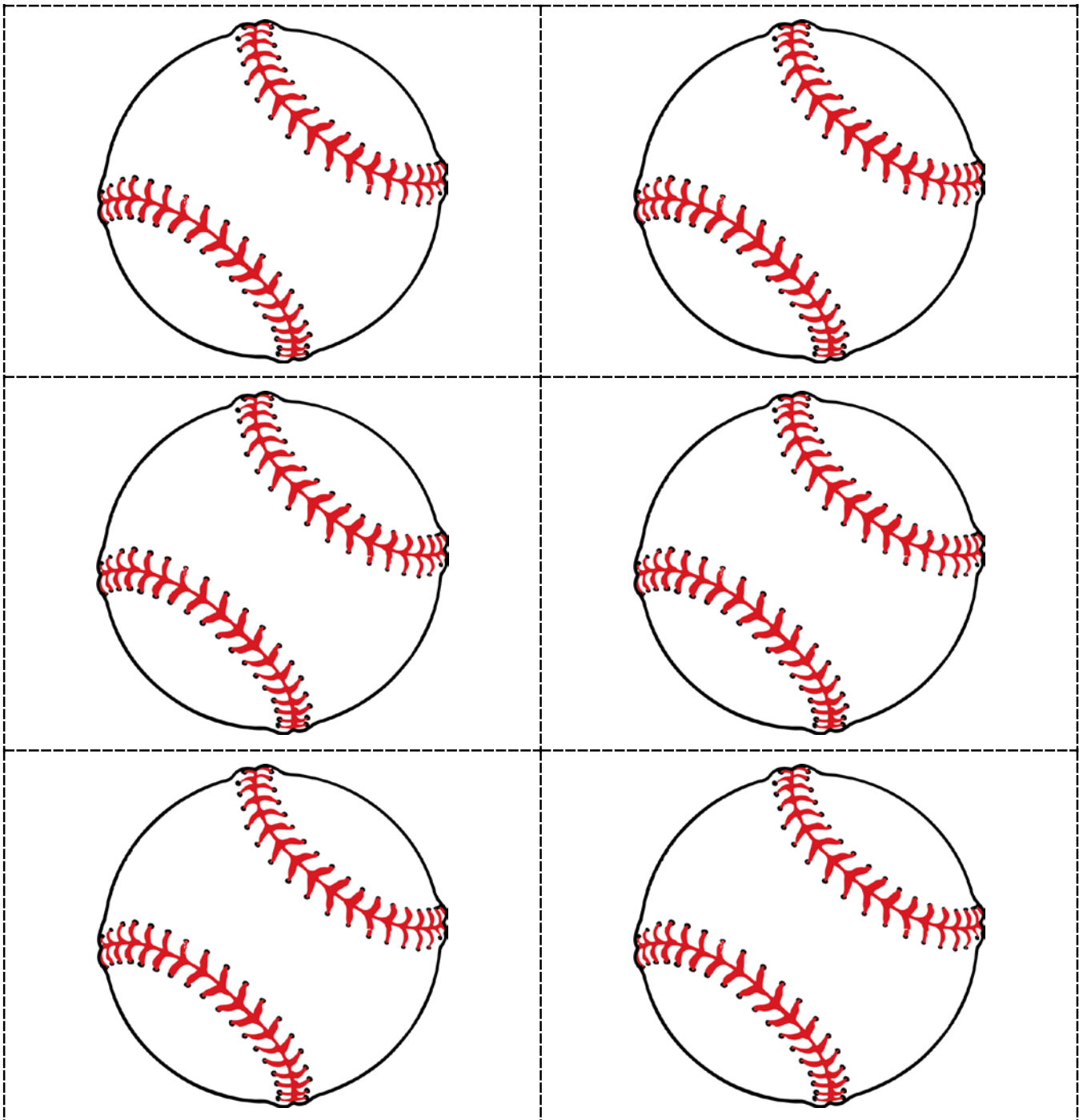
- Hold up 1–5 crayons in each hand. Ask students to make *more than* and *the same as* statements to compare the number of crayons.
- What is the same about 2 crayons, 2 dots, and the number 2?
- 4 students are more than 3 students, yes? Can you make some *more than* statements comparing numbers of students?



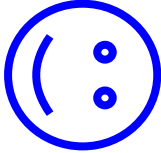
CENTER CONNECTION:


At the center, place 5 sets of objects and 5-group cards. The first set should have one object, the second set two objects, and so forth. Have students match the numerals to each group of objects. After they have matched the numerals, listen as students make *more than* or *the same as* statements to compare the sets.

Make 3 copies and cut.

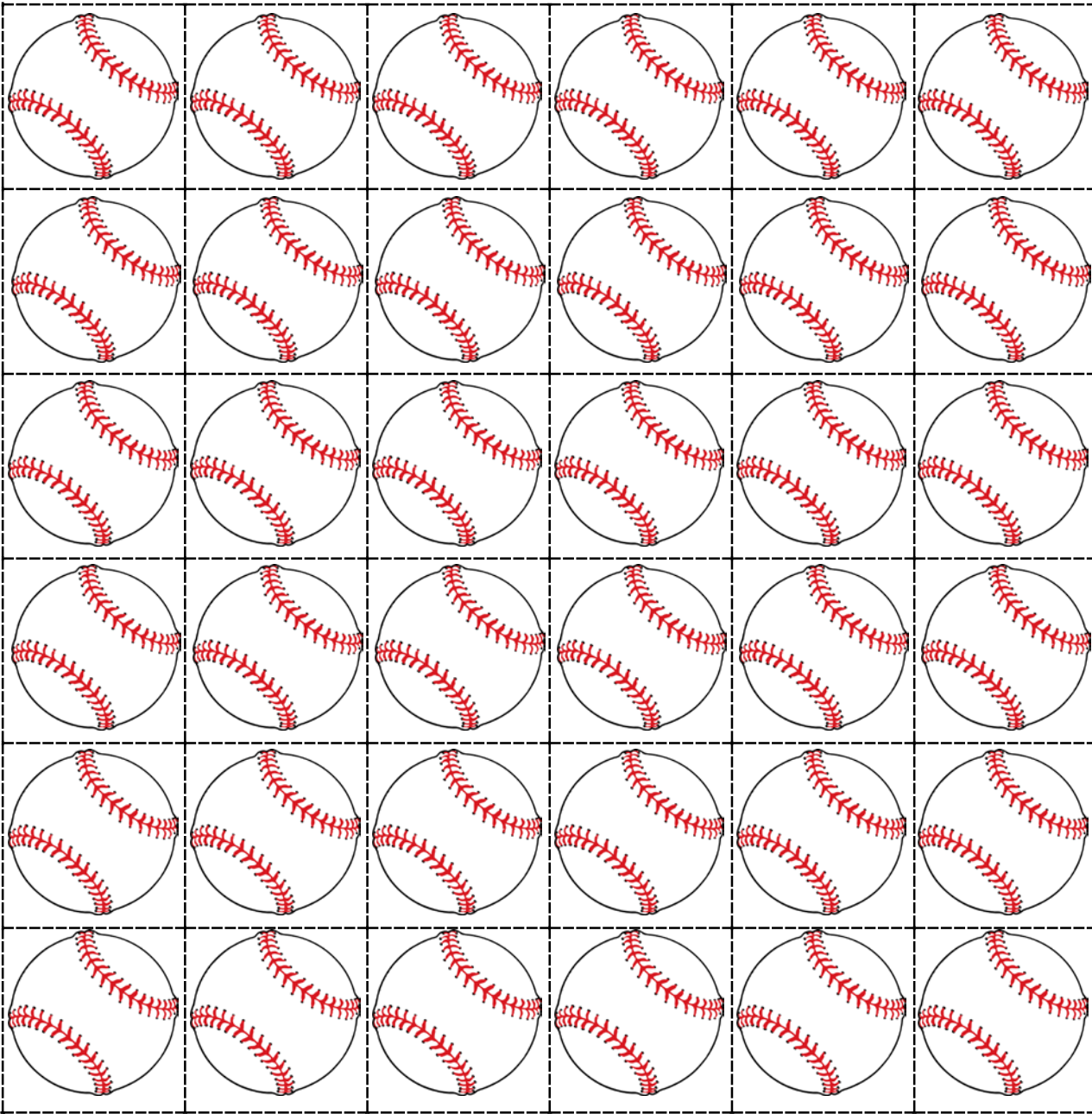


baseball cutouts





baseball scoreboard



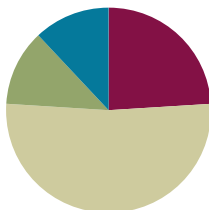
small baseball cutouts

Lesson 24

Objective: Compare numbers using *greater than* and *equal to* statements. Verify with materials.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



