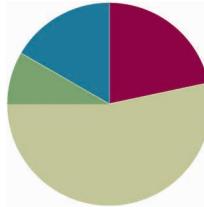


Lesson 10

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 **1.3D, 1.5C** (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 Lesson 2. 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 paperclip, small paperclip, linking cube, pencil eraser

Note: This reviews the content from Lessons 7 and 8.

- 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 paperclips or small paperclips; 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) enlarged Hide Zero cards (Lesson 2 Fluency Template 1) (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 easier to 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 snowmen 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 the context for a *take away with result unknown* or *take apart with result unknown* problem type. Students' story problems and answer statements will vary.



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.

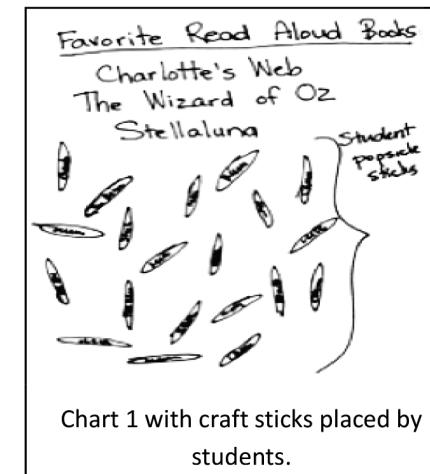


Chart 1 with craft sticks placed by students.



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 especially helpful to English language learners.

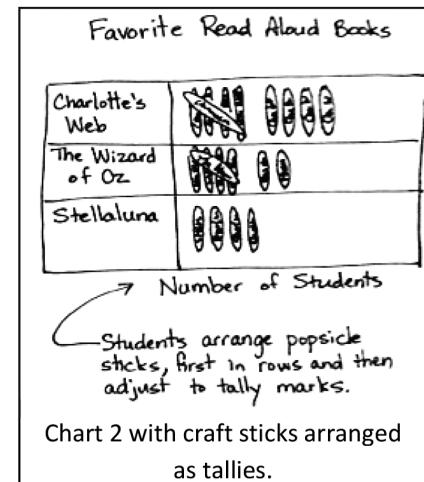
- T: We have different answers, and some people didn't even get to finish counting! How can we make counting these craft sticks easier?
- S: After we count each craft stick, take it off so we can keep track of which ones we have already counted. → Get all the craft sticks for each book, and put them 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, is it easier to see?
- 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.

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 modify the assignment by specifying which problems they work on first.

Student Debrief (10 minutes)

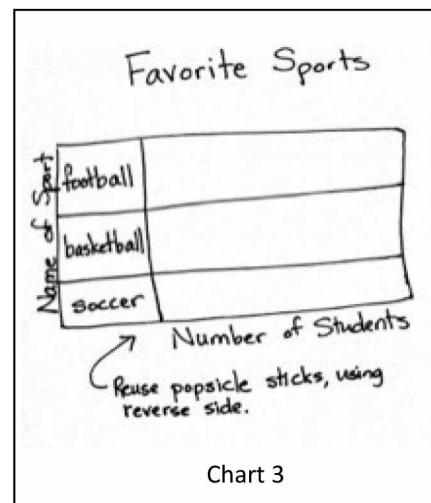
Lesson Objective: Collect, sort, and organize data; then ask and answer questions about the number of data points.

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?
- In what ways do tables help us see information in a quicker and easier way?
- Share the problem you made up using the favorite sports table. Solve each other's questions and check your answers.



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 Maria
Date _____

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



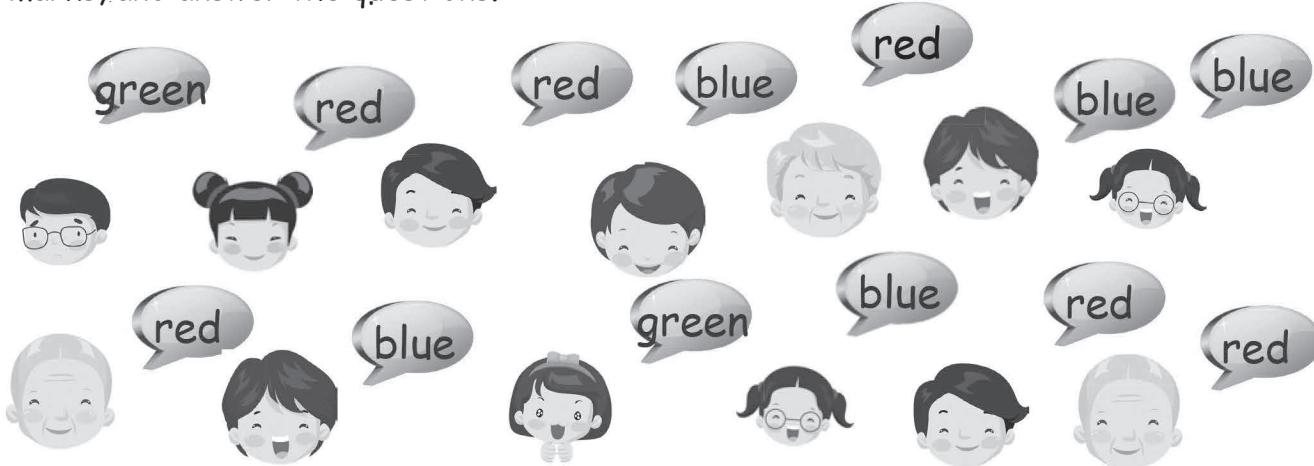
Red	
Green	*
Blue	

1. How many people chose red as their favorite color? 6 people like red.
2. How many people chose blue as their favorite color? 5 people like blue.
3. How many people chose green as their favorite color? 2 people like green.
4. Which color received the least amount of votes? green
5. Write a number sentence that tells the total number of people who were asked their favorite color.
 $6 + 5 + 2 = 13$

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		
Strawberry		
Cookie Dough		

- Fill in the blanks in the table by writing the number of students who voted for each flavor.
- How many students chose cookie dough as the flavor they like **best**? _____ students
- What is the total number of students who like chocolate or strawberry the **best**? _____ students
- Which flavor received the **least** amount of votes? _____
- What is the total number of students who like cookie dough or chocolate the **best**? _____ students
- Which two flavors were liked by a **total** of 7 students?
_____ and _____
- Write an addition sentence that shows how many students voted for their favorite ice cream flavor.



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Lesson 10: Collect, sort, and organize data; then ask and answer questions about the number of data points.

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 10:**

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