**Math 1320**

**Quiz**

Name: _________________________________ ID#: __________________

**Instructions:** Solve the following problems. Show all your work in order to get full credit.

**Problem 1.** The following table, which shows the profile, by Math SAT I scores, of admitted students at UCLA for the Fall 2004 semester.

<table>
<thead>
<tr>
<th></th>
<th>200-399</th>
<th>400-499</th>
<th>500-599</th>
<th>600-699</th>
<th>700-799</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Admitted</strong></td>
<td>7</td>
<td>212</td>
<td>1124</td>
<td>2882</td>
<td>5309</td>
<td>9534</td>
</tr>
<tr>
<td><strong>Not Admitted</strong></td>
<td>687</td>
<td>3512</td>
<td>8689</td>
<td>12230</td>
<td>5150</td>
<td>30268</td>
</tr>
<tr>
<td><strong>Total Applicants</strong></td>
<td>694</td>
<td>3724</td>
<td>9813</td>
<td>15112</td>
<td>10459</td>
<td>39802</td>
</tr>
</tbody>
</table>

Compute the theoretical probabilities of the following events:

a. (3 points) An applicant was admitted.

Solution: \( \frac{9534}{39802} = \frac{681}{2843} \approx 0.2395 \approx 23.95\% \)

b. (4 points) An applicant had a Math SAT below 500 and was admitted.

Solution: \( \frac{7 + 212}{39802} = \frac{219}{39802} \approx 0.0055 \approx 0.55\% \)

c. (4 points) An admitted student had a Math SAT of 600 or above.

Solution: \( \frac{2882 + 5309}{9534} = \frac{8191}{9534} \approx 0.8591 \approx 85.91\% \)

d. (4 points) A rejected applicant had a Math SAT below 600.

Solution: \( \frac{687 + 3512 + 8689}{30268} = \frac{12888}{30268} = \frac{3222}{7567} \approx 0.4258 \approx 42.58\% \)

**Problem 2.** Use the given information to find the indicated probability.

a. \( P(A) = .1, P(B) = .6, P(A \cap B) = .05 \). Find \( P(A \cup B) \).

Solution: \( P(A \cup B) = P(A) + P(B) - P(A \cap B) = 0.1 + 0.6 - 0.05 = 0.65 \)

b. \( A \) and \( B \) are mutually exclusive. \( P(A) = .4, P(B) = .4 \). Find \( P((A \cup B)^c) \).

Solution: \( P((A \cup B)^c) = 1 - P(A \cup B) = 1 - (0.4 + 0.4 - 0) = 0.2 \)

c. \( A \cup B = S \) and \( A \cap B = \emptyset \). Find \( P(A) + P(B) \).

Solution: Since \( A \cap B = \emptyset \), then \( P(A) + P(B) = P(A \cup B) = P(S) = 1 \)

d. \( P(A \cup B) = .3 \) and \( P(A \cap B) = .1 \). Find \( P(A) + P(B) \).

Solution: \( P(A) + P(B) = P(A \cup B) + P(A \cap B) = 0.3 + 0.1 = 0.4 \)