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This tutorial introduces the topic of probability. We'll talk more about what probability means in just a moment. But for now, let's look at these two terms-- an outcome and an event.

An outcome is one clearly defined possibility. Some examples of outcomes are getting a six while rolling a die. That's one specific thing that could happen when you roll a die. You could get a six.

Now, in our second example, we're talking about dealing out cards. One thing that could happen is you could get a 10 of diamonds. That's one possibility that could happen.

Another is if you have a bag of M&M's and you're pulling one out, a possibility is to get a red one. That's one thing that could happen. So that is an outcome.

On the other hand, we have events. Events are a set of one or more outcomes. So our event could be an outcome. It could be getting a six when you're rolling a die.

However, an event could also combine several outcomes together. It could be rolling an even number. So you could roll a 2, a 4, or a 6. Those are what the event is.

Same with the cards. Getting dealt a diamond-- there's a lot of different cards that have a diamond on it. So there's a lot of different ways of fulfilling that event. And then finally, instead of just pulling out a red M&M, if you got any primary color-- so red, blue, or yellow-- that would be that event there.

Now, when we're talking about events and outcomes, we're also going to use the word trial. And a trial is looking at each occurrence of a random event. So each kind of test run for it. So, for example, every time that you roll a die, that is one trial. Every time you flip a coin, that is another trial. Every time you draw a card from a deck, that's a trial. Every time you pick an M&M out of a bag, that's a trial.

Now let's look again at probability. So with probability you're talking about the likelihood of something happening, the likelihood of that event or that outcome. And there's three major ways of looking at this. There's theoretical probability, experimental/relative probability, or subjective probability. Other tutorials cover these in more depth.

The main thing that you should know is probability gets reported as a value from 0 to 1. If you say something has a probability of 0, then that's an event that is impossible. It cannot happen. If an event has a probability of 1, then-- sorry-- an event or an outcome has a probability of 1, that means it's

certain to happen. On the next slide, we'll go through some examples.

So over here we kind of have a probability scale. At the bottom is 0. And we talked about that before. That means that it is impossible. It's never going to happen. And at the top is 1. It's certain.

And in the middle is 0.5. So it could go either way, 50-50. So I'm going to add those words there. This is impossible. And up here at 1 is certain.

So now, over here we have some events. And we're going to try to estimate the probability of those happening. It's not going to be perfect because we're not using any kind of data. We're just thinking about it and coming up with a guess. But it's going to help us sort out between impossible and certain where those probabilities will fall.

So first, the probability of there being an alien landing. That's something that's not very likely. So it's definitely not certain. It's probably not a 50-50 chance of that happening. It's probably pretty close to impossible, if it's not the same as impossible, so maybe just a little bit above that.

Now look at this one here-- rolling a number 1 through 6 on a die. So if you roll a die, what is the chance that a 1, a 2, a 3, a 4, a 5, or a 6 is going to come up? Well, that's the only chances there are on a six-sided die, so that is certain. You are certain to roll a number between 1 and 6.

Flipping heads. If you're flipping a coin, there's only two chances. You could get heads or tails. So that's about 50%, or 0.5, for your probability.

Drawing a heart. So if you have a deck of cards, what's the chance of a heart coming up? There's four suits. So that's going to be about 0.25. We'll look at other tutorials more about how to carefully calculate these, but this is just giving us a sense of the probability overall.

Roll a 6. You have six options on a die, so it's not impossible. It's going to happen. But it's not going to happen as often as drawing a heart, so somewhere here.

Now, tomorrow. It doesn't say anything about it. So tomorrow, let's say, the newspaper person says there's a 70% chance of rain. There's more than a 50% chance. It's not 100% certain.

They can't ever tell us something's absolutely going to happen tomorrow. But it's pretty high. So tomorrow is rainy is somewhere more than flipping a coin and getting heads but less than absolutely certain.

So this is starting to give us an idea of what kind of events would have what kind of probabilities, from

impossible with a value of 0 up to certain with a value of 1. This has been your tutorial introducing the topic of probability, explaining what events and outcomes or trials are. Thank you.