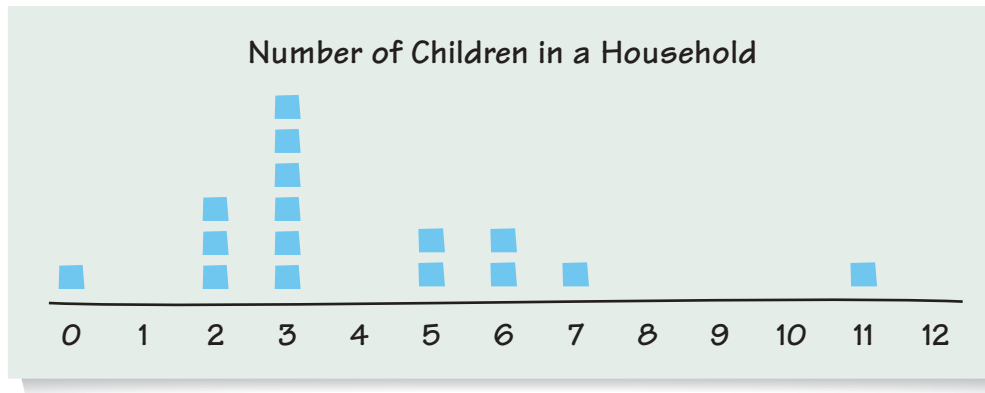


Applications

For Exercises 1 and 2, use the line plot.



1.
 - a. What is the median number of children for the 16 households? Explain how to find the median. What does the median tell you?
 - b. Do any of the 16 households have the median number of children? Explain.
2.
 - a. What is the mean number of children per household for the 16 households? Explain how to find the mean. What does the mean tell you?
 - b. Do any of the 16 households have the mean number of children? Explain.

For Exercises 3 and 4, the mean number of people per household for eight students is 6 people.

3. **Multiple Choice** What is the total number of people in the eight households?
A. 11 **B.** 16 **C.** 48 **D.** 64
4.
 - a. Make a line plot showing one possible arrangement for the numbers of people in the eight households.
 - b. Make a line plot showing a different possible arrangement for the numbers of people in the eight households.
 - c. Are the medians the same for the two arrangements you made?

5. A group of nine students has a mean of $3\frac{1}{3}$ people per household. Make a line plot showing a data set that fits this description.
6. A group of nine students has a mean of 5 people per household. The largest household in the group has 10 people. Make a line plot showing a data set that fits this description.

Connections

7. The students in Mr. Wilson's study hall spent the following amounts of time on their homework.

$\frac{3}{4}$ hour $\frac{1}{2}$ hour $1\frac{1}{4}$ hours $\frac{3}{4}$ hour $\frac{1}{2}$ hour

What is the mean time his students spent on homework?

8. **Multiple Choice** Use the data from Exercise 7. What is the median time Mr. Wilson's students spent on homework?

F. $\frac{1}{2}$ hour G. $\frac{3}{4}$ hour H. 1 hour J. $1\frac{1}{4}$ hour

9. A soccer league wants to find the average amount of water the players drink per game. There are 18 players on a team and 10 teams in the league. The players drank a total of 5,760 ounces of water during one day in which each team played exactly one game.

- a. How much water did each player drink per game if they each drank the same amount of water?
- b. Does this value represent the mean or the median? Explain.



- 10.** A grocery store carries nine different brands of granola bars. What are possible prices for the nine brands if the mean price is \$2.66? Explain. You may use pictures to help you.
- 11.** Ralph has a pet rabbit that is 5 years old. He wonders if his rabbit is old compared to other rabbits. He finds out that the mean life span for a rabbit is 7 years.
- What does the mean tell Ralph about the life span for a rabbit?
 - What additional information would help Ralph to predict the life span of his rabbit?
- 12.** Sabrina, Diego, and Marcus entered a dance contest that ran from 9 a.m. to 7 p.m. Below are the times that each student danced.

Dance Contest Schedule

Student	Time
Sabrina	9:15 a.m. to 1:00 p.m.
Diego	1:00 p.m. to 4:45 p.m.
Marcus	4:45 p.m. to 7:00 p.m.

- Write the time each student spent dancing as a mixed number.
- Look at the data from part (a). Without doing any computations, do you think the mean time spent dancing is the same as, less than, or greater than the median? Explain your reasoning.

For Exercises 13–16, a recent time study of 3,000 children ages 2–18 years old was conducted. The data are in the table below.

