

Reteaching (continued)

Frequency and Histograms

Exercises

Use the data to make a frequency table.

1. height (in.): 78 56 99 82 108 65 76
82 95 100 85 73 99

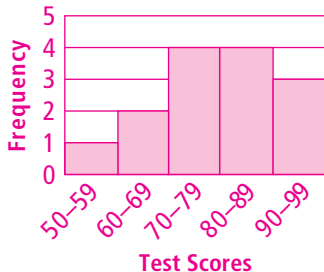
Height	
Inches	Freq.
50 – 59	1
60 – 69	1
70 – 79	3
80 – 89	3
90 – 99	3
100 – 109	2

2. distance (mi): 12 21 19 25 8 17 16
29 31 20 5 13

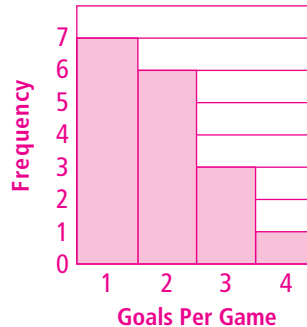
Distance	
Miles	Frequency
5 – 9	2
10 – 14	2
15 – 19	3
20 – 24	2
25 – 29	2
30 – 34	1

Use the data to make a histogram.

3. test scores: 99 72 65 83 87 76 94
80 67 59 73 91 70 82

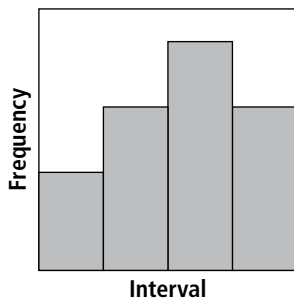


4. goals per game: 2 1 4 2 2 1 1 3
1 3 2 2 1 3 1 1 2



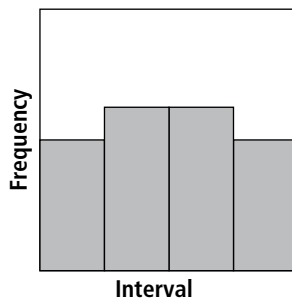
Tell whether each histogram is *uniform*, *symmetric*, or *skewed*.

5.



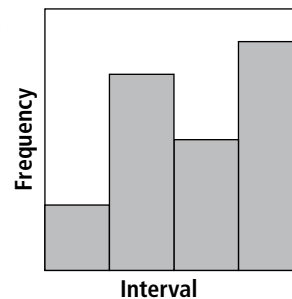
symmetric

6.



uniform

7.



skewed

Reteaching (continued)

Measures of Central Tendency and Dispersion

Exercises

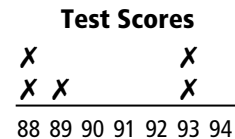
Find the mean, median, and mode of each data set. Which measures of central tendency best describes the data?

- | | |
|---|---|
| 1. number of students per class:
27 19 20 25 16 32 28 20
mean: 23.375; median: 22.5; mode: 20; any or median | 2. temperatures (°F):
67° 58° 67° 70° 69° 61° 65°
mean: 65.3; median: 67; mode: 67; any |
| 3. time spent studying (hr/week):
10 8 11 14 10 12 10 9 8
mean: 10.2; median: 10; mode: 10; any | 4. salaries (\$):
35,000 32,000 41,000 28,000 35,000
mean: 34,200; median: 35,000; mode: 35,000; any |

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

- | | |
|---|--|
| 5. 32, 48, 56, 40, x ; mean 42.6 37 | 6. 1.2, 6.5, 3.3, 4.9, x ; mean 3.34 0.8 |
| 7. 2.85, 12.6, 8.57, 10.1, x ; mean 9.024 11 | 8. 112.5, 68.9, 45.2, 85.4, x ; mean 82.4 100 |

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? **95%**



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
Set M range = 11; Set M mean = 30;
Set N range = 19; Set N mean = 22.8;
Set N has a larger range and a lower mean than Set M. | 11. Set O: 2.6 5.1 3.7 4.8 3.2
Set P: 4.8 1.3 6.7 5 4.5
Set O range = 2.5; Set O mean = 3.88;
Set P range = 5.4; Set P mean = 4.46;
Set P has a larger range and a greater mean than Set O. |
|--|--|

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
mean = 20.8; median = 22; mode = 22;
range = 14 | 13. 4.6, 7.3, 5.8, 6.5, 5.8; add 7
mean = 13; median = 12.8; mode = 12.8;
range = 2.7 |
| 14. 127, 115, 135, 115, 142; divide by 5
mean = 25.36; median = 25.4; mode = 23;
range = 5.4 | 15. 22.3, 18, 13.6, 15.2, 22.3; subtract 3.5
mean = 14.78; median = 14.5; mode = 18.8;
range = 8.7 |

Reteaching (continued)

Box-and-Whisker Plots

Exercises

Find the minimum, first quartile, median, third quartile, and maximum of each data set.

1. 72, 78, 61, 48, 59, 76, 65

minimum = 48; first quartile = 59;
median = 65; third quartile = 76;
maximum = 78

2. 11, 12, 8, 19, 16, 10, 14

minimum = 8; first quartile = 10;
median = 12; third quartile = 16;
maximum = 19

3. 3.6, 5.7, 8.3, 6.5, 2.9, 4.3, 5.1

minimum = 2.9; first quartile = 3.6;
median = 5.1; third quartile = 6.5;
maximum = 8.3

4. 155, 151, 158, 156, 155, 153, 158

minimum = 151; first quartile = 153;
median = 155; third quartile = 158;
maximum = 158

Make a box-and-whisker plot to represent each set of data.

