Quiz 2

Please show your work in all the problems to get full credit.

**Problem 1:** The following data represents the alcohol content of 7 randomly selected beers:

<table>
<thead>
<tr>
<th>8.5</th>
<th>9</th>
<th>8.5</th>
<th>9.5</th>
<th>7</th>
<th>8</th>
<th>5</th>
</tr>
</thead>
</table>

(1) Calculate the Variance and Standard Deviation of the Alcohol Content

Variance=2.286, Standard Deviation=1.512 Other statistics are: Min=5.000, 1st Qu=7.500, Median=8.500, Mean=7.929, 3rd Qu=8.750, Max=9.500.

(2) Draw a Box plot for this data set

Note: Left line should be extended up to 5

(3) Calculate the percentile corresponding to the value of 7

P=(1/7)*100=14.29. 7 is the 14.29th Percentile of the data set.

(6.0 pts (2.0 each))

**Problem 2:** MULTIPLE CHOICE

(1) Select the pair of events that are **disjoint** for a single trial

A) Randomly selecting an ophthalmologist; Randomly selecting a male doctor
B) Randomly selecting a bird; Randomly selecting a hummingbird
C) Randomly selecting someone taking Tylenol; Randomly selecting someone in a control group taking no medications
D) Randomly selecting someone with type O blood; Randomly selecting someone with Rh positive blood

(2) Select the **complement** of the event: All 80 participants in a study are kidney donors.
   A) At least one of the participants is a kidney donor.
   B) Less than 40 of the participants are kidney donors.
   C) None of the participants are kidney donors.
   D) More than 40 of the participants are kidney donors.

(2.0 pts (1.0 each))

**Problem 3:** According to the Center for Disability Studies, 88.1% of people ages 16 to 64 do not have a condition that affects their ability to work at a job or business.

If five people ages 16 to 64 are randomly selected, what is the probability that all five do not have a condition that affects their ability to work at a job or business? (3.0 pts)

\[ P(\text{all of five do not have a condition that affects their disability}) = (0.881)^5 = 0.53 \text{ by the multiplication rule.} \]

**Problem 4:** The following data describes results from a clinical trial of a well known drug

<table>
<thead>
<tr>
<th></th>
<th>Treatment</th>
<th>Placebo</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nausea</td>
<td>117</td>
<td>29</td>
</tr>
<tr>
<td>No Nausea</td>
<td>617</td>
<td>696</td>
</tr>
</tbody>
</table>

(1) Is this a prospective or retrospective study? **Prospective** since the data are collected during the study by looking at the effect on patients after the treatment

(2) Compute the \( P(\text{Nausea}|\text{Treatment}) \) and \( P(\text{Nausea}|\text{Placebo}) \)

\[ P(\text{Nausea}|\text{Treatment}) = \frac{117}{117+617} = 0.1594, \quad P(\text{Nausea}|\text{Placebo}) = \frac{29}{29+696} = 0.04 \]

(3) Find the value of the absolute risk reduction for nausea in the treatment group and placebo group

\[ |p_t - p_c| = |0.1594 - 0.04| = 0.1194 \]

(5.0 pts (1, 2, 2))