11.2 EXERCISES

HOMEWORK KEY

- = **WORKED-OUT SOLUTIONS** on p. WS1 for Exs. 5, 11, and 19
- = **TAKS PRACTICE AND REASONING** Exs. 23, 24, 18, and 38
- = **MULTIPLE REPRESENTATIONS** Exs. 23, 24, 18, and 38

SKILL PRACTICE

1. **VOCABULARY** Copy and complete: Multiplying each value in a data set by a constant is an example of a(n) __?__ of the data.

2. **WRITING** *Describe* how adding the same constant to every value in a data set affects the mean, median, mode, range, and standard deviation.

EXAMPLE 1 on p. 751 for Exs. 3–9

ADDING A CONSTANT **Find the mean, median, mode, range, and standard deviation of the given data set and of the data set obtained by adding the given constant to each data value.**

3. 14, 15, 17, 17, 19, 21, 23; constant: 6
4. 31, 35, 38, 39, 42, 42, 48; constant: 18
5. 74, 76, 77, 77, 78, 81, 83; constant: 17
6. 178, 193, 204, 211, 211, 216; constant: 155
7. 53, 64, 51, 60, 53, 45, 66; constant: −21
8. 295, 279, 278, 282, 279, 301; constant: −45

9. **ERROR ANALYSIS** The standard deviation of a data set is 10. *Describe* and correct the error in finding the standard deviation if 3 is added to each data value.

New standard deviation:
10 + 3 = 13

EXAMPLE 2 on p. 752 for Exs. 10–16

MULTIPLYING BY A CONSTANT **Find the mean, median, mode, range, and standard deviation of the given data set and of the data set obtained by multiplying each data value by the given constant.**

10. 19, 23, 23, 26, 30, 31, 34; constant: 3
11. 58, 58, 59, 62, 64, 65, 67; constant: 4
12. 28, 31, 32, 35, 35, 39, 40; constant: 1.5
13. 88, 91, 99, 102, 102, 107; constant: 2.5
14. 130, 121, 132, 115, 130, 108; constant: 0.5
15. 222, 231, 222, 212, 250, 235; constant: 0.9

16. **TAKS REASONING** The range of a data set is 21. Each value in the data set is multiplied by 3. What is the new range?

(A) 7 (B) 21 (C) 24 (D) 63

17. **CHALLENGE** Let $x_1, x_2, \ldots, x_n$ be the values in a data set, and let $\overline{x}$ be the mean of the data set. Show that the mean of $ax_1, ax_2, \ldots, ax_n$ is $a\overline{x}$.

PROBLEM SOLVING

EXAMPLES 1 and 2 on pp. 751–752 for Exs. 18–22

18. **SALARIES** The data set below gives the annual salaries (in thousands of dollars) of nine DJs working at a local radio station.

39, 29, 42.5, 28.5, 48, 45, 38, 36.5, 28.5

a. Find the mean, median, mode, range, and standard deviation of the salaries.

b. Each DJ receives an annual bonus of $1200. Find the mean, median, mode, range, and standard deviation of the salaries including the bonus.

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