1-2 Lesson Master

SKILLS Objective A

1. Use the data set \{2, 3, 5, 8, 13, 21, 34, 55, 89\}. Find each statistic.
   a. 
   b. 
   c. 

2. The monthly rainfall in Orlando, Florida during 2005 is given in inches at the right. Find each statistic.
   a. median 
   b. mean 
   c. range 

Source: City of Orlando

<table>
<thead>
<tr>
<th>Month</th>
<th>Jan</th>
<th>July</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jan</td>
<td>2.44</td>
<td></td>
</tr>
<tr>
<td>Feb</td>
<td>1.79</td>
<td>5.77</td>
</tr>
<tr>
<td>March</td>
<td>5.36</td>
<td>2.65</td>
</tr>
<tr>
<td>April</td>
<td>1.12</td>
<td>8.44</td>
</tr>
<tr>
<td>May</td>
<td>3.99</td>
<td>1.09</td>
</tr>
<tr>
<td>June</td>
<td>14.86</td>
<td>1.82</td>
</tr>
</tbody>
</table>

SKILLS Objective B

3. A person made the following purchases of stock from time to time.

<table>
<thead>
<tr>
<th>Shares</th>
<th>5,000</th>
<th>10,000</th>
<th>7,500</th>
<th>6,000</th>
<th>11,000</th>
<th>8,000</th>
<th>10,000</th>
<th>5,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>Price per Share ($)</td>
<td>49.25</td>
<td>57.50</td>
<td>62.25</td>
<td>82.50</td>
<td>71.00</td>
<td>73.25</td>
<td>77.75</td>
<td>87.25</td>
</tr>
</tbody>
</table>

Calculate the average cost per share. 

4. Ms. Field counts chapter tests as 40% of a student’s grade, homework as 20%, quizzes and class work as 20%, and final exams as 20%. Lydia has an average of 89 before the final. What score must she get correct on the final to bring her grade up to 90?

5. Kyle’s college computes grade point averages (GPA) by assigning points for grades; \(A = 4.0, B+ = 3.5, B = 3.0, C+ = 2.5, C = 2.0, D = 1.0, \) and \(F = 0\). It then weights the grades by the number of semester hours for each course. Compute Kyle’s semester GPA based on the report at the right.

<table>
<thead>
<tr>
<th>Course</th>
<th>Grade</th>
<th>Hours</th>
</tr>
</thead>
<tbody>
<tr>
<td>Writing</td>
<td>B+</td>
<td>2</td>
</tr>
<tr>
<td>Biology</td>
<td>C+</td>
<td>6</td>
</tr>
<tr>
<td>French II</td>
<td>A</td>
<td>4</td>
</tr>
<tr>
<td>Calculus</td>
<td>B</td>
<td>5</td>
</tr>
</tbody>
</table>

6. Mr. Vestas sells electricity from a wind turbine to his local utility. He receives \(3\)¢ per kilowatt hour for the first 500 kilowatt hours, \(2\)¢ per kilowatt hour for the next 1000 kilowatt hours, and \(1\)¢ per kilowatt hour for each kilowatt hour thereafter. Mr. Vestas sold 1800 kilowatt hours last month. What was the average price per kilowatt hour the utility paid to Mr. Vestas last month, rounded to the nearest hundredth of a cent?

7. The mean average monthly rainfall in Orlando, Florida for the first 5 months of 2005 was 2.94", while the mean average rainfall for the last 7 months was 5.66". Compute the weighted average monthly rainfall in Orlando for 2005.
PROPERTIES  Objective C

8. Suppose that \( F_i \) is the \( i \)th number in the Fibonacci sequence 
   1, 1, 2, 3, 5, 8, 13, 21, 34, 55, 89, … . Evaluate.
   a. \( F_4 \) 
   b. \( \sum_{i=1}^{11} F_i \) 
   c. \( \frac{1}{11} \sum_{i=1}^{11} F_i \) 
   d. \( \sum_{i=3}^{7} F_i - \sum_{i=9}^{11} F_i \)

9. Suppose \( x_1 = -2, x_2 = 3, \) and \( x_3 = 5 \). Evaluate each expression.
   a. \( \sum_{i=1}^{3} x_i \) 
   b. \( \left( \sum_{i=1}^{3} x_i \right)^2 \) 
   c. \( \sum_{i=1}^{3} x_i^2 \)

10. Let \( x_i \) be the monthly rain fall in the \( i \)th month in Orlando from Question 2. Write an expression for the mean monthly rainfall using \( \Sigma \)-notation.

11. Refer to Question 3. Let \( x_i \) be the cost of the \( i \)th purchase and \( w_i \) be the \( i \)th number of shares. Write an expression for the weighted average cost per share using \( \Sigma \)-notation.

PROPERTIES  Objective D

12. a. True or false. The mean and median of a data set can never be equal. 
   b. If true, explain why. If false, give a counter example.

13. The mean of a set of 5 numbers is 41. When \( x \) is added as an element of the set, the new mean is 47. Find \( x \).

14. The mean of a set of \( n \) numbers is 180, if 54 is added to the set of numbers the new mean is 159. Find \( n \).

15. A set of 24 positive integers has a mean of 38 and a median of 32.5. If 32 is added as an element of the set,
   a. find the new mean. 
   b. find the new median.

16. Which is generally more affected by extreme values in the data set, the mean or the median?