NOTES ON COMPARATIVE LANGUAGE:

In the next group of lessons, students compare a number of objects. When comparing sets using numbers, the correct vocabulary to use is *greater than* and *less than*. For example, 4 is greater than 3, and 3 is less than 4. Again, it is not expected for students to know the difference between when to use *greater or more*, and *fewer or less*; however, it is important to model the correct vocabulary for students to help build a strong foundation.

Fluency Practice (6 minutes)

- Clay Numeral 4 **PK.CC.2** (4 minutes)
- Balance Challenge **PK.CC.1** (2 minutes)

Clay Numeral 4 (4 minutes)

Note: This activity anticipates writing numerals in Module 5 and is intended to familiarize students with numeral formation.

Materials: (S) Numeral formation card (Fluency Template), clay

Ask the students to roll the clay into a long snake and lay it on top of the short vertical part of Numeral 4 on the template, starting at the star. Guide students to use one piece of clay (rather than attaching several smaller pieces together) to encourage proper numeral formation, pinching off any excess. Repeat with the short horizontal part, and finally, the long vertical part. (Early finishers can trace the clay numeral with their finger while saying the number name, or they can remove the clay and make the numeral again.)

Balance Challenge (2 minutes)

Note: This activity addresses one of the core fluency goals for the grade, rote counting to 20.

Previously, in Lesson 19, students balanced to 15. Now, have students first count to 17 and then to 20.

T: After 15 comes 16, 17. Let me hear you say 15, 16, 17.

S: 15, 16, 17.

T: Let's balance on one foot while we count to 17. Ready?

S: 1, 2, 3...17.

Repeat to 20.

Application Problem (3 minutes)

Materials: (T) Game pieces (checker pieces or bingo pieces)

Explain to students that each player needs the same number of pieces to play a game. Take out 4 game pieces without counting. Then, instruct students to take out 2 game pieces, and ask them to compare their number of pieces to the teacher's: "Do we have the same number of game pieces?" Model the response for students: "No, I have more game pieces than you." Have students respond with "No, you have more game pieces than I do." Continue this process, ending with both the teacher and students having the same number of pieces



Note: This Application Problem allows students to practice comparing sets of objects using the terms *more than* and *the same as* to prepare for today's Concept Development, where they will compare numbers using the term *greater*.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 10 rectangular blocks, large numeral cards 1–5 (2 copies of each)

Place blocks in a bin for students to use for building and lay out the numeral cards so students can see them. Note that the phrase *numeral cards* is used in the instructions to the teacher to be more precise by means of the simpler phrase *number cards* when used in the dialogue with students.

1. Say, "I was walking down the street and saw a building with 5 floors." Show the numeral 5 card.
2. Say, "The next building I saw had 4 floors." Show the numeral 4 card.
3. Guide students to say, "5 is **greater than** 4."
4. Call on two students and say, "Let's construct the buildings to show 5 is greater than 4." Have each student construct one of the buildings and place the corresponding numeral card in front of the building.
5. Ask the class, "Is 5 greater than 4? Tell your neighbor how you know."
6. Repeat using two numeral 3 cards. Construct two buildings with 3 blocks each. Guide students to say, "3 is **equal to** 3."
7. Repeat Steps 1–5 with different-sized buildings until every student had a chance to make a building. After the construction of the buildings, ensure students use the comparison statements *greater than* or *equal to* for comparing the number of blocks.



MP.3

Part 2: Practice

Materials: (S) Small numeral cards 1–5, tub of linking cubes per table

Note: Teacher creates the small numeral cards by cutting cards into squares, and write numbers 1–5 on the squares.

Place a large tub of disconnected linking cubes at each table. Give each student a set of small numeral cards 1–5.

1. Say, "Lay your number cards in front of you face down so you can't see the numbers."
2. Say, "Turn over two cards. (Pause.) Use the words *greater than* to compare the numbers you see on your cards."
3. Say, "Check your comparison by constructing 2 buildings. Pretend that each cube is 1 floor like we did in our lesson. "
4. Repeat Steps 1–3 several times.
5. Say, "Show me the number 4."
6. Say, "Look at the numbers everyone is holding. Use the words *equal to* to tell about the numbers you see."
7. Say, "Construct a building to match the number 4 you are holding. What do you notice about all the buildings we made?"



NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Some students may need to build the towers first before they can make the *greater than* or *equal to* statement to compare numbers. Celebrating students' success at the concrete level will encourage them to take risks and move to a more abstract level.

Student Debrief (3 minutes)

Lesson Objective: Compare numbers using *greater than* and *equal to* statements. Verify with materials.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary (**greater than, equal to**).

- Talk about ways you can show that 4 is *greater than* 2.
- Talk about ways you can show that 4 is *equal to* 4.
- Does the taller tower always match the greater number?

