Name _____ Date _____ Class _____

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

1. {3, 10, 2, 8, 7, 5, 2, 5}

   a. The mean is the sum of the values in a set divided
   by the number of values. Find the mean of the set.   _____

   b. The median is the middle value when the set is
   ordered numerically. Find the median of the set.   _____

   c. The mode is the value or values that occur most
   often. Find the mode of the set.   _____

2. {11, 15, 4, 10, 7, 5, 11, 9}

   a. Mean   b. Median   c. Mode

   _____   _____   _____

Find the expected values.

3. The probability distribution for the number of free throws
   that Larry makes in a game is given below. Find the
   expected number of free throws that Larry makes in
   a game.   _____

Number of Free Throws Made, n	5	6	7	8
Probability	0.21	0.58	0.14	0.07

4. The probability distribution for the number of pieces of junk
   mail May receives is given below. Find the expected
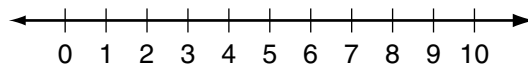   number of junk mail letters May receives in a day.   _____

Number of Junk Mail Letters, n	1	2	3	4
Probability	0.15	0.70	0.10	0.05

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

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

   _____

                                        0 1 2 3 4 5 6 7 8 9 10

6. {1, 9, 9, 2, 2, 5, 5, 10}

   _____
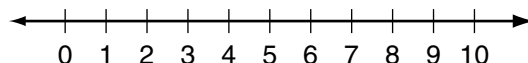
                                        0 1 2 3 4 5 6 7 8 9 10

Find the variance and standard deviation.

7. {1, 2, 8, 11, 7, 10, 7, 2}   8. {10, 14, 8, 12, 9, 13}

   _____   _____

35   **Holt Algebra 2**

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

1. {3, 10, 2, 8, 7, 5, 2, 5}

    a. The mean is the sum of the values in a set divided by the number of values. Find the mean of the set. **5.25**

    b. The median is the middle value when the set is ordered numerically. Find the median of the set. **5**

    c. The mode is the value or values that occur most often. Find the mode of the set. **2, 5**

2. {11, 15, 4, 10, 7, 5, 11, 9}

    a. Mean **9**   b. Median **9.5**   c. Mode **11**

Find the expected values.

3. The probability distribution for the number of free throws that Larry makes in a game is given below. Find the expected number of free throws that Larry makes in a game. **6.07**

Number of Free Throws Made, n	5	6	7	8
Probability	0.21	0.58	0.14	0.07

4. The probability distribution for the number of pieces of junk mail May receives is given below. Find the expected number of junk mail letters May receives in a day. **2.05**

Number of Junk Mail Letters, n	1	2	3	4
Probability	0.15	0.70	0.10	0.05

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

5. {3, 7, 5, 3, 5, 9, 2, 7}   **Interquartile range is 4.**

6. {1, 9, 9, 2, 2, 5, 5, 10}   **Interquartile range is 7.**

Find the variance and standard deviation.

7. {1, 2, 8, 11, 7, 10, 7, 2}   **13; 3.6**

8. {10, 14, 8, 12, 9, 13}   **4.7; 2.2**

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

1. {12, 11, 17, 3, 9, 14, 16, 2}

    a. Mean **10.5**

    b. Median **11.5**

    c. Mode **None**

2. {6, 9, 9, 20, 4, 5, 9, 13, 10, 1}

    a. Mean **8.6**

    b. Median **9**

    c. Mode **9**

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

3. {3, 7, 7, 3, 10, 1, 6, 6}   **Interquartile range is 4.**

4. {1, 2, 3, 5, 3, 5, 8, 2}   **Interquartile range is 3.**

Find the variance and standard deviation.

