HW#07 Answer keys

7.64, 7.66, 8.4, Let’s do it 8.1 due: Wednesday, March 22nd, 2006

7.64
a)

b) On average student will have to wait 7.5 minutes for the next available terminal.

c) \( P(X>10) = \frac{1}{15} \times 5 = \frac{1}{3} \)

7.66
a)

b) \( E(x) = \frac{(45 + 30)}{2} = 37.5 \)

c) 6 Weeks = 42 days
\( P(A) = P(X \geq 42) \Rightarrow (45 - 42) \times \frac{1}{15} = \frac{3}{15} = 20\% \)

d) \( P(A|B) = \frac{P(X \geq 42 | X \geq 35)}{P(B)} = \frac{P(X \geq 42)}{P(X \geq 35)} = \frac{3/15}{10/15} = \frac{3}{10} \)

\( P(A \text{ and } B) \neq P(A)P(B) \), they are not independent.

e) NO, because \( P(A|B) \neq P(A) \)

8.4)
a) i

b) iii

c) iv

Let’s Do it 8.1
Seed Value is 33

<table>
<thead>
<tr>
<th>Number of Women</th>
<th>Sample Proportion</th>
<th>Tally</th>
<th>Frequency</th>
<th>Proportion of All Trial</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>0.00</td>
<td>I</td>
<td>1</td>
<td>0.02</td>
</tr>
<tr>
<td>1</td>
<td>0.25</td>
<td>IIIII IIIII III</td>
<td>13</td>
<td>0.26</td>
</tr>
<tr>
<td>2</td>
<td>0.50</td>
<td>IIIII IIIII IIIII</td>
<td>15</td>
<td>0.3</td>
</tr>
<tr>
<td>3</td>
<td>0.75</td>
<td>IIIII IIIII IIIII II</td>
<td>17</td>
<td>0.34</td>
</tr>
</tbody>
</table>
The most likely proportion of women in a sample is 0.5 or 0.75; it may vary with different Seed Value. In this case, I use 33 as my seed value.

b) 0 women, for a sample proportion of $\hat{p} = 0.00$ 2%

1 woman, for a sample proportion of $\hat{p} = 0.25$ 26%

2 women, for a sample proportion of $\hat{p} = 0.50$ 30%

3 women, for a sample proportion of $\hat{p} = 0.75$ 34%

4 women, for a sample proportion of $\hat{p} = 1.00$ 8%

c) The overall appearance of this empirical sampling distribution is very close to symmetrical.

d) The result is not exactly equal to the previous 50 simulated trial; however, the appearance of my sampling distribution are similar; both are symmetrical.