1 If A and B are mutually exclusive events with \( P(A) = 0.70 \), then \( P(B) \):
   a. can be any value between 0 and 1.       c. cannot be larger than 0.30.
   b. can be any value between 0 and 0.70.     d. cannot be determined with the information given.

2 The intersection of events A and B is the event that occurs when:
   a. either A or B occurs.   b. neither A nor B occurs.   c. both A and B occurs.   d. all of these choices.

3 True-False.
   Two events A and B are said to be independent if \( P(A|B) = P(B) \).

4 If \( P(A) = 0.84 \), \( P(B) = 0.76 \) and \( P(A \text{ or } B) = 0.90 \), then \( P(A \text{ and } B) \) is:
   __________
   Enter your answer to three decimal places.

5 Suppose A and B are events where \( P(A) = 0.4 \), \( P(B) = 0.5 \) and \( P(A \text{ and } B) = 0.10 \), then \( P(B|A) =
   __________
   Enter your answer to three decimal places.

6 If \( P(A) = 0.65 \), \( P(B) = 0.58 \), and \( P(A \text{ and } B) = 0.76 \), then \( P(A \text{ or } B) \) is:
   __________
   Enter your answer to three decimal places.

7 Suppose \( P(A) = 0.35 \). The probability of the complement of A is:
   __________
   Enter your answer to three decimal places.

8 If the events A and B are independent with \( P(A) = 0.30 \) and \( P(B) = 0.40 \), then the probability that both events will occur simultaneously is:
   __________
   Enter your answer to three decimal places.
9 True-False.

If \( P(A \text{ and } B) = 0 \), then \( A \) and \( B \) must be mutually exclusive.

10 True-False.

The temperature of the room in which you are taking this test is a continuous quantitative variable.

11 The probability distribution of a discrete random variable \( X \) is shown below, where \( X \) represents the number of cars owned by a family

<table>
<thead>
<tr>
<th>( x )</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>( p(x) )</td>
<td>0.25</td>
<td>0.40</td>
<td>0.20</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Find the following probabilities:

Enter your answers to three decimal places.

a. \( P(X > 1) = \) ____________________________
b. \( P(X \leq 2) = \) ____________________________
c. \( P(1 \leq X \leq 2) = \) ____________________________
d. \( P(0 < X < 1) = \) ____________________________
e. \( P(1 \leq X < 3) = \) ____________________________
The probability distribution of a discrete random variable $X$ is shown below, where $X$ represents the number of cars owned by a family.

<table>
<thead>
<tr>
<th>$x$</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p(x)$</td>
<td>0.25</td>
<td>0.40</td>
<td>0.20</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Find the expected value of $X$.

Enter your answer to two decimal places.

________

The probability distribution of a discrete random variable $X$ is shown below, where $X$ represents the number of cars owned by a family.

<table>
<thead>
<tr>
<th>$x$</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
</tr>
</thead>
<tbody>
<tr>
<td>$p(x)$</td>
<td>0.25</td>
<td>0.40</td>
<td>0.20</td>
<td>0.15</td>
</tr>
</tbody>
</table>

Find the standard deviation of $X$.

Enter your answer to two decimal places.

________
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th>4.</th>
<th>5.</th>
<th>6.</th>
<th>7.</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>c</td>
<td></td>
<td>0.700</td>
<td>0.25</td>
<td>0.470</td>
<td>0.650</td>
</tr>
<tr>
<td>2.</td>
<td>c</td>
<td></td>
<td>0.350</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3.</td>
<td>False</td>
<td></td>
<td>0.850</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8.</td>
<td>0.120</td>
<td>9.</td>
<td>True</td>
<td>10.</td>
<td>True</td>
<td></td>
</tr>
<tr>
<td>11.</td>
<td>0.600</td>
<td>12.</td>
<td>1.25</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>13.</td>
<td>0.9937</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>