ENGLISH

OER K–5 Math
EDITION 1

Grade 1
Module 3

ORDERING AND COMPARING LENGTH
MEASUREMENTS AS NUMBERS

TEACHER EDITION

K–5 Math Grade 1 Module 3

ORDERING AND COMPARING LENGTH MEASUREMENTS AS NUMBERS

Acknowledgment

Thank you to all the Texas educators and stakeholders who supported the review process and provided feedback. These materials are the result of the work of numerous individuals, and we are deeply grateful for their contributions.

Notice

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OVERVIEW

Grade 1 Module 3 opens with Topic A, Lesson 1 by extending students' Kindergarten experiences with measurement tools to reinforce the continuous nature of linear measurement. Lessons 2–4 take *longer than* and *shorter than* to a new level of precision by introducing the idea of a *length unit*. Centimeter cubes are laid alongside the length of an object as students learn that the total number of cubes laid end to end with no gaps or overlaps represents the length of that object (**1.7A, 1.7B, 1.7C, 1.7D**). The Geometric Measurement Progressions Document expresses the research indicating the importance of teaching standard units to Grade 1 students *before* non-standard units. Thus, Grade 1 students learn about the centimeter before exploring non-standard units of measurement in this module. Lining the cubes up to the ruler allows students to see that they are using units that relate to a tool found around the world. One of the primary reasons we recognize standard units is because they are ubiquitous and appear on rulers at homes in Houston, in school, and in local shops. Students ask and answer the question, "Why do we use a standard unit to measure?" The topic closes with students measuring and comparing sets of three items using centimeter cubes and making precise statements such as, "The pencil measures 10 centimeters. The crayon measures 6 centimeters. The book measures 20 centimeters. I can put them in order from shortest to longest: the crayon, the pencil, the book. The book is longer than the pencil, and the pencil is longer than the crayon, so the book is longer than the crayon" (**1.7A**).

Topic B explores the usefulness of measuring with similar units. Students measure the same objects from Topic A using two different non-standard units, toothpicks and small paper clips, simultaneously to measure one object and answer the question, "Why do we measure with same-sized length units?" (**1.7A, 1.7B, 1.7C, 1.7D**). They realize that using iterations of the *same* unit will yield consistent measurement results. Similarly, students explore what it means to use a different unit of measurement from their classmates. It becomes obvious to students that if we want to have discussions about the lengths of objects, we *must* measure with the same units. Students answer the question, "If Bailey uses paper clips and Maya uses toothpicks, and they both measure things in our classroom, will they be able to compare their measurements?" With this new understanding of consistent measurement, Topic B closes with students solving *compare with difference unknown* problems. Students use standard units to answer such questions as, "How much longer is the pencil than the marker?" (**1.3B, 1.5D**).

Topic C closes the module as students represent and interpret data (**1.8A, 1.8B, 1.8C**). They collect data about their classmates and sort that information into three categories. Using same-sized pictures on squares, students represent this sorted data so that it can be easily compared and described. Students interpret information presented in the graphs by first determining the number of data points in a given category, for example, "How many students like carrots the best?" Then, students combine categories, for example, "How many total students like carrots or broccoli the best?" The module closes with students asking and answering varied questions about data sets, such as "How many students were polled in all?" (*join with result unknown*) and "How many more students preferred broccoli to string beans?" (*compare with difference unknown*) (**1.3B,**

1.5D). Their work with units representing data points is an application of students' earlier work with length as they observe that each square can be lightly interpreted as a length unit, which helps them analyze the data.

Collaboratively Troubleshooting Student Misconceptions

It is common for students to make mistakes as they build their understanding of new or difficult concepts. As noted in the Program and Implementation Guide, *collaborative troubleshooting* is a routine to help teachers address students' misconceptions. The three steps to collaborative troubleshooting are

(1) surface student thinking;

(2) validate what the student did right; and

(3) bridge to a better understanding.

The following table presents teachers with guidance on how to collaboratively troubleshoot misconceptions with students. The first three columns of the table outline misconceptions that commonly arise in this module, reasons why students may have the misconceptions, and associated TEKS. Teachers can use this information to help them decide which questions to ask students to surface thinking and to validate what the students understood or did correctly.

The last column of the table provides instructional strategies and sample guided questions that can support students as they build on what they already know and bridge to a better understanding.

Note: Teachers can also refer to the sample teacher–student dialogue in the "Collaboratively Troubleshooting Student Misconceptions" section of the Grade 1 Course Guide for additional guidance on implementing the three-step routine.

Topic	TEKS	Student Misconception	How to Bridge to a Better Understanding
Topic A	1.7A	Students do not understand that length is a distance (e.g., 5 units means the fifth cube I put down when I measure).	Notice how counting 5 when measuring does not mean just the fifth length unit itself. 5 means the space, or distance, covered by 5 length-units. Encourage students to include units when counting the length of an object, for example, "1 centimeter cube, 2 centimeter cubes, 3 centimeter cubes…" Probe for understanding when students tell the length of an object by asking, "What does the fifth cube tell us?"

Topic	TEKS	Student Misconception	How to Bridge to a Better Understanding
Topic B	1.7C	Students solely depend on counting units to determine the length of an object, rather than considering the size of the units used to measure (e.g., " I can count how many length-units to tell which object is longer").	Have students measure an object by using units of difference sizes, such as linking cubes and paper clips, and ask, "Which object is longer? How do you know?" Students should see that the objects are the same length, even though Pencil A, for example, is 6 paper clips long and Pencil B is 10 linking cubes long. Encourage students to explain their thinking by drawing their attention to the size of the unit they used to measure.
Topic C	1.8B	Students do not organize and align data points in the graph (e.g., Graphs don't help you to see and understand information better).	Notice how using concrete materials, such as same-size square tiles or linking cubes, can help students organize data visually, and ensure one-to-one matching between data points across categories. Encourage students to use their measurement skills to align data points with no gaps or overlaps.

Focus Grade Level Standards

Number and Operations

The student applies mathematical process standards to develop and use strategies for whole number addition and subtraction computations in order to solve problems. The student is expected to:

1.3B   use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as 2 + 4 = [ ]; 3 + [ ] = 7; and 5 = [ ] – 3.

Algebraic Reasoning

The student applies mathematical process standards to identify and apply number patterns within properties of numbers and operations in order to describe relationships. The student is expected to:

1.5D   represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences.

Geometry and Measurement

The student applies mathematical process standards to select and use units to describe length and time. The student is expected to:

1.7A   use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement;

1.7B   illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other;

1.7C   measure the same object/distance with units of two different lengths and describe how and why the measurements differ;

1.7D   describe a length to the nearest whole unit using a number and a unit.

Data Anaylsis

The student applies mathematical process standards to organize data to make it useful for interpreting information and solving problems. The student is expected to: The student applies mathematical process standards to organize data to make it useful for interpreting information and solving problems. The student is expected to:

1.8A   collect, sort, and organize data in up to three categories using models/representations such as tally marks or T-charts;

1.8B   use data to create picture and bar-type graphs;

1.8C   draw conclusions and generate and answer questions using information from picture and bar-type graphs.

Foundational Standards

The student is expected to:

K.2D   recognize instantly the quantity of a small group of objects in organized and random arrangements;

K.2E   generate a set using concrete and pictorial models that represents a number that is more than, less than, and equal to a given number up to 20;

K.2G   compare sets of objects up to at least 20 in each set using comparative language;

K.2H   use comparative language to describe two numbers up to 20 presented as written numerals;

K.7A   give an example of a measurable attribute of a given object, including length, capacity, and weight;

K.7B   compare two objects with a common measurable attribute to see which object has more of/ less of the attribute and describe the difference.

TEKS Mathematical Process Standards

The student uses mathematical processes to acquire and demonstrate mathematical understanding. The student is expected to:

1.1E   create and use representations to organize, record, and communicate mathematical ideas;

1.1F   analyze mathematical relationships to connect and communicate mathematical ideas;

1.1G   display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.

# Overview of Module Topics and Lesson Objectives

| TEKS	ELPS		Topics and Objectives	Days
1.7A **1.7B** **1.7C** **1.7D**	1.C 2.E 2.I 3.E 3.G 4.F 4.G 5.B	A	**Standard Length Units**	4
			Lesson 1: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.	
			Lesson 2: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.	
			Lesson 3: Rename and measure with centimeter cubes, using their standard unit name of centimeters.	
			Lesson 4: Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.	
1.3B **1.5D** **1.7A** **1.7B** **1.7C** **1.7D**	1.H 2.C 2.E 2.I 3.E 3.H 4.B 4.G 5.B	B	**Non-Standard and Standard Length Units**	3
			Lesson 5: Measure the same objects from Topic B with different non-standard units simultaneously to see the need to measure with a consistent unit.	
			Lesson 6: Understand the need to use the same units when comparing measurements with others.	
			Lesson 7: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.	
1.3B **1.5D** **1.8A** **1.8B** **1.8C**	1.A 1.H 2.E 2.F 3.F 4.G 5.B	C	**Data Interpretation**	4
			Lessons 8–9: Collect, sort, and organize data; then ask and answer questions about the number of data points.	
			Lessons 10–11: Ask and answer varied word problem types about a data set with three categories.	
			End-of-Module Assessment Task: Topics A–C	2
Total Number of Instructional Days				**13**

Terminology

A Spanish cognate is included when the term has a similar meaning and spelling in English. Not every term in this module has a Spanish cognate.

New or Recently Introduced Terms

- **Bar graph (*Gráfica de barras*)**: a graph that shows the value of each category with bars shaped like rectangles
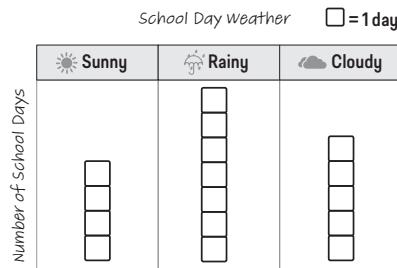

- **Centimeter (*Centímetro*)**: a unit used to measure length
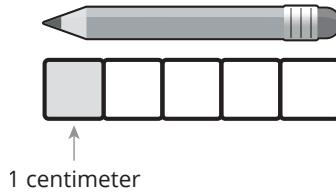
1 centimeter

- **Centimeter cube (*Cubo de un centímetro*)**: a tool used to measure how many centimeters long something is

▪ **Centimeter ruler**: a tool used to measure length using length units of centimeters

▪ **Data (***Datos***)**: collected information

Fruit	Tally Marks	Votes
Apple	||	**2**
Strawberry	||||	**4**
Banana	~~||||~~ |||	**8**

▪ **Endpoint**: the beginning or end of an object
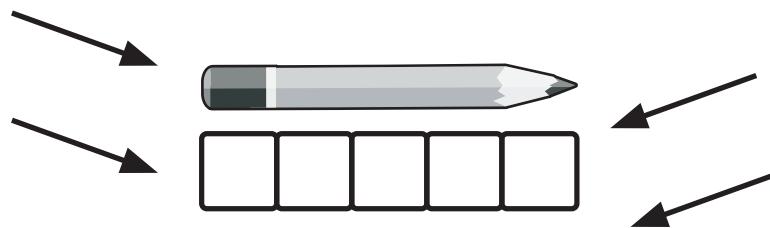
▪ **Graph (***Gráfica***)**: a way to sort and show information

Favorite Things to Make with Snow

Students

Snow angels   Snowman   Snow forts

Snow Day Activities
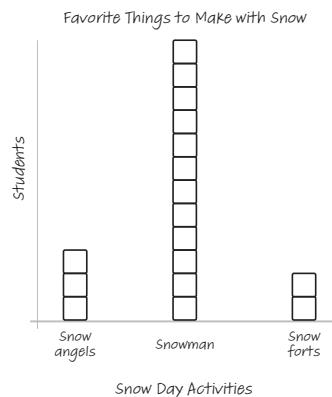
▪ **Length unit**: an equal-sized unit that tells us what we are measuring by

The length unit is 1 centimeter cube.   *The length unit is 1 paperclip.*
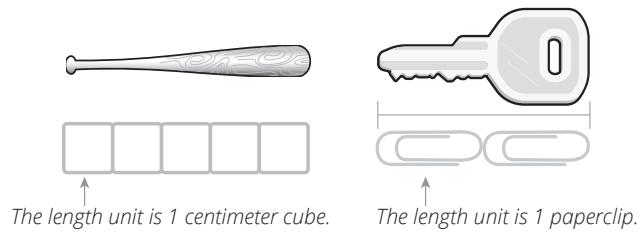
▪ **Poll**: asking people the same questions and keeping count of their answers

▪ **Table**: (*Tabla*): a chart that shows data

Favorite Type of Book

| Fairy Tales | ЖЖ ЖЖ | |
|---|---|
| Science Books | ЖЖ ||| |
| Poetry Books | ЖЖ ЖЖ ЖЖ |

ЖЖ = 5 students

▪ **Tally marks**: lines used to write down the number of things; tallies can be in groups of 5, where the fifth tally always goes across the other four tallies

ЖЖ ЖЖ

Familiar Terms and Symbols[1]

- **Less than**: when comparing two numbers, the smaller number is less

18 is less than 21.
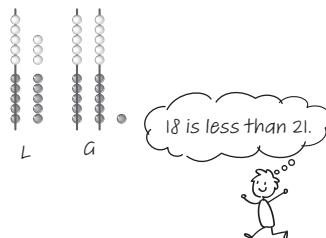
- **Longer than/taller than**: when comparing lengths of objects, an object is longer or taller than another object if it stretches, or extends, out farther

taller than

longer than
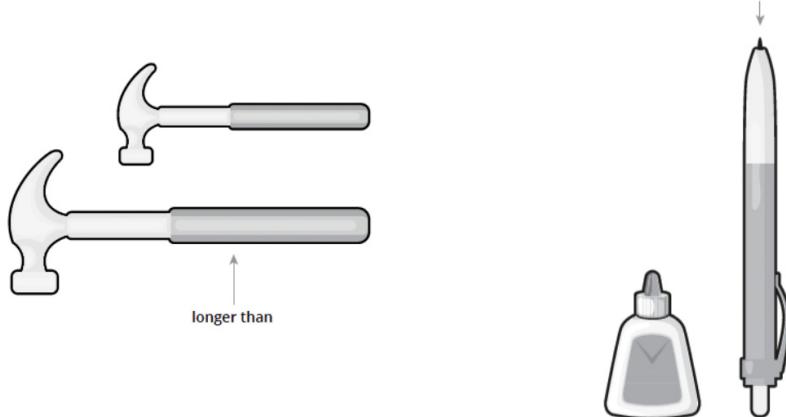
- **More than**: when comparing two numbers, the greater number is more

$$18 < 21$$

21 is more than 18.

- **Picture graph**: a way to sort and show information by using pictures

| Art | P.E. | Music |

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[1]These are terms and symbols students have seen previously.

- **Shorter than**: when comparing lengths of objects, an object is shorter than another object if the other object stretches out farther or higher
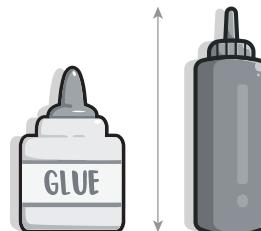
The glue is shorter than the Ketchup.

Suggested Tools and Representations

- Centimeter cubes
- Centimeter rulers (simply for the purpose of naming the centimeter)
- Non-standard units (toothpicks, small and large paper clips)
- String lengths of about 25 centimeters
- Tally marks

1 GRADE **Math Instructional Materials**

Topic A
Standard Length Units

1.7A, 1.7B, 1.7C, 1.7D

Focus Standards:	1.7A	Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.
	1.7B	Illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other.
	1.7C	Measure the same object/distance with units of two different lengths and describe how and why the measurements differ.
	1.7D	Describe a length to the nearest whole unit using a number and a unit.
Instructional Days:	4	
Coherence -Links from:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10
-Links to:	G2–M2	Addition and Subtraction of Length Units
	G2–M7	Problem Solving with Length, Money, and Data

Topic A begins with Lesson 1 by extending students' Kindergarten experiences with measurement tools to reinforce the continuous nature of linear measurement (**1.7A**). Topic A then adds a new level of precision to measurement by introducing the idea of a length unit. In Lesson 2, centimeter cubes are laid alongside the length of objects as students learn that the total number of cubes laid end to end with no gaps or overlaps is the length measure of that object. For example, the length of the crayon can now be described not only as shorter than the paper strip, but more precisely as 9 centimeter cubes (**1.7A, 1.7B, 1.7C, 1.7D**).

In Lesson 3, students lay those same centimeter cubes alongside a ruler, recognizing the meaning of the numbers on the ruler as describing the number of centimeter length units up to that number. The centimeter then connects students to their world as they come to realize that the centimeter unit is used by first-grade students in Brazil, by the restaurant owner across the street, and even by their families. Students explore the question, "Why would we use a standard unit to measure?" As the use of rulers to measure is a Grade 2 standard, students in Grade 1 simply *rename* their centimeter cube as a centimeter as they continue to use the cubes to measure objects. The Geometric Measurement Progressions Document suggests that students engage in standard unit measurement in order to develop a solid understanding of why and how to measure, rather than measuring using a plethora of nonstandard measurement units.

The topic closes with Lesson 4, where students measure and compare sets of three items using centimeter cubes (**1.7A**): "The pencil measures 10 centimeters. The crayon measures 6 centimeters. The book measures

20 centimeters. The order from shortest to longest is the crayon, the pencil, and the book. The book is longer than the pencil, and the pencil is longer than the crayon, so the book is longer than the crayon." Students finally solve *compare with difference unknown* word problems, determining how much longer a given object is than another.

**A Teaching Sequence Toward Proficiency with Standard Length Units**

Objective 1: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.
(Lesson 1)

Objective 2: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.
(Lesson 2)

Objective 3: Rename and measure with centimeter cubes, using their standard unit name of centimeters.
(Lesson 3)

Objective 4: Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.
(Lesson 4)

Lesson 1

Objective: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

Suggested Lesson Structure

■ Fluency Practice   (10 minutes)

■ Application Problem   (5 minutes)

■ Concept Development   (35 minutes)

■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**
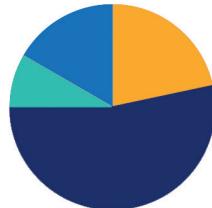
NOTE ON FLUENCY

Throughout the module, teachers are encouraged to make appropriate adjustments to fluency activities to account for varying student needs.

Fluency Practice (10 minutes)

- 1, 2, and 3 Less **1.2D, 1.3D**   (3 minutes)
- Happy Counting by Threes **1.3D**   (2 minutes)
- 5-Group Flash: Take from Ten **1.3D, 1.3E**   (5 minutes)

1, 2, and 3 Less (3 minutes)

Note: This activity provides a review of subtracting 1, 2, and 3 from a given number. This supports fluency development of decomposing numbers within 10.

T: On my signal, say the number that is 1 less.

T: 3.

S: 2.

Continue with all numbers within 10. Then repeat with 2 less and 3 less.

Happy Counting by Threes (2 minutes)

Note: This activity provides a review of counting on and back and allows students to maintain fluency with adding and subtracting 3.

Repeat the Happy Counting activity from Module 2, Lesson 4, counting by threes from 0 to 12 and back.

5-Group Flash: Take from Ten (5 minutes)

Materials: (T) 5-group row cards (Fluency Template 1) (S) Personal white board with 5-group row insert (Fluency Template 2)

Note: This activity provides a review of partners to ten and allows students to maintain fluency with the take from ten strategy.

Flash a card (e.g., 9) for one to three seconds. Students cross off the flashed number from the 5-group row insert and write the corresponding subtraction sentence. Repeat the process until all numbers have been flashed.

Application Problem (5 minutes)

Materials: (T) Ant and elephant image (Template 3)

Show students the image of the ant and the elephant. Use the following questions and prompts to generate a discussion that includes measurement words and phrases such as *longer than*, *shorter than*, and *taller than*.

- What words can you use to describe, or to talk about, the ant? The elephant?
- What words can you use to compare the size of the elephant to the size of the ant?
- Can you think of an animal that is taller than an ant and shorter than an elephant?
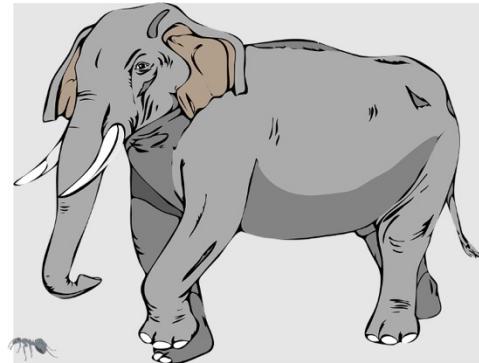
Note: This Application Problem serves as a review of vocabulary students use in Kindergarten to compare length. Students will use this language during today's Concept Development.

Concept Development (35 minutes)

Materials: (T) gift box, various measuring tools such as centimeter cubes, paper clips, 4-6 meter sticks, meter tapes, a ball of yarn or string, scissors, masking tape (S) 10-inch piece of yarn

Note: Consider borrowing extra measuring tools from other classrooms for Part 2 of the Concept Development. Prepare for Part 2 by pre-measuring your walking path scenario. It should be about 15-20 feet long and change direction.

Part 1: Use String to Explore Continuous Measurement

Invite students to sit in a circle. Show them a gift box.

- T: Yesterday, I bought a gift for a friend. I'd like to decorate my gift with a ribbon. I'm not sure how much ribbon I will need. (Display and name various measuring tools. Show that the meter tape is a flexible meter stick.) Which of these tools would you use to measure the length, or distance, around the box, and why?

S: The cubes and paper clips are too small. They won't go around the box easily. → I would use a meter tape, because it will bend around the sides. I wouldn't use a long stick. It won't bend. → The string is best, because you can wrap it around the box like a ribbon!

T: There are many tools we can use to measure the length of an object or the distance around an object.

T: (Hold up a ball of yarn.) How could I use this yarn to find the length, or distance, around my gift box?

S: You can stretch it around the box. → You can wrap it around the box and then cut it.

T: Let's try! I'll start by placing the end of my yarn on one end of my gift box. (Point to a starting edge.) Now, let's measure the top of my box. (Unroll the yarn slightly and pause.) Uh-oh, my yarn isn't long enough. What should I do?

S: Get another piece of yarn and put it where that piece ends. → Unroll the yarn to keep measuring.

T: I'm not at the end of my yarn yet. I can unroll some more yarn. (Demonstrate.) Now I've measured the length of the top of my gift. Am I finished? Turn and talk to a partner.

S: No, you have to go around each side and then make a bow! → You have to keep unrolling the yarn until you get around the whole box!

T: That's right. When I measure the distance around the box, I have to start at one **endpoint** and keep going without any gaps or overlaps to the other endpoint. I want to measure the entire length. (Unroll more yarn to finish measuring, pinch, and cut.) I'll cut the yarn to show where we stopped measuring.

T: (Hold up the piece of yarn.) If I want to make a bow, do you think my ribbon should be shorter than, longer than, or about the same length as this piece of yarn? Why?

S: I think the ribbon should be longer than the piece of yarn because it takes more ribbon to tie a bow. → We only measured the length around the box. We didn't think about the bow, too.
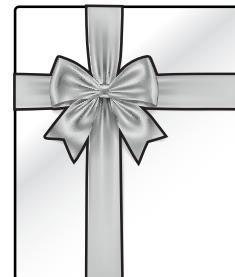
NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Encourage students to reason about which measuring tool would be best to measure objects that are very short, such as a ladybug, or very long, such as a train. Consider selecting objects that are personal, familiar, or locally relevant.

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NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:

For students needing support with language production, including some emergent bilingual students, provide the following sentence frames:

- ____should be longer than ____.
- ____should be shorter than ____.
- ____should be about the same length as ____.

Lesson 1: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

Part 2: Continuous Measurement along a Walking Path

Have students return to their seats. Present a distance scenario such as the following.

T: I would like to make a walking path to measure the distance from my desk to the door of our classroom. (Then again, name various measuring tools.) Think-pair-share: Which of these tools would you use to measure a path from my desk to the door, and why?

S: I would use meter sticks because they are long. → Paper clips are too little. It would take forever to line them up. → I would use the meter tape because it is wavy. → I would use the ball of yarn again. We could make any path we want and keep unrolling it.

T: There are many tools we can use to measure the distance between two endpoints. Who would like to mark the endpoints with masking tape? (Invite a student to put a piece of masking tape on the floor to mark the end of the desk and another student to put a piece of tape on the floor in front of the door.)

T: (Hold up the ball of yarn.) What should we do first to find the length or distance of the path from my desk to the door?

S: First, you can put the end of the yarn on the piece of tape at the desk.

T: Yes, first we have to line up the end of the yarn with one of the endpoints. (Demonstrate.) What should we do next?

S: Unroll the yarn to make a path between our desks. Then, turn and keep unrolling the yarn until we get to the door.

T: (Invite a student to unroll the yarn in a straight path that goes between the desks and then turns and goes to the door.) Yes, we will keep measuring until we get to the other endpoint, marked by the piece of tape at the door.

T: (Pinch, cut, and hold up the piece of yarn.) This piece of yarn shows us the length of our path. Were there any breaks when we measured with the yarn?

S: No.

T: Right! When we measure the distance between two endpoints, we have to make sure there are no breaks or overlaps in our measuring tools.

T: Let's try measuring the same path with a meter stick. (Demonstrate.) I will line up the end of my meter stick with the endpoint of my path. Hmm … It looks like our path is longer than 1 meter stick. What should we do? Turn and talk to a partner.

S: Put down more meter sticks. → Put another meter stick at the end of the first one. → You have to make sure they are touching so there are no spaces on the path.

T: When we measure length, we cannot have any gaps. (Overlap 2 meter sticks.) We also cannot have any overlaps.
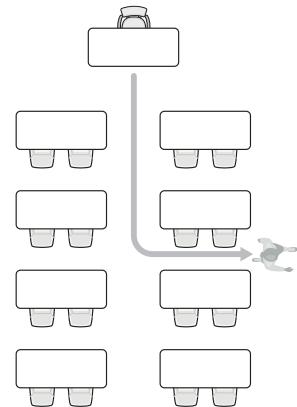
Continue laying meter sticks along the path, end to end. If the path changes direction before the end of the meter stick, consider using meter tape instead. Compare the length of the meter sticks and yarn.

T: Our path is about 5 meter sticks long. Should the length of our yarn be longer than, shorter than, or about the same length as 5 meter sticks? How do you know?

S: The length of the yarn should be the about the same length as 5 meter sticks because we measured the same path. → I think the yarn should be a little bit longer, because the meter stick didn't line up perfectly at the end.

T: How can we check with our tools to see if our measurements are about the same?

S: We can put the yarn next to the 5 meter sticks.

T: (Demonstrate holding the yarn tight and aligning it to the endpoints of the meter sticks.)

Give each student a piece of yarn to use to complete the Problem Set.

> **TEACHER NOTE**
>
> Explain what to do when you don't have enough of a particular tool to measure the length of an object. For example, students may use 4 meter sticks and part of another one to measure the distance from a desk to a window. Sometimes a measurement falls between two numbers. When this happens, we can choose the closer number and use the word about when saying the measurement (e.g., "The path is about 4 meter sticks long.")

Problem Set (10 minutes)

Students will work in pairs to complete the Problem Set. Partner A will use their yarn to measure the items labelled (a) and Partner B will use their yarn to measure the items labelled (b). They can then compare the lengths to answer the questions.

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

Student Debrief (10 minutes)

Lesson Objective: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

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

Invite students to review their solutions for the Problem Set. They should check their work by comparing their answers with a partner's. Look for misconceptions or misunderstandings that can be addressed in the Student Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- When we measure length or distance, what must we do to measure correctly?
- What could you do if you ran out of yarn while measuring?
- For problem 1 how did you compare the length of path a to the length of path b?
- For problem 2, how did you know where to start and stop measuring the path around each shape?

Exit Ticket (3 minutes)

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

Have students save their piece of yarn from today's lesson to use on the Homework. Consider attaching it to their paper.

Name Maria   Date

1. With your partner, use yarn to measure each path. Partner A measures path a. Partner B measures path b.

   a.

   b.

   Which path is longer? a (b)   Which path is shorter? (a) b

2. With your partner, use yarn to measure the path around each shape. Partner A measures shape a. Partner B measures shape b.

   a.

   b.

   Which path is longer? (a) b   Which path is shorter? a (b)

3. With your partner, use yarn to measure each path. Partner A measures the path from the house to the post office. Partner B measures the path from the house to the store.

   Which path is longer? (house to post office)   house to store

   Which path is shorter? house to post office   (house to store)

**Module 3:**   Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

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Name _____   Date _____

1. With your partner, use yarn to measure each path.
   Partner A measures path a. Partner B measures path b.

a. ————————————————————————

b. ～～～

    Which path is longer?   a   b   Which path is shorter?   a   b

2. With your partner, use yarn to measure the path around each shape
   Partner A measures shape a. Partner B measures shape b.

   a.   b.

    Which path is longer?   a   b   Which path is shorter?   a   b

3.   With your partner, use yarn to measure each path.
     Partner A measures the path from the house to the post office.
     Partner B measures the path from the house to the store.

Which path is longer?   house to post office   house to store

Which path is shorter?   house to post office   house to store

Lesson 1:   Use measuring tools to measure the length of objects to reinforce the
continuous nature of linear measurement.

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Name _____   Date _____

Circle the path that has been measured correctly with the string. Tell how you know.

_____

_____

_____

Lesson 1:   Use measuring tools to measure the length of objects to reinforce the
continuous nature of linear measurement.
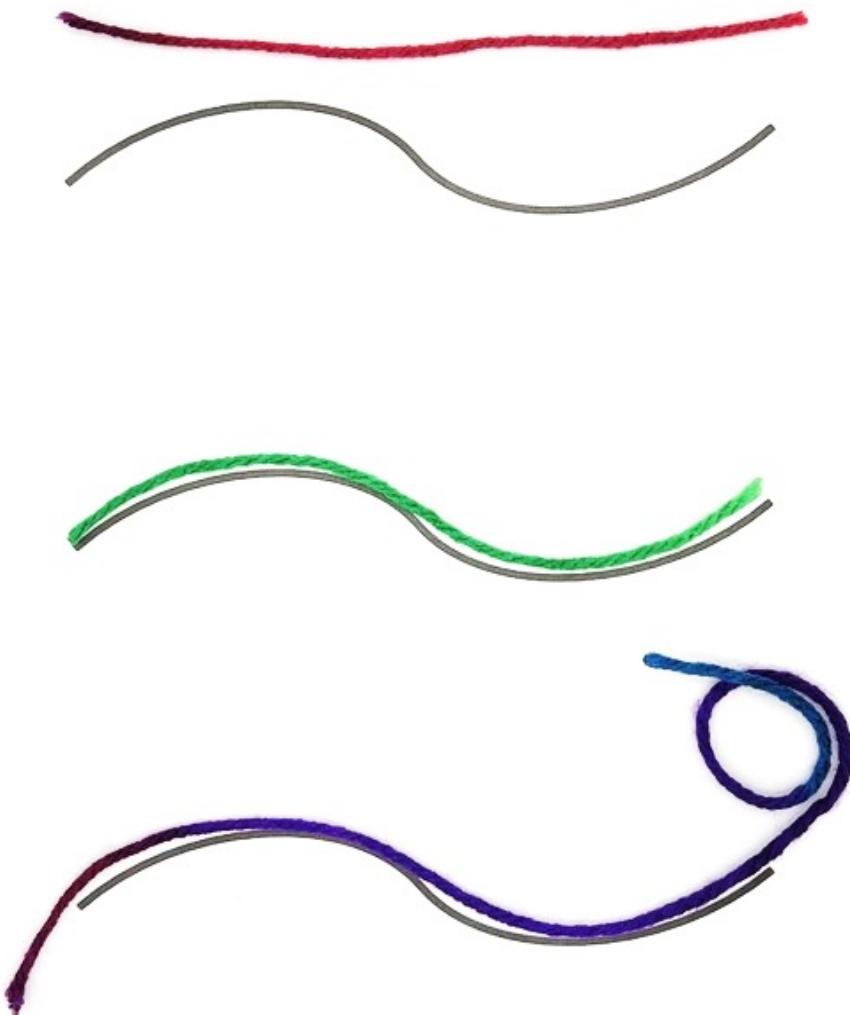
Name _____ Date _____

Use your piece of yarn to measure path a.
Compare the length of path a to the length of path b.