5. {7, 4, 3, 9, 2}   **6.8; 2.6**

6. {35, 67, 21, 16, 24, 51, 18, 32}   **278; 16.7**

7. {19, 23, 17, 20, 25, 19, 15, 22}   **9.3; 3.0**

8. {5, 12, 10, 13, 8, 11, 15, 12}   **8.4; 2.9**

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. **7.01**

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. **45.1**

    b. Find the standard deviation. **13.1**

    c. Identify any outliers. **88**

    d. Describe how any outlier affects the mean and the standard deviation. **The mean increases from ≈41.2 to ≈45.1, and the standard deviation increases from ≈2.1 to ≈13.1.**

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Write a data set to satisfy the given conditions.

1. Median = 8; mode = 4   **Possible answer: {4, 4, 8, 9, 10}**

2. Mean = 10; median = 12   **Possible answer: {3, 6, 12, 14, 15}**

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

3. 21, 20, 4, 5, 5, 20, 20, 13, 1, 1, 13, 7, 13, 17, 7, 17, 9, 9   **Interquartile range is 12.**

4. 10, 16, 3, 18, 18, 10, 8, 2, 9, 3, 7, 7, 8, 8, 18, 13, 7, 13   **Interquartile range is 6.**

Find the variance and standard deviation.

5. {13, 7, 16, 22, 26, 11, 12, 19, 9}   **35.1; 5.9**

6. {4, 7, 28, 6, 1, 1, 10, 15, 48, 3, 4, 5}   **176.2; 13.3**

7. {15, 5, 12, 8, 19, 11, 7, 10, 9, 13, 17, 5}   **18.6; 4.3**

8. {37, 29, 33, 30, 23, 28, 20, 35, 19, 21}   **37.6; 6.1**

Solve.

9. The probability distribution for the number of children per family in a particular suburb of Chicago is shown below. Find the expected number of children per family in this region. **2.28**

Number of Children, n	1	2	3	4
Probability	0.27	0.28	0.35	0.10

10. A chemist weighs samples obtained from a production run. The weights of the samples are 13 g, 14 g, 65 g, 11 g, 15 g, 14 g, 14 g, 12 g, 13 g, 15 g, 14 g, and 12 g.

    a. Find the mean of the data. **17.7**

    b. Find the standard deviation. **14.3**

    c. Identify any outliers. **65**

    d. Describe how any outlier affects the mean and the standard deviation. **The mean increases from ≈13.4 to ≈17.7, and the standard deviation increases from ≈1.2 to ≈14.3.**

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Expected value can be thought of as the long-term average of an experiment after many trials.

The table shows a probability distribution for the variable x. A probability distribution table pairs each outcome with its probability.

Outcome	x_1	x_2	x_3	…	x_n
Probability	p_1	p_2	p_3	…	p_n

Expected value = $x_1p_1 + x_2p_2 + x_3p_3 + … + x_np_n$

> To find the expected value, find the sum of the products of each outcome and its associated probability.

This table shows the probability distribution for the number of red marbles selected when 3 marbles are randomly selected without replacement from a bag with 4 red and 6 blue marbles. Find the expected number of red marbles selected.

Outcome	0	1	2	3
Probability	0.17	0.5	0.3	0.03

In the formula for the expected value, $n = 4$.

Expected value = $x_1p_1 + x_2p_2 + x_3p_3 + x_4p_4$
= 0(0.17) + 1(0.5) + 2(0.3) + 3(0.03)
= 0 + 0.5 + 0.6 + 0.09 = 1.19

> Because the expected value is a type of average, it may not correspond exactly to any of the actual outcomes.

The expected number of red marbles is 1.19.

The probability distribution of temperatures, in degrees Celsius, from a chemistry experiment is shown below. Find the expected value of the temperature during the experiment.

Outcome	4	5	6	7	8
Probability	$\frac{2}{13}$	$\frac{4}{13}$	$\frac{3}{13}$	$\frac{4}{13}$	$\frac{2}{13}$

1. To use the formula for expected value, $n =$ **5**.

2. Write the expected value formula to use.

    Expected value = $x_1p_1 + x_2p_2 + x_3p_3 + x_4p_4 + x_5p_5$

3. Find the expected value of the temperature during the experiment.

    ≈6.9

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59   **Holt Algebra 2**