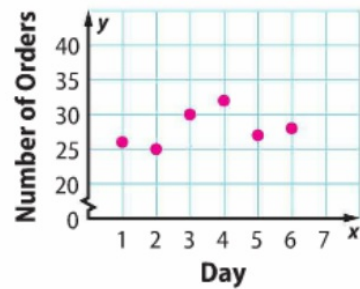


1. Plot the data on the graph provided.



2. Find the mean of the data set. **28**

3. Complete the table by finding the absolute value of the difference between the mean and each data value in the set.

Number of Specials	26	25	30	32	27	28
Difference from Mean	2	3	2	4	1	0

4. Find the average of the values for the difference from the mean in the table. **2**

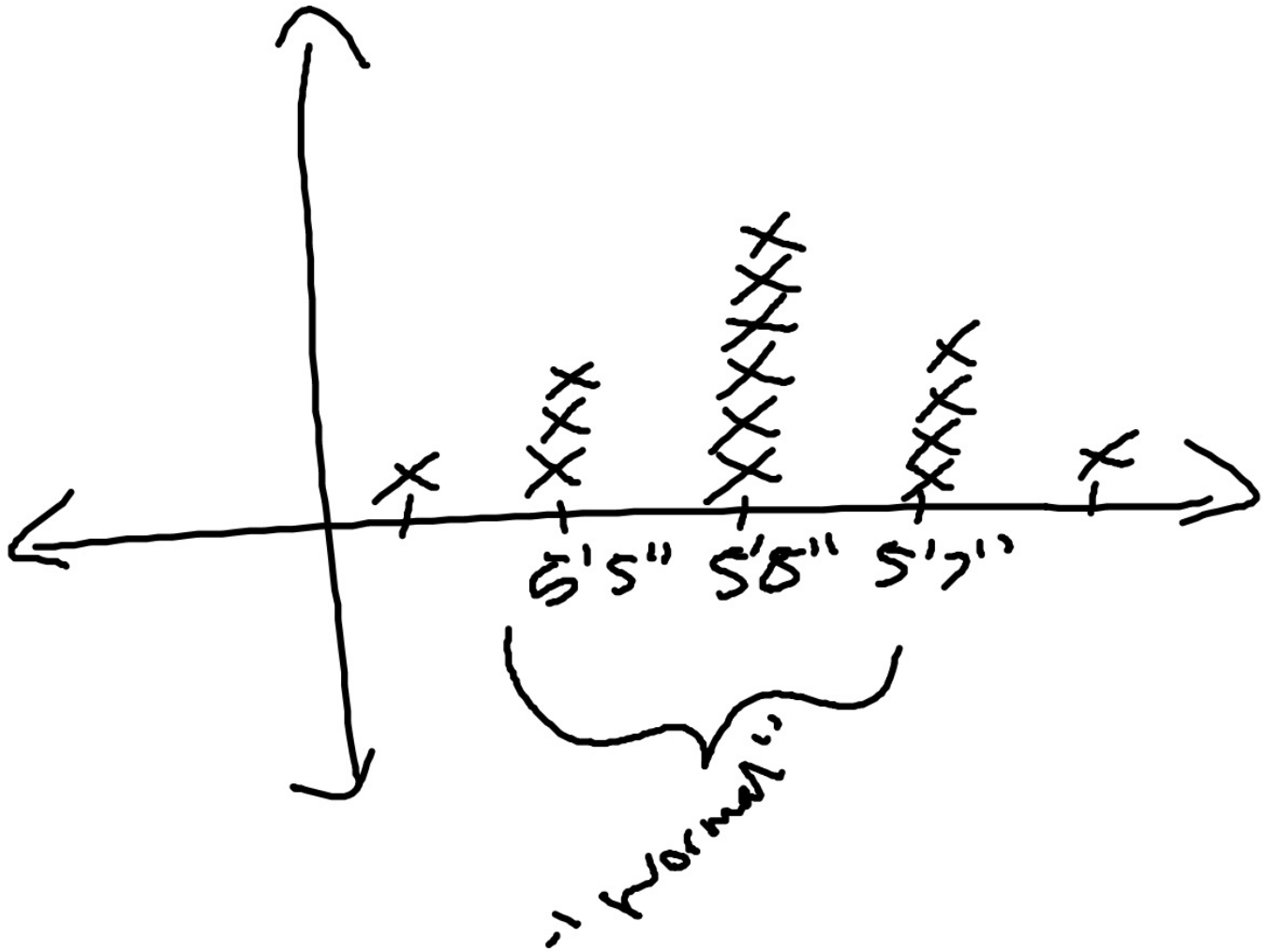


Got It? Do this problem to find out.

a. The number of points that Samantha scored in five basketball games was 8, 14, 10, 7, and 13. Find the mean absolute deviation of the set of data. Describe what the mean absolute deviation represents.

Show your work.

a. **2.48; Sample answer: The average distance each data value is from the mean is 2.48 points.**



1. The table shows the milligrams of caffeine per serving in certain types of tea. Find the mean absolute deviation of the set of data. Describe what the mean absolute deviation represents. (Example 1)

Amount of Caffeine in Tea (milligrams)				
9	46	18	35	30
12	56	24	38	32

11.4; Sample answer: The average distance each data value is from the mean is 11.4 milligrams.

now say ovk.

mean : 30 +14
-14

2. The table shows the milligrams of caffeine per serving in certain types of coffee. Find the mean absolute deviation of the data. Describe what the mean absolute deviation represents. (Example 1)


Amount of Caffeine in Coffee (milligrams)		
145	170	150
90	100	100
165	135	106

26.7; Sample answer: The average distance each data value is from the mean is 26.7 milligrams.

3. Refer to the table in Exercise 1. The standard deviation of the amounts of caffeine is about 14 milligrams. Describe the data values that are within one standard deviation of the mean. (Example 2)

Caffeine amounts that are between 16 and 44 milligrams are within one standard deviation of the mean.



4.  **Building on the Essential Question** How does the mean absolute deviation describe the variation of a set of data? Sample answer: The mean absolute deviation is an indicator of the spread of the data, or how far each data value is from the mean.

Independent Practice

Go online for Step-by-Step Solutions

Find the mean absolute deviation of each set of data. Round to the nearest tenth if necessary. Describe what the mean absolute deviation represents. (Example 1)

1

Average Speeds of Selected Animals (mph)

70	40	45
42	40	36

8.2; Sample answer: The average distance each data value is from the mean is 8.2 miles per hour.

2.


Average Numbers of Annual Vacation Days for Selected Countries

34	26	37	35	42	25	25
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5.7; Sample answer: The average distance each data value is from the mean is 5.7 days.



- 3 Refer to the table in Exercise 1. The standard deviation of the average speeds of some animals is about 11.3 miles per hour. Describe the data values that are within one standard deviation of the mean. (Example 2)
- Speeds that are between 34.2 and 56.8 miles per hour are within one standard deviation of the mean.

4.  **Justify Conclusions** The table shows the total points scored in beach volleyball matches.

- a. Find the mean absolute deviation for each set of data. Round to the nearest hundredth. Then write a few sentences comparing their variation.

Men: 5.52 points; Women: 7.64 points; Sample answer:

$5.52 < 7.64$ so the women's teams had a greater variation in scores and the scores of the men's teams were closer together.

- b. The standard deviation of the men's scores is 6.6 points. The standard deviation of the women's scores is 10.3 points. Describe how this information supports your answer to part a.

Sample answer: The mean of the men's scores is 50.1 points and the standard deviation is 6.6 points. This means that the majority of the men's scores were between 43.5 and 56.7 points. The mean of the women's score is 40.4 and the standard deviation is 10.3. The majority of the women's scores were between 30.1 and 50.7 points. The women's scores are more spread out.

Beach Volleyball Scores	
Men	Women
52	47
61	42
42	42
44	42
60	17
50	54
55	52
42	42
49	29
46	37



H.O.T. Problems Higher Order Thinking

5. **CCSS Find the Error** Brian is describing the data values that are within one standard deviation of the mean of a set of data. Find his mistake and correct it.

Sample answer: Brian should have said more than half of his data values are within one standard deviation of the mean.

Less than half of my data values are within one standard deviation of the mean.



6. **CCSS Identify Structure** Create a list of data with at least five numbers that has a range of 40. Describe the mean absolute deviation.

Sample answer: 5, 20, 30, 40, 45; The mean absolute deviation is 12.4.

7. **CCSS Persevere with Problems** The standard deviation of ribbon lengths is about 7.2 inches. Describe the lengths that are within two standard deviations of the mean. Explain your reasoning.

Lengths that are between 20.6 and 49.4 inches are within two standard deviations of the mean. The mean is 35, so the range is $35 - 2(7.2)$ or 20.6 to $35 + 2(7.2)$ or 49.4.


Lengths of Ribbon (in.)

42	24	48	36
28	36	36	30

8.  **Justify Conclusions** Determine whether the following statement is *always*, *sometimes*, or *never* true. Justify your response.

A data set with a mean absolute deviation of 9 is more spread out than a data set with a mean absolute deviation of 3.

sometimes; Sample answer: A data set that is clustered around the mean with a significant outlier could have a smaller mean absolute deviation than a data set that has all of the data 9 units away from the mean.

9.  **Reason Inductively** Compare and contrast standard deviation and mean absolute deviation.

Sample answer: Both are calculated statistical values that show how each data value deviates from the mean of the data set. The mean absolute deviation is the mean of the absolute values of the differences between each number and the mean of the data set. The standard deviation shows how the data deviates from the mean of the data.