1.

a.

b.
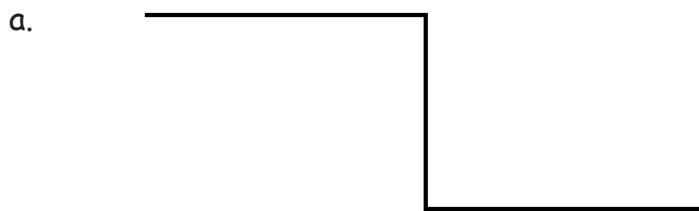
Which path is longer?   a   b   Which path is shorter?   a   b

2.

a.

b.

Which path is longer?   a   b   Which path is shorter?   a   b

3.   a. The path around the pond:

        b.
   _____
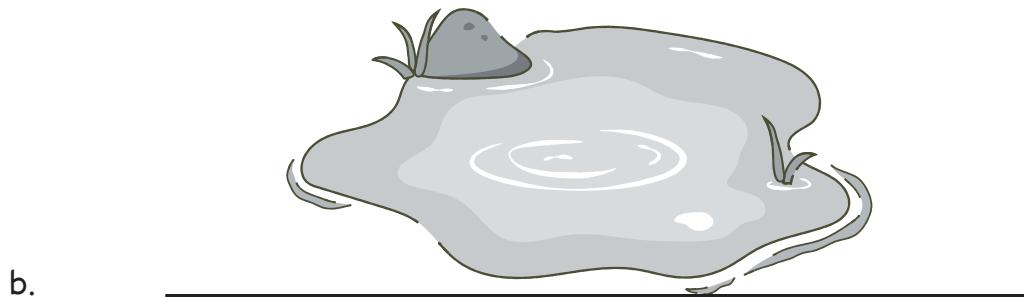
        Which path is longer?   a   b   Which path is shorter?   a   b

4.   Chris measures the length of a train with yarn.

    Did Chris measure correctly? Tell how you know.
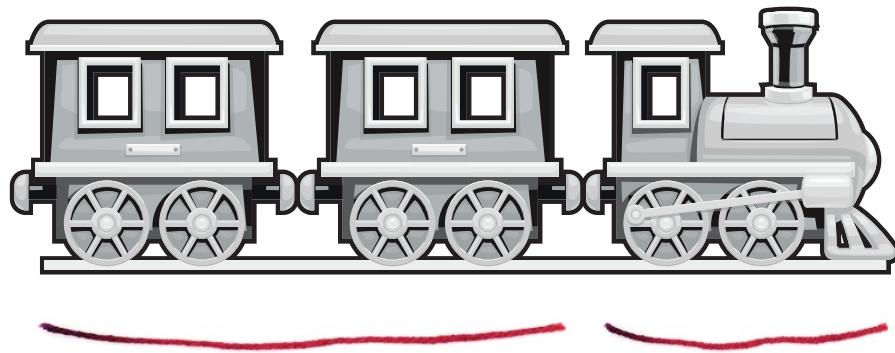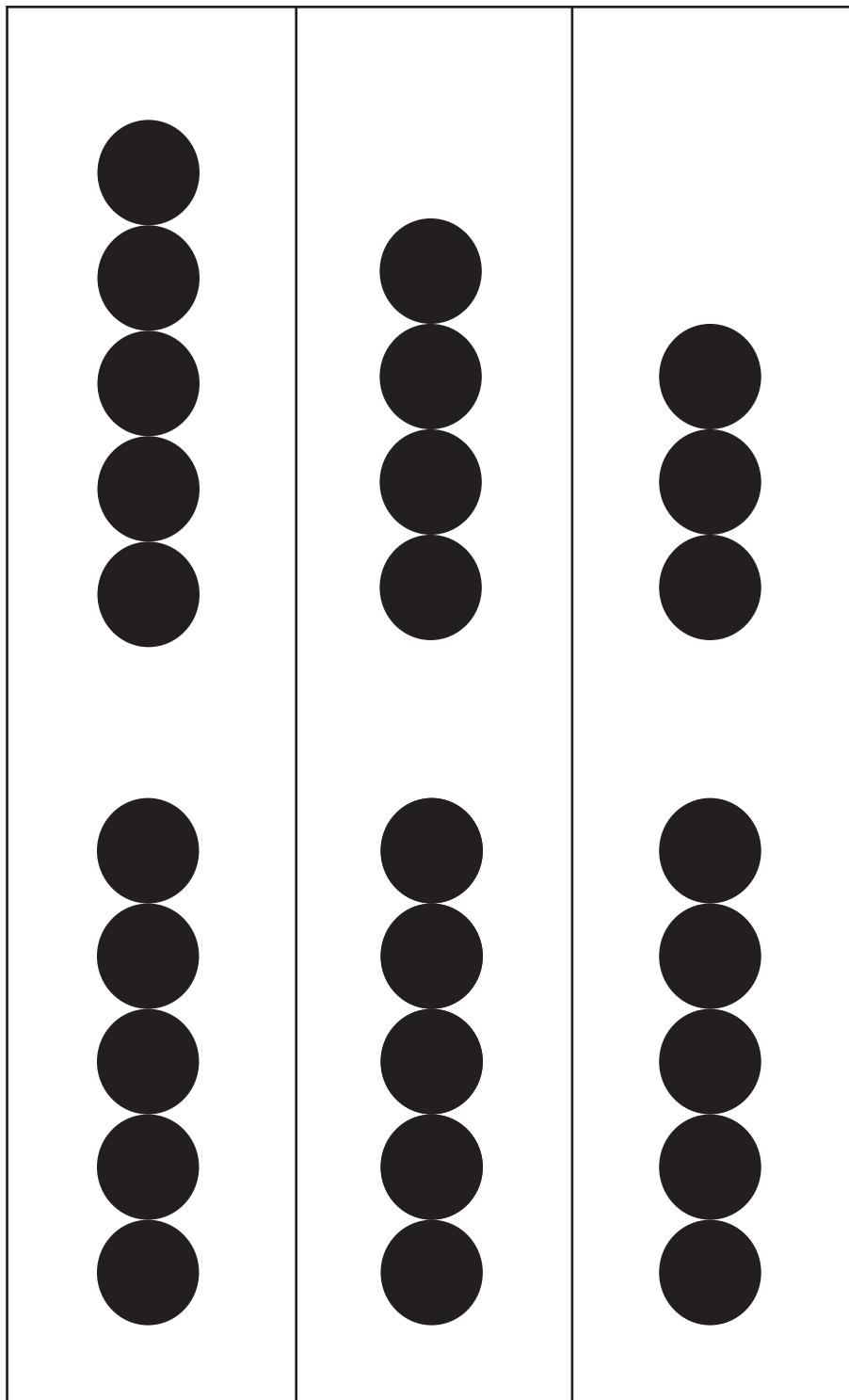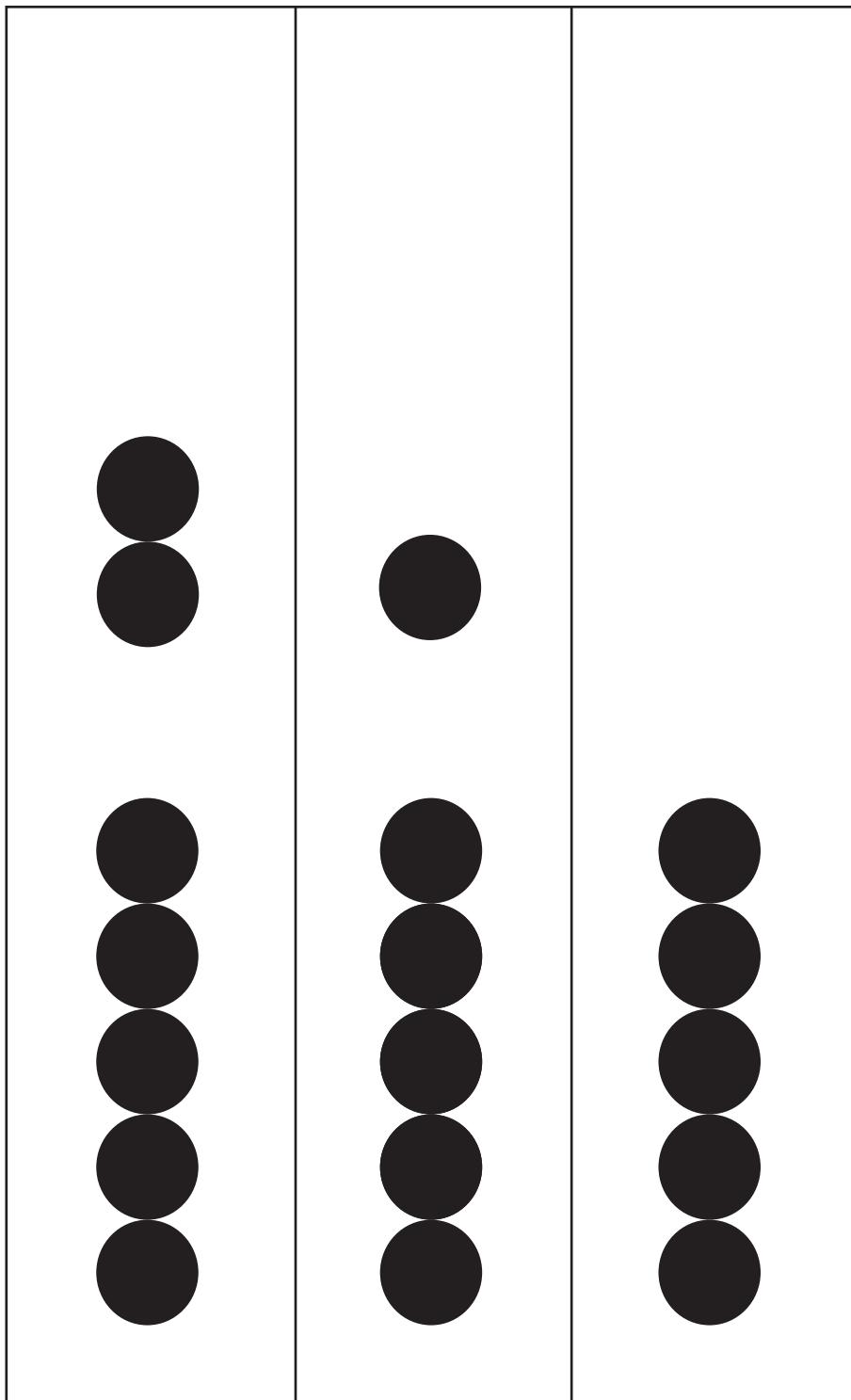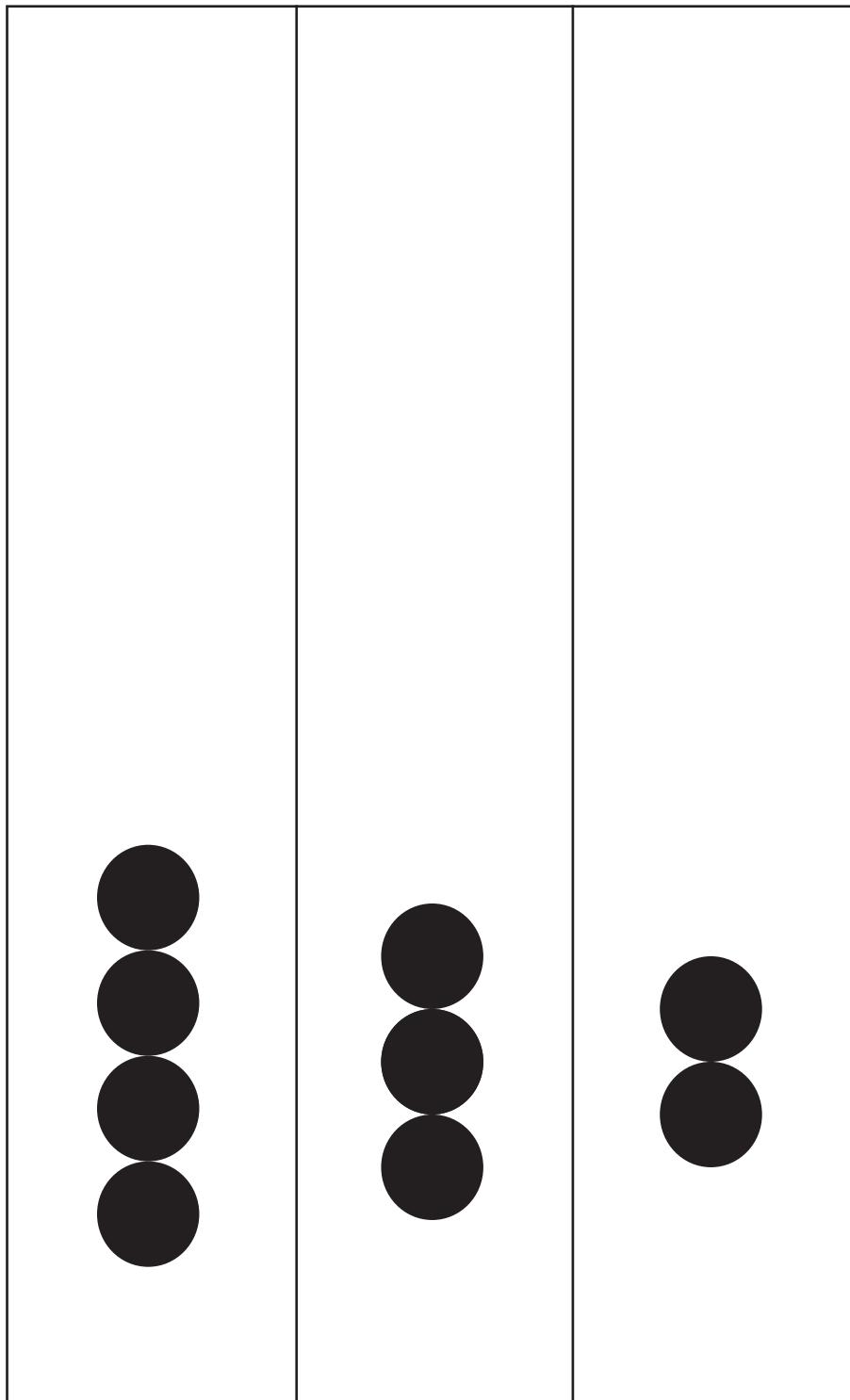
Lesson 1:   Use measuring tools to measure the length of objects to reinforce the
        continuous nature of linear measurement.

Lesson 1: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

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Lesson 1:   Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

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Lesson 1:   Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

OOOOO OOOOO
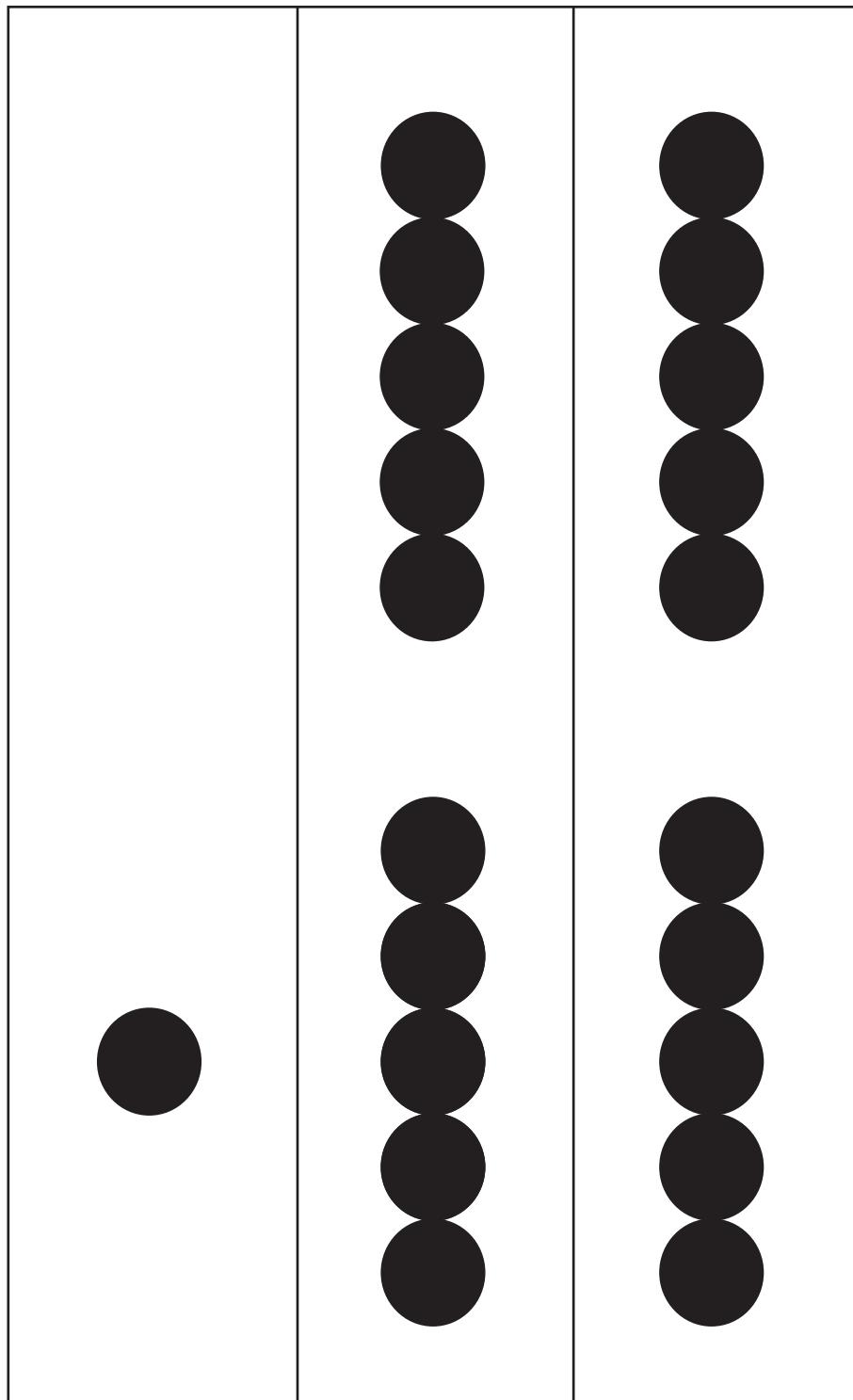
5-group row insert

Lesson 1:   Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

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Image of an ant and an elephant

Lesson 1: Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.

Lesson 2

Objective: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

Suggested Lesson Structure

■ Fluency Practice   (13 minutes)

■ Application Problem   (5 minutes)

■ Concept Development   (32 minutes)

■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**
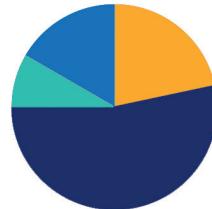
Fluency Practice (13 minutes)

▪ Race and Roll Addition **1.3D, 1.5G**   (4 minutes)

▪ Speed Writing by Twos **1.5B**   (3 minutes)

▪ Subtraction Within 20 **1.3D, 1.3E, 1.3F, 1.5G**   (6 minutes)

Race and Roll Addition (4 minutes)

Materials: (S) 1 die per pair

Note: This fluency activity reviews the grade level standard of adding within 20.

Partners start at 0. Partners take turns rolling a die and then saying a number sentence by adding the number rolled to the total. (For example, Partner A rolls 6 and says, "0 + 6 = 6." Partner B rolls 3 and says, "6 + 3 = 9.") They continue rapidly rolling and saying number sentences until they get to 20, without going over. Partners stand when they reach 20. (For example, if partners are at 18 and roll 5, they take turns rolling until one of them rolls 2 or 1 two times. Then, they both stand.)

Speed Writing by Twos (3 minutes)

Materials: (T) Timer (S) Personal white board

Note: This fluency activity provides students practice with writing numbers while reinforcing adding 2.

Time students as they count by twos on their boards from 0 to 40 as fast as they can. Students stand and hold up their boards when they get to 40. To add excitement to the game, give the class a point each time a student gets to 40, and see how many points the class can earn in two minutes.

Record the points to use as a motivator the next time students speed write by twos.

Module 3:   Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

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Subtraction Within 20 (6 minutes)

Materials: (T) Hide Zero® cards (Lesson 11 Fluency Template 1) enlarged (S) Personal white board

Note: This review fluency activity helps strengthen students' understanding of the take from ten and take from the ones subtraction strategies as well as their ability to recognize appropriate strategies based on problem types.

T: (Show 14 with Hide Zero cards.) How can I take 14 apart to help me subtract?

S: 10 and 4.

T: I want to subtract 2 from 14. Write a number sentence to show whether I should subtract 2 from the 4 or the 10.

S: (Write $4 - 2 = 2$.)

T: Why wouldn't I take from my 10?

S: You don't need to because you have enough ones.

T: Yes! It's much more efficient to just subtract from my ones! Since $4 - 2 = 2$, $14 - 2$ is what? Write the subtraction sentence.

S: (Write $14 - 2 = 12$.)

T: (Replace the 4 Hide Zero card with a 2.) Yes!

Repeat with $14 - 5$, eliciting that students need to take from ten because there are not enough ones. Repeat with similar problems.

Application Problem (5 minutes)

Jim wants to measure the length of a school bus. What measuring tool should Jim use? Why?

Note: This application problem reinforces the need to choose the right measuring tool to measure. Students should recognize that it would take too long to measure an entire school bus with centimeter cubes, and the larger meter stick would be a better choice. Students may also have a valid argument for using the string. Validate all reasonable responses.

string   meter stick   centimeter cube
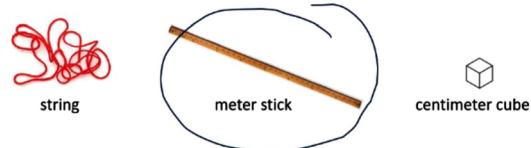
Jim should use the meter stick. The bus is really big, so he needs the longest tool.

Lesson 2:   Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

Concept Development (32 minutes)

Materials: (T) Projector, new crayon (9 cm), unsharpened pencil (19 cm), small glue stick (8 cm), dry erase marker (12 cm), centimeter cubes (S) Bag with 20 centimeter cubes; bag with a new crayon, unsharpened pencil, small glue stick, dry erase marker, jumbo craft stick (15 cm), and small paper clip (3 cm); measurement recording sheet (Template)

Note: Student bags contain items that are used throughout Topic A, although not all items in the bag are used during today's lesson. Collect the bags at the end of the lesson, and keep them in a safe place for future use. Also, collect the bags with centimeter cubes. The centimeter cubes are made available for students to use in completing homework for today's lesson and for Lessons 3 and 4.

Have students sit in the meeting area in a semicircle.

T: (Hold up a new crayon.) How can we find out the length of this crayon? Turn and talk to your partner.

S: Use a string. → Use a ruler.

T: (Project centimeter cubes lined up in a column.) Let's find out how long this crayon is using these **centimeter cubes**. What do you notice about the centimeter cubes?

S: They are all exactly the same size. → They have the same length.

T: Since they have the same length, we can figure out how many centimeter cubes long this crayon is. Count with me as I lay down each centimeter cube to match the length of the crayon. (Lay out the first centimeter cube without aligning it to the crayon's endpoint.)

T/S: 1 centimeter cube.

T: Am I off to a good start?

S: No! You have to line up the endpoints. The edge of the centimeter cube is not starting at the same place as the end of the crayon.

T: You are right! Who can come and start us off on the right foot?

S: (Aligns endpoints.) 1 centimeter cube!

T: Now that our endpoints line up, I can continue to see how many centimeter cubes long this crayon is. (Lay down 3 more centimeter cubes correctly.)

T/S: 2 centimeter cubes! 3 centimeter cubes! 4 centimeter cubes!

T: (Partly overlap the rest of the centimeter cubes by creating an uneven, almost stacked look as pictured to the right. Continue adding cubes in this way until there are 11 cubes, with the last cube aligning with the end of the crayon.)

T/S: 5 centimeter cubes, 6 centimeter cubes, ..., 11 centimeter cubes!

T: Great. The end of this eleventh centimeter cube lines up with the end of the crayon. So, the crayon is as long as 11 centimeter cubes. Do you agree? Turn and talk to your partner.

S: The centimeter cubes were not laid out correctly. Some parts of the centimeter cubes are under others. Some of them overlap!

T: You are right. That is not an accurate way to measure this crayon. Let me fix it. (Fix some, but leave a gap between two centimeter cubes.) Okay. So, there are no overlaps. Is this correct?

S: No. There's a space between the centimeter cubes. That's not an accurate way to measure.
     We can't have any spaces between the centimeter cubes.

T: You are right! The crayon isn't broken with a space in the middle, so the centimeter cubes have to be all connected, without overlaps or gaps. Who would like to come up and fix the centimeter cubes? (Choose a student.)

S: (Lays out 9 centimeter cubes correctly.)

T: Are the centimeter cubes laid out correctly? Are we ready to count and find out how many centimeter cubes long this crayon is?

S: Yes! (Count as teacher points to each centimeter cube.)
     1 centimeter cube, 2 centimeter cubes, ...,
     9 centimeter cubes!

T: How many centimeter cubes long is the crayon?

S: 9 centimeter cubes long!

T: Every centimeter cube is exactly the same length, so we can use them as **length units**. Let's try measuring the pencil with our length units. (Hold up the pencil and the crayon.) What is our length unit called?

S: A centimeter cube.

T: Compared to the crayon, do you think it will take more or fewer of these length units to measure the pencil? Turn and talk to your partner.

S: The pencil will need more centimeter cubes because it is longer than the crayon.

> **A NOTE ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> The abstract term *about* may be challenging for students, including some emergent bilingual students, to understand. While teaching the lesson and using the word *about,* show a visual representation of the objects whenever possible.

Distribute the bags of measuring materials, locate the recording sheets, and have students practice measuring and recording the length of each object from the bag. Students work with their partners as they check each other's work for accuracy. Circulate to provide support as needed. If time allows, choose other objects to measure. Long objects can be measured by combining bags of centimeter cubes.

Note: Use the term *about* to describe the length of an object that is not exactly a certain number of centimeter cubes long. For example, if the pencil is closer to 4 centimeter cubes long than to 5, say it is *about* 4 centimeter cubes long.

Problem Set (10 minutes)

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

For this Problem Set, all objects are measured horizontally unless otherwise noted by a vertical line next to the object.

Student Debrief (10 minutes)

Lesson Objective: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- A **length unit** is what we use to measure how long something is. When we measure, we have to be careful that all of the length units we're using are the same size. What length unit did we measure with today? (**Centimeter cubes.**)

- How is measuring with our new length unit different from measuring with a string, as we did in the last lesson?

- What are the ways in which we need to use the centimeter cubes to accurately measure the length of an object? Explain why these are important.

- Look at Problem 10. What mistake might someone make in answering this question?

Name ___Maria_____   Date _____

Measure the length of each picture with your cubes. Complete the statements below.

1. The pencil is __3__ centimeter cubes long.

2. The pan is __5__ centimeter cubes long.

3. The shoe is __4__ centimeter cubes long.

4. The bottle is __5__ centimeter cubes long.

5. The paintbrush is __4__ centimeter cubes long.

6. The bag is __4__ centimeter cubes long.
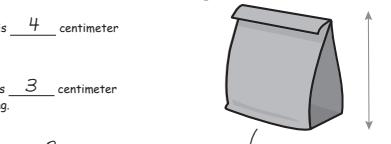
7. The ant is __3__ centimeter cubes long.

8. The cupcake is __2__ centimeter cubes long.

9. The cow sticker is __6__ centimeter cubes long.
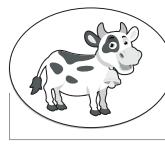
10. The vase is __6__ centimeter cubes long.
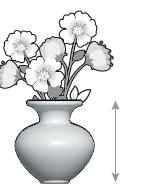
11. Circle the picture that shows the correct way to measure.

3 centimeter cubes   5 centimeter cubes
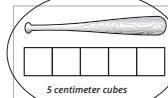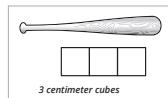
12. How would you fix the picture that shows an incorrect measurement?

    I have to make shor the
    endpoints line up.

Module 3: Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

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- Look at Problem 11. How would you fix the example showing the incorrect way of measuring? Use your own centimeter cubes to correctly measure the length of the smaller bat.
- Can you use the word *tall* to describe the length of an object? Which objects in the Problem Set could be described as being a certain number of centimeter cubes tall?
- Look at your Application Problem. What was Joe using as his tool to compare lengths? Use your hands to show me the length you imagined for his string. Explain your thinking.

Note: Be sure to make the bag of centimeter cubes available for students to complete their homework.

Exit Ticket (3 minutes)

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

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                          length units to measure with no gaps or overlaps.

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Name _____　　Date _____

Measure the length of each picture with your cubes. Complete the statements below.

1. The pencil is _____ centimeter cubes long.

2. The pan is _____ centimeter cubes long.

3. The shoe is _____ centimeter cubes long.

4. The bottle is _____ centimeter cubes long.

5. The paintbrush is _____ centimeter cubes long.

6. The bag is _____ centimeter cubes long.
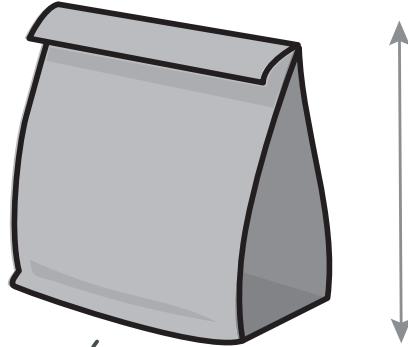
7. The ant is _____ centimeter cubes long.
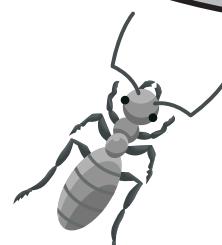
8. The cupcake is _____ centimeter cubes long.

9.
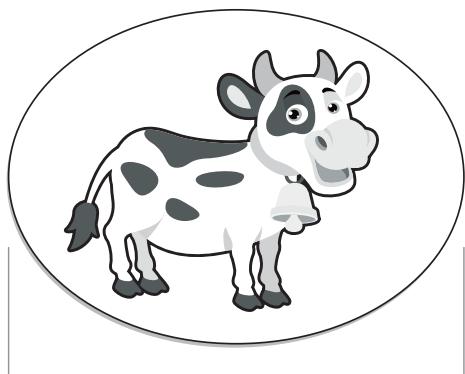
The cow sticker is _____ centimeter cubes long.
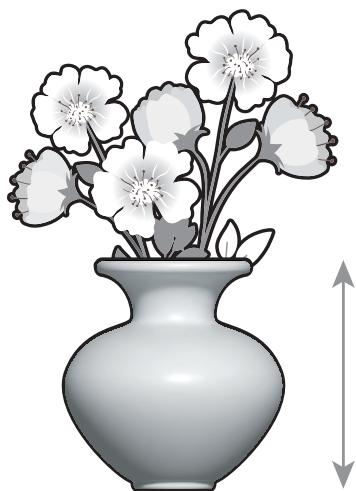
10.

The vase is _____ centimeter cubes long.

11. Circle the picture that shows the correct way to measure.

3 centimeter cubes   *5 centimeter cubes*

12. How would you fix the picture that shows an incorrect measurement?

_____

_____

Lesson 2:   Express the length of an object using centimeter cubes as
length units to measure with no gaps or overlaps.
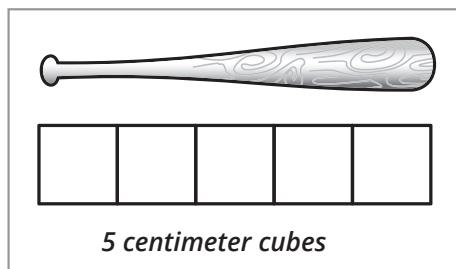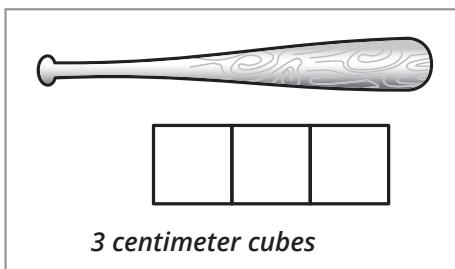
Name _____   Date _____

1.
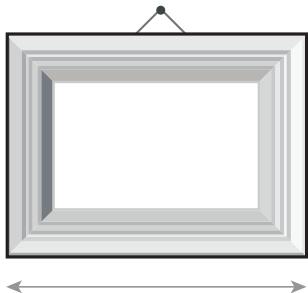
The picture frame is about _____ centimeter cubes long.

