Random Variables
Statisticians use the term random variable for variables whose numeric values are based on the outcome of a random process. The domain of a random variable is the set of possible outcomes. Each outcome has a probability associated with it.

What is the random variable?

**Puzzle #1:** Create a simulation for counting the number of heads in 10 tosses of a fair coin.

**Puzzle #2:** Create a simulation for counting the number of 2’s that appear in 20 rolls of a fair, six-sided die.

**Puzzle #3:** A multiple-choice test has 25 questions. Each question has 5 answers. Suppose you simulate guessing at random on each question and your number of correct answers is counted.

**Puzzle #4:** A roulette table has 38 slots—18 red, 18 black and 2 green. If you bet $1 on red and it comes up red, then you win $1; otherwise, you lose $1. Suppose you simulate playing roulette 50 times, betting $1 each time.

Discrete vs. Continuous Random Variables
Random variables can be **discrete** or **continuous**. Discrete random variables have a countable number of possible values. Continuous random variables are random variables where the data can take infinitely many values.

**Examples:**