1. A large group of people were surveyed in order to determine how many minutes each week they spent reading a newspaper. The results showed that the group read newspapers an average of 400 minutes per week with a standard deviation of 100 minutes per week.

(a) According to Chebyshev's rule, at least \( \frac{15}{16} \) proportion of people read newspapers between ______________ and ______________ minutes per week.

(b) What does Chebyshev's rule say about the proportion of people who spend between 200 and 600 minutes per week reading newspapers?
2. A sample of five computer diskettes that were lying around my office showed they had the following amounts of free space (in kilobytes): 900, 500, 200, 300, and 700. (Note that the sample mean is 520.)

(a) (4 points.) The sample median is ____________________.

(b) (4 points.) The sample range is ____________________.

(c) (4 points.) The sample variance is ____________________.

(d) (4 points.) The sample standard deviation is ____________________.

3. On a particular college campus, 60% of students are female and 40% of students are taking statistics. The events {a randomly selected student is female} and {a randomly selected student is taking statistics} are independent. If a student is selected at random from this campus, what are the probabilities that the selected student will be taking statistics or female?
4. A lie detector is used to classify subjects as either truth-tellers or liars. One particular machine, is believed to be 80% accurate. In other words, if a liar is tested the machine has an 80% probability of classifying him or her as a liar while, if a truth-teller is tested, the machine has an 80% probability of classifying him or her as a truth-teller. Suppose that 90% of all people are truth-tellers and 10% are liars. (Also note that 74% of all people classified as truth-tellers by the machine.) If the machine classifies a person as a truth-teller, what is the probability that person is actually a truth-teller? (Hint: Let $T = \{a \text{ randomly selected person is a truth-teller}\}$ and $C = \{a \text{ randomly selected person is classified by the machine as a truth-teller}\}$.)

5. The amounts of money that students spent last semester at Brady's Grill follow a mound-shaped distribution with a mean of $80 and a standard deviation of $25.

(a) Approximately 99.7% of students spent between ________________ and ________________ at Brady's Grill last semester.

(b) Determine the approximate percentile rank of a student who spent $55 at Brady's Grill last semester.
6. A discrete random variable has probability function:

\[ p(x) = \frac{x}{200} \text{ for } x = 10, 20, 30, 40, 100. \]

Find \( P(x > 35) \).

7. The table below classifies the 200 used cars on a dealer's lot according to their age (measured to most recent year) and whether the car is foreign or domestic.

<table>
<thead>
<tr>
<th>Age</th>
<th>MAKE</th>
<th>0 - 2 years</th>
<th>3 - 5 years</th>
<th>over 5 years</th>
<th>TOTAL</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foreign</td>
<td>40</td>
<td>35</td>
<td>25</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>Domestic</td>
<td>35</td>
<td>45</td>
<td>20</td>
<td>100</td>
<td></td>
</tr>
<tr>
<td>TOTAL</td>
<td>75</td>
<td>80</td>
<td>45</td>
<td>200</td>
<td></td>
</tr>
</tbody>
</table>

Suppose that a car that is randomly selected from this dealer's lot.

(a) Determine the probability that the selected car will be more than 2 years old.

(b) If the selected car is not over 5 years old, what is the probability that it will be domestic?

(c) Are the events \{the selected car is domestic\} and \{the selected car is 0 - 2 years old\} independent? Show why or why not.