11.2 Apply Transformations to Data

pp. 751–755

EXAMPLE

Find the mean, median, mode, range, and standard deviation of the data set below and of the data set obtained by multiplying each data value by 0.8.

200, 220, 280, 290, 320, 320, 340, 380

	Original data	Transformed data
Mean	293.75	0.8(293.75) = 235
Median	305	0.8(305) = 244
Mode	320	0.8(320) = 256
Range	180	0.8(180) = 144
Standard deviation	56.33	0.8(56.33) ≈ 45.06

EXERCISES

EXAMPLES 1 and 2
on pp. 751–752
for Exs. 9–11

Find the mean, median, mode, range, and standard deviation of the given data set and of the data set obtained by performing the given transformation.

9. 34, 35, 37, 37, 38, 41, 42, 46, 48; add −7 to each data value

10. 62, 66, 66, 68, 74, 76, 78, 80, 82; multiply each data value by 1.2

11. **RAINFALL** The list below shows the average rainfall (in millimeters) for Lubbock, Texas, during each month of the year. Find the mean, median, mode, range, and standard deviation of the data in millimeters and of the data in inches. (*Note:* 1 mm ≈ 0.03937 in.)

14.9, 14.3, 20.1, 30.5, 76.9, 59.8, 57.2, 40.2, 59.8, 46.5, 16.4, 18.8

11.3 Use Normal Distributions

pp. 757–762

EXAMPLE

A normal distribution has a mean of 76 and a standard deviation of 9. Use the standard normal table on page 759 to find the probability that a randomly selected x-value from the distribution is at most 64.

$$z = \frac{x - \overline{x}}{\sigma} = \frac{64 - 76}{9} \approx -1.3 \qquad \text{Find } z\text{-score for } x = 64.$$

$$P(x \le 64) \approx P(z \le -1.3) = 0.0968 \qquad \text{Use the standard normal table.}$$

EXERCISES

EXAMPLE 3
on p. 759
for Exs. 12–17

A normal distribution has a mean of 95 and a standard deviation of 7. Use the standard normal table on page 759 to find the indicated probability for a randomly selected x-value from the distribution.

12. $P(x \le 89)$

13. $P(x \le 84)$

14. $P(91 < x \le 100)$

15. $P(x \le 50)$

16. $P(x > 100)$

17. $P(50 < x \le 80)$