Section 4-4, 4-5 Conditional Probability

**Screen 1**
In this lesson, we’ll look at conditional probability. We’ll use this table which contains 100 people broken up into categories, whether they’re men or women, or whether they answered yes or no to a particular question.

Here’s our 1st example. Find the probability that a randomly selected person is a man, given that he or she answered ‘no’. That’s our condition given that he or she answered ‘no’.

We can write this in math notation as the probability of getting a man, given that he or she answered ‘no’. That vertical line is read ‘given’, or ‘given that’. Since given that he or she answered ‘no’, we only look at the people who answered ‘no’ for this particular problem, and there are 60 people who answered ‘no’. So when I do this calculation, there are only 60 people possible to even consider.

Then, out of that 60 total, how many were men? (and we see that 28 are men.) So 28 goes on top. So we’ve got 20 men who answered ‘no’ out of a total of 60 people who answered ‘no’, and we can simplify this or do the division to get 0.467 as our answer.

Here’s our 2nd example. Find the probability that a randomly selected person answered ‘no’ given that we chose a man, or we choose a man. We can write this math notation this time as getting someone who answered ‘no’ given that the person is a man, and so once again there’s that vertical line that’s our given.

So to do this calculation this time we’re only going to consider men because we’re told that, (First of all we’re given that we have to choose a man.) – so we look in the men column there and see that there are 43 total in that column, so 43 goes on the bottom of our fraction.

And if we ask out of those 40 men how many answered ‘no’, we get the same 28 each just in a different context. So 28 goes on top of our fraction. So for this problem we get 28/43, which using the calculator I get 0.651 for our probability.

And we’re done!