Review Ch. 11

1. Suppose $Q$ and $R$ are independent events. Find $P(Q \text{ and } R)$.
   \[
P(Q) = 0.39, \quad P(R) = 0.85
   \]
   a. 1.24 b. 0.3315 c. 0.46 d. 0.1794

2. Two urns contain white balls and yellow balls. The first urn contains 9 white balls and 9 yellow balls and the second urn contains 8 white balls and 3 yellow balls. A ball is drawn at random from each urn. What is the probability that both balls are white?
   a. $\frac{4}{11}$ b. $\frac{17}{29}$ c. $\frac{1}{72}$ d. $\frac{17}{198}$

Suppose $S$ and $T$ are mutually exclusive events. Find $P(S \text{ or } T)$.

3. $P(S) = 20\%, \quad P(T) = 22\%$
   a. 2\% b. 440\% c. 42\% d. 4.4\%

4. If all possible results are equally likely, what is the probability that a spin of the spinner will land on an upper case letter or a consonant?

   a. 0.9 b. 0.7 c. 0.5 d. 0.3

5. The contingency table shows the results of a survey of students in two math classes. Find $P(\text{more than 1 hour of TV } | \text{ 6th period class})$. Round to the nearest thousandth.

<table>
<thead>
<tr>
<th>Did You Watch More Than One Hour of TV Last Night?</th>
<th>Yes</th>
<th>No</th>
</tr>
</thead>
<tbody>
<tr>
<td>3rd period class</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>6th period class</td>
<td>9</td>
<td>6</td>
</tr>
</tbody>
</table>

a. 0.375 b. 0.400 c. 0.600 d. 0.563
6. Each person in a group of students was identified by year and asked when he or she preferred taking classes: in the morning, afternoon, or evening. The results are shown in the contingency table. Find the probability that the student preferred afternoon classes given he or she is a junior. Round to the nearest thousandth.

When Do You Prefer to Take Classes?

<table>
<thead>
<tr>
<th></th>
<th>Freshman</th>
<th>Sophomore</th>
<th>Junior</th>
<th>Senior</th>
</tr>
</thead>
<tbody>
<tr>
<td>Morning</td>
<td>19</td>
<td>2</td>
<td>6</td>
<td>16</td>
</tr>
<tr>
<td>Afternoon</td>
<td>17</td>
<td>3</td>
<td>13</td>
<td>15</td>
</tr>
<tr>
<td>Evening</td>
<td>8</td>
<td>14</td>
<td>9</td>
<td>7</td>
</tr>
</tbody>
</table>

a. 0.571  b. 0.464  c. 0.342  d. 0.158

7. The probability that a student at certain high school likes art is 36%. The probability that a student who likes art also likes science is 21%. Find the probability that a student chosen at random likes science given that he or she likes art. Round to the nearest tenth of a percent.

a. 15.0%  b. 58.3%  c. 61.3%  d. 17.1%

8. A class of 40 students has 11 honor students and 10 athletes. Three of the honor students are also athletes. One student is chosen at random. Find the probability that this student is an athlete if it is known that the student is not an honor student. Round to the nearest thousandth.

a. 0.241  b. 0.345  c. 0.252  d. 0.034

What are the mean, variance, and standard deviation of these values? Round to the nearest tenth.

9. 

<table>
<thead>
<tr>
<th>x</th>
<th>x - (\bar{x})</th>
<th>((x - \bar{x})^2)</th>
</tr>
</thead>
<tbody>
<tr>
<td>53</td>
<td>5.4</td>
<td>29.2</td>
</tr>
<tr>
<td>51</td>
<td>3.4</td>
<td>11.6</td>
</tr>
<tr>
<td>48</td>
<td>0.4</td>
<td>0.2</td>
</tr>
<tr>
<td>49</td>
<td>1.4</td>
<td>2</td>
</tr>
<tr>
<td>37</td>
<td>-10.6</td>
<td>112.4</td>
</tr>
</tbody>
</table>

a. mean = 47.6  variance = 31  standard deviation = 5.6
b. mean = 208.4  variance = 31  standard deviation = 5.6
c. mean = 47.6  variance = 65.3  standard deviation = 5.6
d. mean = 47.6  variance = 31  standard deviation = 963.5

10. The graph below displays how many pieces of candy Timmy and his five friends each received last Halloween. Within how many standard deviations of the mean do the values fall?

a. 2  b. 1  c. 3  d. 4
11. A grocery store will only accept yellow onions that are at least 2.75 in. in diameter. A grower has a crop of onions with diameters that are normally distributed, with a mean diameter of 3.25 in. and a standard deviation of 0.25 in. What percent of the onions will be accepted by the grocery store?
   a. 16%  
   b. 2.5%  
   c. 97.5%  
   d. 34%

12. The numbers of cookies in a shipment of bags are normally distributed, with a mean of 64 and a standard deviation of 4. What percent of bags of cookies will contain between 60 and 68 cookies?
   a. 50%  
   b. 13.5%  
   c. 68%  
   d. 34%
Review Ch. 11
Answer Section