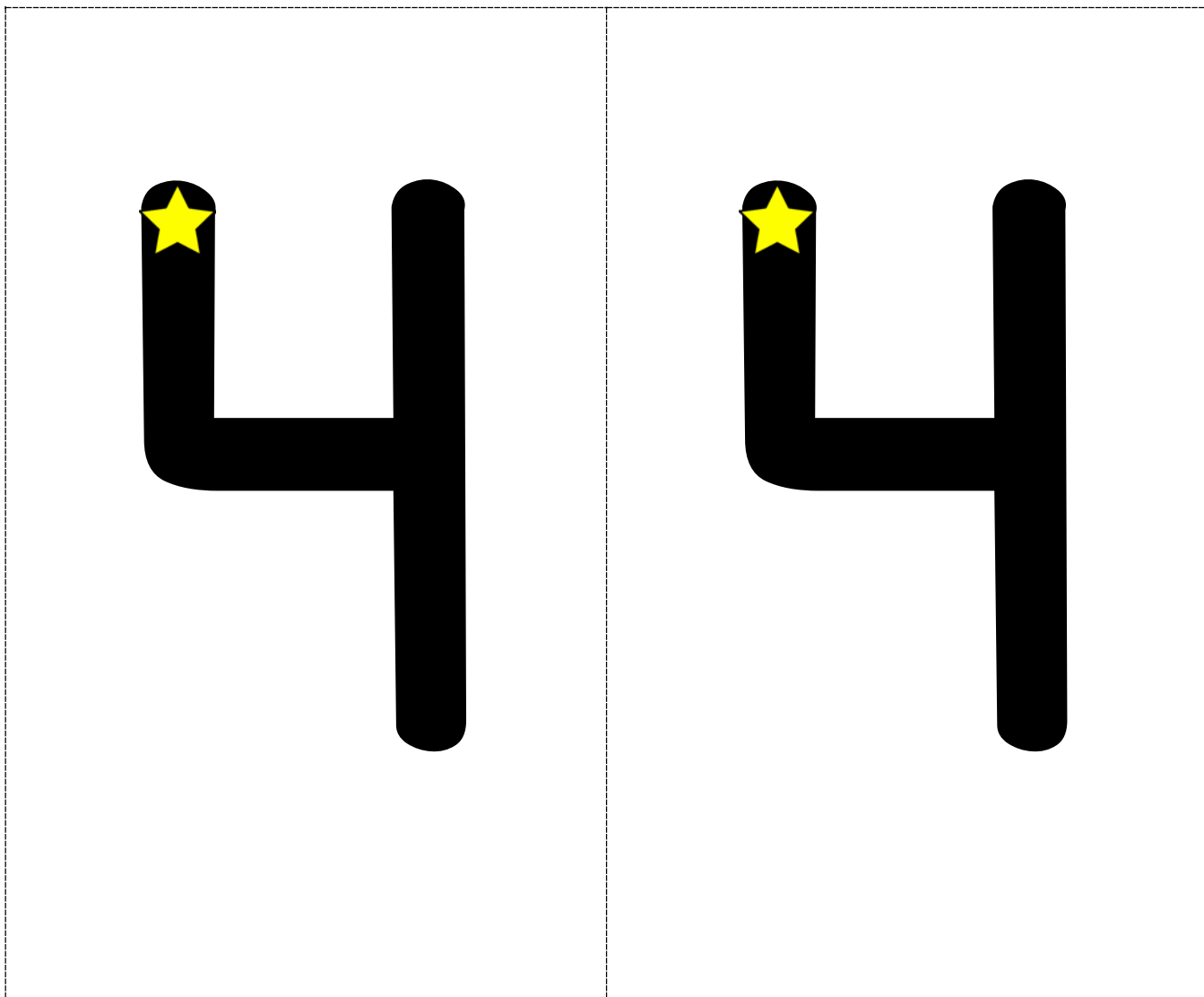


CENTER CONNECTION:

Put a spinner to 5 or a die with the 6 covered and counters in the center. Let students spin the spinner or roll the die and count out that many counters. If they roll the blank (covered 6), they roll again. Listen for students making *greater than* or *more than* statements. Some students will compare numbers, and some will compare quantities of objects.

- Can you use *greater than* to compare the number of fingers you see? (Hold up 3 fingers on 1 hand and 5 fingers on the other.)
- Can you use equal to for comparing the number of fingers you see now? (Hold up 5 fingers on both hands.)
- What did you notice about the buildings when they all matched the number 4?

Cut along dashed lines.



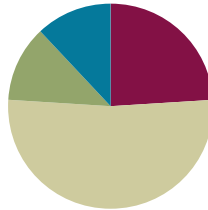
numeral formation cards

Lesson 25

Objective: Compare a number of objects using *less than* or *the same as* statements.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Bean Bag Toss **PK.CC.3b** (4 minutes)
- Alligator Snaps **PK.CC.1** (2 minutes)

Bean Bag Toss (4 minutes)

Materials: (T) 3 bean bags, 1 red mat and 1 blue mat placed side by side (bath towels or pieces of bulletin board paper can be used if mats are not available)

Note: This activity develops understanding with decompositions of 3 to anticipate working with addition and subtraction in Module 5.

T: (Show 3 bean bags on a table.) Count the bean bags. Ready?

S: 1, 2, 3.

T: Look at my mat. One side is (point to indicate)...?

S: Red!

T: The other side is (point to indicate)...?

S: Blue!

T: Everyone will get a turn to toss a bean bag, like this (demonstrate). The only rule is that it has to land on one of the mats. (Distribute the bean bags to 3 students.)

S: (Tosses them onto the mats.)

T: How many landed on the blue mat?

S: 2.

T: How many landed on the red mat?

S: 1.

T: How many beans bags are there in all?

S: 3.

T: We can tell about it like this. 2 (point to the 2 bean bags) and 1 (point to the 1 bean bag) make 3.
Let me hear you say that.

S: 2 and 1 make 3 (as teacher points to indicate).

Pass the 3 bean bags to the next 3 students and repeat. It may be necessary to direct students to toss all 3 to one side or the other to generate all compositions of 3.

Alligator Snaps (2 minutes)

Note: This activity addresses one of the core fluency goals, rote count to 20.

Demonstrate arms open wide, one above the other, mimicking alligator jaws. Students close arms and hands together to make a snapping sound while saying each number to 20.

Application Problem (3 minutes)

Call a student forward to stand at one end of the board. Ask, "How many students are standing here?" Record the number 1 on the board. Call 3 students forward to stand at the other end of the board. Ask how many are in the new group and record the number 3 on the board. Guide the students to make statements, such as, "3 students is *more than* 1 student." Then, have students compare the numbers, "3 is *greater than* 1."

Continue the process, calling forward varying numbers of students for each group. Include situations involving equal groups. Save the comparison of 4 and 5 for last because it will be slightly more challenging.

Note: This provides repeated counting experiences, as well as practice matching numerals to groups of objects and using the language of *more than* and *the same as*.

Concept Development (13 minutes)

Part 1: Concept Introduction

Materials: (T) 10 stuffed animals, large square of green butcher paper, large square of blue butcher paper, large numeral cards 1–5

Lay the pieces of butcher paper out on the rug. The green butcher paper represents the grass, and the blue butcher paper represents the water.

1. Place 2 animals on the blue paper and 3 on the green paper. Say, "Some animals are playing. Let's count how many are playing on the grass."
2. Ask, "Which number shows how many animals are playing on the grass?" Call on a student to find the numeral card and place it by the animals on the grass.
3. Repeat Steps 1–2 with the animals playing in the water.
4. Ask, "Which group has fewer animals, the group in the water or the group on the grass?"

- After counting and matching numeral cards, say, "2 animals are less than 3 animals."
- Repeat Steps 4–5 using different numbers of animals. Encourage students to use the language of *less than* as more examples are completed. Include at least one example with the same number of animals.

Part 2: Practice

Materials: (S) Small dot and numeral cards 1–5, grass and water (Template), tub of teddy bear counters per table

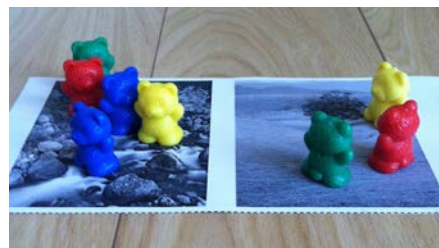
Give each student a template and put a tub of teddy bear counters at each table so all students at the table can access them. Have the students lay out their dot and digit cards so they can see all of the numbers.

- Say, "Count out 3 bears to play on the grass. (Pause.) Find the number card that tells how many bears are playing on the grass."
- Say, "Count out 5 bears to play in the water. (Pause.) Find the number card that tells how many bears are playing in the water."
- Allow work time and then say, "Use the words *less than* to tell about the two groups of bears." Guide and support struggling students: "3 bears is less than 5 bears."
- Repeat Steps 1–3 with different numbers of bears. Include scenarios where there is the same number in each group.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

Provide challenging extensions for students who can make comparison statements with numbers to 5 by having them compare up to 10 bears.



Student Debrief (3 minutes)

Lesson Objective: Compare a number of objects using *less than* or *the same as* statements.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.



CENTER CONNECTION:

Place the grass and water template and teddy bear counters at the center. Invite students to make up stories about the bears and move and match bears on the grass and in the water. Encourage discussion and storytelling about the bears. Listen as students reason about the number of bears they put in each part of the template, which might be more than 5 bears.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- Why is it helpful to show the number when we are counting objects?
- (Show 3 bears and 5 bears.) Use our comparison words *more than*, *less than*, *greater than*, *fewer than*, and *the same as* to talk about these groups of bears.
- Do you like to compare? Have you ever heard your parents or friends compare? (e.g., "Hey, my brother got more chicken strips than I did!")



