What is the difference between an outcome and an event?

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An outcome refers to the result or consequence of a particular action or situation. It is the end result that is determined by the preceding factors. On the other hand, an event is a specific occurrence or happening that takes place during a given period of time. It can be a planned or unplanned situation that can lead to various outcomes. In simpler terms, an outcome is the end goal, while an event is a step towards achieving that goal.

Outcome vs. Event: What's the Difference?

Two terms that students often confuse in statistics are outcome and event.

Here's the subtle difference between the two terms:

Outcome: The result of a random experiment.

For example, there are six potential outcomes when rolling a die: 1, 2, 3, 4, 5, or 6.

Event: A set of outcomes that has a probability assigned to it.

For example, one possible "event" could be rolling an even number. The probability that this event occurs is 1/2.

The following examples show more scenarios that illustrate the difference between outcomes and events.

Example 1: Deck of Cards

Suppose we randomly draw a card from a standard deck of 52 cards.

The four possible outcomes for the suit of the card include:

HeartSpadeDiamondClub

One of these four outcomes must occur.

However, there are many different events that we may be interested in assigning a probability to. For example:

Event 1: Draw a Heart

The probability that this event occurs is 13/52 or 1/4.

Event 2: Draw a Heart or a Spade

The probability that this event occurs is 26/52 or 1/2.The probability that this event occurs is 39/52 or 3/4.

There are many more events that we could come up with and assign a probability to, but these are just three simple ones.

Example 2: Pulling Marbles from a Bag

Suppose a bag has 3 red marbles, 5 green marbles, and 2 blue marbles.

If we close our eyes and randomly select one marble from the bag, the three possible outcomes for the color of the marble include:

RedGreenBlue

One of these four outcomes must occur.

However, there are many different events that we may be interested in assigning a probability to. For example:

Event 1: Draw a Blue Marble

The probability that this event occurs is 2/10 or 1/5.

Event 2: Draw a Blue or Green Marble

The probability that this event occurs is 7/10.

Event 3: Draw a Marble that is *not* Blue

The probability that this event occurs is 8/10 or 4/5.

These are three events that we can easily calculate probabilities for.