How Children Spend Their Time

Activity	Average Time (minutes per day)
Watching videos	39
Reading for fun	44
Using the computer for fun	21

- 13.** Did each child watch videos for 39 minutes per day? Explain.
- 14.** Thelma decides to round 39 minutes to 40 minutes. Then she estimates that children spend about $\frac{2}{3}$ of an hour watching videos. What percent of an hour is $\frac{2}{3}$?
- 15.** Estimate what part of an hour children spend reading for fun. Write your answer as a fraction and as a decimal.

- 16.** Children use a computer for fun for about 20 minutes per day. How many hours do they spend using a computer for fun in 1 week (7 days)? Write your answer as a fraction and as a decimal.
- 17.** Three candidates are running for mayor of Slugville. Each has determined the typical income for the people in Slugville, and they are using this information to help in their campaigns.

Mayor Phillips is running for re-election. He says, “Slugville is doing great! The average income for each person is \$2,000 per week!”

Candidate Lily Jackson says, “Slugville is nice, but it needs my help! The average income is only \$100 per week.”

Candidate Ronnie Ruis says, “Slugville is in a lot of trouble! The average income is \$0 per week.”



Some of the candidates are confused about “average.” Slugville has only 16 residents, and their weekly incomes are \$0, \$0, \$0, \$0, \$0, \$0, \$0, \$0, \$0, \$200, \$200, \$200, \$200, \$200, \$200, \$200, and \$30,600.

- Explain which measure of center each of the candidates used as an “average” income for the town. Check their computations.
- Does any person in Slugville have the mean income? Explain.
- Does any person in Slugville have an income that equals the median? Explain.
- Does any person in Slugville have an income that equals the mode? Explain.
- What do you consider to be the typical income for a resident of Slugville? Explain.
- Suppose four more people move to Slugville. Each has a weekly income of \$200. How would the mean, median, and mode change?

- 18.** A recent survey asked 25 middle-school students how many movies they watch in one month. The data are shown below. Notice that the data vary from 1 movie to 30 movies.

Movies Watched

Student	Number
Wes	2
Tomi	15
Ling	13
Su Chin	1
Michael	9
Mara	30
Alan	20
Jo	1
Tanisha	25
Susan	4
Gil	3
Enrique	2
Lonnie	3
Ken	10
Kristina	15
Mario	12
Henry	5
Julian	2
Alana	4
Tyrone	1
Rebecca	4
Anton	11
Jun	8
Raymond	8
Angelica	17



- Make a stem-and-leaf plot to show these data. Describe the shape of the data.
- Find the mean number of movies watched by the students. Explain.
- What do the mean and the least and greatest values tell you about the typical number of movies watched for this group of students?
- Find the median number of movies watched. Are the mean and the median the same? Why do you think this is so?

19. Six students each had a different number of pens. They put them all together and then distributed them so that each student had the same number of pens.
- Choose any of the following that could be the number of pens they had altogether. Explain your reasoning.
A. 12 B. 18 C. 46 D. 48
 - Use your response from part (a). How many pens did each person have after the pens were distributed evenly?
 - Your classmate says that finding the mean number of pens per person is the same as finding the number of pens each person had after the pens were distributed evenly. Do you agree or disagree? Explain.

Extensions

For Exercises 20 and 21, use the newspaper headline.



20. Do you think that this headline is referring to a mean, a median, or something else? Explain.
21. About how many hours per day does the average third grader watch television if he or she watches 1,170 hours in a year?



- 22.** Review the jump-rope data from Problem 2.2.
- What are the median and the mean for each class's data? How do the median and the mean compare for each class?
 - Should Mr. Costo's class use the median or the mode to compare their performance with Mrs. Reid's class? Why?
 - What happens to the median of Mr. Costo's class data if you leave out the data for the student who jumped rope 300 times? Why does this happen?
 - What happens to the mean of Mr. Costo's class data if you leave out the data for the student who jumped rope 300 times? Why does this happen?
 - Can Mrs. Reid's class claim they did better if Mr. Costo's class leaves out the data of 300 jumps? Explain.
- 23.** A group of middle-school students answered the question: How many TV shows did you watch last week? The table at the right shows their data.
- Use the data to find the mean number of TV shows watched.
 - A new value is added for Albert. He watched only 1 TV show last week.
 - Is this new value an outlier?
 - What is the mean of the data now?
 - Compare this mean to the mean you found in part (a). What do you notice? Explain.

Student	Number of TV Shows Watched
Caleb	17
Malek	13
Jenna	20
Mario	8
Melania	11
Bennett	13
Anna	16