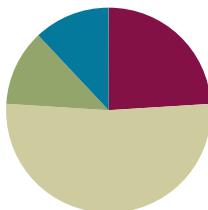
grass and water

Lesson 26

Objective: Compare numbers using *less than* and *equal to* statements. Verify with materials.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Clay Numeral 5 **PK.CC.2** (4 minutes)
- Swim and Count to 20 **PK.CC.1** (2 minutes)

Clay Numeral 5 (4 minutes)

Note: This activity anticipates writing numerals in Module 5 and is intended to familiarize students with numeral formation.

Materials: (S) Numeral formation card (Fluency Template), clay

Ask students to make a long snake and lay it over the short horizontal part of numeral 5 on the template, starting at the star. Guide students to use one piece and pinch off any excess. Repeat the process with the short vertical part, and finally, the curved part to complete numeral 5.

Early finishers can trace the clay numeral with their fingers while saying the number name or remake the numeral.

Swim and Count to 20 (2 minutes)

As before, in Lesson 20, students count up to 20 while pretending to swim. Keep the movement synchronous with the count. If time permits, complete the exercise counting the regular way and then counting the *Say Ten Way*.

Note: Varying the movement keeps this counting exercise fresh and challenges students to remain attentive to the counting sequence while learning a new physical exercise.

Application Problem (3 minutes)

Materials: (T) 5 oranges (S) numeral cards

Show 1 orange. Instruct students to make a statement, "There is 1 orange." Then, have students hold up the digit card that matches. Repeat for all numbers in order. Then repeat with numbers out of order.

Note: Students practice counting and recognizing numbers to prepare for today's Concept Development, wherein they will compare the abstract numbers and verify their statements with materials.

**Concept Development (13 minutes)****Part 1: Concept Introduction**

Materials: (T) 10 rectangular blocks, large numeral cards

1. Show the 4 numeral card and say, "I was walking down the street again and saw a building with 4 floors."
2. Say, "With your fingers, show me a number that is less than 4."
3. Say, "Let's check Sara's idea and see if 2 is less than 4."
4. Count while constructing a building with 4 blocks. Put the 4 numeral card in front of the building. Have Sara construct her building and put the 2 numeral card in front of her building.
5. Say with the class, "2 is less than 4."
6. Show the 5 numeral card and say, "With your fingers, show me a number that is *equal to* the number I'm showing. Let's check to see if 5 is equal to 5."
7. Construct two buildings, placing the numeral cards in front of the buildings and saying together, "5 is equal to 5."
8. Repeat with buildings of different and equal heights. Ensure students use the comparison language of *less than* and *equal to*.

MP.3

Note: Allowing student choice regarding the number students show, as long as it is less than the numeral card the teacher shows, adds complexity as they realize that sometimes more than one number satisfies the description.

Part 2: Practice

Materials: (T) 5 linking cubes (S) 5 linking cubes, small numeral and dot cards 1–5

Prepare tables so each student has 5 linking cubes, as well as numeral and dot cards 1–5.

1. Say, "We are going to continue constructing buildings that have fewer floors than the number I show you."
2. Show the 4 numeral card to the students.
3. Say, "Construct a building that has fewer floors than my building. (Pause.) Stand your building up on your table and put the number card that tells how many floors it has next to your building."
4. Say, "Tell your neighbor '____ is less than 4.'"
5. Repeat Steps 2–4 several times, including examples comparing the same number so students can use *is equal to*.



NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Students who are struggling to recognize a numeral will likely benefit from simultaneously seeing a concrete representation, such as fingers or the dot side of 5-group cards. This provides an explicit connection between the abstract numeral and concrete number of objects.

Student Debrief (3 minutes)

Lesson Objective: Compare numbers using *less than* and *equal to* statements. Verify with materials.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

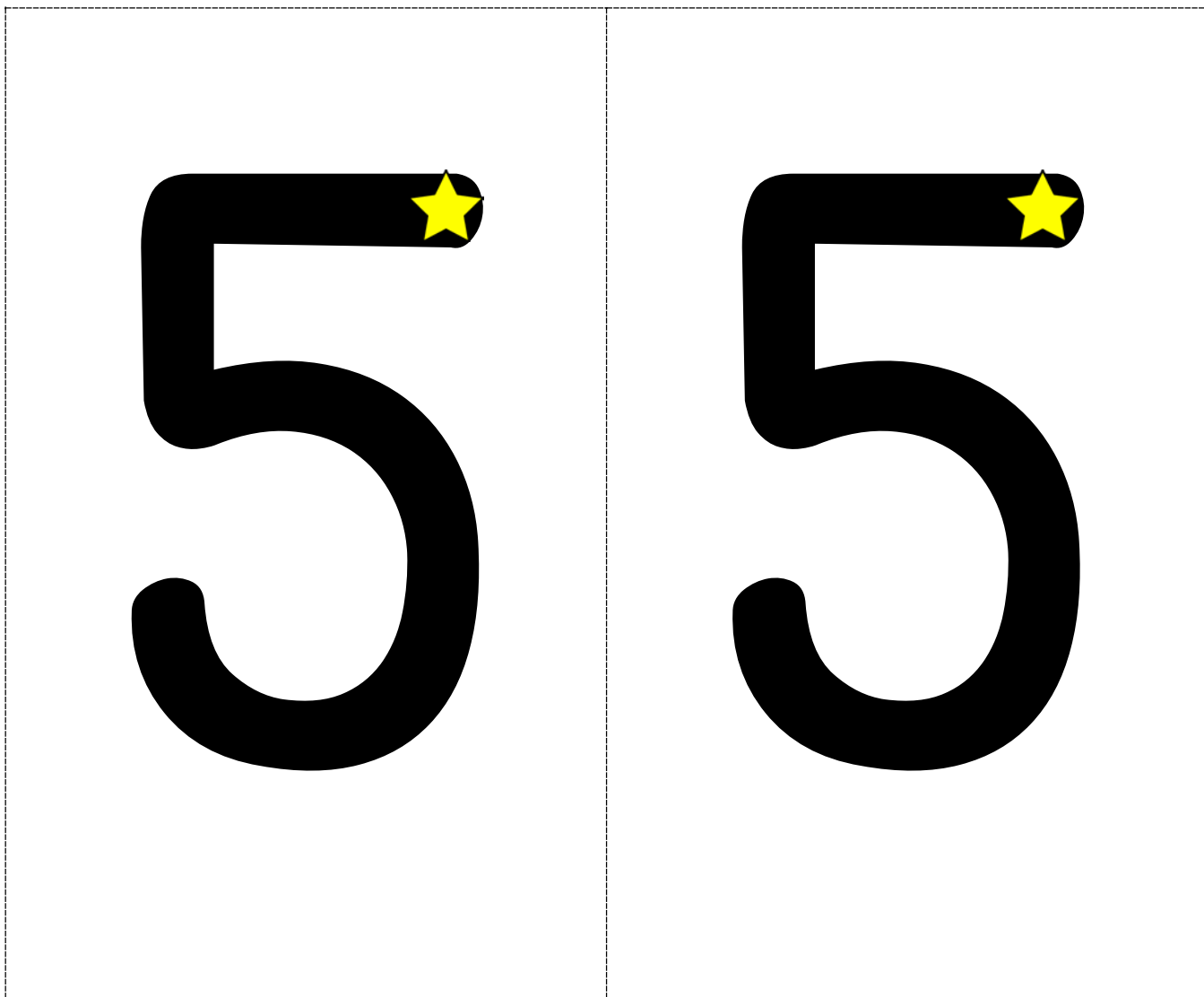
- When you were constructing your building, did your neighbor's building have the same number of floors as yours?
- What are some numbers that are *less than* 5? Use a complete sentence (e.g., "4 is less than 5").
- What are some numbers that are *greater than* 2? Use a complete sentence (e.g., "4 is greater than 2").
- What is a number that is *equal to* 2? Use a complete sentence.
- How does constructing the buildings and comparing the number of floors remind you of number stairs?



