

## Definitions for Probability

### Probability

Probability is the likelihood of the occurrence of an event. The probability of event A is written  $P(A)$ . Probabilities are always numbers between 0 and 1, inclusive.

#### The four basic rules of probability:

- 1) For any event A,  $0 \leq P(A) \leq 1$ .
- 2) P(impossible event) = 0.  
Also written P(empty set) = 0 or  $P(\emptyset) = 0$ .
- 3) P(sure event) = 1.  
Also written  $P(S) = 1$ , where S is the sample set.
- 4)  $P(\text{not } A) = 1 - P(A)$ .  
Also written P(complement of A) =  $1 - P(A)$  or  $P(A^C) = 1 - P(A)$  or  $P(\bar{A}) = 1 - P(A)$ .

### Experiment

In the study of probability, the name given to any controlled and repeatable process.

### Event

A set of possible outcomes resulting from a particular experiment.

### Outcome

A single specific possible result of an experiment.

Experiment	Outcomes
Tossing a coin	Heads, Tails
Rolling a six sided die	1,2,3,4,5,6