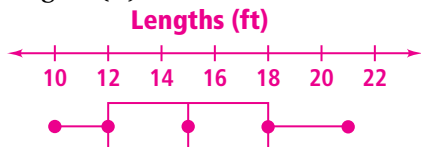
5. daily fair visitors: 2576 3255 1876 2285 3589 4277 996



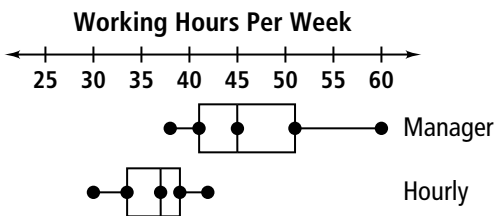
6. computer prices: \$1499 \$699 \$999 \$2999 \$499 \$4499 \$3299



7. lengths (ft): 15 21 10 17 12 14 18



8. Use the box-and-whisker plot below. What does it tell you about the number of hours each type of employee works for the company per week? Explain.



Managers work more hours per week than hourly employees because the manager's data is to the right of the hourly employee's data on the number line.

9. In a certain city with a working population of 10,500, 8925 people earn less than \$75,000 per year. What is the percentile rank of someone who earns \$75,000 per year? **85**

Reteaching (continued)

Scatter Plots and Trend Lines

Problem

Draw a trend line for the scatter plot in the previous problem. What is the equation for your trend line? What would you estimate to be the average height of a girl who is 12 years old?

Draw a line that seems to fit the data. The line drawn for this data goes through (4, 40) and (8, 50). Use these points to write an equation.

$$m = \frac{50 - 40}{8 - 4} = 2.5$$

Use the point-slope form of the line.

$$y - y_1 = m(x - x_1)$$

$$y - 40 = 2.5(x - 4)$$

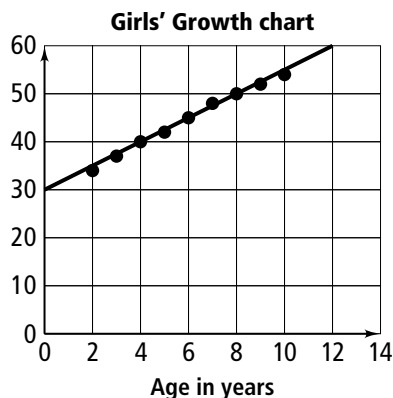
$$y - 40 = 2.5x - 10$$

$$y = 2.5x + 30$$

Use this equation to estimate the average height of 12-year-old girls.

$$y = 2.5(12) + 30$$

$$y = 60$$

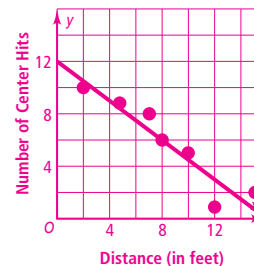


Exercises

Ryan practices throwing darts. From each distance listed below, he throws 10 darts and records how many times he hits the center.

Distance (in feet)	2	5	7	8	10	12	15
Number of Center Hits	10	9	8	6	5	1	2

- Use the space at the right to make a scatter plot of the data.
See points on graph in Ex. 3.
- Describe the type of correlation that is shown in the scatter plot.
negative correlation; as the distance from the target increases, the number of center hits out of 10 decreases
- Draw a trend line.
- What equation represents your trend line? $y = -\frac{3}{4}x + 12$
- How many hits do you estimate Ryan would make from 6 feet?
about 7 hits



Reteaching (continued)

Two-Way Frequency Tables

You can find **conditional relative frequency** by dividing a joint frequency by that frequency's row total or column total. For example, using the table below, the conditional relative frequency that a student surveyed is a senior, given that the student has a job, is $\frac{102}{148}$, or about 0.69.

Grade	Job Status		
	Has a Job	Does Not Have a Job	Total
Juniors	46	149	195
Seniors	102	80	182
Total	148	229	377

Exercises

A drama club sold a combined total of 435 tickets to the matinee and evening performances. Of the 186 tickets sold for the matinee, 74 were adult tickets. Of the 249 tickets sold for the evening performance, 191 were student tickets.

- Complete the two-way frequency table for the data.

Ticket Type	Performance		
	Matinee	Evening	Total
Adult	74	58	132
Student	112	191	303
Total	186	249	435

- Complete the two-way *relative* frequency table for the data.

Ticket Type	Performance		
	Matinee	Evening	Total
Adult	$74/435 \approx 0.17$	$58/435 \approx 0.13$	$132/435 \approx 0.30$
Student	$112/435 \approx 0.26$	$191/435 \approx 0.44$	$303/435 \approx 0.70$
Total	$186/435 \approx 0.43$	$249/435 \approx 0.57$	$435/435 = 1$

- What is the joint relative frequency of adult tickets sold for the evening performance? **The joint relative frequency is about 0.13.**
- What is the marginal relative frequency of student tickets sold? **The marginal relative frequency of student tickets is about 0.70.**
- What is the conditional relative frequency that a ticket is for the matinee, given that it is a student ticket? **about 0.37**