2.

The boy's *crutch* is about _____ centimeter cubes long.

OER

Module 3:   Express the length of an object using centimeter cubes as
length units to measure with no gaps or overlaps.

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Name _____   Date _____

Measure the length of each picture with your cubes. Complete the statements below.

1. The lollipop is _____ centimeter cubes long.
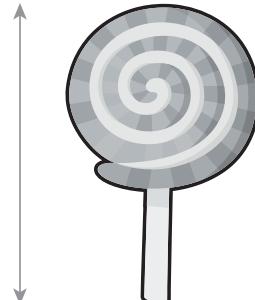
2. The stamp is _____ centimeter cubes long.

03 **NATURE** FLOWER
STAMP 2024

3. The purse is _____ centimeter cubes long.

4. The candle is _____ centimeter cubes long.

Lesson 2:   Express the length of an object using centimeter cubes as length units to measure with no gaps or overlaps.

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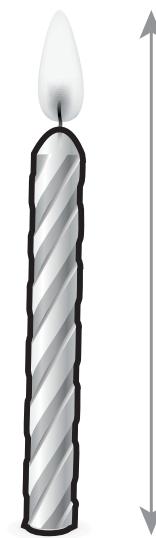
5. The bow is _____ centimeter cubes long.

6. The cookie is _____ centimeter cubes long.
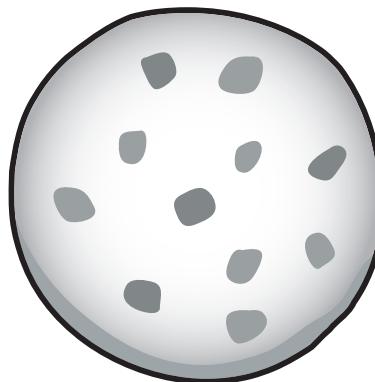
7. The mug is about _____ centimeter cubes long.
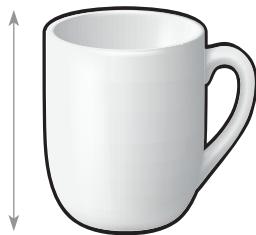
8. The ketchup is about _____ centimeter cubes long.
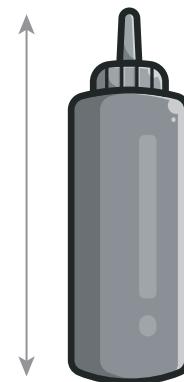
9. The envelope is about _____ centimeter cubes long.

10. Circle the picture that shows the correct way to measure.

A

3 centimeter cubes

D

B

4 centimeter cubes

C

4 centimeter cubes
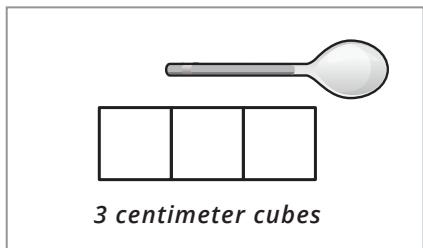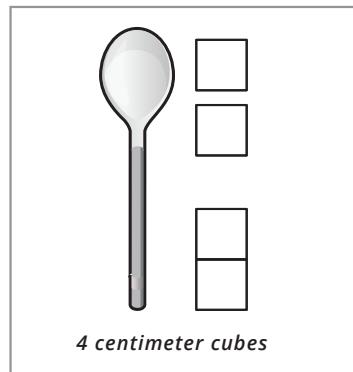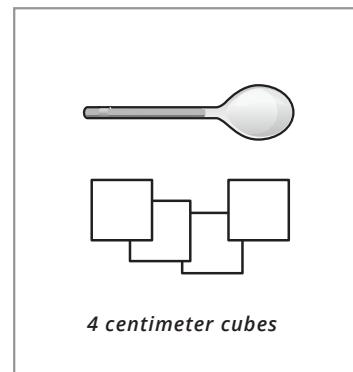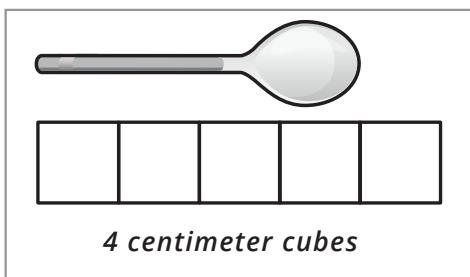
4 centimeter cubes

11. Explain what is wrong with the measurements for the pictures you did NOT circle.

_____

_____

_____

Lesson 2:　　Express the length of an object using centimeter cubes as
length units to measure with no gaps or overlaps.

Name _____   Date _____

Classroom Objects	Length Using Centimeter Cubes
glue stick	_____ centimeter cubes long
dry erase marker	_____ centimeter cubes long
craft stick	_____ centimeter cubes long
paper clip	_____ centimeter cubes long
	_____ centimeter cubes long
	_____ centimeter cubes long
	_____ centimeter cubes long

measurement recording sheet

Lesson 3

Objective: Rename and measure with centimeter cubes, using their standard unit name of centimeters.

Suggested Lesson Structure

- 🟧 Fluency Practice (17 minutes)
- 🟩 Application Problem (5 minutes)
- ⬛ Concept Development (28 minutes)
- 🟦 Student Debrief (10 minutes)

  Total Time **(60 minutes)**
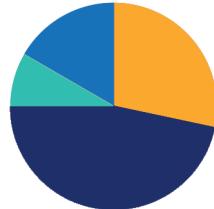
Fluency Practice (17 minutes)

- ▪ Race and Roll Subtraction **1.3D, 1.5G** (4 minutes)
- ▪ Happy Counting **1.5A, 1.5B** (3 minutes)
- ▪ Sprint: Subtraction Within 20 **1.3D, 1.5G** (10 minutes)

Race and Roll Subtraction (4 minutes)

Materials: (S) 1 die per pair

Note: This fluency activity reviews the grade level standard of subtracting within 20.

Partners start at 20. Partners take turns rolling the die and saying a number sentence to subtract the number rolled from the total. (For example, Partner A rolls 3 and says, "20 – 3 = 17." Partner B rolls 2 and says, "17 – 2 = 15.") They continue rapidly rolling and saying number sentences until they reach 0. If they roll a number greater than the number they are subtracting from (minuend), they reroll or forfeit their turn. Partners stand when they reach 0. (For example, if partners are at 1 and roll 4, they would take turns rolling until one of them rolls a 1. They would then say, "1 – 1 = 0," and both partners would stand.) Repeat the game as time permits.

Happy Counting (3 minutes)

Note: Practice with counting forward and backward by tens and ones strengthens students' understanding of place value. Counting by twos and fives builds students' ability to count on or back and strengthens addition and subtraction skills.

Repeat the Happy Counting activity from Module 2, Lesson 4. Choose a counting pattern and range based on the skill level of the class. If students are proficient with counting by ones, twos, fives, and tens up to 40, start at 40, and quickly go up to 80. If they are proficient between 40 and 80, Happy Count between 80 and 120. To reinforce place value understanding, alternate between counting the regular way and the Say Ten way.

Sprint: Subtraction Within 20 (10 minutes)

Materials: (S) Subtraction Within 20 Sprint

Note: This Sprint addresses the Grade 1 standard of subtracting within 20.

Application Problem (5 minutes)

Mai used centimeter cubes to measure the length of her book. She used 8 yellow centimeter cubes and 4 red centimeter cubes. How many centimeter cubes long was her book?

Remind students to use the RDW process. After reading (or listening to) the problem, they must be sure to draw, write a number sentence, and write a statement that answers the question.

Note: This problem uses the context of measurement while enabling students to review their processes for adding single digits with a sum of a teen number. Take note of the strategies students are using independently. Are they making ten first? Are they counting on? Are they counting all after drawing the picture? During the Student Debrief, students have the opportunity to connect, or rename, the length unit of centimeter cube to the more common length unit of centimeter.

4 R

B

8 Y
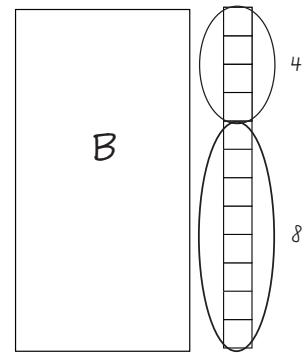
$8 + 4 = 12$
The book is 12 centimeter cubes long.

Concept Development (28 minutes)

Materials: (T) Projector, centimeter cubes, string, scissors, centimeter ruler (S) Per pair: bag with at least 12 centimeter cubes (used in Lesson 2), centimeter ruler, pair of dice

Have students sit in the meeting area in a semicircle.

> T: I need your help solving a problem. My mom is traveling to different countries. She wants to get me bracelets from Korea, Brazil, and France. The problem is she wants to make sure they fit, but the bracelets are over there and my wrist is here! What can she do? Is there any way we can help her? Talk to your partner.

> S: We could measure your wrist with centimeter cubes! → That seems hard though; her wrist isn't straight. → We could measure your wrist with a string then!

> T: I love all of your ideas about the different tools we can use. I knew I could rely on you for some great problem solving! Should we use the string or centimeter cubes first? Why?

> S: The string because it can wrap around your wrist.

> T: (Wrap a string around your wrist.) I'll pretend that the string is the bracelet. I'm going to leave a little room so it's not so tight. (Cut.)

NOTES ON MULTIPLE MEANS OF ENGAGEMENT:

Assign students a measurement discovery buddy to clarify directions and processes. Buddies compare answers to check their work. Consider the needs of your class when pairing students. Some emergent bilingual students may benefit from being paired with a partner who speaks the same native language. This could facilitate discussion and cooperation.

Module 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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T: (Project the string on the board.) How can we figure out how long this string is? Turn and talk to your partner about how we can measure accurately.

S: Use centimeter cubes. → Line up the endpoints. → Don't leave any gaps between the cubes. → Don't overlap the cubes.

T: These are important rules for measuring accurately. Let's count and see how many centimeter cubes long the string is as I lay down each cube.

S: 1 cube, 2 cubes, …, 18 cubes!

T: (Project a centimeter ruler.) Here's a tool that my mom is able to use to measure the length of the bracelet. She said every store, no matter what country she's in, uses the **centimeter ruler** to measure their bracelets. In fact, no matter where you live in the world, people use these tools to measure the length of any items. This tool is called a…?

S: Ruler!

T: When have you seen a ruler used before? Turn and talk to your partner.

S: We used it to draw straight lines in kindergarten. → I used it to learn my counting numbers with my aunt. → My grandpa uses it to measure the picture frames he makes.

T: (Project the centimeter ruler.) What do you notice on the ruler?

S: There are numbers going in order. → There are longer lines next to each number. There are some shorter lines, too.

T: Let's see how the ruler compares to our centimeter cubes that we used to measure my wrist. I'm going to lay these 18 centimeter cubes alongside the ruler. I need to line up the first cube with the endpoint of the ruler. Here's 1 centimeter cube. (Lay down 1 cube.) What do you notice?

S: The other end of the centimeter cube lines up with the 1 on the ruler!

T: When something reaches this line (point to 1 cm mark on the ruler), we say that it is 1 **centimeter** long. So, how long is this centimeter cube?

S: 1 centimeter!

T: (Lay down the second cube.) What do you notice now?

S: The end of the second centimeter cube lines up with the 2 on the ruler!

T: How many centimeters long are these 2 cubes together?

S: 2 centimeters!

T: (Repeat for the third and fourth cubes.) If I lay down the next centimeter cube, with what number will it line up?

S: 5. That's 5 centimeters.

T: (Continue with all the cubes, eliciting responses and checking them by laying down cubes.) How many centimeters long are all of these centimeter cubes?

S: 18 centimeters!

T: When we are measuring with centimeter cubes, we are using the same length unit as the people who use rulers! With this ruler, we are measuring in centimeters. That's the length unit, so we have a special name for this ruler. We call it the **centimeter ruler**. So, did we solve the problem? What should I tell my mom about buying the right length bracelet?

> **A NOTE ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Students may continue to use centimeter cubes if they do not demonstrate an understanding of the relationship between a centimeter and centimeter cubes.

Lesson 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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S: Yes! Tell her to buy bracelets that are 18 centimeters long! She can use the ruler to measure 18 centimeters.

T: Thank you for helping me solve this problem! I will write to her and let her know! From now on, when we measure, we can say that the length of the item is "_____ centimeters" instead of saying "_____ centimeter cubes." Now, it's your turn to determine for sure that 1 centimeter cube is 1 centimeter long, 3 centimeter cubes are 3 centimeters long, and 6 centimeter cubes are…?

S: 6 centimeters long.

Distribute a bag to each pair of students. Have students practice laying down their centimeter cubes alongside the centimeter ruler and renaming *centimeter cubes* as *centimeters* by following these steps:

1. Roll the dice (e.g., 2 and 5).

2. Partner 1 lays down the centimeter cubes alongside the ruler to show the number from the first die (gets to 2 centimeters on the ruler by laying down 2 centimeter cubes). He says, "I measured to 2 centimeters."

3. Partner 2 adds more centimeter cubes alongside the ruler based on the second die (gets to 7 centimeters on the ruler by laying down 5 centimeter cubes). She says, "Now, we measured to 7 centimeters."

4. Say the addition sentence that tells the length of your cubes. (2 centimeters + 5 centimeters = 7 centimeters.)

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> For students who may need assistance lining up and measuring with centimeter cubes, model how to use them one on one, and then help with a few measurements.

Note: If time permits, provide an opportunity for students to work with their partners to measure their own bracelet size or watch size. Students loop string around their wrists, cut it, and use centimeter cubes to determine the length. An RLA connection could include having students write to their families about the size of their wrists, just as the teacher communicated with her family.

Problem Set (10 minutes)

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

Module 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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Student Debrief (10 minutes)

Lesson Objective: Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- What is the new length unit we used to measure length accurately? (**Centimeters.**)

- How can you prove to another first grader that 1 centimeter cube is the same as 1 centimeter?

- How are centimeter cubes similar to and different from the centimeters on a **centimeter ruler**?

- Do you think centimeter rulers in Asia or Europe, or anywhere else, look the same as centimeter rulers here? Explain your thinking.

- Why do you think people all over the world use centimeters as a length unit? Why is it important that we all use the same length unit, like centimeters?

- Look at Problem 2. Explain why your measurements are the same or different.

- How did you solve today's Application Problem? Tell your partner your answer using the new length unit as if we used a ruler to measure the length of Amy's book.

Note: Make the bag of centimeter cubes available for student to use in completing their homework.

Exit Ticket (3 minutes)

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

A

Number Correct:

Name _____   Date _____

*Write the missing number.

1.	17 - 1 = ☐		16.	19 - 9 = ☐	
2.	15 - 1 = ☐		17.	18 - 9 = ☐	
3.	19 - 1 = ☐		18.	11 - 9 = ☐	
4.	15 - 2 = ☐		19.	16 - 5 = ☐	
5.	17 - 2 = ☐		20.	15 - 5 = ☐	
6.	18 - 2 = ☐		21.	14 - 5 = ☐	
7.	18 - 3 = ☐		22.	12 - 5 = ☐	
8.	18 - 5 = ☐		23.	12 - 6 = ☐	
9.	17 - 5 = ☐		24.	14 - ☐ = 11	
10.	19 - 5 = ☐		25.	14 - ☐ = 10	
11.	17 - 7 = ☐		26.	14 - ☐ = 9	
12.	18 - 7 = ☐		27.	15 - ☐ = 9	
13.	19 - 7 = ☐		28.	☐ - 7 = 9	
14.	19 - 2 = ☐		29.	19 - 5 = 16 - ☐	
15.	19 - 7 = ☐		30.	15 - 8 = ☐ - 9	

B

Number Correct:

Name _____   Date _____

*Write the missing number.

1.	16 – 1 = ☐		16.	19 – 9 = ☐	
2.	14 – 1 = ☐		17.	18 – 9 = ☐	
3.	18 – 1 = ☐		18.	12 – 9 = ☐	
4.	19 – 2 = ☐		19.	19 – 8 = ☐	
5.	17 – 2 = ☐		20.	18 – 8 = ☐	
6.	15 – 2 = ☐		21.	17 – 8 = ☐	
7.	15 – 3 = ☐		22.	14 – 5 = ☐	
8.	17 – 5 = ☐		23.	13 – 5 = ☐	
9.	19 – 5 = ☐		24.	12 – ☐ = 7	
10.	16 – 5 = ☐		25.	16 – ☐ = 10	
11.	16 – 6 = ☐		26.	16 – ☐ = 9	
12.	19 – 6 = ☐		27.	17 – ☐ = 9	
13.	17 – 6 = ☐		28.	☐ – 7 = 9	
14.	17 – 1 = ☐		29.	19 – 4 = 17 – ☐	
15.	17 – 6 = ☐		30.	16 – 8 = ☐ – 9	

Lesson 3: Rename and measure with centimeter cubes, using their standard unit name of centimeters.

OER

Name _____   Date _____

1. Circle the object(s) that are measured correctly.

   a.

   3 centimeters long

   b.

   5 centimeters long

   c.
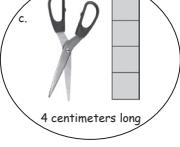
   4 centimeters long

2. Measure the paper clip in 1(b) with your cubes. Then, check the cubes with your centimeter ruler.

   The paper clip is _____ *centimeter cubes* long.

   The paper clip is _____ *centimeters* long.

   Be ready to explain why these are the same or different during the Debrief!

3. Use centimeter cubes to measure the length of each picture from left to right. Complete the statement about the length of each picture in centimeters.
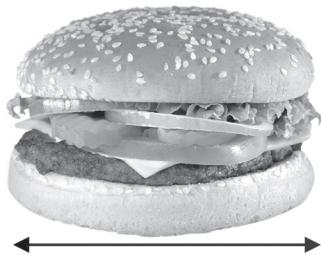
   a. The hamburger picture is _____ centimeters long.

   b. The hot dog picture is _____ centimeters long.

   c. The bread picture is _____ centimeters long.

Module 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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4. Use centimeter cubes to measure the objects below. Fill in the length of each object.

a.

The eraser is about _____ centimeters long.

b.

The hair clip is about _____ centimeters long.

c.

The key is about _____ centimeters long.

d.

The marker is about _____ centimeters long.
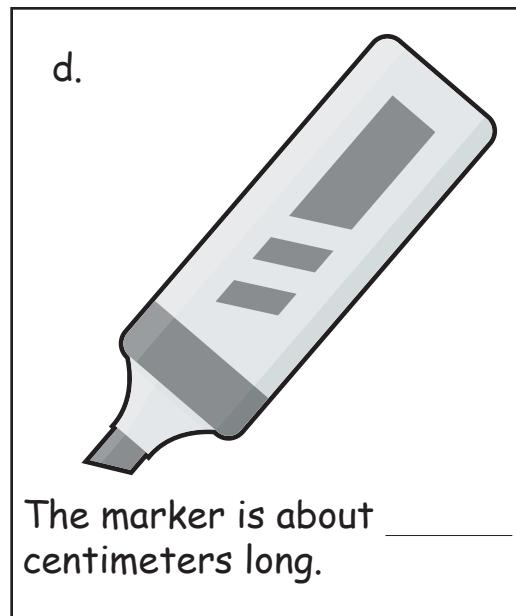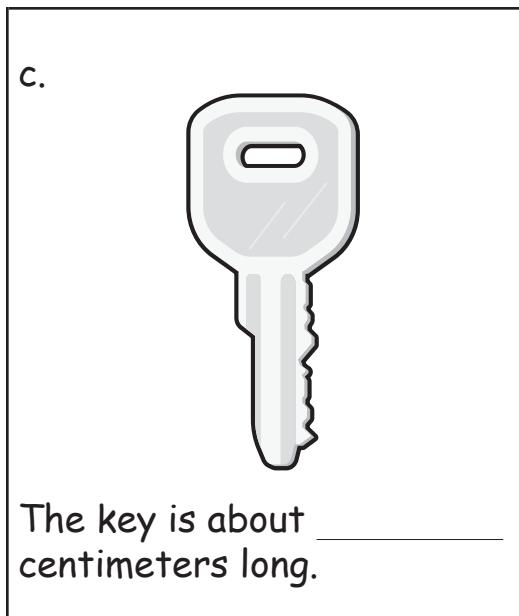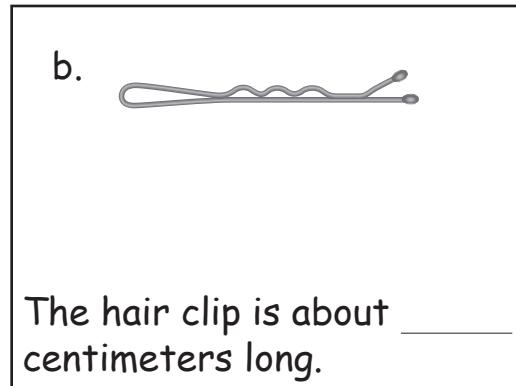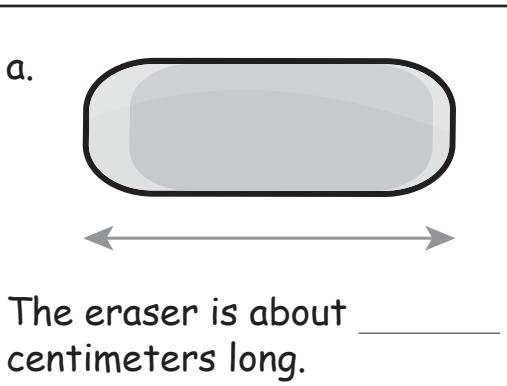
5. The eraser is longer than the _____, but it is shorter than

   the _____.

6. Circle the word that makes the sentence true.

   If a paper clip is shorter than the key, then the marker is **longer/shorter** than the paper clip.

Name _____   Date _____

Use the centimeter cubes to measure the items. Complete the sentences.

1. The water bottle is about _____ centimeters tall.

2. The melon is about _____ centimeters long.
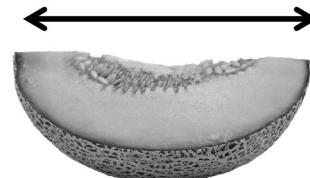
3. The screw is about _____ centimeters long.
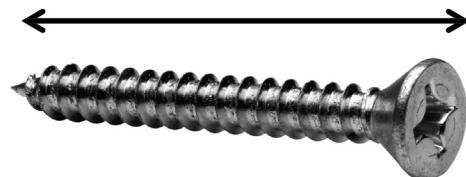
4. The umbrella is about _____ centimeters tall.

Module 3: Rename and measure with centimeter cubes, using their standard unit name of centimeters.

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Name _____   Date _____

1. Justin collects stickers. Use centimeter cubes to measure Justin's stickers. Complete the sentences about Justin's stickers.

   a. The motorcycle sticker is _____ centimeters long.
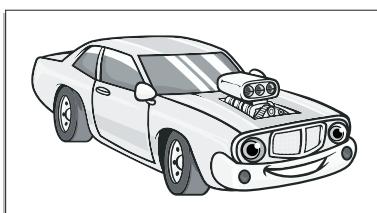
   b. The car sticker is _____ centimeters long.

Lesson 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.
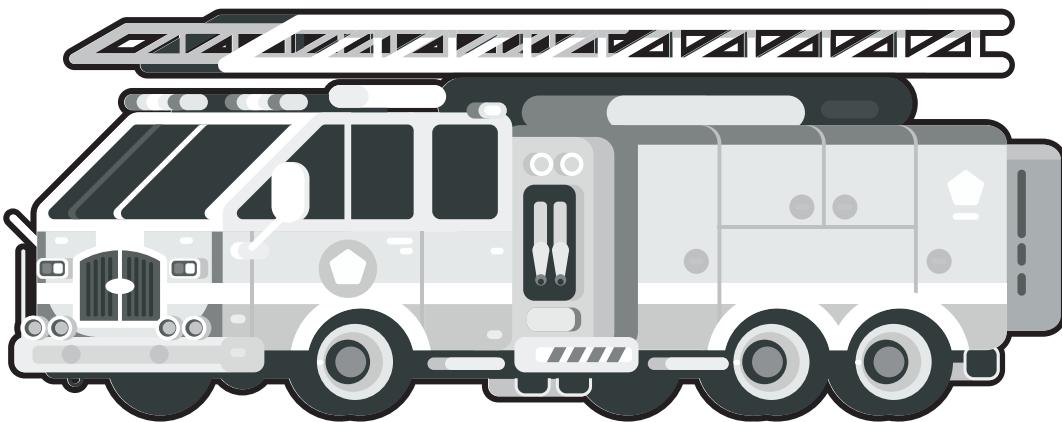
c. The fire truck sticker is _____ centimeters long.
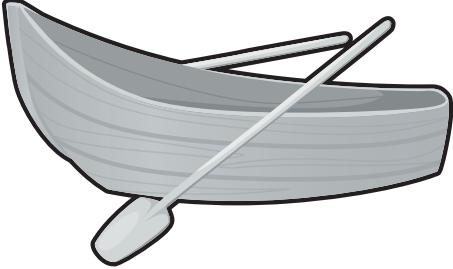
d. The rowboat sticker is _____ centimeters long.
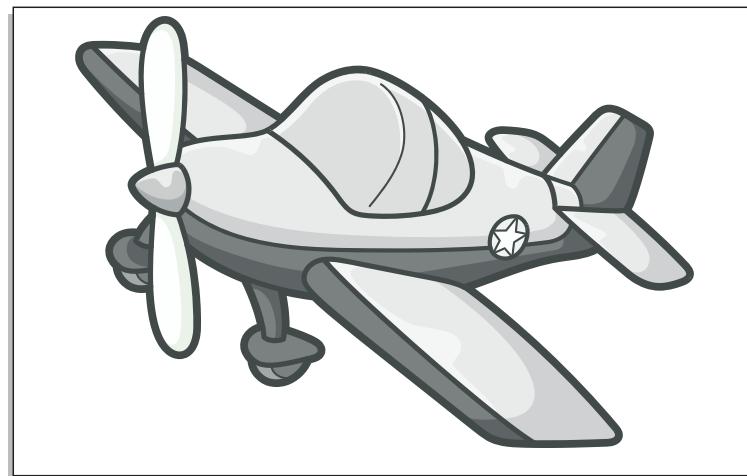
e. The airplane sticker is _____ centimeters long.

2. Use the stickers' measurements to order the stickers of the **fire truck**, the **rowboat**, and the **airplane** from longest to shortest. You can use drawings or names to order the stickers.

Longest ⟶ Shortest

3. Fill in the blanks to make the statements true. (There may be more than one correct answer.)

a. The airplane sticker is longer than the _____ sticker.

b. The rowboat sticker is longer than the _____ sticker and shorter than the _____ sticker.

c. The motorcycle sticker is shorter than the _____ sticker and longer than the _____ sticker.

d. If Justin gets a new sticker that is longer than the rowboat, it will also be longer than which of his other stickers? _____

Lesson 3:   Rename and measure with centimeter cubes, using their standard unit name of centimeters.

OER

Lesson 4

Objective: Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.

Suggested Lesson Structure

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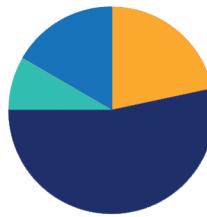
Fluency Practice (13 minutes)

- Addition with Cards **1.2E, 1.3D, 1.5G**   (7 minutes)
- Speed Writing by Twos **1.5B**   (3 minutes)
- Cold Call: Number Sentence Swap **1.3B**   (3 minutes)

Addition with Cards (7 minutes)

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

Note: This review fluency activity strengthens students' abilities to add within and across ten.

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

Module 3:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

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Speed Writing by Twos (3 minutes)

Materials: (T) Timer (S) Personal white board

Note: This fluency activity provides students practice with writing numbers while reinforcing adding 2.

Time students as they count by twos on their personal white boards from 0 to 40 as fast as they can. Students stand and hold up their boards when they get to 40. To add excitement to the game, give the class a point each time a student gets to 40, and see how many points the class can earn in two minutes. Record the points, and compare the score with the last time students completed the Speed Writing by Twos fluency activity. Keep a record of points scored each time this fluency activity is done to help students recognize and celebrate improvement.

Cold Call: Number Sentence Swap (3 minutes)

Note: This fluency activity reviews the grade level standard of understanding subtraction as an unknown addend problem and prepares students for *compare with difference unknown* problem types in this lesson.

In Cold Call, the teacher asks a question, pauses to provide think time, and then randomly calls on a student or group of students to answer. This game helps motivate all students to mentally solve the problem so they are ready if they are chosen to answer.

> T: 4 + what number = 5? (Pause.) Kira?
>
> S: (Only Kira answers.) 1.
>
> T: Good. So, 14 + what number = 15? (Pause to provide think time.) Marcus?
>
> S: (Only Marcus answers.) 1.

Continue with the following suggested sequence: 5 + □ = 7, 15 + □ = 17, 4 + □ = 8, and 14 + □ = 18.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> When playing games where students are randomly called on to answer, adjust wait time for students depending on their individual needs. Some students may also benefit from hearing the question ahead of time so that they feel prepared when put on the spot in front of their peers.

Application Problem (5 minutes)

Julia's lollipop is 15 centimeters long. She measured the lollipop with 9 red centimeter cubes and some blue centimeter cubes. How many blue centimeter cubes did she use? Remember to use the RDW process.

Note: This problem enables students to continue working with *separate with difference unknown* problem types within the context of measurement. During the Student Debrief, students compare the length of Julia's lollipop with another item from the lesson to determine how much longer the lollipop is compared to the other item.

9 r   6 B

$9 + \boxed{6} = 15$

She used 6 blue cubes.

Lesson 4:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

Concept Development (32 minutes)

Materials: (T) Projector, unsharpened pencil (19 cm), new crayon (9 cm), small paper clip (3 cm), dry erase marker (12 cm), jumbo craft stick (15 cm), new colored pencil (17 cm), centimeter cubes
(S) Bag with centimeter cubes, bag with various classroom objects (Lesson 2), personal white board

Gather students in the meeting area.

T: (Project dry erase marker, crayon, and new colored pencil in a disorganized way.) Without measuring, can you order these three objects from shortest to longest?

S: It's hard to tell which is longer or shorter. → They seem too similar. We couldn't tell for sure.
→ Let's straighten them out and line up the endpoints. → We should use our centimeter cubes to be sure.

T: (Align the endpoints of each object.) Now can you order the objects from shortest to longest? Share your thoughts with your partner.

S: (Discuss.) The objects from shortest to longest are the crayon, the dry erase marker, and the colored pencil.

T: (Order the objects as stated by students.) Yes. That's correct!

T: What can we do to describe their lengths more precisely? How can we tell how long each item is?

S: We can measure them!

T: Take the dry erase marker, crayon, and colored pencil out of your bag, and let's measure each item using centimeter cubes. On your personal white board, write down the length of each item.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> When students turn and talk with a partner, they are hearing different ways their peers are thinking about measurement. Hearing others talk about measurement more than once helps students, including some emergent bilingual students, understand and acquire language around this topic.

S: (Measure the items and record their lengths.)

T: What is the length of each item?

S: (Share the measurements. Record the length next to each object.)

T: (Touch each object while describing its length.) The colored pencil, which is 17 centimeters, is longer than the dry erase marker, which is 12 centimeters. The dry erase marker is longer than the crayon, which is only 9 centimeters. What can you say about the colored pencil compared to the crayon?

S: The colored pencil is longer than the crayon!

T: Look at the measurements next to each object in order from shortest to longest. What do you notice? Talk with your partner. (Circulate and listen.)

S: (Discuss.) The numbers get larger. → The measurements are larger.

T: Let's compare the number of cubes we used to measure the marker with the number of cubes we used to measure the crayon. (Align the two objects' endpoints. Use centimeter cubes to show their length, as shown on the next page.) Remind me, which object is longer?

S: The marker.

T: How many centimeter cubes did you use to measure the marker?

S: 12 cubes.

T: How many centimeter cubes did you use to measure the crayon?

S: 9 cubes.