CENTER CONNECTION:

Place several 1-2-3 books or other picture books with simple, countable objects in the center. Encourage students to look at the objects in the books and count and compare them, e.g., "I see 5 children and 2 trees on this page. There are fewer trees than children! 2 is less than 5."

Cut along dashed lines.



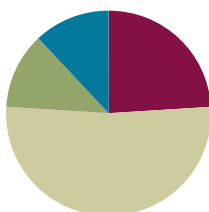
numeral formation cards

Lesson 27

Objective: Count and match to compare two sets of linking cube towers.

Suggested Lesson Structure

■ Fluency Practice	(6 minutes)
■ Application Problem	(3 minutes)
■ Concept Development	(13 minutes)
■ Student Debrief	(3 minutes)
Total Time	(25 minutes)



Fluency Practice (6 minutes)

- Stars and Stripes **PK.CC.3** (4 minutes)
- Number Walk **PK.CC.1** (2 minutes)

Stars and Stripes (4 minutes)

Materials: (S) 3 beans, plastic cup, stars and stripes (Fluency Template)

Note: Becoming fluent in decompositions of numbers to 5 will support students' understanding of addition and subtraction concepts in Module 5.

1. Count how many beans (3).
2. Put them in the cup, shake them, and pour them onto the game board.
3. Count how many beans landed on the striped side and how many landed on the stars side.
4. Count how many beans altogether.
5. Instruct students to make a statement, e.g., "2 and 1 makes 3."
6. Return the beans to the cup and play again.
7. Allow students to work with 3 as long as necessary to develop automaticity. In subsequent lessons, the quantity will increase to 4 or 5 as students demonstrate mastery.



NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

For students who have difficulty controlling the beans, prepare a game board by setting the template inside of a tray or box lid so the beans cannot roll outside of the playing surface.

Number Walk (2 minutes)

Materials: (T) Music (optional)

Note: This activity challenges students to remain attentive to the counting sequence by stopping at a given number.

Similar to Lesson 18, assign a number at which students stop. Students begin walking at the teacher's signal, carefully taking a step for each number as they count aloud. Students then stop at the designated number. Students should only say a number when they step forward.

This time, select stopping points up to 15. Include counting the Say Ten Way and regular way.

Application Problem (3 minutes)

Materials: (T) Numeral cards 1–5 (S) Bowl of pebbles.

Show one numeral card at a time, first in order, then out of order. For each card shown, students read the number and count out that number of pebbles. Then, have students make a statement, such as, "There is 1 pebble."

Note: Students practice counting and recognizing numbers, working from abstract to concrete. Working in numeric order provides support for students who may struggle with number recognition before moving to recognizing numbers out of sequence.



Concept Development (13 minutes)

Concept Introduction and Practice

Materials: (S) 5 linking cubes per student, numeral cards (no dots) 1–5 per student

The Concept Introduction and Practice sections are combined in this lesson because it is a culmination of comparison activities from the entire module. While explaining each step of the game, encourage students to practice. Consider inviting parents, older students, or classroom helpers into the room to facilitate a variety of comparison statements. This is an opportunity for the students to show what they have learned to others outside of the classroom.

1. Say, "Today, we are going to play a game with a partner." Pass out 5 linking cubes and 1–5 digit cards to each student.
2. Explain, "Mix up your cards and put them in a pile so that you cannot see the numbers. When I say 'go,' turn over the top card." (Pause.)
3. Say, "Build a tower with the number of cubes that you see on your card." (Pause.)



4. Explain, "When you and your partner are done, put your towers next to each other. Take turns saying a sentence to compare your towers." (Pause to let students practice.) Below are some examples:
 - "I have fewer cubes."
 - "4 is less than 5."
 - "My tower is taller than your tower."
 - "You have more cubes than I have."
 - "5 is greater than 3."
 - "4 is equal to 4."
5. Say, "We will show our towers and share some of our sentences with the class. Let's see how many different sentences we hear." Call on a few pairs of students to show and share their comparison statements.
6. Ask, "Are we ready to play?" Play the game several times. Eventually, let capable pairs continue playing the game at their own pace while you work with partners who are struggling.

Student Debrief (3 minutes)

Lesson Objective: Count and match to compare two sets of linking cube towers.

The Student Debrief is intended to invite reflection and active processing of the total lesson experience. It is also an opportunity for informal assessment. Consider taking anecdotal notes or using a simple checklist to note each child's progress toward meeting the lesson objective.

As students to complete the Practice portion of the Concept Development, listen for misconceptions or misunderstandings that can be addressed in the Debrief.

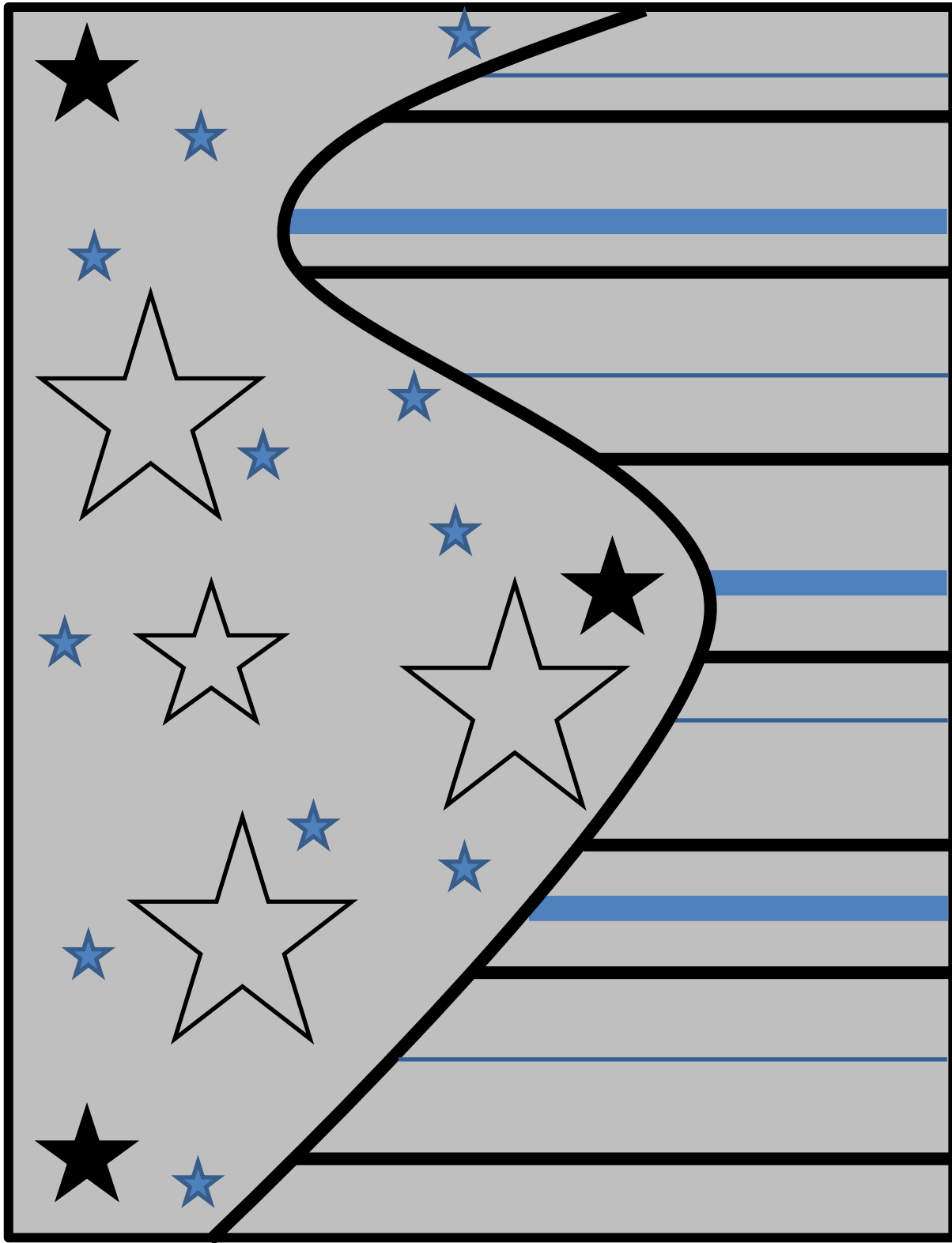
You may choose to use any combination of the questions below to help students express ideas, make connections, and use new vocabulary.

