

## Random Variables



## Preliminaries and Objectives

### Preliminaries

- Probability

### Objectives

- Define 'random variable'

## Example 1

Roll one standard (six-sided) die. Let  $X$  denote the number on the die.

$k$	$P(X = k)$
1	$\frac{1}{6}$
2	$\frac{1}{6}$
3	$\frac{1}{6}$
4	$\frac{1}{6}$
5	$\frac{1}{6}$
6	$\frac{1}{6}$

## Example 2

Flip two coins. Let  $X$  denote the number of heads.

$k$	$P(X = k)$	
0	$\frac{1}{4}$	TT
1	$\frac{2}{4}$	HT, TH
2	$\frac{1}{4}$	HH

## Definition

### Random Variables

A **random variable** is a set of numbers associated with outcomes of a random experiment. A probability distribution assigns probabilities to the values in the set.