T: How many more cubes did you need to use to measure the marker compared to the crayon? If you need to, put your rows of cubes right next to each other so you can see the extra cubes you used more easily.

S: (Adjust rows of cubes as necessary to compare.) Three more centimeter cubes.

T: How did you know? Talk with your partner about your thinking. Think about the number sentence that would match what you did.

S: I lined them up and counted on the extras. Niiiine, 10, 11, 12. That's 3 more cubes. → I thought, "9 plus the mystery number gives me 12." Then from 9, I counted on to get to 12. → I took away 9 from 12 and got 3.

T: (Elicit and write a number sentence corresponding to each student response.) You are right! Let's try some more.
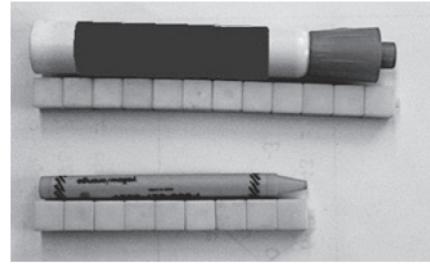
Repeat the process with a new pencil, a paper clip, and a craft stick. After comparing the length of two rows of cubes for two of the objects and identifying the difference, encourage students to write the number sentences and the statement on their personal white boards.

Note: Comparing centimeter cubes is a natural opportunity to concretely experience the *compare with difference unknown* problem type. Lesson 7 is dedicated to focusing attention on this objective. Make note of the particular challenges students may be facing, and use these specific examples to help shape the Concept Development work during Lesson 7.

Problem Set (10 minutes)

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

Name _Maria_____   Date _____

1. Order the bugs from longest to shortest by writing the bug names on the lines. Use centimeter cubes to check your answer. Write the length of each bug in the space to the right of the pictures.

The bugs from longest to shortest are

caterpillar   _dragonfly_   _bee___

Dragonfly
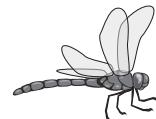
_5_ centimeters

Caterpillar

_7_ centimeters

Bee

_4_ centimeters

Lesson 4:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

Student Debrief (10 minutes)

Lesson Objective: Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving *compare with difference unknown* word problems.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- What did we do to figure out precisely how much longer or shorter one object was than another today?
- Can you think of a time when it would be helpful or important to say that something is longer by an exact amount rather than just saying it is longer or shorter?
- Turn and talk to your partner about how you solved Problem 3. How are your strategies similar and/or different?
- How was solving Problem 5 different from solving Problems 3 and 4? Explain your thinking.
- Look at your Application Problem. How much longer is Julia's lollipop than the new crayon? Talk with a partner to discuss how you know.

Note: Be sure to make the bag of cubes available for students to complete their homework.

Exit Ticket (3 minutes)

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

2. Order the objects below from shortest to longest using the numbers 1, 2, and 3. Use your centimeter cubes to check your answers, and then complete the sentences for problems d, e, f, and g.

a. The noise maker: _3_

b. The balloon: _1_

c. The present: _2_

d. The present is about _5_ centimeters long.

e. The noise maker is about _8_ centimeters long.

f. The balloon is about _4_ centimeters long.

g. The noise maker is about _3_ centimeters longer than the present.

Use your centimeter cubes to model each length, and answer the question. Write a statement for your answer.

3. Peter's toy T. rex is 11 centimeters tall, and his toy Velociraptor is 6 centimeters tall. How much taller is the T. rex than the Velociraptor?

T-Rex is 5 centimeters taller.

4. Miguel's pencil rolled 17 centimeters, and Sonya's pencil rolled 9 centimeters. How much less did Sonya's pencil roll than Miguel's?

Sonya's pencil rolled 8 centimeters less.

5. Tania makes a cube tower that is 3 centimeters taller than Vince's tower. If Vince's tower is 9 centimeters tall, how tall is Tania's tower?

Tania's tower is centimeters.

Module 3:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

63

Name _____   Date _____

1. Order the bugs from longest to shortest by writing the bug names on the lines. Use centimeter cubes to check your answer. Write the length of each bug in the space to the right of the pictures.

   The bugs from longest to shortest are

   _____   _____   _____

   ## Dragonfly
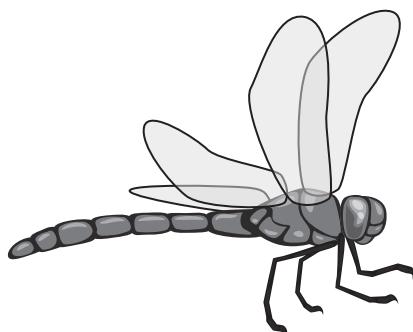
   ____ centimeters

   ## Caterpillar

   ____ centimeters

   ## Bee
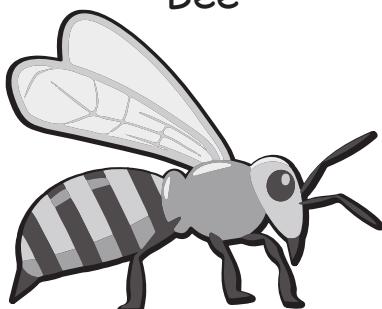
   ____ centimeters

Lesson 4:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

2. Order the objects below from shortest to longest using the numbers 1, 2, and 3. Use your centimeter cubes to check your answers, and then complete the sentences for problems d, e, f, and g.

   a. The noise maker: _____

   b. The balloon: _____
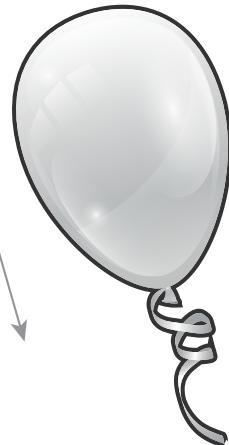
   c. The present: _____

   d. The present is about _____ centimeters long.

   e. The noise maker is about _____ centimeters long.

   f. The balloon is about _____ centimeters long.

   g. The noise maker is about _____ centimeters longer than the present.

Use your centimeter cubes to model each length, and answer the question. Write a statement for your answer.

3. Peter's toy T. rex is 11 centimeters tall, and his toy Velociraptor is 6 centimeters tall. How much taller is the T. rex than the Velociraptor?

4. Miguel's pencil rolled 17 centimeters, and Sonya's pencil rolled 9 centimeters. How much less did Sonya's pencil roll than Miguel's?

5. Tania makes a cube tower that is 3 centimeters taller than Vince's tower. If Vince's tower is 9 centimeters tall, how tall is Tania's tower?

Lesson 4:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.

Name _____   Date _____

Read the measurements of the tool pictures.

The wrench is 8 centimeters long.

The screwdriver is 12 centimeters long.

The hammer is 9 centimeters long.

1. Order the pictures of the tools from shortest to longest.

    _____   _____   _____

2. How much longer is the screwdriver than the wrench?

    The screwdriver is _____ centimeters longer than the wrench.

Module 3:   Order, measure, and compare the length of objects before and after measuring with centimeter cubes, solving compare with *difference unknown* word problems.   **67**

OER

Name _____   Date _____

1. Natasha's teacher wants her to put the fish in order from longest to shortest.
    Measure each fish with the centimeter cubes that your teacher gave you.

A
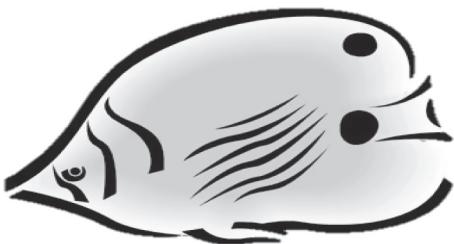
_____ centimeters

B

_____ centimeters

D
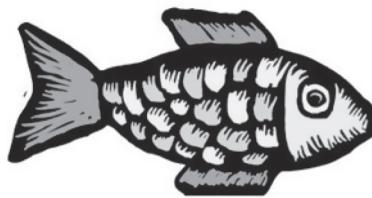
_____ centimeters

C

_____ centimeters

E

_____ centimeters
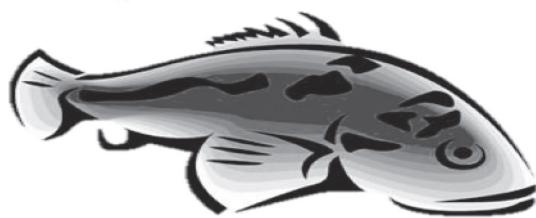
68   **Lesson 4:**   Order, measure, and compare the length of objects before and after
                              measuring with centimeter cubes, solving compare with *difference
                              unknown* word problems.

2. Order fish A, B, and C from longest to shortest.

   _____   _____   _____

3. Use all of the fish measurements to complete the sentences.

   a. Fish A is longer than Fish _____ and shorter than Fish _____.

   b. Fish C is shorter than Fish _____ and longer than Fish _____.

   c. Fish _____ is the shortest fish.

   d. If Natasha gets a new fish that is shorter than Fish A, list the fish that the new fish is also shorter than.

Use your centimeter cubes to model each length, and answer the question.

4. Henry gets a new pencil that is 19 centimeters long. He sharpens the pencil several times. If the pencil is now 9 centimeters long, how much shorter is the pencil now than when it was new?

5. Malik and Jared each found a stick at the park. Malik found a stick that was 11 centimeters long. Jared found a stick that was 17 centimeters long. How much longer was Jared's stick?

Topic B

Non-Standard and Standard Length Units

1.3B, 1.5D, 1.7A, 1.7B, 1.7C, 1.7D

Focus Standards:	1.3B	Use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as 2 + 4 = [ ]; 3 + [ ] = 7; and 5 = [ ] − 3.
	1.5D	Represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences.
	1.7A	Use measuring tools to measure the length of objects to reinforce the continuous nature of linear measurement.
	1.7B	Illustrate that the length of an object is the number of same-size units of length that, when laid end-to-end with no gaps or overlaps, reach from one end of the object to the other.
	1.7C	Measure the same object/distance with units of two different lengths and describe how and why the measurements differ.
	1.7D	Describe a length to the nearest whole unit using a number and a unit.
Instructional Days:	3	
Coherence -Links from:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10
-Links to:	G2–M2	Addition and Subtraction of Length Units
	G2–M7	Problem Solving with Length, Money, and Data

Topic B gives students a chance to explore the usefulness of measuring with similar units. The topic opens with Lesson 5 where students measure the same objects from Topic A using two different non-standard length units simultaneously, such as toothpicks and small paper clips (**1.7A, 1.7B, 1.7C, 1.7D**). They then use small paper clips and large paper clips, two non-standard units that happen to be the same object but different lengths. Each time they measure one object using both units, they receive inconsistent measurement results. Students then begin to ask the question, "Why do we measure with same-sized length units?" As they explore why it is so important to use the same-sized length unit, they realize that doing so yields consistent measurement results.

In Lesson 6, students explore what happens when they use a different unit of measurement from that of their classmates. As students measure the same objects with different non-standard length units, they realize that in order to have discussions about the lengths of objects, they *must* measure with the same units. Students answer the question, "If Bailey uses paper clips and Maya uses toothpicks, and they both measure things in our classroom, will they be able to compare their measurements?" With this new understanding of consistent measurement, Lesson 7 closes the topic with students solving *compare with difference unknown* problems using centimeter cubes. Students explore and solve problems such as, "How much longer is the pencil than the marker?" (**1.3B, 1.5D**). Revisiting the centimeter helps students recognize the value of having a consistent way to communicate about various measurements.

A Teaching Sequence Toward Proficiency with Non-Standard and Standard Length Units
Objective 1: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.   (Lesson 5)
Objective 2: Understand the need to use the same units when comparing measurements with others.   (Lesson 6)
Objective 3: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.   (Lesson 7)

Lesson 5

Objective: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

Suggested Lesson Structure

🟨 Fluency Practice	(18 minutes)	
🟩 Application Problem	(5 minutes)	
⬛ Concept Development	(27 minutes)	
🟦 Student Debrief	(10 minutes)	
Total Time	**(60 minutes)**	
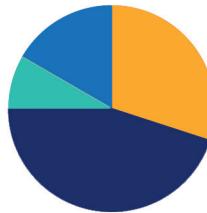
Fluency Practice (18 minutes)

- Beep Counting **1.5A, 1.5B** (2 minutes)
- Addition Strategies Review **1.3C, 1.3D, 1.3E, 1.3F, 1.5G** (6 minutes)
- Sprint: Addition Within 20 **1.3D, 1.5G** (10 minutes)

Beep Counting (2 minutes)

Note: This fluency activity strengthens students' ability to understand number relationships and to recognize counting patterns. If students are proficient with beep counting by ones, consider beep counting by tens (**1.5C**) or practicing the Grade 2 standard of counting by twos or fives (**2.2C**).

Say a series of three or more numbers, but replace one of the numbers with the word *beep* (e.g., 15, 16, beep). When signaled, students say the number that was replaced by the word *beep* in the sequence. Scaffold number sequences, beginning with simple sequences and moving to more complex ones. Be sure to include forward and backward number sequences and to change the sequential placement of the beep.

Suggested sequence: 15, 16, beep; 25, 26, beep; 35, 36, beep; 12, 11, beep; 22, 21, beep; 32, 31, beep; 8, beep, 10; 18, beep, 20; 38, beep, 40; beep, 9, 8; beep, 19, 18; and beep, 29, 28.

Addition Strategies Review (6 minutes)

Materials: (T) Hide Zero cards (Lesson 11 Fluency Template)

Note: This review fluency activity helps strengthen students' understanding of the make ten and add the ones addition strategies. It also strengthens their ability to recognize appropriate strategies based on the number of tens and ones in both addends.

T: (Divide students into partnerships. Show 9 and 6 with Hide Zero cards.) Partner A, show me 9 on your Magic Counting Sticks. Partner B, show me 6. If I want to solve 9 + 6, how can I make a ten?
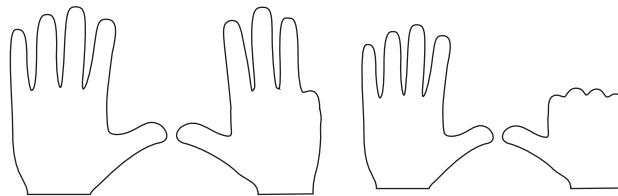
S: Take 1 from the 6, and add 1 to 9.

T: Yes. Show me! (Exchange the 9 and 6 cards for 10 and 5 as students adjust their fingers.) We changed 9 + 6 into a simpler problem. Say our new addition sentence with the solution.
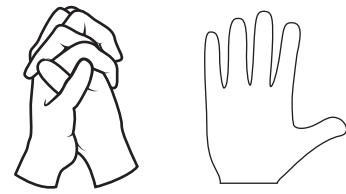
S: 10 + 5 = 15.

T: (Put the Hide Zero cards together to show 15.) Say it the Say Ten way.

S: Ten 5.

T: (Show 13 with Hide Zero cards.) Partner A, show the ones. Partner B, show the tens. (Break apart the Hide Zero cards as students hold up their fingers.) If we want to add 2, should we make a ten to help us?

S: No. We already have a ten!
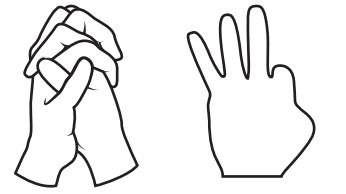
T: Should we add 2 to our 3 or our 10?

S: Our 3.

T: Yes! Partner A, show me 3 + 2. (Exchange the 3 card for a 5 card.) What is the answer?
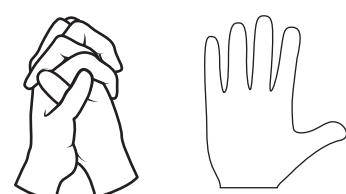
S: 5.

T: So, Partner B, what is 13 + 2?

S: 15.

T: Say it the Say Ten way

S: Ten 5.

Sprint: Addition Within 20 (10 minutes)

Materials: (S) Addition Within 20 Sprint

Note: This Sprint addresses the Grade 1 standard of adding and subtracting within 20.

Application Problem (5 minutes)

When Corey measures his new pencil, he uses 19 centimeter cubes. After he sharpens the pencil, he needs 4 fewer centimeter cubes. How long is Corey's pencil after he sharpens it? Use centimeter cubes to solve the problem. Write a number sentence and a statement to answer the question.

Note: As students build measurements with centimeter cubes, they continue to connect their experiences of addition and subtraction with concrete problem situations. As students work, encourage them to talk through the problem sentence by sentence, placing the centimeter cubes in front of them to build the story.

During the Student Debrief, connect students' concrete experience with the problem type or computation.

(handwritten notes, right side):

not sharp

sharp

$19 - 4 =$
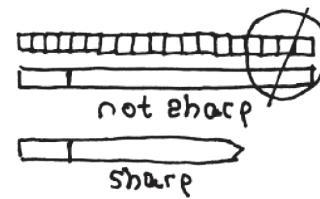
$10\quad 9$

$9 - 4 = 5$

$10 + 5 = 15$

Sharp pencil is 15 cubes long.

Concept Development (27 minutes)

Materials: (T) Chart paper, 3 new pencils of different colors (e.g., red, blue, yellow) from the same brand and size, mixed set of large and small paper clips (S) Bag of 20 large paper clips and 20 small paper clips

Note: The chart created during today's lesson is used throughout the remainder of the module.

Gather students in the meeting area with their materials.

> **A NOTE ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Ask questions to guide connections, analysis, and proficiency of concepts. This allows students the opportunity to develop critical thinking skills instead of just memorizing answers.

- T: For the past few days, we have been measuring with centimeter cubes. Today, let's measure with paper clips. What did we learn about the rules of measuring? (Write the rules on chart paper as students respond. Model how to measure objects that are longer or shorter than a whole unit. Discuss how best to choose the number of units when estimating.)
- S: Line up the endpoints. → Don't leave any gaps. → Don't overlap what you are measuring with.
- T: Let's see how long this red pencil is by using paper clips as our length unit. (Measure with a mix of both paper clips, e.g., 3 large and 1 small.) How many paper clips long is the red pencil?
- S: 4 paper clips long.

red

blue

yellow

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

T: (Keep the red pencil measurement displayed.) This blue pencil is the same length. Let's measure it using paper clips as the length unit. (Measure with a different combination of paper clips, e.g., 1 large and 4 small.) How many paper clips long is the blue pencil?

S: 5 paper clips long.

T: According to these measurements, the blue pencil is longer than the red. Is this correct?

S: Yes. → But, it looks like the pencils are the same length!

T: Let's compare the pencils directly. (Pick up the pencils from their places, and stand them up from the floor. Leave the paper clip measurements where they are.) Are they the same length?

S: Yes!

T: (Put the pencils back so they are aligned with their paper clips.)

T: Hmmm. Let me measure again. This yellow pencil is also the same length as the others. (Measure with a different combination of paper clips, e.g., 4 large paper clips.) Oh boy, this time, it's *less* than 4 paper clips long! Why do I keep getting different measurements when the pencils are the same size?

T: I'm using the length unit of a paper clip. (Refer to the chart with measuring rules.) I'm aligning my endpoints, making sure there are no gaps or overlaps. I should be getting the same length measurement each time since the pencils are the same length.

T: Talk to your partner. Can you figure out what I need to change about the way I'm measuring?

S: The paper clips are different sizes! → Some paper clips are long and others are short! → It's not an accurate measurement because the paper clips have to be the same size, just like our centimeter cubes were the same size, a centimeter. → We should only use the smaller paper clips. → Or, we should only use the bigger paper clips. But, we can't mix them.

T: It sounds to me like we have a new rule for proper measuring! (Add to the chart: *Length units must be the same length.*) Just like you said, we need to make a decision: either use just the small paper clips or…?

S: Just the big paper clips!

T: Great. And what should we make sure we don't do?

S: Don't mix them up because they are different sizes!

> **NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> Provide challenging extensions for students who are able to measure more complex objects. Provide them with an object to be measured both horizontally and vertically, and find the difference. Students can also measure something round using a tape measure. Have them present their findings to the class.

> **NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> Consider giving students who need support with language production, including some emergent bilingual students, an opportunity to speak to their peers at key points in the lesson before their classmates are asked for responses. An opportunity to turn and talk to a partner to discuss their understanding of measurement gives them a chance to practice their words and express their thinking, encouraging them to participate more fully in class discussions.

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

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T: (Ask a student volunteer to come up and use small paper clips to measure the red pencil. Measure the blue pencil with small paper clips as the student measures the red pencil.) How many paper clips long is the blue pencil? How many paper clips long is the red pencil?

S: They are both about 6 small paper clips long!

T: Thank you for solving my measurement problem! You're ready to measure with paper clips on your Problem Set. First, let's read all of our rules for measuring.

While distributing a bag of varying paper clips to each student, remind the class of the new rule to make sure they use the same length paper clips as they measure. (Note: It would be helpful to students to have the chart hanging in the classroom for future reference.)

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

Note: Circulate to ensure that students use the correct size paper clip for each set of questions. The last two items on the chart are found in the classroom, not on the Problem Set.

Name Maria _____   Date _____

1. Measure the length of each object with **large** paper clips. Fill in the chart with your measurements.

Name of Object	Number of Large Paper Clips
a. glue bottle	2
b. caterpillar	2
c. key	1
d. pen	3
e. cow sticker	2
f. Problem Set paper	6
g. reading book (from classroom)	4

GLUE

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.
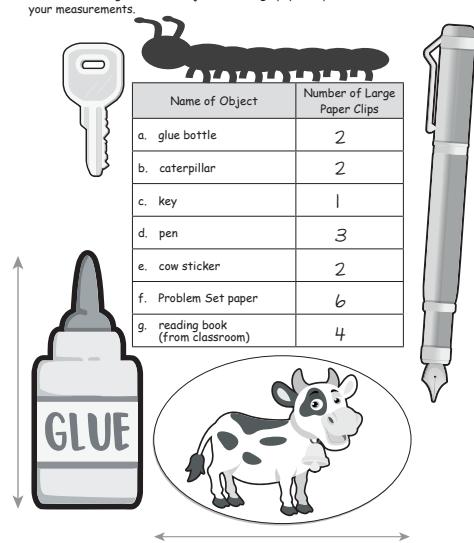
Student Debrief (10 minutes)

Lesson Objective: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

2. Measure the length of each object with **small** paper clips. Fill in the chart with your measurements.

Name of Object	Number of Small Paper Clips
a. glue bottle	3
b. caterpillar	4
c. key	2
d. pen	4
e. cow sticker	3
f. Problem Set paper	9
g. reading book (from classroom)	6

- Why did it take more small paper clips than large paper clips to measure the same picture?
- Why did it take less large paper clips than small paper clips to measure the same picture?
- What is a new rule we must remember when we are measuring?
- Compare your first chart to your partner's. Explain why you have the same measurements.
- Even though we measured the same objects, why are your measurements different on your first chart than on your second chart?
- A student said she used new pencil-top erasers from a pack to measure how long her pencil is. All the erasers are the same size. Her partner said she couldn't use these erasers to measure properly because they are all different colors. Who is correct? Explain your thinking.
- Look at your Application Problem. What measurement rules did you have to keep in mind? Did you add more cubes or take cubes away to solve this problem? What number sentence matches the problem?

Exit Ticket (3 minutes)

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

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

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A

Number Correct: ___

Name _____   Date _____

*Write the missing number.

1.	$17 + 1 = \square$		16.	$11 + 9 = \square$	
2.	$15 + 1 = \square$		17.	$10 + 9 = \square$	
3.	$18 + 1 = \square$		18.	$9 + 9 = \square$	
4.	$15 + 2 = \square$		19.	$7 + 9 = \square$	
5.	$17 + 2 = \square$		20.	$8 + 8 = \square$	
6.	$18 + 2 = \square$		21.	$7 + 8 = \square$	
7.	$15 + 3 = \square$		22.	$8 + 5 = \square$	
8.	$5 + 13 = \square$		23.	$11 + 8 = \square$	
9.	$15 + 2 = \square$		24.	$12 + \square = 17$	
10.	$5 + 12 = \square$		25.	$14 + \square = 17$	
11.	$12 + 4 = \square$		26.	$8 + \square = 17$	
12.	$13 + 4 = \square$		27.	$\square + 7 = 16$	
13.	$3 + 14 = \square$		28.	$\square + 7 = 15$	
14.	$17 + 2 = \square$		29.	$9 + 5 = 10 + \square$	
15.	$12 + 7 = \square$		30.	$7 + 8 = \square + 9$	

   Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

OER

B

Number Correct: _____

Name _____

Date _____

*Write the missing number.

1.	14 + 1 = ☐		16.	11 + 9 = ☐	
2.	16 + 1 = ☐		17.	10 + 9 = ☐	
3.	17 + 1 = ☐		18.	8 + 9 = ☐	
4.	11 + 2 = ☐		19.	9 + 9 = ☐	
5.	15 + 2 = ☐		20.	9 + 8 = ☐	
6.	17 + 2 = ☐		21.	8 + 8 = ☐	
7.	15 + 4 = ☐		22.	8 + 5 = ☐	
8.	4 + 15 = ☐		23.	11 + 7 = ☐	
9.	15 + 3 = ☐		24.	12 + ☐ = 18	
10.	5 + 13 = ☐		25.	14 + ☐ = 18	
11.	13 + 4 = ☐		26.	8 + ☐ = 18	
12.	14 + 4 = ☐		27.	☐ + 5 = 14	
13.	4 + 14 = ☐		28.	☐ + 6 = 15	
14.	16 + 3 = ☐		29.	9 + 6 = 10 + ☐	
15.	13 + 6 = ☐		30.	6 + 7 = ☐ + 9	

Lesson 5: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

OER

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Name _____ Date _____

1. Measure the length of each object with **large** paper clips. Fill in the chart with your measurements.

Name of Object	Number of Large Paper Clips
a. glue bottle	
b. caterpillar	
c. key	
d. pen	
e. cow sticker	
f. Problem Set paper	
g. reading book (from classroom)	

Lesson 5: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

2. Measure the length of each object with **small** paper clips. Fill in the chart with your measurements.

Name of Object	Number of Small Paper Clips
a. glue bottle	
b. caterpillar	
c. key	
d. pen	
e. cow sticker	
f. Problem Set paper	
g. reading book (from classroom)	

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

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Name _____   Date _____

Measure the length of each object with **large** paper clips. Then, measure the length of each object with **small** paper clips. Fill in the chart with your measurements.

Name of Object	Number of Large Paper Clips	Number of Small Paper Clips
a. bow		
b. candle		
c. vase and flowers		

Lesson 5:   Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.
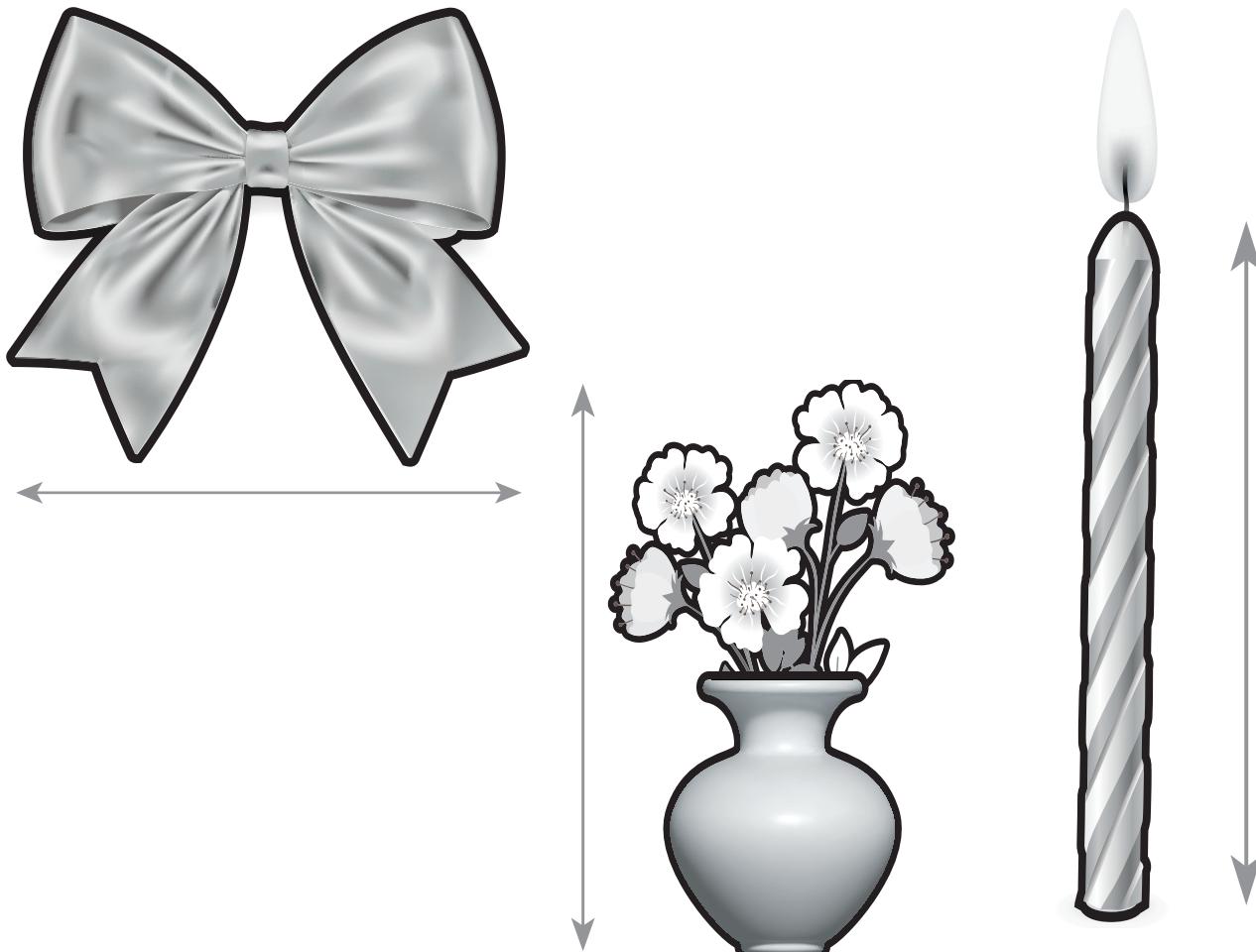
Name _____ Date _____

Cut the strip of paper clips. Measure the length of each object with the **large** paper clips to the right. Then, measure the length with the **small** paper clips on the back.

1. Fill in the chart with your measurements.

Paintbrush

Scissors

Crayon

Glue

Eraser

Lesson 5: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

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Name of Object	Length in Large Paper Clips	Length in Small Paper Clips
a. paintbrush		
b. scissors		
c. eraser		
d. crayon		
e. glue		

2. Find objects to measure. Record the objects you find and their measurements on the chart.

Name of Object	Length in Large Paper Clips	Length in Small Paper Clips
a.		
b.		
c.		
d.		
e.		

Lesson 5: Measure the same objects from Topic A with different non-standard units simultaneously to see the need to measure with a consistent unit.

Lesson 6

Objective: Understand the need to use the same units when comparing measurements with others.

Suggested Lesson Structure

■ Fluency Practice   (10 minutes)
■ Application Problem   (5 minutes)
■ Concept Development   (35 minutes)
■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**
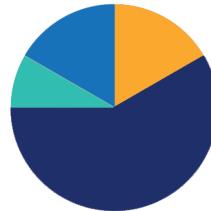
Fluency Practice (10 minutes)

- Speed Writing **1.5A, 1.5B**   (3 minutes)
- Race and Roll Addition **1.3D, 1.5G**   (4 minutes)
- Cold Call: Addition and Subtraction Within 20 **1.3D, 1.5G**   (3 minutes)

Speed Writing (3 minutes)

Materials: (T) Timer (S) Personal white board

Note: Throughout the first two modules, students have been counting by ones, twos, fives, and tens, as well as the Say Ten way.

Review of these counting patterns prepares students for Module 4 by strengthening their understanding of place value and their ability to add and subtract. Many students are familiar with skip-counting.

Choose a counting pattern with which students need more practice. Students count on their boards by the chosen pattern for one minute. Tell them to erase their boards but to remember how high they counted. Then, give them another minute to try to count even higher.

> **NOTES ON
> MULTIPLE MEANS
> OF REPRESENTATION:**
>
> If there are students who are unable to count by the chosen pattern without numerical visual cues at this point in the year, use a tool such as a number line or a hundreds chart. Students can color the pattern on the number line or hundreds chart so that they have a visual representation as they count on their own.

