Outcomes, events, and probability

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Fundamental concepts of Probability Theory include outcomes, events, and probabilities.
- An *outcome* is the most basic result of an observation or experiment.
- An *event* is a set of outcomes that share a property of interest.
- The *probability of an event A* is the likelihood that A occurs, measured by

$$P(A) = \frac{Number\ of\ outcomes\ in\ which\ A\ occurs}{Total\ number\ of\ outcomes}$$

Common examples used to illustrate probability concepts are: coin toss (flip), dice roll, card draw (from a standard deck of 52 cards).

Experiment 1: Flip a coin
What are the possible outcomes? Which outcomes constitute the event of getting Head? What is the probability of this event?

Experiment 2: Flip three coins
What are the possible outcomes? Which outcomes constitute the event of getting exactly one Head? What is the probability of this event?

Experiment 3: Roll a dice
What are the possible outcomes? Which outcomes constitute the event of getting a face greater than 4? What is the probability of this event?

Experiment 4: Roll two dice
What are the possible outcomes? Which outcomes constitute the event of getting two different faces? What is the probability of this event?

Experiment 5: Draw a card from the standard deck of 52 cards
What are the possible outcomes? Which outcomes constitute the event of getting a face card? What is the probability of this event?

Experiment 6: Draw two cards
What are the possible outcomes? Which outcomes constitute the event of getting at least one Ace? What is the probability of this event?