Introduction to Probability
Video Script

Scene		Full Transcript
1	**Cameron:**	Yeah! One, two, three, four, five. Hi, I'm Cameron. A few friends and I have gotten together for board-game night. One of our favorites is Probability Path, which is more than just a game or subject in math class. Come on; let's head down that path and get another *Problem Solved*, but hold on, while I win.
2	**Cameron:**	In the real world, probability is used to answer all kinds of questions.
3	**Voice-Over Cameron:**	Like, what are the chances it will rain today? What are the chances you will win the raffle for a new bike? What is the likelihood that a baby will be a girl?
4	**Cameron:**	Probability, like the game Probability Path, has rules to keep in mind.
5	**Voice-Over Cameron:**	Probability deals with future events. Probability can be expressed as a percent from 0 to 100% or as a rational number from 0 to 1. The probability of a certain event is 1 or 100%. The probability of an impossible event is 0 or 0%. The sum of the probabilities of all possible outcomes is 1 or 100%.
6	**Cameron:**	The game is easy. Here's the start. The goal is to be the first to move your piece along the winding path to the finish. How far you move is determined by the spinner. Who wins is just a matter of chance.
7	**Voice-Over Cameron:**	Shea has been doing well. If she spins a five, she will win. What is the probability of her spinning a five? First, look at the spinner. There are 10 possible outcomes. There are 4 ones, 2 twos, 2 threes, 1 four and 1 five; together they represent all the possible outcomes, which is called the sample space. It looks like Shea is more likely to spin a one than any other number. Similarly, she is more likely to spin two or three than four or five.
8	**Voice-Over Cameron:**	Let's spin a few times and keep track of what we get. By collecting data, we can find the experimental probability. It's impossible to determine probability after just one spin. I got a two on my first spin; I will record this in a graph. Now, here are 10 spins. This is still not enough spins to accurately determine probability. A larger number of spins will give us more accurate results. Here is the graph for 100 spins. Let's record our results for 100 spins in a table. If you consider all four ways to spin a one, out of 100 spins, we got a one 36 times. Here are the other results of our experiment: the number of times we spun a two, three, four, and five.
9	**Voice-Over Cameron:**	The experimental probability of spinning a one is 36 hundredths. The numerator represents the number of times the result was one; the denominator represents the total number of spins. The result was one 36% of the time. Here are the other probabilities. The results are consistent with

		our predictions. We are most likely to spin a one, and twos or threes are more likely than fours or fives. We just determined the probability of spinning each number with an experiment.
10	**Voice-Over Cameron:**	We could also determine the probability by analyzing the actual spinner. Take a look. The spinner is divided into 10 equal sections. Four sections of the spinner show one. In theory, we should expect to spin a one four times in 10 spins. That's 4 tenths or 40% of the time. This is the theoretical probability of spinning a one. Here is the theoretical probability of spinning a two, three, four, and five. Notice, the experimental and theoretical probabilities are close but not exactly the same.
11	**Voice-Over Cameron:**	We've looked at 100 spins, but watch how things change after 1000 spins. The experimental and theoretical probabilities are even closer. Look at 10,000 spins. Woo, that would be a long game! The more spins or trials there are, the closer the experimental probability should be to the theoretical probability.
12	**Cameron:**	Are you starting to understand how probability works? Take another look at the board.
13	**Voice-Over Cameron:**	Ally is six places away from the finish. What is the probability of her spinning a six and winning on this round? There isn't a six; it is an impossible event. The probability of spinning six is 0 or 0%.
14	**Voice-Over Cameron:**	Tina is one place from the finish. What is the probability that Tina will finish the game on the next turn if she needs at least a one? Any number on the spinner will give her the one space she needs; this is a certain event. The probability of spinning one or greater is 1 or 100%.
15	**Voice-Over Cameron:**	Lexi isn't doing very well. She has spun a two the last five times. What is the probability she will spin a two on her next turn? Ah, it's not a trick; each spin is independent from the others. There is still a 20% chance that she will spin a two on her next turn. Ally hasn't spun a two the entire game. The probability that she will spin a two is also 2 tenths or 20%.
16	**Voice-Over Cameron:**	Oh, no! If Kyle spins a two, he will have to go back 10 spaces. What is the probability of not spinning a two? Well, since we know the probability of spinning a two is 20%, the probability of him not spinning a two is 80%. Whoops, sorry Kyle.
17	**Cameron:**	We've used probability to understand a simple game, but when we understand probability and apply these ideas to real life situations everyone's a winner. *Problem Solved*. It's my turn again.