In this example, we'll take a look at simple random sampling.

Sophie has 4 tickets to a concert.

6 of her friends, Yolanda, Michael, Kevin, Marissa, Annie,

and Katie have all expressed an interest

in going to the concert with her.

Sophie decides to randomly select 3 of her 6 friends

to attend the concert.

First we'll list all possible samples of size n

equals 3 from the population of size n equals 6.

Once an individual is chosen, he or she cannot be chosen again.

Then we'll go on to comment on the likelihood of the sample

containing Michael, Kevin, and Marissa.

We use the lowercase letter n to represent the sample size

and we use the capital letter N to represent a population size.

To make this notation a little easier,

I'm going to let number 1 represent Yolanda,

number 2 represent Michael, and so on.

So one of my samples could be persons 1, 2, and 3.

That would represent Yolanda, Michael, and Kevin.

On the next screen, I'm going to show you

how to lay out all the possible samples of size 3.

I'm going to begin by assuming that person 1 and 2 get

selected first.

If we select person 1 and 2, one possible samples

could be 1, 2, 3.

Another could be 1, 2, 4.

It could be 1, 2, 5 or even 1, 2, 6.

I'll next move on to the case where

person 2 isn't selected second.

Person 1 and person 3 could be first and second.

Then it would be 1, 3, 4, 1, 3, 5, or 1, 3, 6.

Notice I didn't write down 1, 3, 2 because that's

the same as this sample of 1, 2, 3.

It's the same 3 people.

Continuing on, it could be persons 1 and 4 first,

which would give us 1, 4, and 5 or 1, 4, and 6.

And finally, it could go person 1, then person 5,

and the only option left is 1, 5, 6.

So we're at 10 samples so far.

Let's move on to the case where person 1 isn't selected.

We could begin with 2, 3, which would give us 2, 3, 4, 2,

3, 5, or 2, 3, 6.

Continuing on, 2, 4 with 5 or 2, 4 with 6.

And then 2, 5, and 6.

What if person 2 isn't selected either?

We could start with 3 and 4.

3, 4, 5 or 3, 4, 6.

Or we could start with persons 3 and 5 and tag on number 6.

The only other sample that's left starts with 4.

And that would be 4, 5, and 6.

Here's a summary of those 20.

Now let's go ahead and convert them

back to the names of the people invited.

The first sample, 1, 2, 3, was Yolanda, Michael and Kevin.

Continuing on with all the ones with Yolanda listed first.

Then when person 2 was first, Michael.

And finally, all the way down to the last

sample of 4, 5, and 6, which was Marissa, Annie, and Katie.

Now will comment on the likelihood

of the sample containing Michael, Kevin, and Marissa.

Well, there was only one of those 20

that contained these three people.

So there's a 1 in 20 chance that the simple random sample

will contain these three friends.