The table below shows counts of how many people were male/female and how many of these smoked out of 100 people.

1. Fill in the missing cells.

2. What is P(Smokes|Male), what is P(Smokes and Male)?

3. Transfer this table into a tree diagram. Let the first branching be P(Male) vs P(Female)

<table>
<thead>
<tr>
<th></th>
<th>Smokes</th>
<th>Doesn’t smoke</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Male</td>
<td>15</td>
<td></td>
<td>45</td>
</tr>
<tr>
<td>Female</td>
<td></td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>20</td>
<td></td>
<td>100</td>
</tr>
</tbody>
</table>
It is estimated that about 85% of all incoming emails are spam. A software company develops a
program that flags 75% of spam emails. However, this program is also known to flag 4% of legitimate
(non-spam) emails. See slide 12 in Probability notes for tree diagrams.

a. Display this information and the probabilities provided in a tree diagram.
b. What percent of all incoming emails are flagged by this program?
For each characteristic, explain whether the random variable is continuous or discrete.

a. The number of left-handed individuals in a sample of 100 people.
b. Time taken to complete an exam for students in a class.
c. Vehicle speeds at a highway location.
d. The number of accidents reported last year at a highway location.
Let the random variable $X$ represent the weights, in pounds (lb), of adult male grizzly bears. $X$ can be modeled using a normal distribution with a mean of 845 lb and a standard deviation of 35 lb. For questions requiring a calculator, be sure to show what you typed in your calculator along with your answers.

a. Calculate $P(800 \leq X \leq 900)$. See slide 7 of Continuous random variable notes.
b. What is the probability that an adult male grizzly bear weighs either less than 800 lb or more than 900 lb?
c. What is the value of the first quartile of weights in the population of adult male grizzly bears? See slide 9.
d. What is the range of values in which we expect 99.7% of grizzly bear weights?