Name _____ Class _____ Date _____

1-1

Additional Practice

Find the mean, median, and mode of each data set.

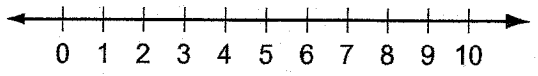
1. { 12, 11, 17, 3, 9, 14, 16, 2 }
   a. Mean _____
   b. Median _____
   c. Mode _____

2. { 6, 9, 9, 20, 4, 5, 9, 13, 10, 1 }
   a. Mean _____
   b. Median _____
   c. Mode _____

Make a box-and-whisker plot of the data. Find the interquartile range.

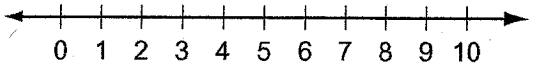
3. { 3, 7, 7, 3, 10, 1, 6, 6 }

_____



4. { 1, 2, 3, 5, 3, 5, 8, 2 }

_____



Find the variance and standard deviation.

5. { 7, 4, 3, 9, 2 }

_____

6. { 35, 67, 21, 16, 24, 51, 18, 32 }

_____

7. { 19, 23, 17, 20, 25, 19, 15, 22 }

_____

8. { 5, 12, 10, 13, 8, 11, 15, 12 }

_____

Solve.

9. The probability distribution for the amount of rain that falls on Boston in May each year is given below. Find the expected amount of rain for Boston in May. _____

Inches of Rain, *n*	5	6	7	8
Probability	0.05	0.10	0.64	0.21

10. A biologist is growing bacteria in the lab. For a certain species of bacteria, she records these doubling times: 41 min, 45 min, 39 min, 42 min, 38 min, 88 min, 43 min, 40 min, 44 min, 39 min, 42 min, and 40 min.
    a. Find the mean of the data. _____
    b. Find the standard deviation. _____
    c. Identify any outliers. _____
    d. Describe how any outlier affects the mean and the standard deviation.

_____

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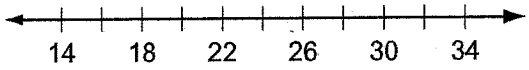
Problem Solving

Each week, Damien records the miles per gallon for his car, to the nearest whole number. Over a period of 10 weeks, the data are 18, 17, 19, 18, 18, 25, 29, 30, 26, 19. He wants to arrange and summarize his data so that he can analyze it.

1. Make a box-and-whisker plot of his data.
   a. Order the data from least to greatest. _____
   b. Identify the minimum, maximum, median, first quartile, and third quartile.

      _____

   c. Use the number line to make a box-and-whisker plot of the data. Find and label the interquartile range.



   d. Explain what the interquartile range represents in terms of the car's miles per gallon.

      _____

2. Find the standard deviation for the data.
   a. Write an equation and solve to find the mean. _____
   b. Complete the table to show the difference between the mean and each data value, and the square of that difference.

Data Value, *x*	18	17	19	18	18	25	29	30	26	19
$x - \bar{x}$										
$(x - \bar{x})^2$										

   c. Explain how to use the data from the table to find the standard deviation.

      _____

   d. What is the standard deviation for the data? _____
   e. Explain what the standard deviation represents in terms of the car's miles per gallon.

      _____

3. Damien thinks that the standard deviation is a more reliable measure of dispersion than the interquartile range. Is he correct? Explain.

   _____

   _____

   _____

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PRACTICE

A student council wants to know whether students would like the council to sponsor a mid-winter dance or a mid-winter carnival this year. Classify each sampling method.

1. Survey every tenth student on the school's roster. _____

2. Survey all freshmen and all juniors. _____

3. Survey 20 freshmen, 20 sophomores, 20 juniors, and 20 seniors. _____

4. Survey those who ask the council president for a questionnaire. _____

5. Survey those who happen to be in the cafeteria at noon. _____

Use the following information for Exercises 6–9.

The officers of a neighborhood association want to know whether residents are interested in beautifying the neighborhood and, if so, how much money they are willing to contribute toward the costs involved. The officers are considering the three sampling methods below.

A. Call and survey every tenth resident on the association's roster.

B. Randomly select and survey 10 residents from among those who come to the neighborhood block party.

C. Mail a survey to every resident with instructions to complete and mail the survey back.

6. Identify the population.

_____

7. Which sampling method is most likely to result in a representative sample of the population? Explain.

_____

_____

_____

8. Describe another sampling method that is likely to result in a representative sample of the population.

_____

9. Describe the categorical and numerical data that the officers of the neighborhood association want to gather through a survey.

_____

_____

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Use the following information for Exercises 10–14.

A community theater association plans to produce three plays for the upcoming season. The association surveys a random sample of the approximately 7000 households in the community to see if an adult member of the household is interested in attending plays and, if so, what type of plays the person prefers (comedy, drama, or musical), how many members of the household (including the person surveyed) might attend plays, and how many of the three plays those household members might attend.

Of the 50 adults surveyed, 12 indicated an interest in attending plays. The table lists the data for those 12 people.

Preferred type of play	Number of people attending	Number of plays attending
Comedy	2	1
Musical	3	2
Musical	1	2
Drama	2	3
Comedy	3	2
Comedy	2	3
Musical	4	1
Drama	2	3
Comedy	2	2
Musical	2	3
Comedy	5	1
Drama	1	2

10. Describe the categorical and numerical data gathered in the survey.

11. Calculate the proportion of adults who indicated an interest in attending plays. Then calculate the proportion of those interested in attending plays who prefer dramas.

12. Approximately 15,000 adults live in the community. Predict the number of adults who prefer plays that are dramas. Show your calculations.

13. For an adult with an interest in attending plays, calculate the mean number of household members who might attend plays. Then calculate the mean number of plays that those household members might attend. Round each mean to the nearest tenth.

14. The theater association plans to sells tickets to the plays for $40 each. Predict the amount of revenue from ticket sales. Show your calculations and include units.

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