Race and Roll Addition (4 minutes)

Materials: (S) 1 die per pair

Note: This fluency activity reviews the grade level standard of adding within 20.

Partners start at 0. Partners take turns rolling a die and then saying a number sentence by adding the number rolled to the total. (For example, Partner A rolls 6 and says, "0 + 6 = 6." Partner B rolls 3 and says, "6 + 3 = 9.") They continue rapidly rolling and saying number sentences until they get to 20, without going over. (For example, if partners are at 18 and roll 5, they take turns rolling until one of them rolls 2 or 1 two times.) Partners stand when they reach 20.

Cold Call: Addition and Subtraction Within 20 (3 minutes)

Note: This review fluency activity addresses the Grade 1 standard of adding and subtracting within 20 and practices including units when adding length.

For directions on how to play Cold Call, refer to Lesson 4.

- T: 4 centimeters + 2 centimeters is…? (Pause to provide think time.) Only students with pets answer. Ready?
- S: (Only students with pets answer.) 6 centimeters.
- T: 14 centimeters + 2 centimeters is…? (Pause to provide think time.) Only students without pets answer. Ready?
- S: (Only students with no pets answer.) 16 centimeters.

Continue playing, practicing addition and subtraction within 20. As always, scaffold instruction by beginning with simple problems and slowly increasing the complexity.

Application Problem (5 minutes)

I have 2 crayons. Each crayon is 9 centimeter cubes long. I also have a paintbrush. The paintbrush is the same length as 2 crayons. How many centimeter cubes long is the paintbrush? Use centimeter cubes to solve the problem. Then, draw a picture, and write a number sentence and a statement to answer the question.

Note: Students continue to use concrete materials to consider problem situations. Continue to encourage students to build each part of the story, using the cubes to think through what they know and to identify what they do not yet know. During the Student Debrief, students demonstrate their strategies for solving the problem. The example above shows one way in which students may solve this Application Problem. Some students may simply align the cubes and solve without drawing.

Concept Development (35 minutes)

Materials: (T) Chart with measuring rules (Lesson 5), cube larger than a linking cube, cube smaller than a centimeter cube (S) 1 lunch bag of 2 new crayons, 10 linking cubes and 10 centimeter cubes per pair, 1 personal white board per pair

Gather students in the meeting area in a semicircle.

T: We have measured with many different tools so far. Who can name the different tools we have used to measure?

S: String. → Strip of paper (or pipe cleaners). → Centimeter cubes. → Centimeter ruler. → Small paper clips. → Large paper clips.

Review the rules for measuring properly using the chart created in Lesson 5.

T: (Distribute a lunch bag with materials listed above to each pair of students.) Take the materials out of your bag. You and your partner are going to measure the new crayons with the other materials in your bag. Don't forget about the rules for proper measuring!

T: The new crayon is how many cubes long? (Note: Do not tell students which cubes to use.)

S: Mine was 9 cubes long. → Mine was 3 cubes long.

T: That's interesting. These crayons are brand new, and they came from the same box, which means they should be the same size. (Match up the crayons.) And they are! Why are we getting different measurements?

Ask students if they measured properly by going over each rule, repeating the last rule twice to ensure that no one mixed the cubes to measure.

T: Why do we have different measurements? Talk with your partner.

S: We were measuring with different cubes. We didn't mix them up, but I measured with smaller cubes, the centimeter cubes. My partner measured with bigger cubes, the linking cubes. → We didn't do anything wrong. We measured correctly. It's just that our answers are different because we each used a different size cube to measure.

T: Great thinking! Even though you measured properly, it sounds like we need to add a rule for *sharing and communicating* about our measurements. When someone says, "My crayon is 3 cubes long," and another person says, "No! It's 9 cubes long," this can become a frustrating conversation because they are both right! So, how can we help these two students?

S: They have to say, "My crayon is 3 *linking* cubes long," or "My crayon is 9 *centimeter* cubes long."
→ We have to say what type of tool we used to measure!

T: Yes! We need to be precise when we communicate about which length unit we used to measure. Practice measuring more items and communicating their measurements precisely on your Problem Set.

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Highlight vocabulary that could be unfamiliar for students, including some emergent bilingual students. Vocabulary in this lesson that might be highlighted is *sharing* and *communicating.* Provide some examples of how students share and communicate outside of math so they can make the connection.

Lesson 6:   Understand the need to use the same units when comparing measurements with others.

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T: (Distribute 1 personal white board to each pair of students.) Work with your partner. Partner A, measure the long side of your personal white board with the centimeter cubes. Partner B, measure the other long side of your personal white board with the linking cubes.

S: (Measure with cubes.)

T: Using the linking cubes, how long is your personal white board?

S: About 10 linking cubes long.

T: Using the centimeter cubes, about how long is your personal white board?

S: About 24 centimeter cubes long.

T: If we all measured the long side of our whiteboards, shouldn't the number of cubes that each partner found be the same? Why did we get different numbers of cubes?

S: Some of us used big cubes and some of us used little cubes. → We used different tools!

T: Did it take more centimeter cubes or linking cubes to measure the long side of your personal white board?

S: It took more centimeter cubes.

T: Why did it take more centimeter cubes than it took linking cubes to measure our personal white board?

S: The centimeter cubes are smaller, so we need more to go from one end to the other.

T: (Display a cube smaller than the centimeter cube.) If we used this cube, would our measurement be bigger or smaller than the measurement we got using the centimeter cube?

S: The measurement would be bigger. → We would need more of the little cubes. → The tool is smaller, so each one covers less space. → The smaller the cube, the more we need.

T: (Display a cube larger than the linking cube.) How would our measurements change if we used this cube?

S: The measurement would be smaller. → We would need less of the big cubes. → The tool is bigger, so each one covers more space. → The larger the cube, the less we need.

Give each student, or pair of students, *one* set of the following measuring tools:

- 20 small paper clips
- 20 large paper clips
- 20 toothpicks
- 20 centimeter cubes

Ask students to measure the classroom objects with their assigned measuring tools. Remind students to write the word *about* if their measurement is not exactly a certain length unit long. Circulate and ask students about their measurements, encouraging them to use the length unit label as they share. (Note: The use of the word *about* was first introduced in Lesson 2. Remind students that if they are going to use this word, the appropriate way to use it is, for example, "My pretzel rod is about 18 centimeter cubes long.")

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

For the Problem Set and Homework, each student gets *one* of the following: bag of 20 small paper clips, bag of 20 large paper clips, bag of 20 toothpicks, or bag of 20 centimeter cubes. Be sure students have the necessary materials to complete the Homework assignment.

Student Debrief (10 minutes)

Lesson Objective: Understand the need to use the same units when comparing measurements with others.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner who used the same length unit. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- Compare your measurements to your partner's (a student who used a different tool). How are your answers different?

- Why do we need a label, or a length unit, along with a number when we are writing our measurements? Why can't we use the number only?

- How can it be true that when Student A says the glue stick is X paper clips long and Student B says it is Y centimeter cubes long, they are both correct?

- Student A says she used 9 centimeter cubes to measure the crayon. Student B says she used 3 small paper clips to measure the crayon. Why do you think she needed so many more centimeter cubes to measure the crayon compared to using the small paper clips?

- Pick three objects from your sheet. Name your items in order from shortest to longest. Name your items in order from longest to shortest.

- Would the order change if you were using a different measuring tool to measure length? Why or why not?

- Display an example of the Problem Set for Lesson 5. Look at the caterpillar on each page. How do our measurements on each page relate to today's lesson?

- Look at your Application Problem. How much longer is the paintbrush compared to one crayon? Why is it important that you included the label *centimeters* or *centimeter cubes* after the number in your statement?

- Would it take more small paper clips or more large paper clips to measure from here to the door?

Exit Ticket (3 minutes)

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

Name __Maria__ Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips   Large Paper Clips

Toothpicks   Centimeter Cubes

Measure each object listed on the chart, and record the measurement. Find some other items to measure. Add the names of those objects to the chart, and record their measurements.

Classroom Object	Measurement
a. glue stick	Answers will vary.
b. dry erase marker	Answers will vary.
c. unsharpened pencil	Answers will vary.
d. personal white board	Answers will vary.
e. Answers will vary.	Answers will vary.
f. Answers will vary.	Answers will vary.
g. Answers will vary.	Answers will vary.

Lesson 6:   Understand the need to use the same units when comparing measurements with others.

Name _____ Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips

Large Paper Clips

Toothpicks

Centimeter Cubes

Measure each object listed on the chart, and record the measurement. Find some other items to measure. Add the names of those objects to the chart, and record their measurements.

Classroom Object	Measurement
a. glue stick	
b. dry erase marker	
c. unsharpened pencil	
d. personal white board	
e.	
f.	
g.	

Lesson 6: Understand the need to use the same units when comparing measurements with others.

Name _____　　Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips　　　　　Large Paper Clips

Toothpicks　　　　　　　　Centimeter Cubes

Choose two objects in your desk that you would like to measure. Measure each object, and record the measurement.

Classroom Object	Measurement
a.	
b.	

Name _____   Date _____

Circle the length unit you will use to measure. Use the same length unit for all objects.

Small Paper Clips   Large Paper Clips

Toothpicks   Centimeter Cubes

1. Measure each object listed on the chart, and record the measurement. Find some other objects to measure. Record the names and the measurements of those objects in the chart.

Object	Measurement
a. fork	
b. picture frame	
c. pan	
d. shoe	

Lesson 6:   Understand the need to use the same units when comparing measurements with others.

Object	Measurement
e. stuffed animal	
f.	
g.	

Did you remember to add the name of the length unit after the number? Yes   No

2. Pick 3 items from the chart. List your items from longest to shortest:

a.   _____

b.   _____

c.   _____

Lesson 6:   Understand the need to use the same units when comparing
measurements with others.

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Lesson 7

Objective: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

Suggested Lesson Structure

▪ Fluency Practice   (18 minutes)
▪ Application Problem   (5 minutes)
▪ Concept Development   (27 minutes)
▪ Student Debrief   (10 minutes)
  Total Time   **(60 minutes)**
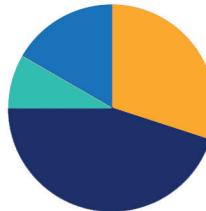
Fluency Practice (18 minutes)

▪ Race and Roll Addition **1.3D, 1.5G**   (5 minutes)
▪ Sprint: Addition Within 20 **1.3D, 1.5G**   (10 minutes)
▪ What Takes More? **1.7C**   (3 minutes)

Race and Roll Addition (5 minutes)

Materials: (S) 1 die per pair

Note: This fluency activity reviews the grade level standard of adding within 20.

Partners start at 0. Partners take turns rolling a die and then saying a number sentence by adding the number rolled to the total. (For example, Partner A rolls 6 and says, "0 + 6 = 6." Partner B rolls 3 and says, "6 + 3 = 9.") They continue rapidly rolling and saying number sentences until they get to 20, without going over. (For example, if partners are at 18 and roll 5, they take turns rolling until one of them rolls 2 or 1 two times.) Partners stand when they reach 20.

Sprint: Addition Within 20 (10 minutes)

Materials: (S) Addition Within 20 Sprint

Note: This Sprint addresses the Grade 1 standard of adding and subtracting within 20. It is the same Sprint from Lesson 5, so students will likely do better today. Along with celebrating improvement between Sides A and B, celebrate improvement from the last time this Sprint was given.

> **NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> While some students thrive during Sprints, others may not enjoy having to complete a timed task. Personal best competition during Sprints encourages students to focus on their individual success and improvement.

What Takes More? (3 minutes)

Materials: (T) centimeter cube, board eraser, ruler, new pencil, new crayon, large paper clip, small paper clip, linking cube, pencil eraser

Note: This reviews the content from Lessons 5 and 6.

   T: (Point to a large piece of poster paper, indicate the long vertical edge.) Does it take more centimeter cubes or board erasers to measure this length?

   S: Centimeter cubes!

   T: Does it take more rulers or board erasers to measure this length?

   S: Board erasers!

Continue the sequence with: rulers or new crayons; new pencils or new crayons; pencil erasers or board erasers; large paper clips or small paper clips; linking cubes or centimeter cubes.

   T: If we are measuring the same length, why do we need more centimeter cubes than linking cubes?

   S: Each centimeter cube is smaller, so we need more to cover the same length.

Application Problem (5 minutes)

Corey buys a super-cool, extra-long crayon that is 14 centimeters long. His regular crayon is 9 centimeters long. Use centimeter cubes to find out how much longer Corey's new crayon is than his regular crayon.

Write a statement to answer the question.
Write a number sentence to show what you did.

Note: This problem continues to provide students with opportunities to concretely build various lengths with centimeter cubes. As students work toward solving *compare with difference unknown* problem types, experiences with concrete objects like centimeter cubes can strengthen understanding. Students explore the comparison of centimeter cubes during today's lesson. As students work, notice how they are solving, and use your analysis during the Concept Development.

$$9 + 5 = 14$$

$$9 + 1 = 10$$
$$10 + 4 = 14$$

New crayon is 5 cubes longer.
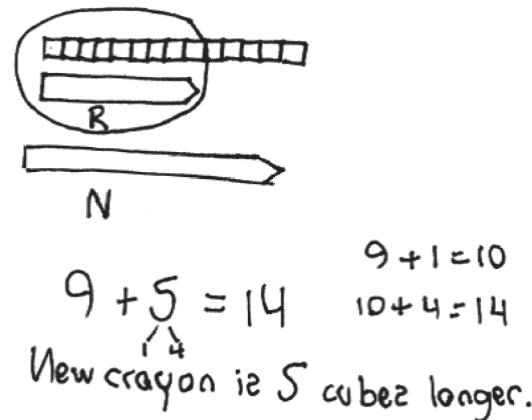
Concept Development (27 minutes)

Materials: (T) 2 different colors of centimeter cubes (e.g., blue and yellow), dry erase marker, jumbo craft stick, crayon, glue stick, small paper clip, unsharpened pencil, new colored pencil, chart with measuring rules (Lesson 5) (S) Bag with 20 blue and 20 yellow centimeter cubes, bag with classroom materials (Lesson 2), new colored pencil

**Lesson 7:**   Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

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Note: Adjust the Concept Development as necessary based on observations of student successes and challenges during Lesson 4, as well as during the most recent Application Problems. Today's Concept Development is an opportunity to continue supporting student understanding of the *compare with difference unknown* problem types within the concrete context of comparing lengths of centimeter cubes.

Gather students in the meeting area in a semicircle formation.

T: (Post the chart with measuring rules from Lesson 5.) The teacher next door and I were playing a game. Whoever found the longer object on our desks won, but the object could not be longer than a new pencil. For each extra centimeter in length, the person with the longer object got a point.

T: The teacher next door found a craft stick, and I found a dry erase marker, just like the ones on our chart (point to the chart). My dry erase marker measured 12 centimeters, and his craft stick measured 15 centimeters. He said he got 15 points, but I don't think that's right. Let's lay the centimeter cubes down and compare them to see how many points he should have gotten in our game.

T: I have 12 centimeter cubes here in my hand. (Lay the two objects in the middle. Point to the chart.) The dry erase marker is 12 centimeters long. Will I have enough cubes to measure my dry erase marker?

S: Yes! It is 12 centimeters long, and you have 12 centimeter cubes.

T: (Lay down blue centimeter cubes along the dry erase marker. Point to the craft stick measurement of 15 centimeters on the chart.) Will these same 12 cubes be enough to measure the craft stick?

S: No! There are only 12 centimeter cubes. The craft stick is 15 centimeters long.

T: (Lay down 12 blue centimeter cubes along the craft stick.) The teacher next door said he should get 15 points because it took 15 more centimeter cubes to measure the craft stick than the marker! Look at the marker and the centimeter cubes we laid down. Is he right? Did he need 15 more cubes along with the 12 cubes I needed? Talk with a partner. How many more cubes did the teacher next door need compared to the number of cubes I used? (Have partners share their thinking with the class.)

T: Now, let's try the other teacher's idea. (Add 15 more cubes, this time using yellow cubes.) Wow, this is too long! It's much longer than the difference between what he already has and what he needs. What should I do?

S: Take away all of the extra cubes until they line up with the end of the craft stick.

T: (Three yellow cubes are left.) So, if I had 12 cubes and he had 15 cubes, how many more cubes did the teacher need compared to me?

S: 3 more cubes.

T: How much longer is the teacher's craft stick compared to my marker?

S: 3 centimeters.

T: How much shorter is my marker compared to the teacher's craft stick?

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Reading word problems aloud facilitates problem solving for those students who have challenges reading the text. Hearing the word problem also helps students who are auditory learners and some emergent bilingual students. Make sure students with reading challenges are not held back by the reading when they are able to solve the math problems.

S: 3 centimeters.

T: So, for that round, the teacher got 3 points because his stick was 3 centimeters longer than my marker. The teacher tried to get 15 points for that one, but I'm glad we figured out that he only gets 3 points.

Repeat the process by having students work with their centimeter cubes, measuring using the following contexts. Model as much as appropriate.

- Measure a new colored pencil and an unsharpened pencil as in the game between the two teachers.
- Students measure and compare the lengths of a crayon and a glue stick to see which item is shorter and by how much.
- Kelly is knitting a scarf for her doll. It needs to be 13 centimeters long. She has already knitted 9 centimeters. How many more centimeters need to be knitted?

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

Note: For the Problem Set, students use actual centimeter cubes to solve the problems.

Student Debrief (10 minutes)

Lesson Objective: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- Look at Problems 3 and 4. What do you notice about the answers? Explain to your partner why this is so.
- Look at Problem 8. Can you think of a number sentence that can help you check your answer?
- What strategy helped you when you tried to find the difference between two objects?
- Look at today's Application Problem. How does it apply to today's lesson?

Name Maria _____ Date _____

1. Look at the picture below. How much **longer** is Guitar A than Guitar B?

Guitar A is __|__ unit(s) **longer** than Guitar B.

2. Measure each object with centimeter cubes.

The blue pen is __8 centimeters__.

The yellow pen is __10 centimeters__

Note: Make the bags of centimeter cubes available for students to use in completing their homework.

Exit Ticket (3 minutes)

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

3. How much **longer** is the yellow pen than the blue pen?

   The yellow pen is ~~2~~ _____ centimeters **longer** than the blue pen.

4. How much **shorter** is the blue pen than the yellow pen?

   The blue pen is ~~2~~ _____ centimeters **shorter** than the yellow pen.

Use your centimeter cubes to model each problem. Then, solve by drawing a picture of your model and writing a number sentence and a statement.

5. Vinh wants to make a train that is 13 centimeter cubes long. If his train is already 9 centimeter cubes long, how many **more** cubes does he need?
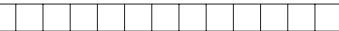
   W
   A
   $9 + \boxed{4} = 13$

   Vinh needs 4 more cubes.

6. Kea's boat is 12 centimeters long, and Megan's boat is 8 centimeters long. How much **shorter** is Megan's boat than Kea's boat?
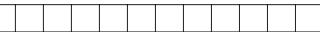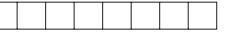
   K
   M
   $8 + \boxed{4} = 12$

   Megan's boat is 4 centimeters shorter.

7. Kim cuts a piece of ribbon for her mom that is 14 centimeters long. Her mom says the ribbon is 8 centimeters too long. How **long** should the ribbon be?

   T L   S h
   $14 - 8 = \boxed{6}$
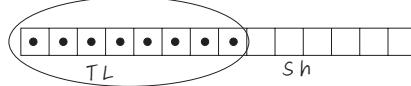
   The ribbon should be 6 centimeters.

8. The tail of Lee's dog is 15 centimeters long. If the tail of Kit's dog is 9 centimeters long, how much **longer** is the tail of Lee's dog than the tail of Kit's dog?
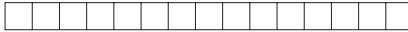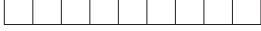
   L
   K
   $9 + \boxed{6} = 15$

   Lee's dogs tail is 6 centimeters longer.

Lesson 7: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

OER

A

Number Correct: ⬡

Name _____　Date _____

*Write the missing number.

1.	17 + 1 = □		16.	11 + 9 = □	
2.	15 + 1 = □		17.	10 + 9 = □	
3.	18 + 1 = □		18.	9 + 9 = □	
4.	15 + 2 = □		19.	7 + 9 = □	
5.	17 + 2 = □		20.	8 + 8 = □	
6.	18 + 2 = □		21.	7 + 8 = □	
7.	15 + 3 = □		22.	8 + 5 = □	
8.	5 + 13 = □		23.	11 + 8 = □	
9.	15 + 2 = □		24.	12 + □ = 17	
10.	5 + 12 = □		25.	14 + □ = 17	
11.	12 + 4 = □		26.	8 + □ = 17	
12.	13 + 4 = □		27.	□ + 7 = 16	
13.	3 + 14 = □		28.	□ + 7 = 15	
14.	17 + 2 = □		29.	9 + 5 = 10 + □	
15.	12 + 7 = □		30.	7 + 8 = □ + 9	

B

Number Correct:

Name _____   Date _____

*Write the missing number.

1.	$14 + 1 = \square$		16.	$11 + 9 = \square$	
2.	$16 + 1 = \square$		17.	$10 + 9 = \square$	
3.	$17 + 1 = \square$		18.	$8 + 9 = \square$	
4.	$11 + 2 = \square$		19.	$9 + 9 = \square$	
5.	$15 + 2 = \square$		20.	$9 + 8 = \square$	
6.	$17 + 2 = \square$		21.	$8 + 8 = \square$	
7.	$15 + 4 = \square$		22.	$8 + 5 = \square$	
8.	$4 + 15 = \square$		23.	$11 + 7 = \square$	
9.	$15 + 3 = \square$		24.	$12 + \square = 18$	
10.	$5 + 13 = \square$		25.	$14 + \square = 18$	
11.	$13 + 4 = \square$		26.	$8 + \square = 18$	
12.	$14 + 4 = \square$		27.	$\square + 5 = 14$	
13.	$4 + 14 = \square$		28.	$\square + 6 = 15$	
14.	$16 + 3 = \square$		29.	$9 + 6 = 10 + \square$	
15.	$13 + 6 = \square$		30.	$6 + 7 = \square + 9$	

Lesson 7: Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

OER

Name _____   Date _____

1. Look at the picture below. How much **longer** is Guitar A than Guitar B?

Guitar A is _____ unit(s) **longer** than Guitar B.

2. Measure each object with centimeter cubes.

The blue pen is _____ _____.

The yellow pen is _____ _____.

3. How much **longer** is the yellow pen than the blue pen?

    The yellow pen is _____ centimeters **longer** than the blue pen.

4. How much **shorter** is the blue pen than the yellow pen?

    The blue pen is _____ centimeters **shorter** than the yellow pen.

Use your centimeter cubes to model each problem. Then, solve by drawing a picture of your model and writing a number sentence and a statement.

5. Vinh wants to make a train that is 13 centimeter cubes long. If his train is already 9 centimeter cubes long, how many **more** cubes does he need?

6. Kea's boat is 12 centimeters long, and Megan's boat is 8 centimeters long. How much **shorter** is Megan's boat than Kea's boat?

Lesson 7:   Answer *compare with difference unknown* problems about lengths of two different objects measured in centimeters.

7. Kim cuts a piece of ribbon for her mom that is 14 centimeters long. Her mom says the ribbon is 8 centimeters too long. How **long** should the ribbon be?

8. The tail of Lee's dog is 15 centimeters long. If the tail of Kit's dog is 9 centimeters long, how much **longer** is the tail of Lee's dog than the tail of Kit's dog?

Name _____   Date _____

Use your centimeter cubes to model the problem. Then, draw a picture of your model.

Mona's hair is 7 centimeters long. Claire's hair is 15 centimeters long. How much **shorter** is Mona's hair than Claire's hair?

Name _____   Date _____

1. Look at the picture below. How much **shorter** is Trophy A than Trophy B?
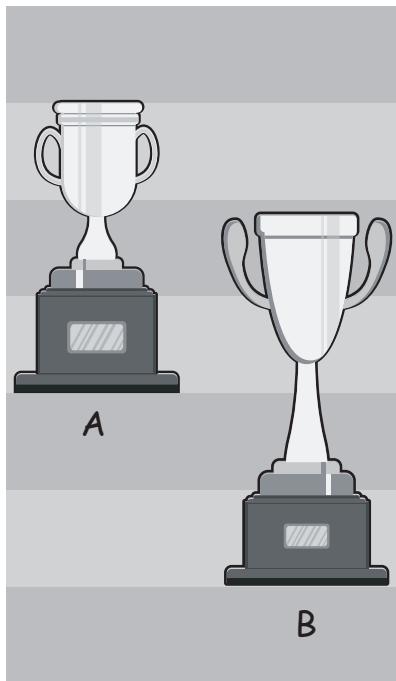
Trophy A is _____ units **shorter** than Trophy B.

2. Measure each object with centimeter cubes.

The red shovel is _____   _____.

The green shovel is _____   _____.

3. How much **longer** is the green shovel than the red shovel?
    The green shovel is _____ centimeters **longer** than the red shovel.

Use your centimeter cubes to model each problem. Then, solve by drawing a picture of your model and writing a number sentence and a statement.

4. Susan grew 15 centimeters, and Tyler grew 11 centimeters. How much **more** did Susan grow than Tyler?

5. Bob's straw is 13 centimeters long. If Tom's straw is 6 centimeters long, how much **shorter** is Tom's straw than Bob's straw?

6. A purple card is 8 centimeters long. A red card is 12 centimeters long. How much **longer** is the red card than the purple card?

7. Carl's bean plant grew to be 9 centimeters tall. Dan's bean plant grew to be 14 centimeters tall. How much **taller** is Dan's plant than Carl's plant?
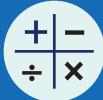
Topic C
Data Interpretation

1.3B, 1.5D, 1.8A, 1.8B, 1.8C

Focus Standards:	1.3B	Use objects and pictorial models to solve word problems involving joining, separating, and comparing sets within 20 and unknowns as any one of the terms in the problem such as 2 + 4 = [ ]; 3 + [ ] = 7; and 5 = [ ] − 3.
	1.5D	Represent word problems involving addition and subtraction of whole numbers up to 20 using concrete and pictorial models and number sentences.
	1.8A	Collect, sort, and organize data in up to three categories using models/representations such as tally marks or T-charts.
	1.8B	Use data to create picture and bar-type graphs.
	1.8C	Draw conclusions and generate and answer questions using information from picture and bar-type graphs.
Instructional Days:	4	
Coherence Links from:	GK–M3	Comparison of Length, Weight, Capacity, and Numbers to 10
-Links to:	G2–M7	Problem Solving with Length, Money, and Data

Topic C closes the module as students organize, represent, and interpret personally relevant data in Lesson 8 (**1.8A, 1.8B, 1.8C**). As students work as a class to collect, sort, and organize data into a graph, they find great purpose and excitement. They begin to answer, and then ask questions about, the number of data points in a given category and in two categories.

Lesson 9 allows students to take a more independent role in the collecting, sorting, organizing, and representing phases involved in graphing. They work on their own to ask and answer questions about the data set. This work prepares them for the comparison work of the last two lessons.

In Lesson 10, students interpret information presented in picture graphs by exploring *compare with difference unknown* problems. They begin with visualizing these problems in their easily accessible "equalizing" contexts by answering questions such as, "How many more students would Category A need in order to have the same amount as Category B?" Students use their understanding of comparing lengths from Topics A and B to now compare the responses in three categories.

Lesson 11 continues this exploration with students again interpreting data sets to ask and answer varied word problems including "How many students were polled in all?" and "How many more students are in Category C than in Category A?" (**1.3B, 1.5D**). Throughout Topic C, students also apply their learning from earlier in the module as they begin to notice the connection between length units and data points on a graph.

A Teaching Sequence Toward Proficiency with Data Interpretation
Objective 1: **Collect, sort, and organize data; then ask and answer questions about the number of data points.** **(Lessons 8–9)**
Objective 2: **Ask and answer varied word problem types about a data set with three categories.** **(Lesson 10)**
Objective 3: **Ask and answer varied word problem types about a bar graph with three categories.** **(Lesson 11)**

Lesson 8

Objective: Collect, sort, and organize data; then ask and answer questions about the number of data points.

Suggested Lesson Structure

- 🟨 Fluency Practice　　　(13 minutes)
- 🟩 Application Problem　　(5 minutes)
- ⬛ Concept Development　(32 minutes)
- 🟦 Student Debrief　　　　(10 minutes)

　Total Time　　　　　**(60 minutes)**
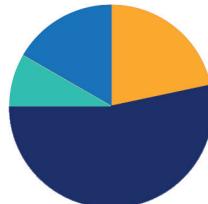
Fluency Practice (13 minutes)

- Happy Counting **1.5A, 1.5B**　　　　　　　(3 minutes)
- What Takes Less? **1.7C**　　　　　　　　　(4 minutes)
- Subtraction Within 20 **1.3D, 1.3E, 1.3F, 1.5G**　(6 minutes)

Happy Counting (3 minutes)

Note: Practice with counting forward and backward by tens and ones strengthens students' understanding of place value. Counting by twos and fives strengthens addition and subtraction skills.

Repeat the Happy Counting activity from Module 2, Lesson 4. Choose a counting pattern and range based on the class's skill level. If students are proficient with counting by ones, twos, fives, and tens to 40, start at 40 and go to 80. If they are proficient between 40 and 80, work between 80 and 120. Alternate between counting the regular way and the Say Ten way to reinforce place value.

What Takes Less? (4 minutes)

Materials:　(T) centimeter cube, board eraser, ruler, new pencil, new crayon, large paper clip, small paper clip, linking cube, pencil eraser

Note: This reviews the content from Lessons 5 and 6.

- T:　(Point to a large piece of poster paper, indicate the long vertical edge.) Does it take less centimeter cubes or board erasers to measure this length?
- S:　Board erasers!
- T:　Does it take fewer rulers or board erasers to measure this length?
- S:　Rulers!

Continue the sequence with: rulers or new crayons; new crayons or new pencils; pencil erasers or board erasers; large paper clips or small paper clips; linking cubes or centimeter cubes.

T: If we are measuring the same length, why do we need fewer linking cubes than centimeter cubes?

S: Each linking cube is larger, so we need less.

Subtraction Within 20 (6 minutes)

Materials: (T) Hide Zero cards (Lesson 11 Fluency Template) (S) Personal white board

Note: This review fluency activity helps strengthen students' understanding of the take from ten and take from the ones subtraction strategies, as well as their ability to recognize appropriate strategies based on problem types.

T: (Show 14 with Hide Zero cards.) How can I take 14 apart to help me subtract?

S: 10 and 4.

T: I want to subtract 2 from 14. Write a number sentence to show whether I should subtract 2 from the 4 or the 10.

S: (Write $4 - 2 = 2$.)

T: Why wouldn't I take from my 10?

S: You don't need to because you have enough ones.

T: Yes! I can just subtract from my ones! Since $4 - 2 = 2$, $14 - 2$ is …? Write the subtraction sentence.

S: (Write $14 - 2 = 12$.)

T: (Replace the 4 Hide Zero card with a 2.) Yes!

Repeat with $14 - 5$, eliciting the need to take from ten because there are not enough ones. Repeat with similar problems.

Application Problem (5 minutes)

A first grade teacher needs a story problem about bluebonnets to match this drawing and number sentence. Help her by writing a story problem that matches both. Make sure to answer the question you write in your story problem!

Note: This problem encourages students to create a story problem for a *take away with result unknown or separate with result unknown problem type*. Students' story problems and answer statements will vary.

Lesson 8:   Collect, sort, and organize data; then ask and answer questions about the number of data points.

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Concept Development (32 minutes)

Materials: (T) 3 pieces of chart paper (S) 1 jumbo craft stick, marker, personal white board

Note: Before today's math lesson begins, prepare three charts:

Chart 1: *Favorite Read Aloud Books*

Chart 2: *Favorite Read Aloud Books* with a blank table labeled with *Number of Students*

Chart 3: *Favorite Sports* with a blank table labeled with *Name of Sport* and *Number of Students*

Note: Later in the lesson, students are asked to vote for one of three sports. A topic other than sports can be used to match the class's preference. The lesson requires that only three choices be provided from which students can pick. Model for students that when making a table of information, the symbols within the table all need to be the same.

