

Counting Sheep (or Charting Sleep)

Companion Text: Night Symphony, written by Lara Binn, and illustrated by Valia Ovseyko

Subject Area & Grade Level: Mathematics, First grade

Materials: “Sticky notes,” or small pieces of paper and tape, in two colors

Objectives

After this lesson, students will be able to:

- Gather concrete data using consistent units
- Organize data in a table
- Represent data using a simple column graph
- Describe what the elements of a column graph mean, and interpret what it means as a whole

Activity—Part One

Part One of this activity is homework, and should be assigned the day before Part Two, not over a weekend. First, read the story. Then, ask students how much sleep it seems like the little boy in the story got each night, and why they think so. (Though the story’s focus is on the sounds that the boy hears each night as he falls asleep, you should encourage students to believe that he falls asleep eventually, and that Sunday is just a quiet night.) Point out that their ideas about how much the boy sleeps are just guesses, and that in order to know for sure, they would need to know what time the boy went to bed, and what time he woke up. Ask students how they could figure out how many hours of sleep he had if they knew those two times. Encourage any correct solution, or if no student offers one, suggest that they could count the hours on their fingers between the time the little boy went to bed and the time he woke up. For example, if the little boy went to bed at 7:00 p.m., then at 8:00 p.m. he had slept for one hour, at 9:00 he had slept two hours, at 10:00, three hours, and etc. until the time that he woke up.

Hand out the accompanying worksheet, and have students fill in the first column with the names of all of the family members they expect to be sleeping in the same home with them that night, including themselves. Tell students that they will be collecting information, which is also called data, about how many hours each member of their family sleeps tonight. Remind them that they are only responsible for collecting data about the family members who will be sleeping in the same home as them, not family members who are sleeping at other places. Explain to students how the table works, reading the column titles to them, and going through the example. Again, model the process for determining the hours of sleep.

Suggest that today after school, students should tell an adult in their house about their homework, and have the adult help them to record their data if necessary. Tell students that if any family members go to bed before they do, that they should record the time they go to bed in the proper column. Then, tomorrow morning, they should try to fill in the rest of the times in their table (columns two and three) before they come to school. Tell students that they can fill in the last column (hours of sleep) before school if they want to, but that otherwise we will spend time in class finishing their tables.



Activity—Part Two

Part Two of this activity should take place the day after Part One. Begin by asking students to take out their homework, and work on calculating hours of sleep with a partner. Walk around and help, roughly checking as you go that students' answers in the last column are correct. If there is any student who did not complete his or her homework, or was absent the day before, have the student fill in any part of their table that they can remember or know, such as their own bedtime and wake time. Or, give them numbers to work with that are your best guess about how many hours of sleep each family member should have gotten based on his or her age.

Once all students have a completed fourth column, draw an x-axis and y-axis on a piece of butcher paper, and attach the blank chart to a place where all students can see it. Label the x-axis "Hours of Sleep" and the y-axis "Number of People." Then, give each student either enough sticky notes for each person they listed. Use two colors of sticky notes—one color for adults, and the other for kids. Ask students to write each person's name that they listed on the appropriately colored sticky note. Then, ask students to look at their last column and find the lowest and highest numbers. Determine what the lowest and highest amounts of sleep recorded by the class are, and use those to label the x-axis. (For example, if the lowest amount of sleep recorded was 4 hours, and the highest was 13 hours, then 4 would be the number on the farthest left side of your x-axis, and 13 would be the number on the farthest right side of your x-axis.) Be sure the numbers on your x-axis are evenly spaced across the whole axis, and explain to students that you are setting up a chart so that we can see all of our data at one time. Do not worry about labeling the y-axis at this time.

Then, have each student come up and add their sticky notes one by one to the chart, in the appropriate column. For instance, if a student's mom slept 8 hours, then that student would put an "adult-colored" sticky note in the "8" column. Start each column of sticky notes from just above the x-axis and work upward. After all students have added their sticky notes, lead them in a discussion about what the chart looks like. Discuss the "shape" made by the data if there is one, and any differences in the amount of sleep received between adults and kids, if any. At this time, you could also prompt students to consider what labels we might want to use on the y-axis, given its title, "Number of People." Lead students into making both specific and general observations about the data. For example, a specific observation might be: "The column labeled '9 Hours' has the most people in it," and a general observation might be: "It looks like most adults in our families get less sleep than the kids."

Reflection

Ask students to comment on why they think the data look the way they do. The adults-sleep-less-than-kids example suggested below is a likely generalization that this lesson will uncover, which can prompt you to discuss why that might be. (If you discuss this topic, focus on how kids need more sleep to be healthy than adults do.) Students can also reflect on and share about their personal sleep habits (Ex. Can they choose their own bedtime? Do they sleep in a room alone or with other people? Do they sleep with any comfort objects?) in groups or with the whole class.



How Much Sleep?

Name of Family Member	Time Went to Bed	Time Got Up	Hours of Sleep
<i>Example: Teacher</i>	<i>10:30 p.m.</i>	<i>6:30 p.m.</i>	<i>8 hours</i>

