Assignment 4.2   AP Statistics   Name:

In a study, researchers looked at the relationship between the type of college (public or private) attended by 3265 members of the same graduating class who went into industry and the level of job each member had 20 years later. The results were:

Management level	Public	Private	Totals
High	75	107	182
Middle	962	794	1756
Low	732	595	1327
Totals	1769	1496	3265

1. Calculate the marginal distribution of management level in percents.

$High:$ $182 / 3265 = 5.5743\%$

$Middle: 1756 / 3265 = 53.7825\%$

$Low:$ $1327 / 3265 = \underline{40.6432\%}$

         $Total$ 100%

2. Compute the conditional distributions of management level given college type (in percents).

   Public:

   High $75/1796 = 4.2397\%$

   Middle $962/1796 = 54.3810\%$

   Low $732/1796 = \underline{41.3793\%}$

             100%

   Private:

   High $107/1496 = 7.1524\%$

   Middle $794/1496 = 53.0749\%$

   Low $595/1496 = \underline{39.7727\%}$

             100%

3. A segmented bar graph allows a graphical comparison of distributions. Each bar describes one group, and the bar is divided into segments to show the distribution for that group. Each bar has height 100%. Show the conditional distributions from Question 2 as a segmented bar graph. Be sure to label both axes and provide a key to identify the segments.
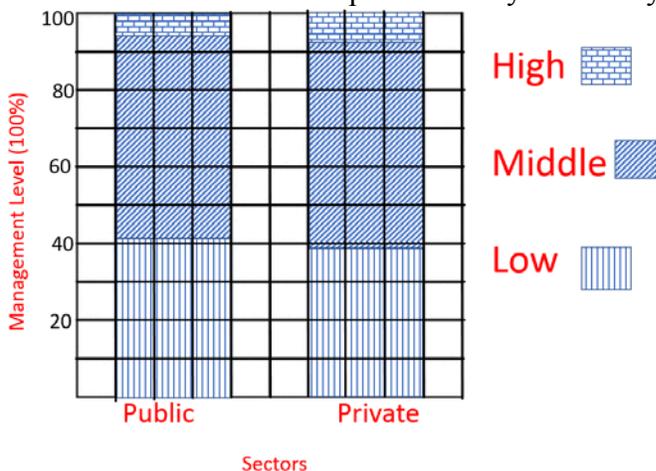
4. Comment on the observed relationship

The percentage of grads that went into low or middle management positions were about the same for public and private colleges. However, more graduates from private colleges went into high level management jobs compared to public colleges.

5. Two candy factories, A and B, produce 3 flavors of gum: spearmint, cinnamon, and wintergreen. Here is a two-way table of factory (x) by gum flavor (y), with each entry in the table representing the number of packs of gum of a certain flavor produced during a given day.

	Spearmint	Cinnamon	Wintergreen	Totals
A	250	150	50	450
B	175	180	25	380
Totals	425	330	75	830

1. Compute the marginal distribution of gum flavor (expressing your results in percents)
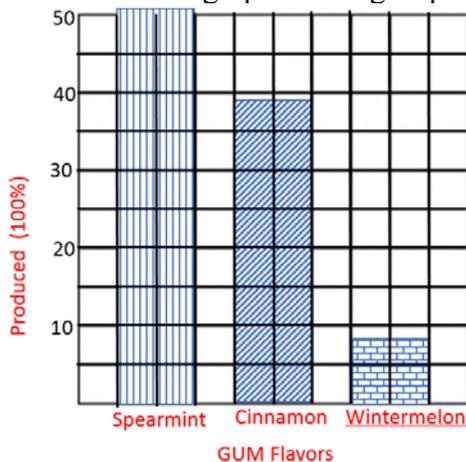
Public:

Spearmint   425/830   = 51.2048%

Cinnamon   330/830   = 39.7590%

Wintermelon 75/830   = 9.0361%
_____
                        100% .

2. Construct a bar graph on the grid provided to show your results from Question 1.

3. Compute the conditional distribution of gum flavor given the factory. Show the distribution in a table.

	Spearmint	Cinnamon	Wintergreen	
Factory A	250/450 = 55.5556%	150/450 = 33.333%	50/450 = 11.1111%	= 100%
Factor B	175/380=46.0526%	180/380=47.3684%	25/380=6.5789%	= 100%

4. **B**riefly describe your findings from Question 3 in words.
Factory A produced a higher proportion of spearmint and wintergreen flavored gum. Factory B produced a higher proportion of cinnamon flavored gum.