Have students come to the meeting area with their personal white boards and sit in a semicircle formation.

T: I want to find out which read aloud books you like the most from the ones we have read together. Can you name some of the books we've read?

S: (Name books.)

T: (Choose three titles, and write them on Chart 1. Consider using the most important word from the title to alleviate students from having to write many words during the following activity.)

T: Let's collect some information, or **data**, to find out how many students like which books the most. How should we collect our data?

S: Ask each student, and then write the names down next to the book title. → Call out each title, and ask us to raise our hands if it is our favorite book.

T: Each of you has a craft stick at your table. Decide which book you like the most out of these three choices. Then, write the name of the book on the craft stick. Come up to this chart, and place your stick anywhere on the chart. (Lay the chart on the floor in the middle of the meeting area.)

S: (Label the craft stick, and freely place it on the chart.)

T: Wow, this chart is filled with ____ (the number of students) craft sticks! How many students liked Book A? (Give five seconds for students to count.)

S: (Answers may vary.) I can't count that fast! I need more time.

Favorite Read Aloud Books

(Book Title 1)
(Book Title 2)
(Book Title 3)

Student Popsicle Sticks
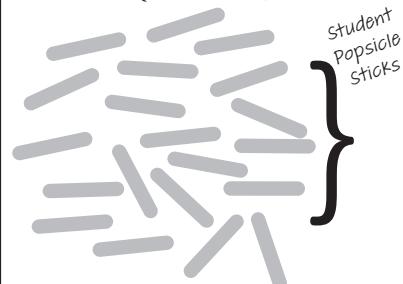
Chart 1 with craft sticks placed by students.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Highlight the critical vocabulary for students while teaching the lesson. Vocabulary to highlight is *collecting, organize, sorting, data,* and *table,* as this is the first time students are being introduced to these words in the context of math. Try relating the vocabulary to something they already know. This is helpful to all students, including emergent bilingual students.

Lesson 8: Collect, sort, and organize data; then ask and answer questions about the number of data points.

T: We have different answers, and some people didn't even get to finish counting! How can we make counting these craft sticks more efficient?

S: After we count each craft stick, take it off so we can keep track of which ones we have already counted. → Get all the craft sticks for each book, and put them together. We should separate and sort them. → We should organize these sticks by book titles!

T: These are great ideas. I agree! Here is a **table**. It will help us organize our information or data. (Lay Chart 2 on the floor, and write in the titles. Ask a few student volunteers to rearrange the craft sticks in a horizontal line next to each book title.)

T: Now, do you see it differently? How is it different?

S: Yes!

T: How can we organize the data so we can count more efficiently and see more easily?

S: Group them by twos. → Group them by fives. Put them in 5-group rows!

T: I love the idea of organizing them into groups of 5. In fact, we are going to arrange some of these sticks in a special way to show groups of 5. Help me count as I show you how this is done.

S: 1, 2, 3, 4, 5. (Count as the teacher points to each craft stick.)

T: Stop! Since we have a group of 5 here, I'm going to take the fifth stick and lay it across the others. (Model.) Show me in the air how this group of 5 is made as we count from 1 through 5 again.

S: 1, 2, 3, 4, 5. (Make tally marks in the air with teacher modeling.)

T: You just used **tally marks**. Tally marks come in groups of 5 where the fifth line always goes across the rest of the four lines. Let's continue with the rest of these sticks.

Favorite Read Aloud Books

(Book Title 1) | (Book Title 2) | (Book Title 3)

Number of Students

Students arrange popsicle sticks, first in rows and then adjust to tally marks.

Chart 2 with craft sticks arranged as tallies.

Students count to 5 and make tally marks in the air as the teacher makes tally marks with craft sticks. After arranging a few craft sticks, ask student volunteers to rearrange the remaining craft sticks.

T: Great job organizing the data by sorting the information we collected. Now we can see and count our information more easily.

Count the tally marks for each book title, and record the number directly on the table. Invite students to interpret the data by posing questions such as those below.

▪   How many students liked Book A the most?

▪   How many students liked Book A or Book B the most? (Note: Because the question says *or*, students need to add the number for A and the number for B.)

▪   Which book is most liked by our classmates? Which book is the least liked of the favorites?

Repeat the process with favorite sports using football, basketball, and soccer as the three choices. Alternatively, use a theme other than sports if it would have more appeal for the class. Another strategy is to offer *other* as a choice. Students may use the back of the original craft sticks to record their choice. After creating the table on Chart 3, have students write their answers to the following questions:

- How many students chose football as the sport they like best?
- How many students chose basketball as the sport they like best?
- How many students chose soccer as the sport they like best?
- What is the total number of students who like soccer or basketball the best?
- Which sport received the most votes?
- Think of a question you could ask a friend about the **table**.

Note: Save these tables for reference in Lessons 11, 12, and 13 of this topic.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

Student Debrief (10 minutes)

Lesson Objective: Collect, sort, and organize data; then ask and answer questions about the number of data points.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- How is making a table helpful when we are looking at a lot of information?
- Why is sorting and organizing data important when you are making a table?
- How do tables help us see information?
- Share the problem you made up using the favorite sports table. Solve each other's questions and check your answers.

Favorite Sports

Name of Sport | Football | |
Basketball | |
Soccer | |

Number of Students

Re-use craft sticks, using reverse side.

Chart 3

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

When using a table to answer questions, ask student volunteers to point to the category label to ensure they are referring to the appropriate category. Remind students to also count accurately so that the interpretation of the information displayed in their table is valid.

■   How are 5-group rows and tally marks similar? How are they different?

■   Why is using **tally marks** better than using 5-group rows when making a table?

Exit Ticket (3 minutes)

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

Name _____   Date _____

A group of people were asked to say their favorite color. Organize the data using tally marks, and answer the questions.
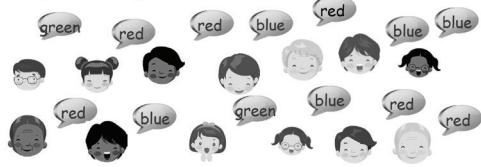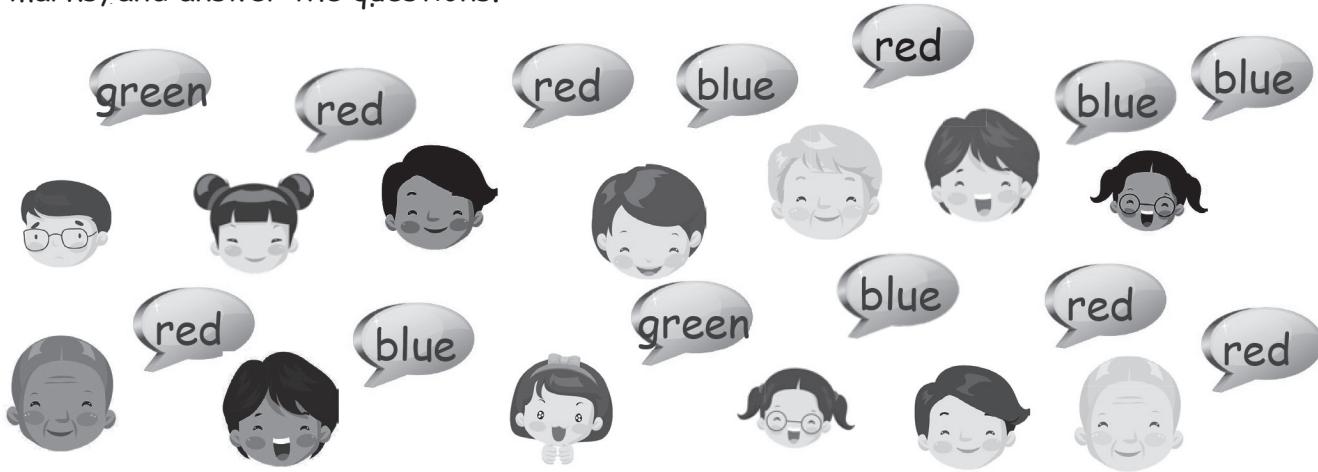
Red	
Green	
Blue	

1. How many people chose red as their favorite color? _____ people like red.

2. How many people chose blue as their favorite color? _____ people like blue.

3. How many people chose green as their favorite color? _____ people like green.

4. Which color received the least amount of votes? _____

5. Write a number sentence that tells the total number of people who were asked their favorite color.

Name _____   Date _____

A group of students were asked what they ate for lunch. Use the data below to answer the following questions.

Student Lunches

Lunch	Number of Students
sandwich	3
salad	5
pizza	4

1. What is the **total** number of students who ate pizza? _____ student(s)

2. Which lunch was eaten by the **greatest** number of students? _____

3. What is the total number of students who ate pizza or a sandwich? _____ student(s)

4. Write an addition sentence for the **total** number of students who were asked what they ate for lunch.

   _____

Name _____   Date _____

Students were asked about their favorite ice cream flavor. Use the data below to answer the questions.

Ice Cream Flavor	Tally Marks	Votes
Chocolate	IIII	
Strawberry	III	
Cookie Dough	HHH HHH	

1. Fill in the blanks in the table by writing the number of students who voted for each flavor.

2. How many students chose cookie dough as the flavor they like **best**?

   _____ students

3. What is the total number of students who like chocolate or strawberry the **best**?

   _____ students

4. Which flavor received the **least** amount of votes? _____

5. What is the total number of students who like cookie dough or chocolate the **best**?

   _____ students

6. Which two flavors were liked by a **total** of 7 students?

   _____ and _____

7. Write an addition sentence that shows how many students voted for their favorite ice cream flavor.

   _____

Students voted on what they like to read the most. Organize the data using tally marks, and then answer the questions.

comic book	magazine	chapter book	comic book	magazine
chapter book	comic book	comic book	chapter book	chapter book
chapter book	chapter book	magazine	magazine	magazine

What Students Like to Read the Most	Number of Students
Comic Book	
Magazine	
Chapter Book	

8. How many students like to read chapter books the most? _____ students

9. Which item received the **least** amount of votes? _____

10. How many more students like to read chapter books than magazines?

    _____ students

11. What is the total number of students who like to read magazines or chapter books?

    _____ students

12. Which two items did a total of 9 students like to read?

    _____ and _____

13. Write an addition sentence that shows how many students voted.

    _____

Lesson 8:   Collect, sort, and organize data; then ask and answer questions about the number of data points.

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Lesson 9

Objective: Collect, sort, and organize data; then ask and answer questions about the number of data points.

Suggested Lesson Structure

■	Fluency Practice	(10 minutes)
■	Application Problem	(5 minutes)
■	Concept Development	(35 minutes)
■	Student Debrief	(10 minutes)
	Total Time	**(60 minutes)**
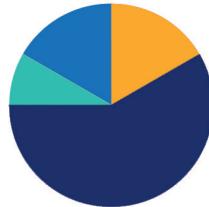
Fluency Practice (10 minutes)

- Sprint: Subtraction Within 20 **1.3D, 1.5G**   (10 minutes)

Sprint: Subtraction Within 20 (10 minutes)

Materials: (S) Subtraction Within 20 Sprint

Note: This Sprint addresses the Grade 1 standard of subtracting within 20. This is the second time students are seeing this Sprint. Ask students if they were able to complete more problems than the last time they tried this Sprint.

Application Problem (5 minutes)

Nam asked his friends whether dogs or cats are friendlier. 9 of his friends think dogs are friendlier, and 6 think cats are friendlier. Make a table to show Nam's data collection. How many friends did he ask?

Note: This Application Problem reviews organizing data, the objective in Lesson 8. Some students may show their work with simple shapes, such as lines or circles, while others may experiment with tally marks.

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Remember that the strength of the Sprint is in students' on-going experience of success. The tendency is to want to compete with a peer rather than with oneself. At times, it is wise to downplay who improved the most or who got the most correct but rather opt for self-reflection:

- Who feels they tried hard today?
- Who feels they have improved with their subtraction since the beginning of first grade?
- Who feels they are memorizing more facts?

dogs O O O O O O O O O
cats O O O O O O O

9 + 6 = 15   9 + 1 = 10
      ∧   10 + 5 = 15
     1 5

He asked 15 friends.

Concept Development (35 minutes)

Materials: (T) Chart paper with a table entitled *Favorite Rainy Day Activities* with *Activity* and *Number of Students* on the top line, class list (S) Clipboard, class list (preferably with first names in alphabetical order)

Have students sit in the meeting area in a semicircle formation.

T: (Post the chart.) Let's brainstorm some of our favorite rainy day activities and make a table to see how many students like which activity the best and compare the information. To make this table, what do we need to do first? Turn and talk to your partner.

S: (Answers may vary.) We need to figure out the choices we will vote on.

T: You are right! What are some of your favorite things to do on a rainy day?

Answers may vary. Choose three activities, and write them down on the chart in the first column. For example, they could be *read a book, watch a movie,* and *play board games.*

T: Now, what do we do? Turn and talk to your partner.

S: We need to ask around and get everyone to vote.
→ We need to write down who likes which activity the best. → We can use 5-group rows to show our votes.
→ We can use tally marks to show everyone's votes.

T: If we want to compare the information in the table, what do you think is the best way to record the information? Why?

S: (Answers may vary.) 5-group rows help me see better because I can line them up with the other rows. → I like using the tally marks because I can count faster.

T: Good thinking! (Project the class list.) To make sure I interview everyone and get everyone's vote, I'm going to use the class list to help me keep track of who answered my question and what he voted for. (Start from the top of the list. Model collecting data using the class list by asking the first seven to eight students on the list. Check off each name as a student volunteer either makes a tally mark or draws a circle in 5-group rows on the table to represent each vote.)

To save time, call out a choice, and ask the remaining students to raise their hands. Elicit one to two questions to interpret the data. Then, have students come up with additional questions for their partners to answer, including any of the following:

▪   How many students like to [watch a movie] the most on a rainy day?

> **NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> Connect literature with the table students will be making in class today. Pick a favorite book that discusses rainy day activities, or alternatively visit with the school librarian to check one out. Read it aloud to the class before making the table to get students ready with ideas.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> Consider providing sentence frames for students that need support with posing and answering questions based on data, including some emergent bilingual students. For example, "We counted _____ birds, mammals, and reptiles," and, "The category with the fewest animals is _____."

- Which rainy day activity is liked the most by our class? The least? How can you tell from the table?
- How many students like to [read a book] or [play board games] the most on a rainy day?
- If two more students voted for [watching a movie], how many students would like [watching a movie] the best?

T: Just like we created this entire table as a class, you will now get to create your own table! Let's look at the Problem Set together to see how!

Problem Set (20 minutes)

Students should do their personal best to create questions based on their tables in the Problem Set and answer their partner's questions within the allotted 20 minutes.

Read over the Problem Set directions and go over the steps to follow. Have students locate the Problem Set and distribute a class list. Give students approximately 20 minutes to collect and organize their data.

Students who need more structured directions can work in a small group with the teacher for step-by-step guidance.

Photocopy today's Problem Set on two separate sheets of paper so that students can set their papers side by side as they refer to their tables and design questions.

Student Debrief (10 minutes)

Lesson Objective: Collect, sort, and organize data; then ask and answer questions about the number of data points.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

Name _Maria_   Date _____

Welcome to Data Day! Follow the directions to **collect** and **organize** data. Then, **ask** and **answer questions** about the data.

- Choose a question. Circle your choice.
- Pick 3 answer choices.
- Ask your classmates the question, and show them the 3 choices. Record the data on a class list.
- Organize the data in the chart below.

Which fruit do you like best?	Which snack do you like best?	What do you like to do on the playground the most?	Which school subject do you like the best?	Which animal would you most like to be?

Answer Choices	Number of Students
monky bars!	⊬⊬ |||
swings!	⊬⊬	
tag!	⊬⊬ ⊬⊬ ||

- Complete the question sentence frames to ask questions about your data.
- Trade papers with a partner, and have your partner answer your questions.

1. How many students liked _monky bars_ the best?

     8 students

2. Which category received the fewest votes? __swings__

     6 students

3. How many more students liked ___tag___ than ___swings___?

     6 students

4. What is the total number of students who liked ___tag___ or _monky bars_ the best?

     20 students

5. How many students answered the question? How do you know?

     26
  I counted the tally marks..

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

- How did you organize your data?
- How could you have used tallies? Pictures? Shapes? What other ways might someone organize data?
- How did you solve Problem 4?
- How did you solve Problem 5? How can you solve Problem 5 by looking at your notes on the class list? Would you prefer to use the class list or the table to see the information? Why?
- Look at the Application Problem. How did you organize the data? How did you solve the problem?

Exit Ticket (3 minutes)

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

A

Number Correct:

Name _____

Date _____

*Write the missing number.

1.	17 - 1 = ☐		16.	19 - 9 = ☐	
2.	15 - 1 = ☐		17.	18 - 9 = ☐	
3.	19 - 1 = ☐		18.	11 - 9 = ☐	
4.	15 - 2 = ☐		19.	16 - 5 = ☐	
5.	17 - 2 = ☐		20.	15 - 5 = ☐	
6.	18 - 2 = ☐		21.	14 - 5 = ☐	
7.	18 - 3 = ☐		22.	12 - 5 = ☐	
8.	18 - 5 = ☐		23.	12 - 6 = ☐	
9.	17 - 5 = ☐		24.	14 - ☐ = 11	
10.	19 - 5 = ☐		25.	14 - ☐ = 10	
11.	17 - 7 = ☐		26.	14 - ☐ = 9	
12.	18 - 7 = ☐		27.	15 - ☐ = 9	
13.	19 - 7 = ☐		28.	☐ - 7 = 9	
14	19 - 2 = ☐		29.	19 - 5 = 16 - ☐	
15.	19 - 7 = ☐		30.	15 - 8 = ☐ - 9	

Lesson 9:   Collect, sort, and organize data; then ask and answer questions about the number of data points.

OER

B

Number Correct:

Name _____   Date _____

*Write the missing number.

1.	16 - 1 = ☐		16.	19 - 9 = ☐
2.	14 - 1 = ☐		17.	18 - 9 = ☐
3.	18 - 1 = ☐		18.	12 - 9 = ☐
4.	19 -2 = ☐		19.	19 - 8 = ☐
5.	17 - 2 = ☐		20.	18 - 8 = ☐
6.	15 - 2 = ☐		21.	17 - 8 = ☐
7.	15 - 3 = ☐		22.	14 - 5 = ☐
8.	17 - 5 = ☐		23.	13 - 5 = ☐
9.	19 - 5 = ☐		24.	12 - ☐ = 7
10.	16 - 5 = ☐		25.	16 - ☐ = 10
11.	16 - 6 = ☐		26.	16 - ☐ = 9
12.	19 - 6 = ☐		27.	17 - ☐ = 9
13.	17 - 6 = ☐		28.	☐ - 7 = 9
14.	17 - 1 = ☐		29.	19 - 4 = 17 - ☐
15.	17 - 6 = ☐		30.	16 - 8 = ☐ - 9

Lesson 9: Collect, sort, and organize data; then ask and answer questions about the number of data points.

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Name _____   Date _____

Welcome to Data Day! Follow the directions to **collect** and **organize** data. Then, **ask** and **answer questions** about the data.

- Choose a question. Circle your choice.
- Pick 3 answer choices.
- Ask your classmates the question, and show them the 3 choices. Record the data on a class list.
- Organize the data in the chart below.

Which fruit do you like best?	Which snack do you like best?	What do you like to do on the playground the most?	Which school subject do you like the best?	Which animal would you most like to be?

Answer Choices	Number of Students

- Complete the question sentence frames to ask questions about your data.
- Trade papers with a partner, and have your partner answer your questions.

1. How many students liked _____ the best?

2. Which category received the fewest votes? _____

3. How many more students liked _____ than _____?

4. What is the total number of students who liked _____ or

   _____ the best?

5. How many students answered the question? How do you know?

Lesson 9:   Collect, sort, and organize data; then ask and answer questions about the number of data points.

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Name _____   Date _____

A class collected the information in the chart below. Students asked each other: Among stuffed animals, toy cars, and blocks, which is your favorite toy?

Then, they organized the information in this chart.

Toy	Number of Students
Stuffed Animals	11
Toy Cars	5
Blocks	13

1. How many students chose toy cars? _____

2. How many more students chose blocks than stuffed animals? _____

3. How many students would need to choose toy cars to equal the number of students who chose blocks? _____

Name _____　　Date _____

Collect information about things you own. Use tally marks or numbers to organize the data in the chart below.

How many **pets** do you have?	How many **toothbrushes** does your family have?	How many **pillows** does your family have?	How many **jars of tomato sauce** does your family have?	How many **picture frames** does your family have?

- Complete the question sentence frames to ask questions about your data.
- Answer your own questions.

1. How many _____ do you have? (Pick the item you have the **most** of.)

2. How many _____ do you have? (Pick the it em you have the **least** of.)

3. **Together**, how many picture frames and pillows do you have?

4. Write and answer two more questions using the data you collected.

a. _____ ?

b. _____ ?

Students voted on their favorite type of museum to visit. Each student could only vote once. Answer the questions based on the data in the table.
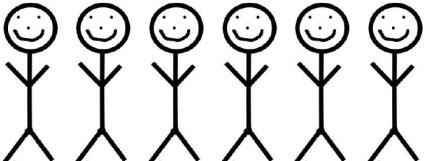
Science Museum	
Art Museum	
History Museum	
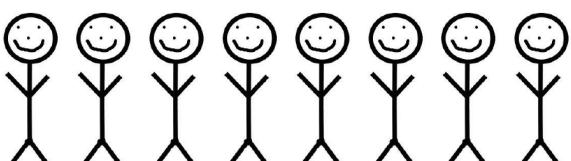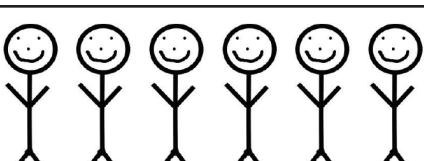
5. How many students chose art museums? _____ students

6. How many students chose the art museum or the science museum?

   _____ students

7. From this data, can you tell how many students are in this class? Explain your thinking.

Lesson 10

Objective: Ask and answer varied word problem types about a data set with three categories.

Suggested Lesson Structure

|		
▮	Fluency Practice	(15 minutes)
▮	Application Problem	(5 minutes)
▮	Concept Development	(30 minutes)
▮	Student Debrief	(10 minutes)
	Total Time	**(60 minutes)**
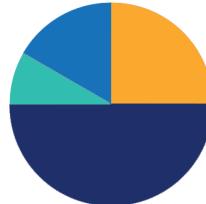
Fluency Practice (15 minutes)

- Addition with Cards **1.2E, 1.3D, 1.5G**　　　(7 minutes)
- Get to 10 or 20 **1.3D**　　　(3 minutes)
- Subtraction with Partners **1.3D, 1.5G**　　　(5 minutes)

Addition with Cards (7 minutes)

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

Note: This review fluency activity strengthens students' ability to add within and across ten.

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

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> When playing games with students, consider the needs of your students. For example:
>
> - Oral fluency games could be adjusted for students who are deaf or have a hearing impairment by allowing them to show their answer with fingers, or using personal white boards to write their answers.
> - Games that require physical movement can be adjusted for students with physical disabilities that still allow them to participate in the activity.

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Lesson 10: 　Ask and answer varied word problem types about a picture graph with three categories.

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Get to 10 or 20 (3 minutes)

Materials: (T) 20-bead Rekenrek

Note: Practice with getting to 10 or 20 reinforces strategically counting on, which enables students to solve addition problems by stopping at 10 and continuing to the desired number.

> T: (Show 8 on the Rekenrek.) What number do you see?
>
> S: 8.
>
> T: Say the complete number sentence to get to 10.
>
> S: 8 + 2 = 10.
>
> T: (Move two beads to make 10.) Good. (Show 18.) What number do you see?
>
> S: 18.
>
> T: Say the complete number sentence to get to 20.
>
> S: 18 + 2 = 20.

Add two beads to confirm, and then continue with other numbers within 20.

> **NOTES ON**
> **MULTIPLE MEANS**
> **OF REPRESENTATION:**
>
> Allow students who have difficulty with the multiple demands of writing, including some emergent bilingual students, to share their word problems orally instead of in writing. Record or transcribe the problem so that the student has a record of their thinking. Consider having students record their thinking using a device that records audio and/or video. Make the recordings available for listening by other students.

Subtraction with Partners (5 minutes)

Materials: (S) Personal white board

Note: This fluency activity reviews subtracting 7, 8, and 9 from teen numbers. Allow students who still require pictorial representations to draw 5-groups to solve.

Assign partners of equal ability. Partners assign each other a number from 11 to 17 (e.g., 12).
On their personal white boards, students write number sentences with 9, 8, and 7 as the subtrahend and solve them (e.g., 12 – 9 = 3, 12 – 8 = 4, 12 – 7 = 5). Partners then exchange personal white boards and check each other's work.

Application Problem (5 minutes)

A first grade teacher needs a story problem about shapes to match this drawing and number sentence. Help him by writing a story problem that matches both. Make sure to answer the question you write in your story problem!

Triangles

Circles

?
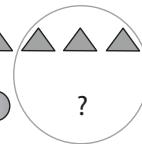
14 - 11 = ☐

Note: This problem encourages students to create a story problem for a *comparison with difference unknown* similar to the Application Problem solved in Lesson 8. Students' story problems and answer statements will vary. Triangles and circles are purposely used in order to give students a starting context.

Concept Development (30 minutes)

Materials: (T) Chart with a three-column vertical graph entitled *Our Favorite Fruits,* chart with measuring rules (Lesson 5) (post on the side of the board), *Favorite Read Aloud Books* chart (Lesson 8), Fruit picture cards (Template 1) (S) personal white board

Have students sit in the meeting area in a semicircle formation.

T: (Post *Our Favorite Fruits* graph.) What are some of your favorite fruits?

S: (Responses may vary.) Strawberries. → Watermelon. → Apples.

T: The most popular fruits in the United States are bananas, strawberries, and grapes. Today, we are going to make a picture graph to answer the question: Which fruit is your favorite: bananas, strawberries, or grapes?

Fill in the three categories on the graph. Place the fruit picture cards on the floor and prompt students to take a card that represents their favorite fruit.

T: My vote is for strawberry as my favorite fruit. I'm going to place my sticky note right beneath the line that says *Strawberry.* (Model.) Who likes grapes best? (Choose a student to come up.) He's also going to place his grapes picture card right beneath the line that says Grapes. (Choose another student to come up and place her banana picture under that says Bananas. Be sure to have these picture cards aligned with each other.)

T: We need one more person who likes strawberries the most. (Have student come up.) When he places his strawberry card, he's going to put it right beneath my card so there are no gaps or overlaps.

T: (Call up one-third of the class to post their votes, encouraging them to avoid making gaps or overlaps between the fruit picture cards.) What do you notice about the rules for placing our fruit picture cards as we complete this picture graph??

S: The rules are just like the rules for measuring! → We had to line up our endpoints when we first started! → We couldn't have any overlaps or gaps. → The picture cards are the same size, the same length unit.

T: Excellent connections! Let's have the rest of our classmates complete the graph as they put up their votes following these rules.

T: Which fruit is the most popular in our class? Which fruit is the least popular? That means it has the fewest number of votes. How can you tell?

S: I counted. The fruit with the highest total is the most popular. → I just looked at the picture cards. The longest strip of notes means the most votes. → The shortest strip means the fewest number of votes. → This reminds me of measuring again! The one that used the most length units to measure is the longest one, and that is the most popular fruit!

NOTES ON MULTIPLE MEANS OF REPRESENTATION:

Students demonstrate a true understanding of math concepts when they can apply them in a variety of situations. Often students learn math concepts in an isolated fashion, and they do not see how to transfer their application to new situations. Celebrate student success when they make these connections.

T: How many students voted for bananas? Strawberries? Grapes? (Record the number amount on the graph.) When we organize our data this way, we call this a picture graph. A graph lets us see the data easily. This graph lines up our data just like when we measure lengths of different items, so we can easily compare.

T: (Point to the corresponding parts of the graph.) Which received more votes, strawberries or grapes?

S: _____ (category) got more votes.

T: Did you have to look at the numbers for each, or could you see it just by looking at the lengths of the bars made of pictures?

S: I just looked at the bar of pictures. → The longer bar of pictures has more.

T: What other questions can we ask about this graph?

S: Did more students like bananas or grapes? → How many more students like _____ than _____?

T: Great! Let's take a moment to answer Student A's questions. Talk to your partner.

S: (Students discuss.)

T: Picture graphs help us answer questions because the data is organized. Let's ask and answer some more questions. How many more students would _____ (category) need in order to have the same amount as _____ (category)? Tell your partner how you figured out your answer _____ (category) need to have the same amount as _____ (category)? Tell your partner how you figured it out.

S: I just counted the part that was longer, the part that was sticking out. → I used subtraction. → I used addition with a mystery number in the middle. → This reminds me of measuring again! We used all of these strategies when we tried to figure out which length was longer when we compared two things!

T: You are right! So, how many more votes did _____ (category) receive than _____ (category)?

T: (Using the same two categories as above, rephrase the question.) How many *fewer* votes did _____ (category) receive than _____ (category)?

Continue to ask *compare with difference unknown* problems and *join with total unknown* problems presented by this graph. Ask students to write a number sentence on their personal white boards to show how they reached a solution. If time allows, use the *Favorite Read Aloud Books* chart from Lesson 8 to answer more *compare with difference unknown* problems. Students may work with their partners to answer each other's questions.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

Student Debrief (10 minutes)

Lesson Objective: Ask and answer varied word problem types about a picture graph with three categories.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- What are some strategies to figure out how many more or fewer votes a category received compared to the other
- How are the graphs that are used with Problems 3 and 5 different? How are they similar?
- How is measuring objects similar to creating graphs like these to compare information about different categories?
- How does a graph that is created properly help you see and understand information better? Did you follow these rules when you made your graph for Problem 1?
- What other questions can you ask about the Favorite Ice Cream picture graph?
- What other questions can you ask about the Favorite Pets picture graph?

Exit Ticket (3 minutes)

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

Name ___Jesus___ Date _____

Each friend picked a picture to represent their favorite ice cream flavor. Cut out their pictures and glue them to the picture graph. Line up your data carefully. Make sure there are no gaps or overlaps as you organize your data.

Favorite Ice Cream Flavors
Number of Students

= 1 vote
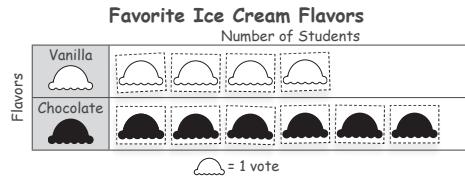
1. How many **more** students liked chocolate than liked vanilla? ___2___ students
2. How many **total** students voted for their favorite ice cream flavor? ___10___ students
3. What is another question we can ask about this picture graph? Write the question and its answer.

How many students voted for vanilla?

4 students
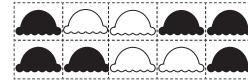
Each student in the class placed a picture on the graph to show his or her favorite kind of pet. Use the picture graph to answer the questions.

Favorite Pets

dog	bunny	cat

Each picture = 1 student vote
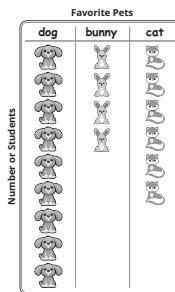
4. How many students chose dogs **or** cats as their favorite pet?
___15___ students
5. How many more students chose dogs as their favorite pet than cats?
___3___ students
6. If the teacher asked a question about this picture graph and you correctly answered "2," what question might the teacher have asked?

How many students more students chose cats than bunnies

Name _____　Date _____

Each friend picked a picture to represent their favorite ice cream flavor. Cut out their pictures and glue them to the picture graph. Line up your data carefully. Make sure there are no gaps or overlaps as you organize your data.