- What words did you use to compare your tower to your partner's?
- What does it mean to compare? Think about two things you can compare. Why would you compare them?
- How can you show that 4 is greater than 3? 2 is the same as 2? 1 is less than 5? (Use fingers, cubes, objects, etc.)



CENTER CONNECTION:

Once students learn the game, it can be used at a center intermittently for the rest of the year. This game involves many Pre-Kindergarten skills (counting, numbers to 5, comparison, one-to-one correspondence, matching, etc.), so it is a good review of many topics and can be done independently.



stars and stripes

Pre-Kindergarten Mid-Module 4 Assessment Instructions (Administer after Topic C)

Purpose: These assessments inform daily planning and track student skill development to support and strengthen parent–teacher communication of student progress, as well as provide valuable information for kindergarten teachers.

Materials Needed: Chopstick, toothpick, 15-inch strip of paper, 10 linking cubes, block, white board eraser, box with 2 heavy and 2 light objects, 3 containers (large, medium and small, relative to each other), beans, scissors.

Preparation: This may be a Pre-Kindergarten student's first assessment experience, so it is critical to make it a positive experience. Greet the child warmly, sitting next to the student rather than opposite. Tell the child that you want to play some number games together.

Procedure: Use the specific language of the assessment, translating as necessary for non-English speakers. Use the second hand of a watch or clock to ensure there is ample wait time and note when there is a significant delay in response, e.g., more than 20 seconds. Record the student's results in two ways: 1) the narrative documentation and 2) the overall score per topic. To ensure the most accurate results it is important to allow the child to explain his or her reasoning in his or her primary language.

Initial Assessment: Use the rubric to determine the step at which students are performing.

STEP 1 Little evidence of reasoning without a correct answer. (1 point)	STEP 2 Evidence of some reasoning without a correct answer. (2 points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 points)
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If the student is unable to get the correct answer on any part of the assessment, his or her score cannot exceed Step 3. However, if the student is unable to use his or her words to *tell* what he or she did, then it is not counted against the student quantitatively. (However, awareness exists regarding the difference between a non-English versus a native English speaker unable to articulate something.) If the student asks for or needs a hint or significant support, provide either, but the score is automatically lowered. This is to make sure that the assessment provides a true picture of what a student can do independently.

Repeated Assessment: If a student scores at Step 1 or 2, repeat that task again at two-week intervals, noting the date of the reassessment in the space at the top of the student's record sheet. Document progress on this one form. If the student is very delayed in his or her response but completes it, reassess after two weeks to see if there is a change in the time elapsed.

Documentation Availability: Put the assessments in a three-ring binder or student portfolio. There are two assessments (mid and final) per module for each student. Use the Class Record Sheet following the rubric for an *At-a-Glance* look at students' strengths and weaknesses and follow-up lesson planning.

Student Name _____

Topic A: Comparison of Length

Rubric Score _____ Time Elapsed _____

Materials: (S) Chopstick, toothpick, 15-inch strip of paper, 10 linking cubes, scissors

	Date 1	Date 2	Date 3
Topic A			
Topic B			
Topic C			

- (Hold a chopstick and a toothpick upright in front of the student.) Which words BEST describe these objects, *big* and *small* or *tall* and *short*?
- (Hand a chopstick and a linking cube tower of 8 to the student.) Compare these two objects: which one is longer?
- (Place a 15-inch strip of paper and the chopstick in front of the student.) Cut the paper. Give me the piece that is **shorter than** the chopstick.
- (Hand two linking cube towers of 5 to the student.) Compare the towers: Are they **the same as** each other or is one **longer** or **shorter than** the other?

What did the student do?	What did the student say?
1.	
2.	
3.	
4.	

Topic B: Comparison of Weight

Rubric Score _____ Time Elapsed _____

Materials: (S) Block, white board eraser, box with 2 heavy and 2 light objects

1. (Place a block and a white board eraser in front of the student.) Which words BEST describe these objects, *heavy* and *light* or *big* and *small*?
2. (Place the box with 2 heavy and 2 light objects in front of the student. Hold up the white board eraser.) Find something in the box that is **heavier than** this eraser. (Pause as the student does so.) Use your words to compare the weight of the eraser and the _____.
3. (Place the box with 2 heavy and 2 light objects in front of the student. Hold up the block.) Find something in the box that is **lighter than** this block. (Pause as the student does so.) Use your words to compare the weight of the block and the _____.



What did the student do?	What did the student say?
1.	
2.	
3.	

Topic C: Comparison of Volume

Rubric Score _____ Time Elapsed _____

Materials: (S) Large, medium, and small containers (relative to each other); beans

1. (Place the large container and small container filled with beans in front of the student.) Which words BEST describe these objects, *heavy* and *light* or *big* and *small*?
2. (Place all 3 containers, with the medium-sized container filled with beans, in front of the student.) Which container holds **more than** this cup of beans? Use your words to compare how much these two containers hold.
3. Which container holds **less than** this cup of beans? Use your words to compare how much these two containers hold.

What did the student do?	What did the student say?
1.	
2.	
3.	

Mid-Module Assessment Task
Standards Addressed

Topics A–C

Describe and compare measurable attributes.

- PK.MD.1** Identify measurable attributes of objects, such as length, and weight. Describe them using correct vocabulary (e.g., small, big, short, tall, empty, full, heavy, and light.)

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe and quantify steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery

Assessment Task Item	STEP 1 Little evidence of reasoning without a correct answer. (1 point)	STEP 2 Evidence of some reasoning without a correct answer. (2 points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 points)
Topic A PK.MD.1	<p>The student shows little evidence of understanding how to compare objects according to length. Student needs teacher assistance to begin tasks. Student is uncertain when replying to length comparison questions and looks to the teacher for guidance. Time elapsed for each task is significant.</p>	<p>The student shows evidence of beginning to understand how to compare objects according to length. Student inconsistently uses length comparison vocabulary and/or is able to do 2 of the 4 tasks correctly.</p>	<p>The student is able to do three of the following:</p> <ul style="list-style-type: none"> Describes the chopstick and toothpick as <i>tall</i> and <i>short</i>. Says, "The chopstick is <i>longer than</i> the linking cubes or tower," and may align endpoints to compare length. Gives teacher the cut piece of paper that it is <i>shorter than</i> the chopstick. Counts the cubes or aligns endpoints and says, "The towers are <i>the same as</i> each other." <p>Length comparison vocabulary is used even if sentences are incomplete or fragmented, e.g., "This is <i>taller than</i> this."</p>	<p>The student correctly:</p> <ul style="list-style-type: none"> Describes the chopstick and toothpick as <i>tall</i> and <i>short</i>. Says, "The chopstick is <i>longer than</i> the linking cubes or tower," and may align endpoints to compare length. Gives teacher the cut piece of paper that is <i>shorter than</i> the chopstick. Counts the cubes or aligns endpoints and says, "The towers are <i>the same as</i> each other." <p>Length comparison vocabulary is used even if sentences are incomplete or fragmented, e.g., "This is <i>taller than</i> this."</p>
Topic B PK.MD.1	<p>The student shows little evidence of understanding how to compare objects according to weight. Student needs teacher assistance to choose items from the box. Student is unable to use words to tell about the weight</p>	<p>The student shows evidence of beginning to understand how to compare objects according to weight. Student inconsistently uses weight comparison vocabulary. When asked to compare two objects, the student chooses</p>	<p>The student is able to do two of the following:</p> <ul style="list-style-type: none"> Describes the block and white board eraser as <i>heavy</i> and <i>light</i>. Chooses an object that is <i>heavier than</i> the eraser and says, "The ____ is heavier than the eraser." 	<p>The student correctly:</p> <ul style="list-style-type: none"> Describes the block and white board eraser as <i>heavy</i> and <i>light</i>. Chooses an object that is <i>heavier than</i> the eraser and says, "The ____ is heavier than the eraser." Chooses an object that