1. **ANS:** B  **PTS:** 1  **DIF:** L2  **REF:** 11-3 Probability of Multiple Events
   **OBJ:** 11-3.1 To find the probability of the event A and B
   **NAT:** CC S.CP.2| CC S.CP.5| CC S.CP.7| D.4.a| D.4.b| D.4.c| D.4.h| D.4.j
   **TOP:** 11-3 Problem 2 Finding the Probability of Independent Events
   **KEY:** independent events

2. **ANS:** A  **PTS:** 1  **DIF:** L3  **REF:** 11-3 Probability of Multiple Events
   **OBJ:** 11-3.1 To find the probability of the event A and B
   **NAT:** CC S.CP.2| CC S.CP.5| CC S.CP.7| D.4.a| D.4.b| D.4.c| D.4.h| D.4.j
   **TOP:** 11-3 Problem 2 Finding the Probability of Independent Events
   **KEY:** independent events

3. **ANS:** C  **PTS:** 1  **DIF:** L3  **REF:** 11-3 Probability of Multiple Events
   **OBJ:** 11-3.2 To find the probability of the event A or B
   **NAT:** CC S.CP.2| CC S.CP.5| CC S.CP.7| D.4.a| D.4.b| D.4.c| D.4.h| D.4.j
   **TOP:** 11-3 Problem 4 Finding Probability for Mutually Exclusive Events
   **KEY:** mutually exclusive events

4. **ANS:** A  **PTS:** 1  **DIF:** L3  **REF:** 11-3 Probability of Multiple Events
   **OBJ:** 11-3.2 To find the probability of the event A or B
   **NAT:** CC S.CP.2| CC S.CP.5| CC S.CP.7| D.4.a| D.4.b| D.4.c| D.4.h| D.4.j
   **TOP:** 11-3 Problem 4 Finding Probability for Mutually Exclusive Events
   **KEY:** probability | mutually exclusive events

5. **ANS:** C  **PTS:** 1  **DIF:** L2  **REF:** 11-4 Conditional Probability
   **OBJ:** 11-4.1 To find conditional probabilities
   **NAT:** CC S.CP.3| CC S.CP.4| CC S.CP.5| CC S.CP.6| CC S.CP.8| D.4.b| D.4.c| D.4.i| D.4.j
   **TOP:** 11-4 Problem 1 Finding Conditional Probability
   **KEY:** conditional probability | contingency table

6. **ANS:** B  **PTS:** 1  **DIF:** L3  **REF:** 11-4 Conditional Probability
   **OBJ:** 11-4.1 To find conditional probabilities
   **NAT:** CC S.CP.3| CC S.CP.4| CC S.CP.5| CC S.CP.6| CC S.CP.8| D.4.b| D.4.c| D.4.i| D.4.j
   **TOP:** 11-4 Problem 1 Finding Conditional Probability
   **KEY:** conditional probability | contingency table

7. **ANS:** B  **PTS:** 1  **DIF:** L3  **REF:** 11-4 Conditional Probability
   **OBJ:** 11-4.1 To find conditional probabilities
   **NAT:** CC S.CP.3| CC S.CP.4| CC S.CP.5| CC S.CP.6| CC S.CP.8| D.4.b| D.4.c| D.4.i| D.4.j
   **TOP:** 11-4 Problem 2 Conditional Probability in Statistics
   **KEY:** conditional probability

8. **ANS:** A  **PTS:** 1  **DIF:** L4  **REF:** 11-4 Conditional Probability
   **OBJ:** 11-4.2 To use formulas and tree diagrams
   **NAT:** CC S.CP.3| CC S.CP.4| CC S.CP.5| CC S.CP.6| CC S.CP.8| D.4.b| D.4.c| D.4.i| D.4.j
   **TOP:** 11-4 Problem 3 Using the Conditional Probability Formula
   **KEY:** conditional probability

9. **ANS:** A  **PTS:** 1  **DIF:** L2  **REF:** 11-7 Standard Deviation
   **OBJ:** 11-7.1 To find the standard deviation and variance of a set of values
   **NAT:** CC S.ID.4| CC S.IC.6| D.1.c
   **TOP:** 11-7 Problem 1 Finding Variance and Standard Deviation
   **KEY:** standard deviation | variance
10. **ANS:** A  **PTS:** 1  **DIF:** L2  **REF:** 11-7 Standard Deviation  **OBJ:** 11-7.2 To apply standard deviation and variance  **TOP:** 11-7 Problem 3 Using Standard Deviation to Predict  **NAT:** CC.S.ID.4| CC.S.IC.6| D.1.c  **KEY:** standard deviation | mean

11. **ANS:** C  **PTS:** 1  **DIF:** L3  **REF:** 11-10 Normal Distributions  **OBJ:** 11-10.1 To use a normal distribution  **TOP:** 11-10 Problem 3 Analyzing a Normal Distribution  **NAT:** CC.S.ID.2| CC.S.ID.4| D.1.b| D.1.c| D.2.g  **KEY:** normal distribution

12. **ANS:** C  **PTS:** 1  **DIF:** L3  **REF:** 11-10 Normal Distributions  **OBJ:** 11-10.1 To use a normal distribution  **TOP:** 11-10 Problem 3 Analyzing a Normal Distribution  **NAT:** CC.S.ID.2| CC.S.ID.4| D.1.b| D.1.c| D.2.g  **KEY:** normal distribution