Favorite Ice Cream Flavors
Number of Students

| Flavors		Number of Students
	Vanilla	
	Chocolate	

= 1 vote

1. How many **more** students liked chocolate than liked vanilla?　_____ students

2. How many **total** students voted for their favorite ice cream flavor?
_____ students

3. What is another question we can ask about this picture graph? Write the question and its answer.

_____

_____

Each student in the class placed a picture on the graph to show his or her favorite kind of pet. Use the picture graph to answer the questions.

dog	bunny	cat
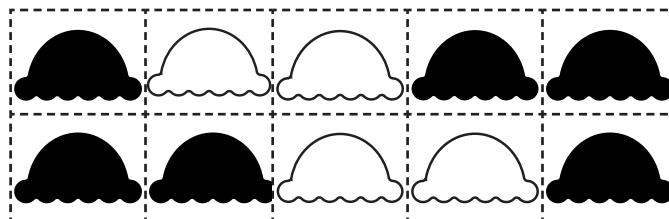
Number or Students
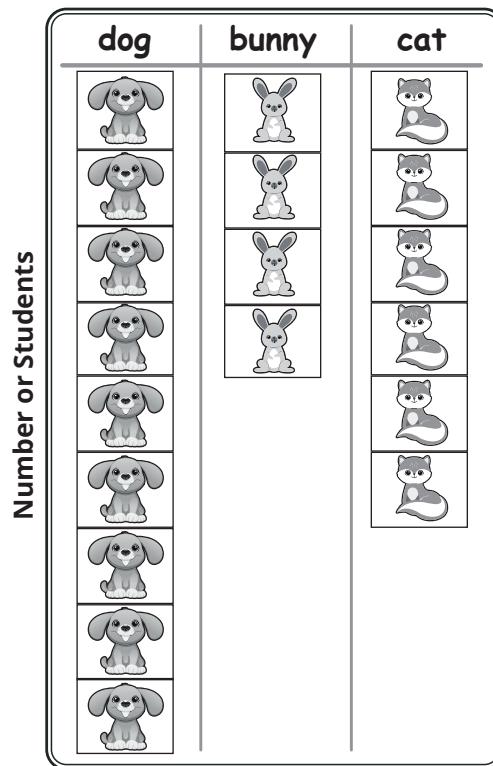
Each picture = 1 student vote

4. How many students chose dogs **or** cats as their favorite pet?

   _____ students

5. How many more students chose dogs as their favorite pet than cats?

   _____ students

6. If the teacher asked a question about this picture graph and you correctly answered "2," what question might the teacher have asked?

   _____

   _____

Name _____   Date _____

Each student in the class selected a picture to vote for their favorite zoo animal. Glue their pictures into the graph with no gaps or overlaps. Then answer the questions.

Favorite Zoo Animals
Number of Students

Zoo Animals		
giraffe	
elephant	
lion	

Each picture = 1 student vote

1. How many total students voted for their favorite zoo animal? _____ students

2. How many **fewer** students like lions than like giraffes? Write a number sentence to show your answer. _____

3. If the teacher asked a question about this picture graph and you correctly answered "3," what question might the teacher have asked?

_____

   Lesson 10:   Ask and answer varied word problem types about a data set with three categories.
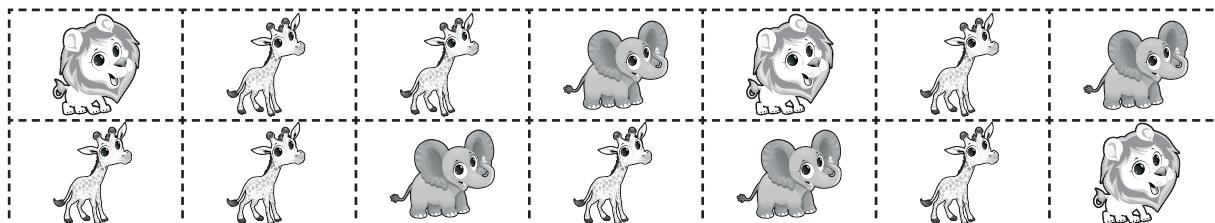
Name _____　　Date _____

In class on Friday, 9 students wore sneakers, 3 students wore boots, and 6 students wore sandals. Use the correct number of picture cards to build your graph. Line up the cards carefully, and make sure there are no gaps or overlaps.

Shoes Worn on Friday

1. How many more students wore sneakers than sandals?

   _____ students

sneakers	boots	sandals

2. How many students were asked about their shoes on Friday? Write a number sentence to show your answer.

   _____

3. How many fewer students wore boots than sneakers? Write a number sentence to show your answer.

   _____

4. If the teacher asked a question about this picture graph and you correctly answered "3," what question might the teacher have asked?

   _____

   _____

Number of Students

Lesson 10:　Ask and answer varied word problem types about a data set with three categories.

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Our school garden has been growing for two months. The graph below shows the numbers of each vegetable that have been harvested so far.

Vegetables Harvested

beets	carrots	corn

Number of Vegetables

Each picture = 1 vegetable
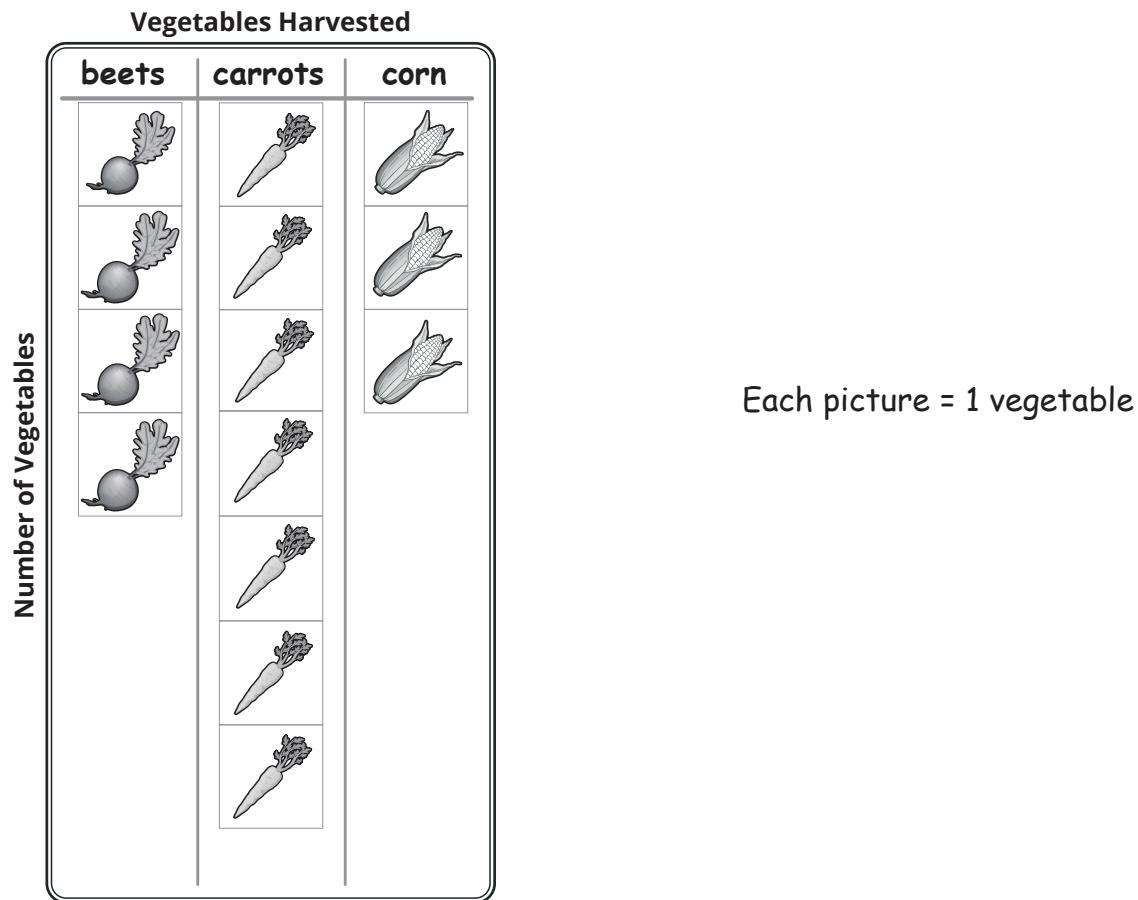
5. How many total vegetables were harvested? _____ vegetables

6. Which vegetable has been harvested the most? _____

7. How many more beets were harvested than corn? _____ more beets than corn

8. How many more beets would need to be harvested to have the same amount as the

    number of carrots harvested? _____

Attach a set of picture cards to each student's homework page.

Lesson 10:   Ask and answer varied word problem types about a data set with three categories.

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fruit picture cards

　　Lesson 10:　　Ask and answer varied word problem types about a data set with three categories.
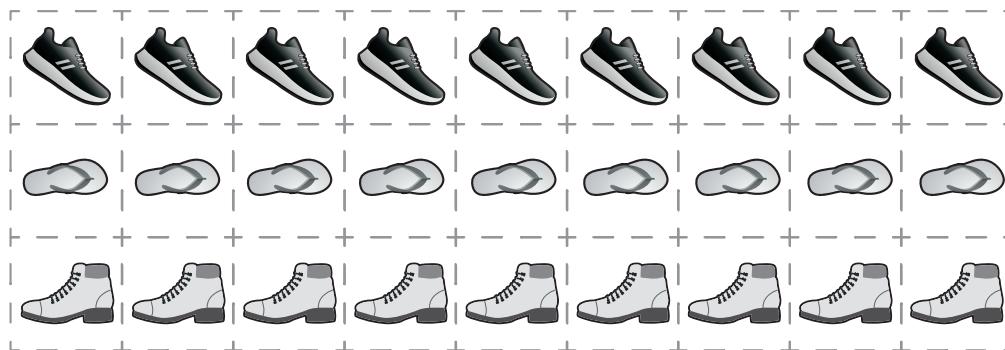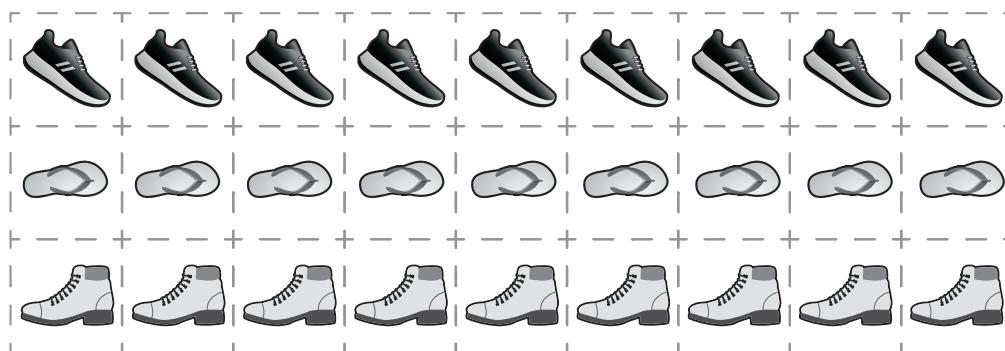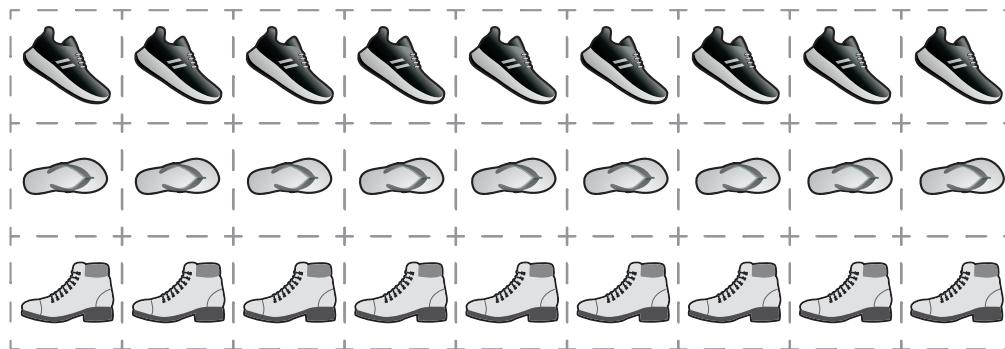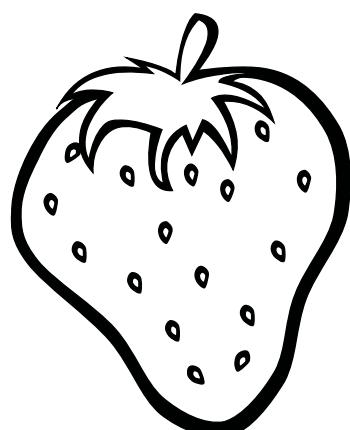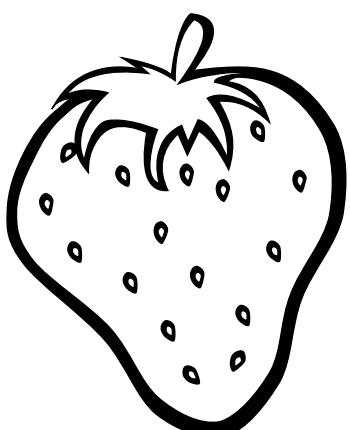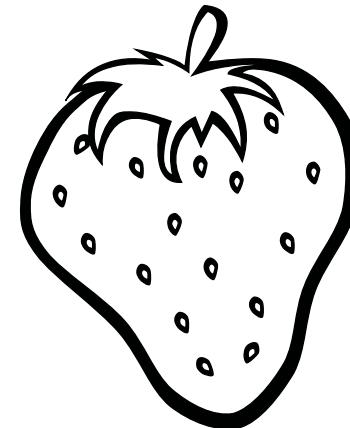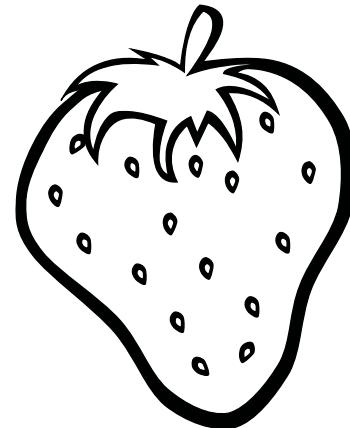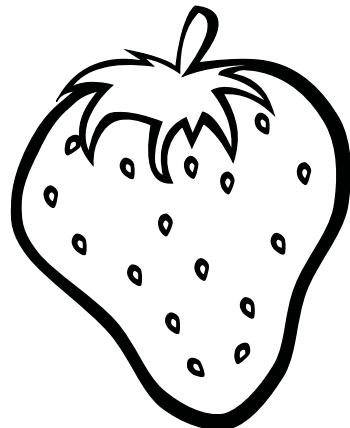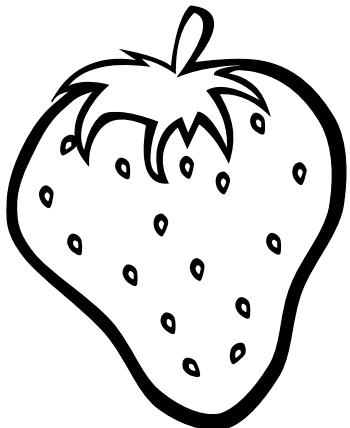
fruit picture cards

fruit picture cards
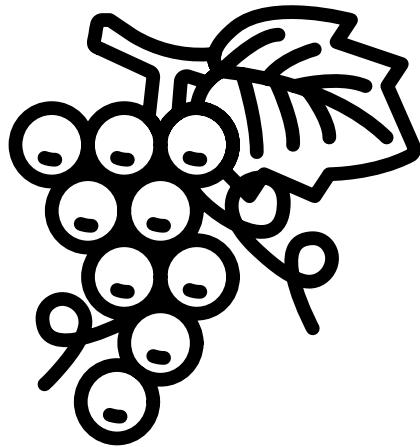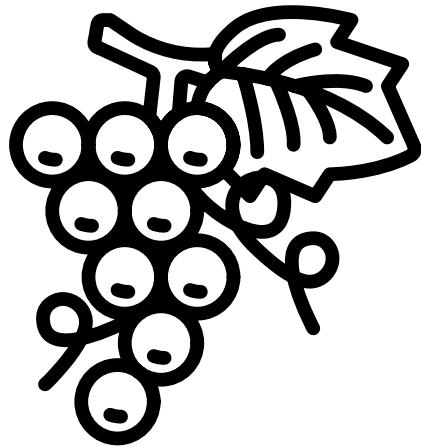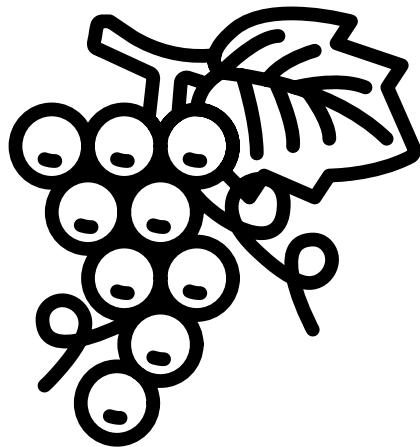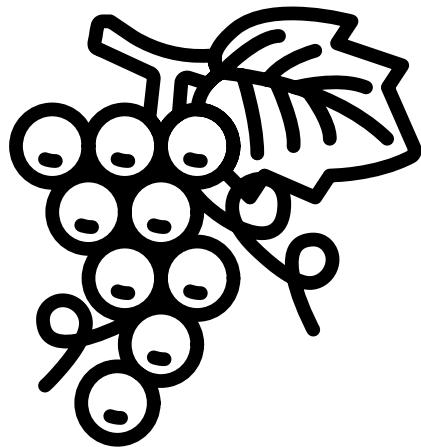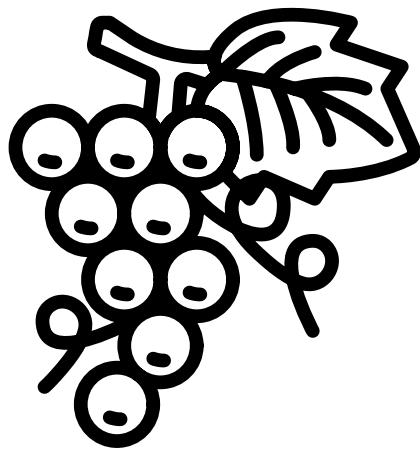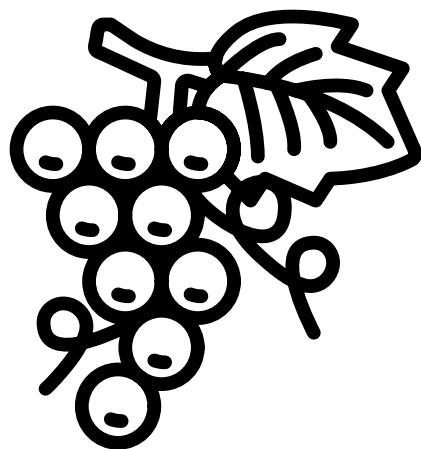
Lesson 10:   Ask and answer varied word problem types about a data set with three categories.

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

numeral cards

Lesson 11

Objective: Ask and answer varied word problem types about a data set with three categories.

Suggested Lesson Structure

■ Fluency Practice   (18 minutes)

■ Application Problem   (5 minutes)

■ Concept Development   (27 minutes)

■ Student Debrief   (10 minutes)

Total Time   **(60 minutes)**
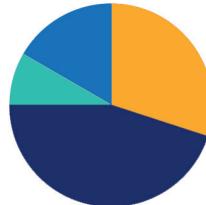
Fluency Practice (18 minutes)

▪ Hide Zero Number Sentences **1.2C**   (3 minutes)

▪ Add Three Numbers **1.3C, 1.3D**   (5 minutes)

▪ Sprint: Add Three Numbers **1.3C, 1.3D**   (10 minutes)

Hide Zero Number Sentences (3 minutes)

Materials: (T) Hide Zero cards (Fluency Template)

Note: This fluency activity strengthens the understanding of place value and prepares students for Module 4.

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

Suggested sequence: 15, 25, 35; 14, 24, 34; and 16, 26, 36.

Add Three Numbers (5 minutes)

Materials: (S) 3 dice per pair, personal white board

Note: This fluency activity reviews adding three numbers.

Assign students partners. Partners take turns rolling the three dice and adding them together. The partner with the higher sum each round scores a point. If there is a tie, players should keep playing until one of them has the higher sum. The person with the higher sum after the tie scores two points. Students record points with tally marks on their personal white boards.

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                                     three categories.

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Sprint: Add Three Numbers (10 minutes)

Materials: (S) Add Three Numbers Sprint

Note: This Sprint provides students practice with adding three numbers within 20 and encourages students to apply properties of operations as strategies to add.

Application Problem (5 minutes)

A first grade teacher needs a story problem to match this drawing and number sentence. Help her by writing a story problem that matches both. Make sure to answer the question you write in your story problem!

Note: This problem encourages students to create a story problem for a *add to with change unknown* or *join with change unknown* similar to the Application Problem solved in Lesson 6. The given equation is to help students interpret this drawing as a missing addend problem, rather than a *take away* or *separate* situation. Hats are purposefully used so students are not struggling to identify a starting context. Students' story problems and answer statements will vary.

> **NOTES ON MULTIPLE MEANS OF REPRESENTATION:**
>
> Consider having students record their thinking using a device that records audio and/or video. Make the recordings available for listening by other students.
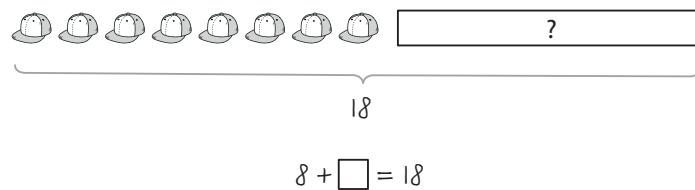
$$8 + \square = 18$$

Concept Development (27 minutes)

Materials: (T) Bar graph titled *Favorite Things to Do at the Beach* created on easel (data: swim—3, build sandcastles—12, and find seashells—2) Sticky notes , Lesson 11 Template 1, Park Picture and Lesson 11 Template 2, Bar Graph (S) Personal white board , Lesson 11 Template 1, Park Picture and Lesson 11 Template 2, Bar Graph

Note: Adjust the Concept Development as necessary based on observations of student successes and challenges during Lesson 10, as well as during the most recent Application Problems. Today's Concept Development is an opportunity to continue supporting student understanding of the *compare with difference unknown* problem types using appropriate number sentences as they interpret the given data.

Have students gather in the meeting area in a semicircle formation with their personal white boards.

>   T: (Post the graph.) Here's a **bar graph.** Students were asked what they like to do at the beach. The graph shows how they answered the question. What do you notice about this graph that is different from the graphs we used yesterday? What is similar?

Lesson 11:   Ask and answer varied word problem types about a data set with three categories.

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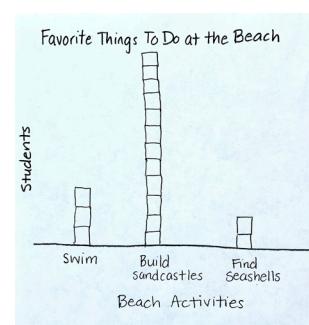
S: The starting point is on the bottom of this graph. Yesterday, we started from the top. Today, they are built like towers. → But it's still following the rules. → No overlaps. → No gaps. → The same endpoints. Today's graph has squares instead of pictures...

T: Turn and talk to your partner about what you notice. What information can you gather from reading this graph?

S: (Students discuss.)

T: Yesterday, we learned graphs help us easily answer questions because the data is organized. Look at our bar graph and talk to your partner. Partner A, ask a question about the data, and Partner B, answer it. Then switch roles and repeat.

S: (Students discuss.) Which activity has the most votes? → Which activity has the fewest votes? → How many more kids prefer building sandcastles to swimming?

T: Great job asking and answering questions about our data. Now, let's answer some more questions about our bar graph. How many people prefer building sandcastles over swimming? How did you figure it out?

S: I looked at the building sandcastles and swimming columns. I counted on from the 4th square in the sandcastles column since they both have 3 votes. → I already know that there are 3 votes for swimming and 12 votes for the building sandcastles, so I took away 3 from 12 and got 9.

T: I noticed that yesterday, many students counted to figure out which had more or fewer votes. What subtraction sentence can you use to solve this problem?

S: 12 – 3 = 9.

T: Explain to your partner how both of these strategies are related.

T: No matter how you solve this, we can use the number sentence 12 – 3 = 9 as a way to show how we solved the problem.

> **NOTES ON MULTIPLE MEANS OF ACTION AND EXPRESSION:**
>
> Asking questions for comprehension during this lesson is important to guide students to evaluate their thinking. This provides students an opportunity to evaluate their process and analyze errors.

In the next set of questions, encourage students to visualize how the graph might change based on the information presented in the following situations:

- How many more votes do we need if we want to make the number of votes for finding seashells the same as the number of votes for building a sandcastle?
- Some more children came by and answered the question. If there were 20 children total that answered the question, how many more children came by and voted?
- If 4 more children came along and said they like finding seashells the most, then how many votes would there be for finding seashells?

Use additional sticky notes or tiles for those students who need the concrete–visual support. Again, encourage students to use a number sentence to solve. Leave the beach activity bar graph in a common area, so students can use as a reference in the next section.

T: (Show students the picture of a park, Template 1.) Rose wants to know which animal there is more of at the park, dogs, cats, or birds.

Give students the bar graph template (Template 2).

T: Let's make a bar graph to help Rose organize the data in the picture. Start with the dogs. How many dogs are in the picture? (Give students time to count.)

S: 8

T: How can we show there are 8 dogs on our bar graph?

S: Color eight boxes above the dog picture.

T: Yes, we can color 1 box for each dog. Color the graph to show how many dogs, cats, and birds are in the picture.

Give students time to work.

T: How can organizing the data in the picture in a bar graph help Rose see which animal there is more of at the park, dogs, cats, or birds?

S: When I put it in the graph, I can see there are more dogs at the park than there are birds or cats. That bar is tallest.

T: Rose wondered which animal there is more of at the park, dogs, cats, or birds. Turn and talk to your partner about other questions you could ask about the picture.

S: How many cats are there? → How many animals are at the park in all? → How many more dogs are at the park than cats?

T: How many more cats are at the park than birds? How do you know?

S: There are 6 cats and only 1 bird. 6 − 1 = 5. There are 5 more cats than birds. → I can use my graph. I can count on from the box I colored for the 1 bird until I get to the top box for cats. That is 5 boxes more. There are 5 more cats at the park than there are birds.

Continue asking *compare* with *difference* unknown questions as time allows.

Problem Set (10 minutes)

Students should do their personal best to complete the Problem Set within the allotted 10 minutes. For some classes, it may be appropriate to adjust the assignment by specifying which problems they work on first.

> **NOTES ON MULTIPLE MEANS OF ENGAGEMENT:**
>
> This Problem Set lends itself well to pairing up accelerated students and students needing more support. Encourage students who may need more proficiency practice, including some emergent bilingual students, to teach and assist one another when answering questions about the data. This cultivates a classroom community that thrives on mutual support and cooperation. As students work together to solve problems, monitor their progress to ensure that everyone is engaged and participating.

Lesson 11: Ask and answer varied word problem types about a data set with three categories.

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Student Debrief (10 minutes)

Lesson Objective: Ask and answer varied word problem types about a data set with three categories.

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

Invite students to review their solutions for the Problem Set. They should check work by comparing answers with a partner. Look for misconceptions or misunderstandings that can be addressed in the Debrief. Guide students in a conversation to debrief the Problem Set and process the lesson.

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

- How are bar graphs the same as and different from picture graphs?
- How are the Favorite Food and School Day Weather graphs set up differently?
- Look at Problem 5. What questions did you ask about the School Day Weather bar graph?
- Look at Problem 9. What question(s) might the teacher have asked?
- How is using the counting on strategy related to using a
 subtraction sentence when comparing how many more or
 fewer votes one category received than another?

Exit Ticket (3 minutes)

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

Name __Ximena__   Date _____

Use the graph to answer the questions. Fill in the blank, and write a number sentence to the right to solve the problem.

School Day Weather ☐ = 1 day

School Day Weather — Sunny | Rainy | Cloudy (Number of School Days)
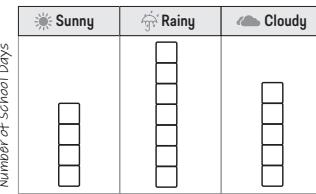
1. How many more days were cloudy than sunny?
 __1__ more day(s) were cloudy than sunny. $4 + \boxed{1} = 5$
2. How many fewer days were cloudy than rainy?
 __2__ fewer day(s) were cloudy than rainy. $7 - \boxed{2} = 5$
3. How many more days were rainy than sunny?
 __3__ more day(s) were rainy than sunny. $7 + \boxed{4} = 3$
4. How many total days did the class keep track of the weather?
 The class kept track of a total of __16__ days. $4 + 7 + 5 = 16$
5. If the next 3 school days are sunny, how many of the school days will be sunny in all?
 __7__ days will be sunny. $4 + 3 = 7$

Use the data from the chart to make a bar graph by shading the boxes. Use the bar graph to answer the questions. For Questions 6-8, fill in the blank and write a number sentence.

Favorite Food

apple / banana / grapes

Food	Number of Votes
Apple	𝗵𝗵𝗵𝗵𝗵 I
Banana	𝗵𝗵𝗵𝗵𝗵
Grapes	IIII

= 1 vote
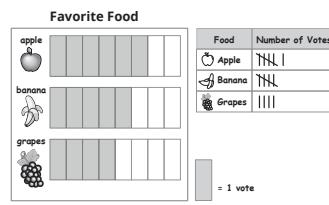
6. How many fewer students chose bananas than apples?
 __1__ fewer students chose bananas than apples. $6 - 5 = 1$
7. How many more students chose bananas than grapes?
 __1__ more students chose bananas than grapes. $5 - 4 = 1$
8. How many fewer students chose grapes than apples?
 __2__ fewer students chose grapes than apples. $6 - \boxed{2} = 4$
9. Some more students answered about their favorite fruits. If the new total number of students who answered is 20, how many more students answered?
 __5__ more students answered the question. $15 + \boxed{5} = 20$

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OER

A

Number Correct: ⭐

Name _____   Date _____

*Write the missing number.

1.	$9 + 1 + 3 = \square$		16.	$6 + 3 + 8 = \square$	
2.	$9 + 2 + 1 = \square$		17.	$5 + 9 + 4 = \square$	
3.	$5 + 5 + 3 = \square$		18.	$3 + 12 + 4 = \square$	
4.	$5 + 2 + 5 = \square$		19.	$3 + 11 + 5 = \square$	
5.	$4 + 5 + 5 = \square$		20.	$5 + 6 + 7 = \square$	
6.	$8 + 2 + 4 = \square$		21.	$2 + 6 + 3 = \square$	
7.	$8 + 3 + 2 = \square$		22.	$3 + 2 + 13 = \square$	
8.	$12 + 2 + 2 = \square$		23.	$3 + 13 + 3 = \square$	
9.	$3 + 3 + 12 = \square$		24.	$9 + 1 + \square = 14$	
10.	$4 + 4 + 5 = \square$		25.	$8 + 4 + \square = 16$	
11.	$2 + 15 + 2 = \square$		26.	$\square + 8 + 6 = 19$	
12.	$7 + 3 + 3 = \square$		27.	$2 + \square + 7 = 18$	
13.	$1 + 17 + 1 = \square$		28.	$2 + 2 + \square = 18$	
14.	$14 + 2 + 2 = \square$		29.	$19 = 6 + \square + 9$	
15.	$4 + 12 + 4 = \square$		30.	$18 = 7 + \square + 6$	

Lesson 11:   Ask and answer varied word problem types about a data set with three categories.

B

Number Correct: ___

Name _____ Date _____

*Write the missing number.

1.	$9 + 1 + 2 = \square$		16.	$6 + 3 + 9 = \square$	
2.	$9 + 4 + 1 = \square$		17.	$4 + 9 + 2 = \square$	
3.	$5 + 5 + 1 = \square$		18.	$2 + 12 + 4 = \square$	
4.	$5 + 3 + 5 = \square$		19.	$2 + 11 + 5 = \square$	
5.	$4 + 5 + 5 = \square$		20.	$6 + 6 + 7 = \square$	
6.	$8 + 2 + 2 = \square$		21.	$2 + 6 + 5 = \square$	
7.	$8 + 3 + 2 = \square$		22.	$3 + 3 + 13 = \square$	
8.	$11 + 1 + 1 = \square$		23.	$3 + 14 + 3 = \square$	
9.	$2 + 2 + 14 = \square$		24.	$9 + 1 + \square = 13$	
10.	$4 + 4 + 4 = \square$		25.	$8 + 4 + \square = 15$	
11.	$2 + 13 + 2 = \square$		26.	$\square + 8 + 6 = 18$	
12.	$6 + 3 + 3 = \square$		27.	$2 + \square + 6 = 18$	
13.	$1 + 15 + 1 = \square$		28.	$2 + 5 + \square = 18$	
14.	$15 + 2 + 2 = \square$		29.	$19 = 5 + \square + 9$	
15.	$3 + 14 + 3 = \square$		30.	$19 = 7 + \square + 6$	

Lesson 11: Ask and answer varied word problem types about a data set with three categories.

