

**Key for Chapter 6 problems 6.20 and 6.24.
Graded out of 20 points.**

6.20) Since there are 337 single men, 58 of which work Grade 1 jobs, we have a ratio of $58/337 \approx 0.1721$. Therefore, approximately **17.21% of the single men hold Grade 1 jobs**. Since there are 955 men working Grade 1 jobs with 58 of them we have a ratio of $58/955 \approx 0.0607$. Therefore, approximately **6.07% of male Grade 1 job holders are single**.

6.24) a) The marginal distribution of opinion about quality is:

Opinion about Coffee Filters	
Higher	$49/133 \approx 0.368$ so 36.8%
The Same	$32/133 \approx 0.241$ so 24.1%
Lower	$52/133 \approx 0.391$ so 39.1%

The distribution could tell you several things. I see these three categories as being roughly equal with the “opinionated” choices (lower and higher) being slightly higher than the “neutral” choice (the same).

b) The conditional distributions, in %, are:

Opinion about Coffee Filters from BUYERS	
Higher	$20/36 \approx 0.556$ so 55.6%
The Same	$07/36 \approx 0.194$ so 19.4%
Lower	$09/36 \approx 0.250$ so 25.0%

Opinion about Coffee Filters from NONBUYERS	
Higher	$29/97 \approx 0.299$ so 29.9%
The Same	$25/97 \approx 0.258$ so 25.8%
Lower	$43/97 \approx 0.443$ so 44.3%

The difference should be obvious in this case. Roughly $\frac{1}{2}$ of all buyers believe that the quality is higher, while $\frac{1}{2}$ of nonbuyers believe the quality to be lower. This makes quite a bit of sense since the buyers are choosing to buy the product. Some of them will be doing so because they feel the quality is higher while others will be doing so for other reasons (environmental, etc).

As far as using the product causing higher opinions on quality one could argue either side. For starters, those that choose to purchase may be doing so due to quality. However, since this is an environmental issue they may be buying for those reasons. It could also be argued that since the % of buyers that feel the quality is higher is so large perhaps those are people that originally switched for other reasons and came to conclude that the quality was higher.

COMMON MISTAKES

1) On 6.20 many missed the differences between the two percents they wanted. They wanted the percent of grade 1 jobs held by single men which is asking “of all people holding grade 1 jobs, how many are male”. They are also asking for the percent of single

men that hold grade 1 jobs. This is different because here they are asking “of all single men, how many hold grade 1 jobs”. **(This mistake was typically -6)**