A Progression Toward Mastery

	comparisons. Time elapsed for each task is significant.	some of the correct objects. Student has some difficulty using words to tell about the weight comparisons.	<ul style="list-style-type: none"> Chooses an object that is <i>lighter than</i> the block and says, "The _____ is <i>lighter than</i> the block." <p>Weight comparison vocabulary is used, even if sentences are incomplete or fragmented, e.g., "This is <i>lighter than</i> this."</p>	<p>is <i>lighter than</i> the block and says, "The _____ is <i>lighter than</i> the block."</p> <p>Weight comparison vocabulary is used, even if sentences are incomplete or fragmented, e.g., "This is <i>lighter than</i> this."</p>
<p>Topic C</p> <p>PK.MD.1</p>	The student shows little evidence of understanding how to compare objects according to volume. Student incorrectly identifies the <i>more than</i> container and the <i>less than</i> container. Student is unable to use words to tell about the volume comparisons. Time elapsed for each task is significant.	The student shows evidence of beginning to understand how to compare objects according to volume. Student inconsistently uses volume comparison vocabulary. When asked to compare two containers, the student points to the correct container hesitantly. Student has some difficulty using words to tell about the volume comparisons.	<p>The student is able to do two of the following:</p> <ul style="list-style-type: none"> Describes the containers as <i>big</i> and <i>small</i>. Chooses the large container and says, "This container holds <i>more than</i> that cup of beans." Chooses the small container and says, "This container holds <i>less than</i> that cup of beans." <p>Volume comparison vocabulary is used, even if sentences are incomplete or fragmented, e.g., "Can put more in this cup than that."</p>	<p>The student correctly:</p> <ul style="list-style-type: none"> Describes the containers as <i>big</i> and <i>small</i>. Chooses the large container and says, "This container holds <i>more than</i> that cup of beans." Chooses the small container and says, "This container holds <i>less than</i> that cup of beans." <p>Volume comparison vocabulary is used even if sentences are incomplete or fragmented, e.g., "Can put more in this cup than that."</p>

Class Record Sheet of Rubric Scores: Mid-Module 4 Assessment

Student Names	Topic A: Comparison of Length	Topic B: Comparison of Weight	Topic C: Comparison of Volume	Next Steps:

Pre-Kindergarten End-of-Module 4 Assessment Instructions (Administer after Topic G)

Purpose: These assessments inform daily planning, enhance parent conferences with specific documentation of students' skill development, and provide valuable information about a student to their next teacher.

Materials Needed: 8 teddy bear counters, a paper clip or small cube for marking the start of the circular and scattered count, 5 teddy bear counters, 5-box template, 5 pencils, 5 erasers, 3 linking cube towers (one with 3 cubes, one with 4 cubes, one with 5 cubes), tub of disconnected linking cubes, numeral cards to 5 (two 4 cards for a total of 6 cards)

Preparation: Pre-Kindergarten students are new to assessments, so it is critical to make it a positive experience. Greet the child warmly, sitting next to the student rather than opposite. Tell the child that you want to play some number games together.

Procedure: Use the specific language of the assessment, translating as necessary for non-English speakers. Use the second hand of the classroom clock to assure there is ample wait time and note when there is a significant delay in response, e.g., more than 20 seconds. Record the student's results in two ways: 1) the narrative documentation and 2) the overall score per topic. It is important to allow the child to explain his or her reasoning in his or her primary language..

Initial Assessment: Use the rubric to determine the step at which students are performing.

STEP 1 Little evidence of reasoning without a correct answer. (1 point)	STEP 2 Evidence of some reasoning without a correct answer. (2 points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 points)
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If the student is unable to get the correct answer on any part of the assessment, his or her score cannot exceed Step 3. However, if the student is unable to use his or her words to *tell* what he or she did, then it is not counted against the student quantitatively. (However, awareness exists regarding the difference between a non-English versus a native English speaker unable to articulate something.) If the student asks for or needs a hint or significant support, provide either, but the score is automatically lowered. This is to make sure that the assessment provides a true picture of what a student can do independently.

Repeated Assessment: If a student scores at Step 1 or 2, repeat that task again at two-week intervals, noting the date of the reassessment in the space at the top of the student's record sheet. Document progress on this one form. If the student is very delayed in his or her response but completes it, reassess after two weeks to see if there is a change in the time elapsed.

Documentation Availability: Put the assessments in a three-ring binder or student portfolio. There are two assessments (mid and final) per module for each student. Use the Class Record Sheet following the rubric for an *At-a-Glance* look at students' strengths and weaknesses and follow-up lesson planning.

Student Name _____

Topic D: First and Last

Rubric Score _____ Time Elapsed _____

Materials: (S) 8 teddy bear counters, a paper clip (or small cube) for marking the start of the circular count

	Date 1	Date 2	Date 3
Topic D			
Topic E			
Topic F			
Topic G			

1. (Place 5 teddy bear counters in a scattered configuration in front of the student.) Count the bears. When you are done, I'm going to ask you which bear you counted first and last. You can use this paper clip to help you remember which bear you counted first. (Pause.) Which bear did you count first? Which bear did you count last?
2. (Place 7 teddy bear counters in a linear configuration in front of the student.) The bears are in line waiting to go out of their classroom. Point to the last bear. Point to the first bear. (Turn all the bears around so that they are facing the opposite direction.) Now they are waiting in line to go back into their classroom. Point to the first bear. Point to the last bear.
3. (Place 8 teddy bear counters in a circular configuration. Have the paper clip readily accessible.) Count the bears. When you are done, I'm going to ask you which bear you counted first. You can use this paper clip to help you remember. (Pause.) Which bear did you count first?

What did the student do?	What did the student say?
1.	
2.	
3.	

Topic E: Are There Enough?

Rubric Score _____ Time Elapsed _____

Materials: (S) 5 teddy bear counters, 5-box template

1. (Place 3 teddy bear counters and the 5-box template in front of the student.) Match the bears to the boxes. Tell me if there are exactly enough boxes, enough boxes with some extras, or not enough boxes for the bears to sit on.
2. (Place all of the teddy bear counters and the 5-box template in front of the student.) Match the bears to the boxes to show exactly enough boxes for the bears to sit on.

What did the student do?	What did the student say?
1.	
2.	

Topic F: Comparison of Sets Up to 5

Rubric Score _____ Time Elapsed _____

Materials: (S) 5 pencils, 5 erasers

1. (Place 2 pencils and 4 erasers in front of the student.) Count the group of pencils and the group of erasers. (Pause.) Which group has more?
2. (Place 5 pencils and 4 erasers in front of the student.) Count the group of pencils and the group of erasers. (Pause.) Which group has less?
3. (Place 3 pencils and 5 erasers in front of the student. Have the other two pencils close by for students to use if desired.) Add pencils or take away erasers so that both groups have the same number of objects.