Name _____   Date _____

Use the graph to answer the questions. Fill in the blank, and write a number sentence to the right to solve the problem.

School Day Weather   ▢ = 1 day

☀ Sunny	☂ Rainy	☁ Cloudy

Number of School Days
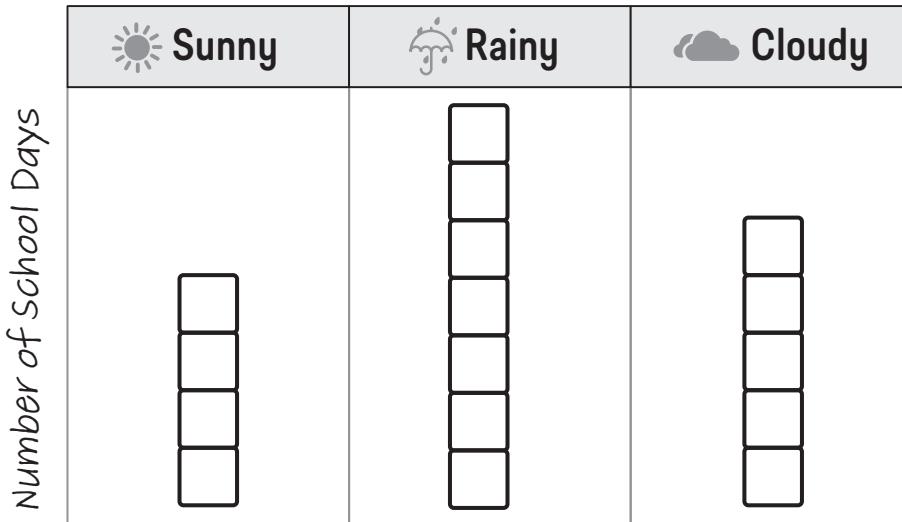
1. How many more days were cloudy than sunny?

    _____ more day(s) were cloudy than sunny. _____

2. How many fewer days were cloudy than rainy?

    _____ fewer day(s) were cloudy than rainy. _____

3. How many more days were rainy than sunny?

    _____ more day(s) were rainy than sunny. _____

4. How many total days did the class keep track of the weather?

    The class kept track of a total of _____ days. _____

5. If the next 3 school days are sunny, how many of the school days will be sunny in all?

    _____ days will be sunny. _____

OER

Lesson 11:   Ask and answer varied word problem types about a data set with three categories.

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Use the data from the chart to make a bar graph by shading the boxes. Use the bar graph to answer the questions. For Questions 6-8, fill in the blank and write a number sentence.

Favorite Food

Food	Number of Votes
🍎 Apple	TͰ I
🍌 Banana	TͰ
🍇 Grapes	IIII
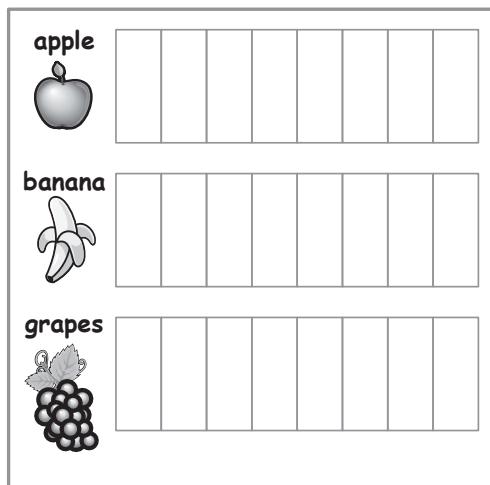
apple

banana

grapes

☐ = 1 vote

6. How many fewer students chose bananas than apples?

   _____ fewer students chose bananas than apples. _____

7. How many more students chose bananas than grapes?

   _____ more students chose bananas than grapes. _____

8. How many fewer students chose grapes than apples?

   _____ fewer students chose grapes than apples. _____

9. Some more students answered about their favorite fruits. If the new total number of students who answered is 20, how many more students answered?

   _____ more students answered the question. _____

Lesson 11:   Ask and answer varied word problem types about a data set with three categories.

Name _____   Date _____

Use the graph to answer the questions.

Animals on Lily's Farm   ☐ = 1 animal

sheep	cows	pigs

Number of Animals
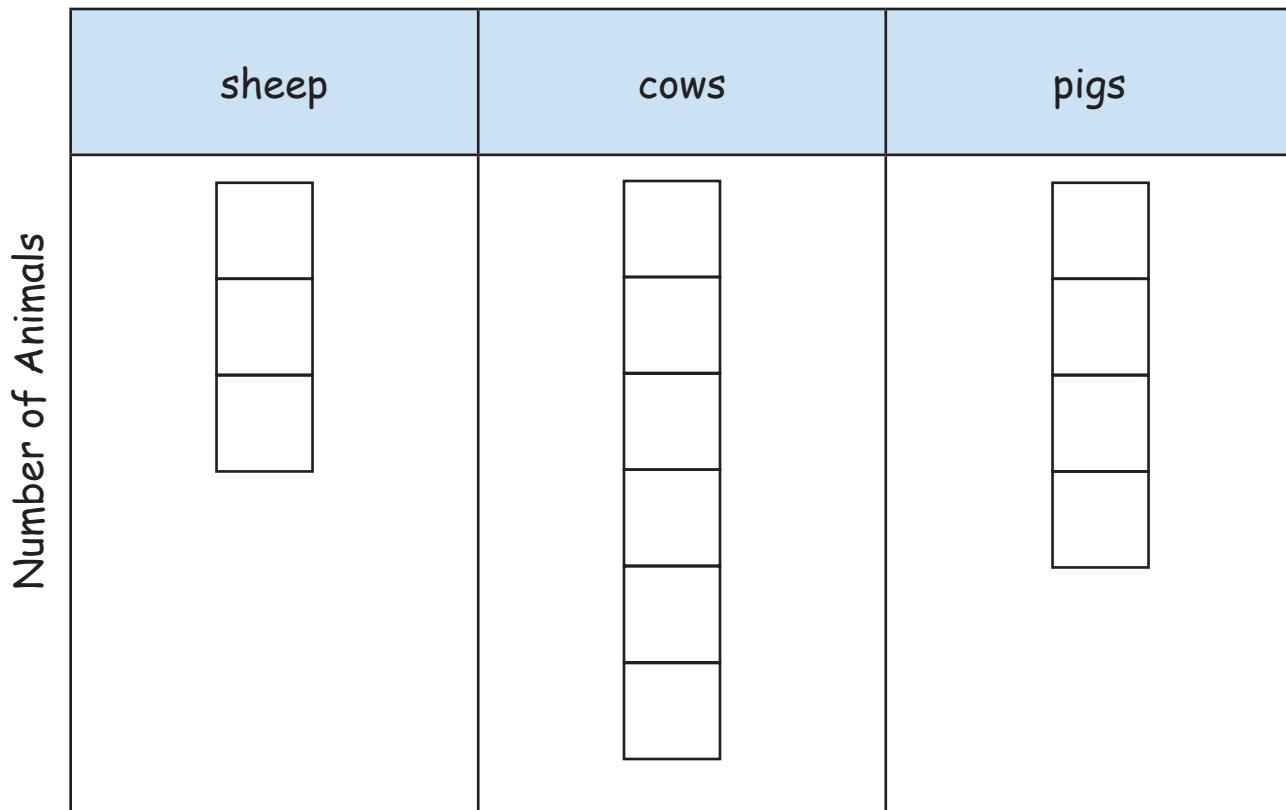
1. How many animals are on Lily's farm in all? _____ animals

2. How many fewer sheep than pigs are on Lily's farm? _____ fewer sheep

3. How many more cows are on Lily's farm than sheep? _____ more cows

4. What is another question you can ask about this bar graph?

    _____

Lesson 11:   Ask and answer varied word problem types about a data set with three categories.

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Name _____　　Date _____

Use the data from the chart to make a bar graph by shading the boxes. Use the bar graph to answer the questions. For Questions 1-3, fill in the blank and write a number sentence.

School Lunch Order
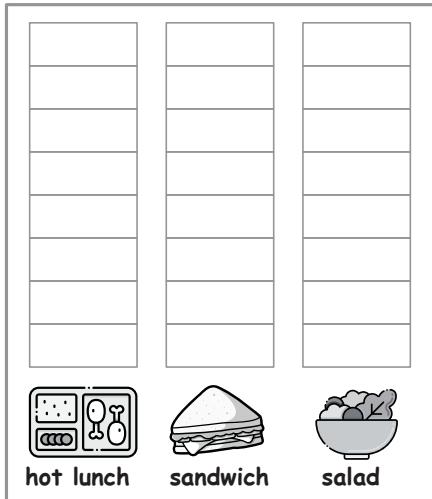
| Meal Choice	Number of Orders
🍱 Hot Lunch	~~IIII~~ II
🥪 Sandwich	~~IIII~~ I
🥗 Salad	IIII

hot lunch　sandwich　salad
Meal Choices
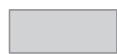
☐ = 1 order

1. How many more hot lunch orders were there than sandwich orders?

   There were _____ more hot lunch orders. _____

2. How many fewer salad orders were there than hot lunch orders?

   There were _____ fewer salad orders. _____

3. If 5 more students order hot lunch, how many hot lunch orders will there be?

   There will be _____ hot lunch orders. _____

4. What is another question you can ask about this bar graph? Write the question and answer.

   _____

   _____

　　Lesson 11:　　Ask and answer varied word problem types about a data set with three categories.

Use the bar graph to answer the questions. For Questions 5–7, fill in the blanks, and write a number sentence.

Favorite Type of Book
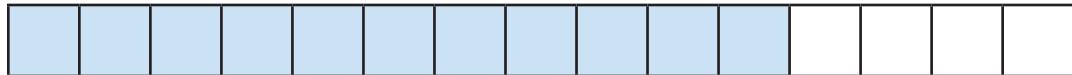
fairy tales

science books
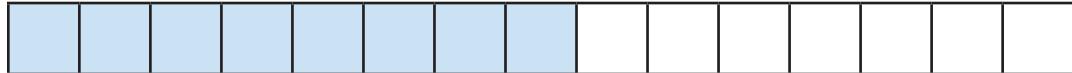
poetry books
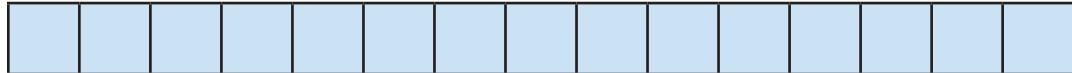
5. How many more students like fairy tales than science books?
   _____ more students like fairy tales. _____

6. How many fewer students like science books than poetry books?
   _____ fewer students like science books. _____

7. How many students picked fairy tales or science books in all?
   _____ students picked fairy tales or science books.

   _____

8. If 5 more students show up late and all pick fairy tales, will this be the most popular type of book? Use a number sentence to show your answer.

   _____

9. If the teacher asked a question about this bar graph and you correctly answered "8," what question might the teacher have asked?

   _____

   _____

0	1	2	3
4	5	<u>6</u>	7
8	<u>9</u>		

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

Lesson 11: Ask and answer varied word problem types about a data set with three categories.

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1 0	2 0
3 0	4 0
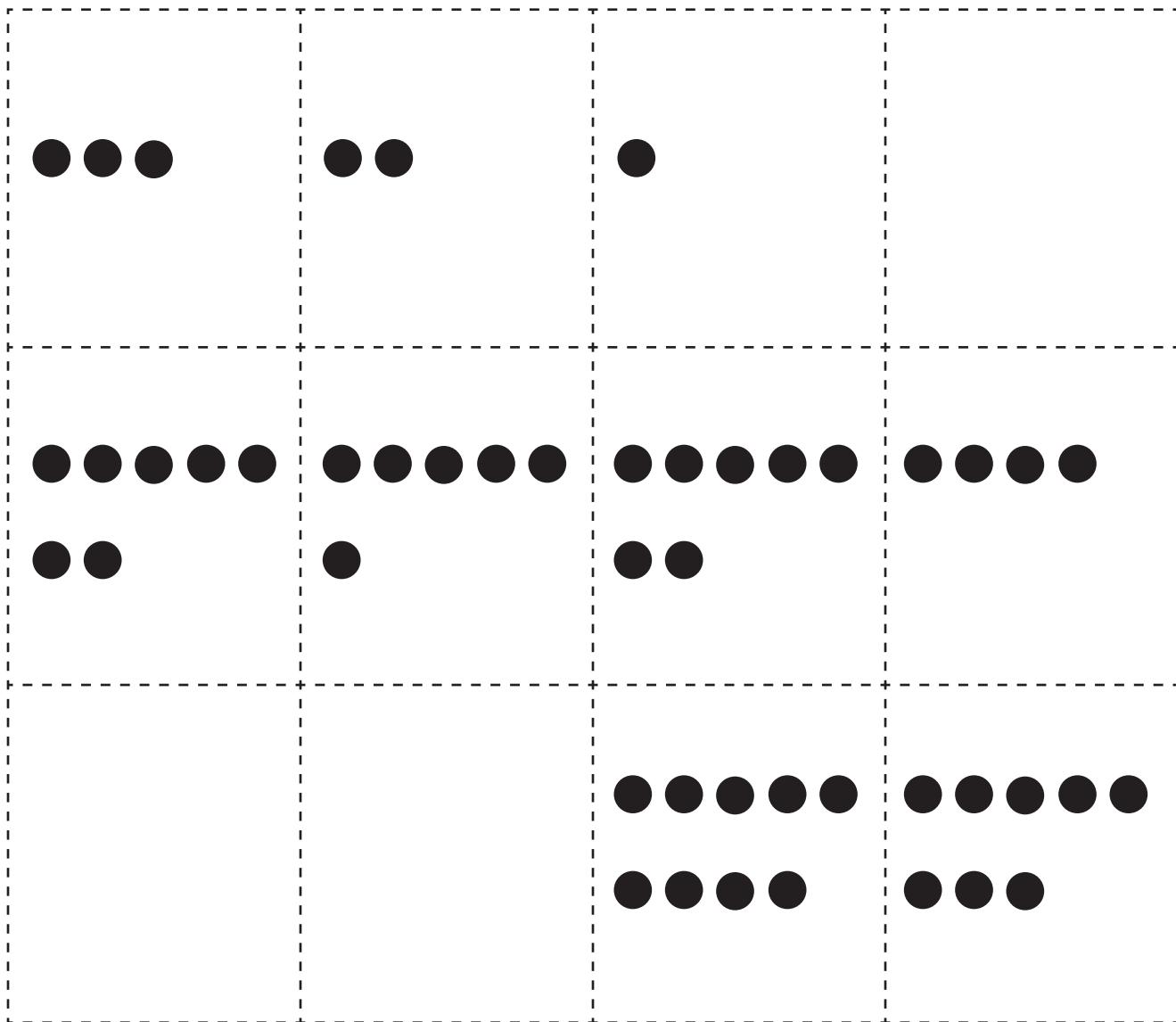
hide zero cards, numeral side of tens digits, 10–40 (Copy double-sided with the next page.)
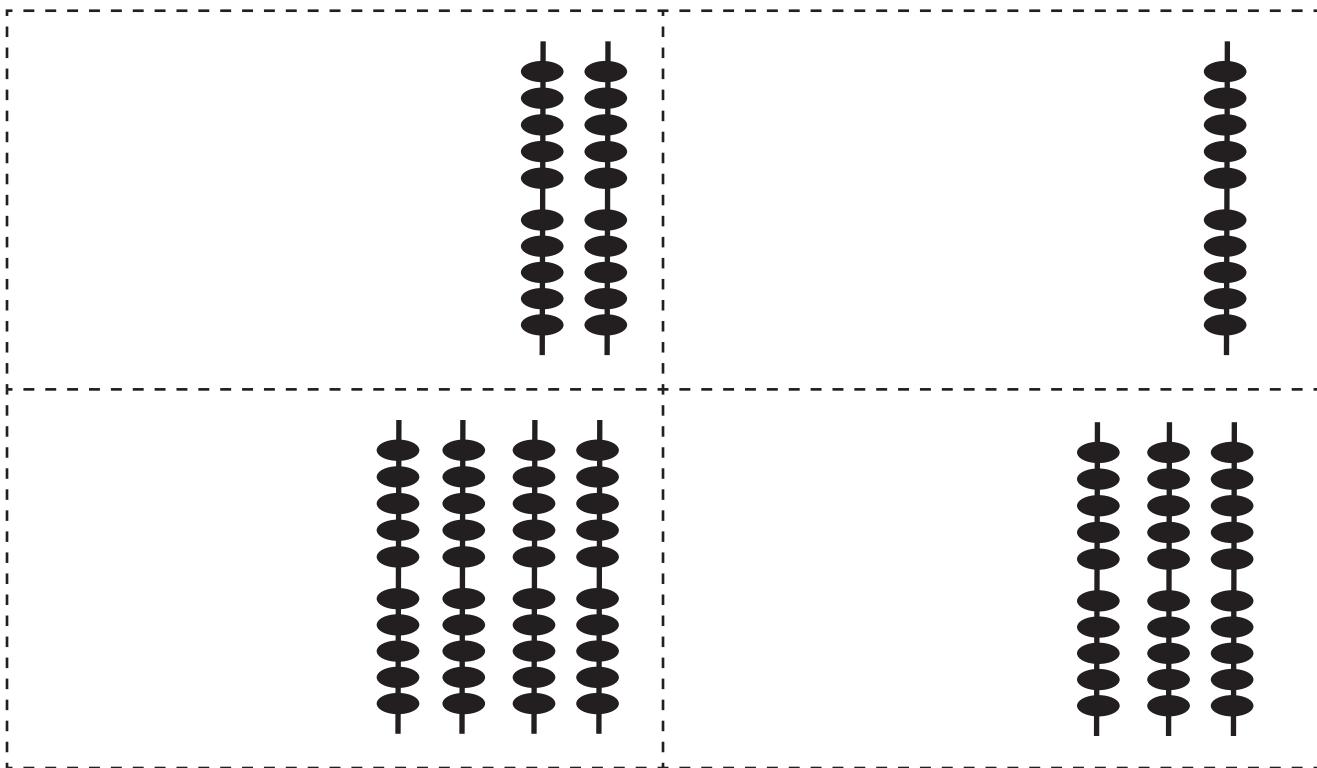
hide zero cards, dot side of tens digits, 10–40 (Copy double-sided with the previous page.)

Lesson 11: Ask and answer varied word problem types about a data set with three categories.

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picture of a park

_____

dogs   cats   birds

☐ = 1 animal

_____
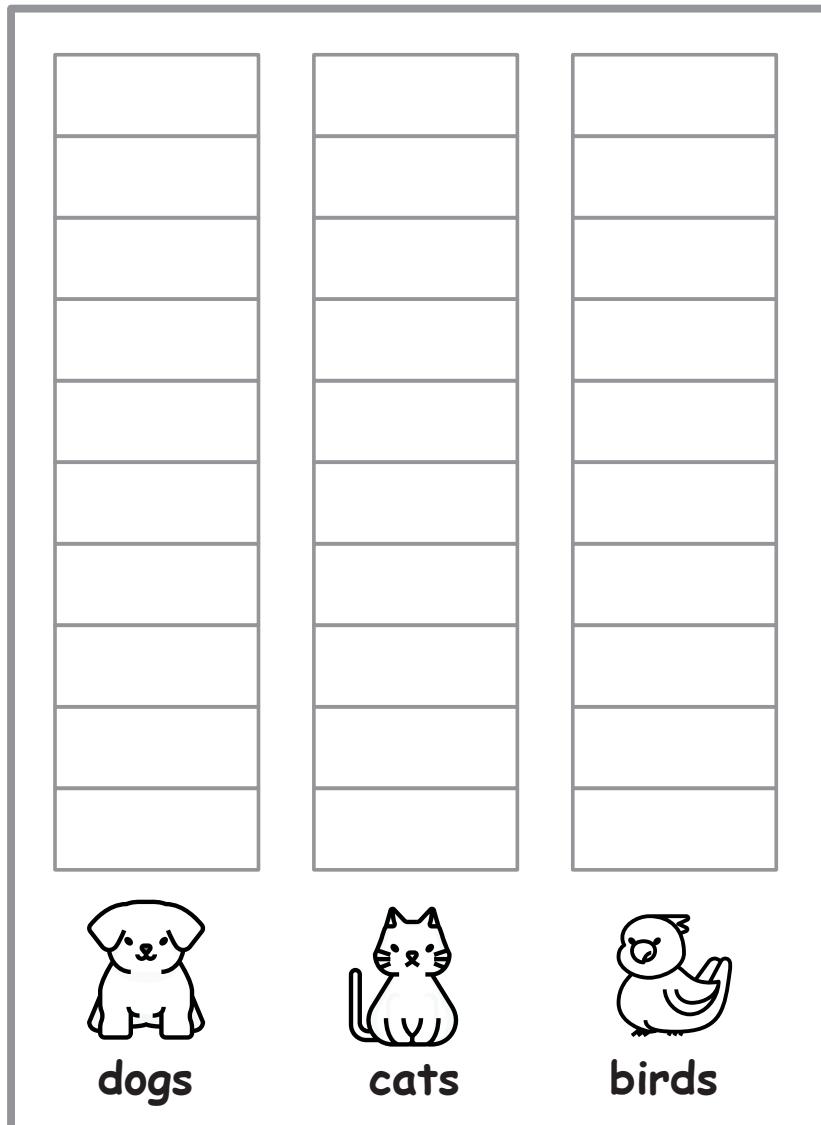
bar graph template
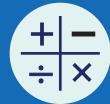
Answer Key

GRADE 1 • MODULE 3

Ordering and Comparing Length Measurements as Numbers

Lesson 1

Problem Set

1. b; a
2. a; b
3. House to Post Office; House to Store

Exit Ticket

Middle path and string circled; Valid explanation given

Homework

1. a; b
2. b; a
3. a; b
4. No. (Valid explanation given.)

Lesson 2

Problem Set

1. 3
2. 5
3. 4
4. 5
5. 4
6. 4

7. 3
8. 2
9. 6
10. 3
11. The second picture is circled.
12. Answers may vary.

Exit Ticket

1. 4
2. 4

Homework

1. 4
2. 5
3. 5
4. 7
5. 3

6. 5
7. 3
8. 5
9. 4
10. Picture D is circled.
11. Answers may vary.

Lesson 3

Sprint

Side A

1.	16	11.	10	21.	9
2.	14	12.	11	22.	7
3.	18	13.	12	23.	6
4.	13	14.	17	24.	3
5.	15	15.	12	25.	4
6.	16	16.	10	26.	5
7.	15	17.	9	27.	6
8.	13	18.	2	28.	16
9.	12	19.	11	29.	2
10.	14	20.	10	30.	16

Side B

1.	15	11.	10	21.	9
2.	13	12.	13	22.	9
3.	17	13.	11	23.	8
4.	17	14.	16	24.	5
5.	15	15.	11	25.	6
6.	13	16.	10	26.	7
7.	12	17.	9	27.	8
8.	12	18.	3	28.	16
9.	14	19.	11	29.	2
10.	11	20.	10	30.	17

Problem Set

1. c. is circled.

2. 3; 3

3. a. 4

    b. 6

    c. 5

4. a. 5

    b. 4

    c. 5

    d. 7

5. Hair clip; marker

6. Longer circled

Exit Ticket

1. 5

2. 4

3. 6

4. 4

Homework

1. a. 13

    b. 5

    c. 15

    d. 8

    e. 10

2. Fire truck, airplane, rowboat

3. a. Rowboat or car

    b. Car; motorcycle, fire truck, or airplane

    c. Fire truck; car, rowboat, or airplane

    d. Car

Lesson 4

Problem Set

1.   Caterpillar, fly, bee; 5; 7; 4

2.   a.   3
     b.   1
     c.   2
     d.   5
     e.   8
     f.   4
     g.   3

3.   5 cm
4.   8 cm
5.   12 cm

Exit Ticket

1.   Wrench, hammer, screwdriver
2.   4

Homework

1.   a.   6
     b.   9
     c.   8
     d.   5
     e.   7

2.   B, C, A

3.   a.   D; answers may vary (B, C, or E).
     b.   B; answers may vary (A, D, or E).
     c.   D
     d.   B, C, and E

4.   10 cm
5.   6 cm

Lesson 5

Sprint

Side A

1.	18	11.	16	21.	15
2.	16	12.	17	22.	13
3.	19	13.	17	23.	19
4.	17	14.	19	24.	5
5.	19	15.	19	25.	3
6.	20	16.	20	26.	9
7.	18	17.	19	27.	9
8.	18	18.	18	28.	8
9.	17	19.	16	29.	4
10.	17	20.	16	30.	6

Side B

1.	15	11.	17	21.	16
2.	17	12.	18	22.	13
3.	18	13.	18	23.	18
4.	13	14.	19	24.	6
5.	17	15.	19	25.	4
6.	19	16.	20	26.	10
7.	19	17.	19	27.	9
8.	19	18.	17	28.	9
9.	18	19.	18	29.	5
10.	18	20.	17	30.	4

Problem Set

1. a. 2
    b. 2
    c. 1
    d. 3
    e. 2
    f. 5 or 6 are acceptable
    g. Answers will vary.

2. a. 3
    b. 4
    c. 2
    d. 4
    e. 3
    f. 9
    g. Answers will vary.

Exit Ticket

Answers will vary based on size of paper clips.

Homework

1. a. 4; 6
    b. 3; 4 or 5
    c. 1; 1 or 2
    d. 2; 3
    e. 3; 4 or 5

2. Answers will vary.

Lesson 6

Problem Set

a. Answers will vary.

b. Answers will vary.

c. Answers will vary.

d. Answers will vary.

e. Answers will vary.

f. Answers will vary.

g. Answers will vary.

Exit Ticket

Answers will vary.

Homework

1. a. Answers will vary.

    b. Answers will vary.

    c. Answers will vary.

    d. Answers will vary.

    e. Answers will vary.

    f. Answers will vary.

    g. Answers will vary.

2. a. Answers will vary.

    b. Answers will vary.

    c. Answers will vary.

Lesson 7

Sprint

Side A

1.	18	11.	16	21.	15
2.	16	12.	17	22.	13
3.	19	13.	17	23.	19
4.	17	14.	19	24.	5
5.	19	15.	19	25.	3
6.	20	16.	20	26.	9
7.	18	17.	19	27.	9
8.	18	18.	18	28.	8
9.	17	19.	16	29.	4
10.	17	20.	16	30.	6

Side B

1.	15	11.	17	21.	16
2.	17	12.	18	22.	13
3.	18	13.	18	23.	18
4.	13	14.	19	24.	6
5.	17	15.	19	25.	4
6.	19	16.	20	26.	10
7.	19	17.	19	27.	9
8.	19	18.	17	28.	9
9.	18	19.	18	29.	5
10.	18	20.	17	30.	4

Problem Set

1. 1
2. 8 cm; 10 cm
3. 2
4. 2
5. Model drawn; 9 + 4 = 13 or 13 − 9 = 4; 4 cm cubes
6. Model drawn; 8 + 4 = 12 or 12 − 8 = 4; 4 cm
7. Model drawn; 8 + 6 = 14 or 14 − 8 = 6; 6 cm
8. Model drawn; 9 + 6 = 15 or 15 − 9 = 6; 6 cm

Exit Ticket

Model drawn; 8 cm

Homework

1. 1
2. 7 cm; 8 cm
3. 1
4. Model drawn; 11 + 4 = 15 or 15 − 11 = 4; 4 cm
5. Model drawn; 6 + 7 = 13 or 13 − 6 = 7; 7 cm
6. Model drawn; 8 + 4 = 12 or 12 − 8 = 4; 4 cm
7. Model drawn; 9 + 5 = 14 or 14 − 9 = 5; 5 cm

Lesson 8

Problem Set

1. 6
2. 5
3. 2
4. Green
5. 6 + 5 + 2 = 13

Exit Ticket

1. 4
2. Salad
3. 7
4. 3 + 5 + 4 = 12

Homework

1. 4; 3; 10
2. 10
3. 7
4. Strawberry
5. 14
6. Chocolate, strawberry
7. 4 + 3 + 10 = 17
8. 6
9. Comic book
10. 1
11. 11
12. Comic books, magazines
13. 4 + 6 + 5 = 15

Lesson 9

Sprint

Side A

1.	16	11.	10	21.	9
2.	14	12.	11	22.	7
3.	18	13.	12	23.	6
4.	13	14.	17	24.	3
5.	15	15.	12	25.	4
6.	16	16.	10	26.	5
7.	15	17.	9	27.	6
8.	13	18.	2	28.	16
9.	12	19.	11	29.	2
10.	14	20.	10	30.	16

Side B

1.	15	11.	10	21.	9
2.	13	12.	13	22.	9
3.	17	13.	11	23.	8
4.	17	14.	16	24.	5
5.	15	15.	11	25.	6
6.	13	16.	10	26.	7
7.	12	17.	9	27.	8
8.	12	18.	3	28.	16
9.	14	19.	11	29.	2
10.	11	20.	10	30.	17

Problem Set

Answers will vary.

Exit Ticket

1. 5
2. 2
3. 8

Homework

1. Answers will vary.
2. Answers will vary.
3. Answers will vary.
4. Answers will vary.

5. 8
6. 14
7. Yes, explanations will vary.

Lesson 10

Problem Set

1.   2
2.   10
3.   Answers will vary.
4.   15
5.   3
6.   Answers will vary.

Exit Ticket

1.   14
2.   4
3.   Answers will vary.

Homework

1.   3
2.   9 + 6 + 3 = 18
3.   9 − 3 = 6
4.   Answers will vary.
5.   14
6.   Carrots
7.   1
8.   3

Lesson 11

Sprint

Side A

1.	13	11.	19	21.	11
2.	12	12.	13	22.	18
3.	13	13.	19	23.	19
4.	12	14.	18	24.	4
5.	14	15.	20	25.	4
6.	14	16.	17	26.	5
7.	13	17.	18	27.	9
8.	16	18.	19	28.	14
9.	18	19.	19	29.	4
10.	13	20.	18	30.	5

Side B

1.	12	11.	17	21.	13
2.	14	12.	12	22.	19
3.	11	13.	17	23.	20
4.	13	14.	19	24.	3
5.	14	15.	20	25.	3
6.	12	16.	18	26.	4
7.	13	17.	15	27.	10
8.	13	18.	18	28.	11
9.	18	19.	18	29.	5
10.	12	20.	19	30.	6

Problem Set

1. 1; 5 – 4 = 1 or 4 + 1 = 5
2. 2; 7 – 5 = 2 or 5 + 2 = 7
3. 3; 7 – 4 = 3 or 4 + 3 = 7
4. 16; 4 + 7 + 5 = 16
5. 7; 4 + 3 = 7

6. 1; 6 – 5 = 1 or 5 + 1 = 6
7. 1; 5 – 4 = 1 or 4 + 1 = 5
8. 2; 6 – 4 = 2 or 4 + 2 = 6
9. 5; 20 – 15 = 5 or 15 + 5 = 20

Exit Ticket

1. 13
2. 1
3. 3
4. Answers will vary.

Homework

1. 1; 7 – 6 = 1 or 6 + 1 = 7
2. 3; 7 – 4 = 3 or 4 + 3 = 7
3. 12; 7 + 5 = 12
4. Answers will vary.
5. 3; 11 - 8 = 3 or 8 + 3 = 11

6. 7; 15 - 8 = 7 or 8 + 7 = 15
7. 19; 11 + 8 = 19
8. Yes; 11 + 5 = 16
9. Answers will vary.

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ORDERING AND COMPARING LENGTH MEASUREMENTS AS NUMBERS

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