

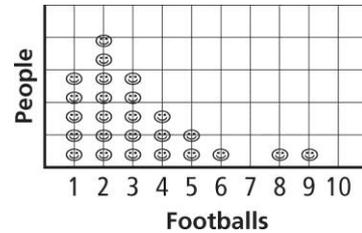
12-3 Reteaching

Measures of Central Tendency and Dispersion

Mean, median, and mode are all measures of central tendency which are different ways of describing a set of data.

Problem

The chart at the right shows the number of people in a small town who own a certain number of footballs. So, for example, there are 5 people who own 1 football and 7 people who own 2 footballs. Find the mean, median, and mode.



Using the data presented in the chart, you can determine different measures of central tendency.

The mode is the number that appears most often. For this data, the mode is 2.

The median is the middle number. Since there are 25 people, the middle is the thirteenth person. The thirteenth person has 3 footballs. Therefore, the median is 3.

To find the mean, calculate the total number of footballs

$$1 \times 5 + 2 \times 7 + 3 \times 5 + 4 \times 3 + 5 \times 2 + 1 \times 6 + 1 \times 8 + 1 \times 9 = 79$$

Now divide that by the number of people, $\frac{79}{25} = 3.16$

You can use what you know about mean to find a data value.

Problem

Sheralee has scored 15, 23, and 17 points in the first three basketball games of the season. How many points does she need to score in the fourth game to bring her points per game average up to 20 points per game?

First, how many points total does she need to score in the 4 games?

$$20 \times 4 = 80 \text{ points}$$

Now how many points has she scored through 3 games?

$$15 + 23 + 17 = 55 \text{ points}$$

So, she needs to score $80 - 55 = 25$ points in the fourth game.

You can check your answer by finding the average number points she scores if she scored 25 points in the fourth game.

$$\frac{15 + 23 + 17 + 25}{4} = \frac{80}{4} = 20 \checkmark$$

The answer checks.

Exercises

Find the mean, median, and mode of each data set. Which measures of central tendency best describes the data?

1. number of students per class:
27 19 20 25 16 32 28 20

2. temperatures ($^{\circ}\text{F}$):
 67° 58° 67° 70° 69° 61° 65°

3. time spent studying (hr/week):
10 8 11 14 10 12 10 9 8

4. salaries (\$):
35,000 32,000 41,000 28,000 35,000

Find the value of x so that the data set has the given mean.

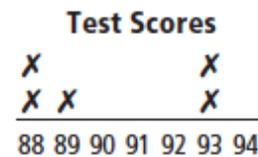
5. 32, 48, 56, 40, x ; mean 42.6

6. 1.2, 6.5, 3.3, 4.9, x ; mean 3.34

7. 2.85, 12.6, 8.57, 10.1, x ; mean 9.024

8. 112.5, 68.9, 45.2, 85.4, x ; mean 82.4

9. The line plot at the right shows test scores Cheryl has received so far in the semester. Her goal is to have a 91% test average at the end of the semester. What does she need to score on her final test in order to achieve her goal?



Find the range and mean of each data set. Use your results to compare the two data sets.

10. Set M: 25 36 31 28 30
Set N: 15 22 34 18 25

11. Set O: 2.6 5.1 3.7 4.8 3.2
Set P: 4.8 1.3 6.7 5 4.5

Find the mean, median, mode, and range of each data set if you perform the given operation on each data value.

12. 11, 14, 9, 7, 11; multiply by 2

13. 4.6, 7.3, 5.8, 6.5, 5.8; add 7

14. 127, 115, 135, 115, 142; divide by 5

15. 22.3, 18, 13.6, 15.2, 22.3; subtract 3.5