What did the student do?	What did the student say?
1.	
2.	
3.	

Topic G: Comparison of Sets Including Numerals Up to 5

Rubric Score _____ Time Elapsed _____

Materials: (T) Three linking cube towers (one with 3 cubes, one with 4 cubes, one with 5 cubes) (S) Tub of disconnected linking cubes, numeral cards to 5 (two 4 cards for a total of 6 cards)

1. (Place the 5-tower and numeral cards in front of the student.) Count the cubes in this tower. (Pause.) Show me the number that matches the tower. (Move the chosen numeral next to the tower and move aside.)
2. (Place the 3-tower in front of the student.) Count the cubes in this tower. (Pause.) Show me the number that matches this tower. (Move the chosen numeral next to the tower.)
3. (Move 3-tower aside. Place the 5 and 3 numeral cards in front of the student.) Tell me about these numbers using *more than*, *less than*, or *the same as*.
4. (Remove all other materials and place the tub of disconnected linking cubes, the 4-tower, and the 6 numeral cards in front of the student.) Show me the number that matches this tower (pointing to 4-tower). Now, make a tower to match it. Show me the number that tells how many cubes are in this tower. Tell me about these numbers using *greater than*, *less than*, or *the same as*.

What did the student do?	What did the student say?
1.	
2.	
3.	
4.	

5-box template



End-of-Module Assessment Task Standards Addressed

Topics D–G

Compare Numbers.

- PK.CC.5** Identify whether the number of objects in one group is more, less, greater than, fewer, and/or equal to the number of objects in another group, e.g., by using matching and counting strategies. (1:1 up to 5 objects)
- PK.CC.6** Identify “first” and “last” related to order or position.

Evaluating Student Learning Outcomes

A Progression Toward Mastery is provided to describe and quantify steps that illuminate the gradually increasing understandings that students develop on their way to proficiency. In this chart, this progress is presented from left (Step 1) to right (Step 4). The learning goal for each student is to achieve Step 4 mastery. These steps are meant to help teachers and students identify and celebrate what the students CAN do now and what they need to work on next.

A Progression Toward Mastery

Assessment Task Item	STEP 1 Little evidence of reasoning without a correct answer. (1 point)	STEP 2 Evidence of some reasoning without a correct answer. (2 points)	STEP 3 Evidence of some reasoning with a correct answer or evidence of solid reasoning with an incorrect answer. (3 points)	STEP 4 Evidence of solid reasoning with a correct answer. (4 points)
Topic D PK.CC.6	<p>The student shows little evidence of understanding how to identify first and last. Student is confused and is unable to identify the first and last bear counted.</p>	<p>The student shows evidence of beginning to understand how to identify first and last and is inconsistent in doing so. Student is uncertain of his or her identifications and looks to the teacher for confirmation.</p> <p>Student recounts the bears several times to try to figure out the first and last bear counted.</p>	<p>The student is able to do two of the following:</p> <ul style="list-style-type: none"> Identifies the first and last bear in a scattered configuration, possibly using the paper clip or cube. Identifies the first and last bear in a linear configuration facing both directions (4 identifications total). Identifies the first bear in a circular configuration, possibly using the paper clip <p>Do not penalize the student for an incorrect count because this is not being assessed.</p>	<p>The student correctly:</p> <ul style="list-style-type: none"> Identifies the first and last bear in a scattered configuration, possibly using the paper clip or cube. Identifies the first and last bear in a linear configuration facing both directions (4 identifications total). Identifies the first bear in a circular configuration, possibly using the paper clip. <p>Do not penalize the student for an incorrect count because this is not being assessed.</p>
Topic E PK.CC.5	<p>The student shows little evidence of understanding how to show <i>enough</i>. Student is unable to match the bears to the boxes and clearly does not understand the correlation between the bears and the boxes in the context of <i>enough</i>.</p>	<p>The student shows evidence of beginning to understand how to show <i>enough</i>. Teacher guides the student to match the bears to the boxes,</p> <p>The student is unable to begin the task independently.</p> <p>The student has difficulty using <i>enough</i> vocabulary.</p>	<p>The student correctly does the following with more time elapsed for each task:</p> <ul style="list-style-type: none"> Matches 3 bears to 3 boxes and states that there are enough boxes with some extra boxes. Matches 5 bears to 5 boxes to show there are exactly enough boxes for bears. Uses <i>enough</i> vocabulary to talk about bears and boxes. 	<p>The student correctly:</p> <ul style="list-style-type: none"> Matches 3 bears to 3 boxes and states that there are enough boxes with some extra boxes. Matches 5 bears to 5 boxes to show there are exactly enough boxes for bears. Uses <i>enough</i> vocabulary to talk about bears and boxes.



A Progression Toward Mastery

<p>Topic F</p> <p>PK.CC.5</p>	<p>The student shows little evidence of understanding how to compare sets. The student clearly does not understand the correlation between the pencils and the erasers to make more than or less than comparison statements. The student is unable to manipulate the erasers and the pencils to make the groups equal.</p>	<p>The student shows evidence of beginning to understand comparison of sets. Student inconsistently uses strategies, matching or counting, to make some correct comparison statements.</p> <p>The student looks to the teacher for confirmation of correct response.</p>	<p>The student is able to do two of the following:</p> <ul style="list-style-type: none"> Counts the pencils and the erasers and makes a comparison statement that the eraser group has more. Counts the pencils and erasers and makes a comparison statement that the eraser group has less. Manipulates the erasers and pencils so that both groups are equal. <p>Do not penalize the student for an incorrect count of the groups as long as his or her <i>more or less</i> statement is correct.</p>	<p>The student correctly:</p> <ul style="list-style-type: none"> Counts the pencils and the erasers and makes a comparison statement that the eraser group has more. Counts the pencils and the erasers and makes a comparison statement that the eraser group has less. Manipulates the erasers and pencils so that both groups are equal. <p>Do not penalize the student for an incorrect count of the groups as long as his or her <i>more or less</i> statement is correct.</p>
<p>Topic G</p> <p>PK.CC.5</p>	<p>The student shows little evidence of understanding how to compare sets including numerals. Student is unable to complete most of the tasks. Student is unclear on the relationship between the numbers and the sets. Student is unresponsive when asked to make comparison statements.</p>	<p>The student shows evidence of beginning to understand how to compare sets including numerals. Student inconsistently uses strategies to make some correct comparison statements with the towers and numbers. Time elapsed for each task is prolonged.</p>	<p>The student is able to do two of the following:</p> <ul style="list-style-type: none"> Chooses the correct numeral cards that correspond to each tower. Compares the numbers 3 and 5 with the towers nearby, but not directly next to the numeral cards. Uses <i>more than</i> or <i>less than</i> in a comparison statement about 3 and 5. Makes a 4-tower out of disconnected linking cubes to match the 4-tower placed in front of him. Places a 4 numeral card next to each tower and states something like, "The towers are the same." 	<p>The student correctly:</p> <ul style="list-style-type: none"> Chooses the correct numeral cards that correspond to each tower. Compares the numbers 3 and 5 with the towers nearby, but not directly next to the numeral cards. Uses <i>more than</i> or <i>less than</i> in a comparison statement about 3 and 5. Makes a 4-tower out of disconnected linking cubes to match the 4-tower placed in front of them. Places a 4 numeral card next to each tower and states something like, "The towers are the same."

Class Record Sheet of Rubric Scores: End-of-Module 4 Assessment

Student Names	Topic D: First and Last	Topic E: Are There Enough	Topic F: Comparison of Sets Up to 5	Topic G: Comparison of Sets Including Numerals Up to 5	Next Steps: