

## Bell Ringer

### Section 6.2

1. What are the mean, median and mode of the number of haircuts at a barbershop over the past 12 days? Which measure of central tendency best describes the data? Explain.

Number of Haircuts			
36	75	51	28
61	88	36	40
45	52	58	66

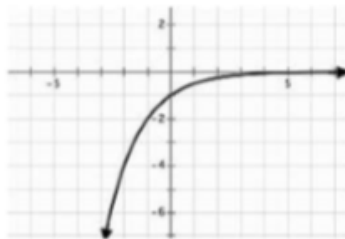
2. A student has test scores of 97, 89, 79, 94, 95, and 100 this term. What score must the student earn on the next test to have an average test score of 91 for the term?

3. The table below shows the prices of 8 different televisions at an electronics store. This week the store is having a 15% off sale on all televisions. What are the mean, median, mode, and range of the discounted prices?

Television Prices			
\$870	\$710	\$625	\$750
\$1275	\$710	\$1080	\$500

### Review.

4.  $g(x)$



a.  $g(-1) =$  \_\_\_\_\_

b.  $g(-3) =$  \_\_\_\_\_

c. when  $g(x) = -4$ ,  $x =$  \_\_\_\_\_

d. when  $g(x) = -1$ ,  $x =$  \_\_\_\_\_

## Solutions

### Section 6.2

1. What are the mean, median and mode of the number of haircuts at a barbershop over the past 12 days? Which measure of central tendency best describes the data? Explain.

Number of Haircuts			
36	75	51	28
61	88	36	40
45	52	58	66

Mean: 53, Median: 51.5, Mode: 36

Mean (or Median) is the best because there is no outlier in the data

2. A student has test scores of 97, 89, 79, 94, 95, and 100 this term. What score must the student earn on the next test to have an average test score of 91 for the term?

83

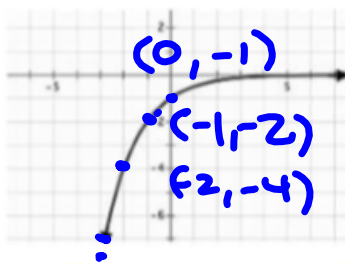
3. The table below shows the prices of 8 different televisions at an electronics store. This week the store is having a 15% off sale on all televisions. What are the mean, median, mode, and range of the discounted prices?

Television Prices			
\$870	\$710	\$625	\$750
\$1275	\$710	\$1080	\$500

Mean: 692.7, Median: 620.50, Mode: 603.50, Range: 658.75

### Review.

4.  $g(x)$



a.  $g(-1) = -2$

b.  $g(-3) = -8$

c. when  $g(x) = -4$ ,  $x = -2$

d. when  $g(x) = -1$ ,  $x = 0$

2. A student has test scores of 97, 89, 79, 94, 95, and 100 this term. What score must the student earn on the next test to have an average test score of 91 for the term?

$$91 = \frac{97 + 89 + 79 + 94 + 95 + 100 + x}{7}$$

$$\begin{array}{r} 637 = 554 + x \\ - 554 \quad - 554 \\ \hline 83 = x \end{array}$$

correct 6.1 #s 9-18, 21-23, 25

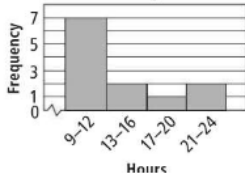
9. Battery Life

Hours	Frequency
9-12	7
13-16	2
17-20	1
21-24	2



10.

Battery Life



11.

Battery Life

Hours	Frequency	Cumulative Frequency
9-12	7	7
13-16	2	9
17-20	1	10
21-24	2	12



12. The store owner could look at the frequency column to pick out the busiest hours.



13. A symmetric histogram has roughly the same shape if you fold it down the middle. A skewed histogram has a peak that is not in the center.

14. Add the frequency of each interval to the frequencies of all the previous intervals.



15. a.

The Perpendicular Bisectors

Time/Song (min)	Frequency	Cumulative Frequency
0-1:19	0	0
1:20-2:39	2	2
2:40-3:59	5	7
4:00-5:19	3	10

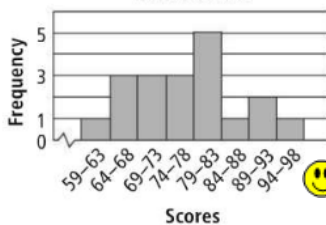
b. 70%; 7 out of 10 songs are shorter than 4 min.



16. about 60 people

17. Answers may vary. Sample:

Test Scores



21. \$99

22. 20-39

23. 9 customers



25. There were no numbers in the range of 30 to 39 so the student just left out this interval. The intervals in a frequency table should not have any gaps, so the student should have included the interval 30-39.

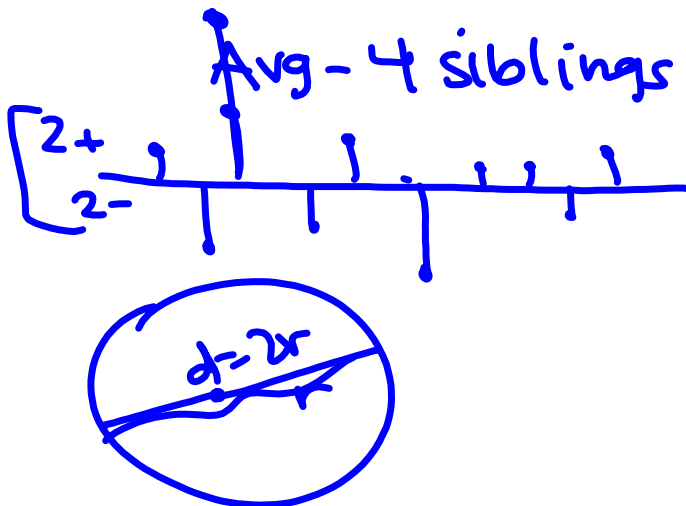
Interval	Frequency
20-29	6
30-39	0
40-49	5
50-59	4

due Monday hw 6.2 #s 11-13, 15, 16, 18, 19, 22, 23, 25

### Standard Deviation...

Measure of how the values in a data set vary, or deviate, from the mean.

*average*



6 3 2 5 4

$\bar{x} = \text{mean} = 4$

4 subs

2	9
-1	-2

$\frac{+1 + -1 + -2}{4}$

$\frac{4 + 1 + 1 + 4}{4} = \frac{10}{4} = 2.5$

$= \frac{0}{4} = 0$

$\sqrt{2.5} \approx 1.5 = \sigma$



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Statisticians use measures of dispersion to describe how spread out the values in a data set are. One measure of dispersion is *standard deviation*. **Standard deviation** is a measure of how the values in a data set vary, or deviate, from the mean.

Statisticians use several special symbols in the formula for standard deviation.

The Greek letter sigma ( $\sigma$ ) represents standard deviation.

$$\sigma = \sqrt{\frac{\sum(x - \bar{x})^2}{n}}$$

$x$  is a value in the data set.  
 $\bar{x}$  is the mean of the data set.

The capital sigma ( $\Sigma$ ) represents the sum of a series of numbers.

$n$  is the number of values in the data set.

Find the mean and standard deviation of the data set

Number of pairs of shoes owned: 9, 12, 7, 18, 9, 5  $\bar{x} = 10$

- Step 1 Find the mean,  $\bar{x}$ .
- Step 2 Find the difference between each data value and the mean,  $x - \bar{x}$ .
- Step 3 Square each difference,  $(x - \bar{x})^2$ .
- Step 4 Find the average (mean) of these squares,  $\frac{\sum(x - \bar{x})^2}{n}$ .
- Step 5 Take the square root to find the standard deviation,  $\sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ .

#2 $x - \bar{x}$	#3 $(x - \bar{x})^2$	#4 Avg of #3	$\sqrt{17.3}$
-1	4	17.3	$\sqrt{17.3}$
-2	9		$\approx 4.16$
-3	64		
-1	25		
-5			
	$\frac{\sum(x - \bar{x})^2}{n}$		

Find the mean and standard deviation of the data set  
Cost of candy bar: 1.79, 0.92, 1.25, 0.99, 2.17, 1.85

**Step 1** Find the mean,  $\bar{x}$ .

**Step 2** Find the difference between each data value and the mean,  $x - \bar{x}$ .

**Step 3** Square each difference,  $(x - \bar{x})^2$ .

**Step 4** Find the average (mean) of these squares,  $\frac{\sum(x - \bar{x})^2}{n}$ .

$$\sum (x - \bar{x})^2$$

**Step 5** Take the square root to find the standard deviation,  $\sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ .

**Example**

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Find the mean and standard deviation of each data set. Which data set has greater standard deviation?

**Step 1** Find the mean,  $\bar{x}$ .

**Step 2** Find the difference between each data value and the mean,  $x - \bar{x}$ .

**Step 3** Square each difference,  $(x - \bar{x})^2$ .

**Step 4** Find the average (mean) of these squares,  $\frac{\sum(x - \bar{x})^2}{n}$ .

**Step 5** Take the square root to find the standard deviation,  $\sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ .

Data Set 1				Data Set 2			
$x_1$	$\bar{x}_1$	$x_1 - \bar{x}_1$	$(x_1 - \bar{x}_1)^2$	$x_2$	$\bar{x}_2$	$x_2 - \bar{x}_2$	$(x_2 - \bar{x}_2)^2$
12.6	15	-2.4	5.76	13.4	14.5	-1.1	1.21
15.1	15	0.1	0.01	11.7	14.5	-2.8	7.84
11.2	15	-3.8	14.44	18.3	14.5	3.8	14.44
17.9	15	2.9	8.41	14.8	14.5	0.3	0.09
18.2	15	3.2	10.24	14.3	14.5	-0.2	0.04
$\frac{\sum(x_1 - \bar{x}_1)^2}{n}$			7.772	$\frac{\sum(x_2 - \bar{x}_2)^2}{n}$			4.724
$\sqrt{\frac{\sum(x_1 - \bar{x}_1)^2}{n}}$			$\approx 2.79$	$\sqrt{\frac{\sum(x_2 - \bar{x}_2)^2}{n}}$			$\approx 2.17$

Data set 1 has a greater standard deviation at 2.79.

Find the mean and standard deviation of each data set. Round to the nearest hundredth. Which data set has the greater standard deviation?

1. Data set 1: 4, 8, 5, 12, 3, 9, 5, 2

Data set 2: 5, 9, 11, 4, 6, 11, 2, 7

Step 1 Find the mean,  $\bar{x}$ .

Step 2 Find the difference between each data value and the mean,  $x - \bar{x}$ .

Step 3 Square each difference,  $(x - \bar{x})^2$ .

Step 4 Find the average (mean) of these squares,  $\frac{\sum(x - \bar{x})^2}{n}$ .

Step 5 Take the square root to find the standard deviation,  $\sqrt{\frac{\sum(x - \bar{x})^2}{n}}$ .

$\bar{x} = 6$  1  
 -2      4  
 -2      4  
 -4      16  
 -1      1  
 -1      1  
 -1      1  
 -1      1  
 $\sigma = 3.16$

mean  
 $\sqrt{10}$   
 .3.16

$\bar{x} = 6.875$  2  
 -1.875  
 2.125  
 4.125  
 -2.875  
 -0.875  
 4.125  
 (-4.875)<sup>2</sup>  
 0.125  
 3.515625  
 4.515625  
 17.015625  
 +8.265625  
 +.65625  
 17.015625  
 23.765625  
 .015625  
 $\sqrt{9.345703125}$   
 $\sigma = 3.06$

No hw!!!!

