

Probability

Outcome is the result of an action.

Event is an outcome or a group of outcomes.

Theoretical Probability

$$P(\text{event}) = \frac{\text{number of favorable outcomes}}{\text{total number of possible outcomes}}$$

examples:

- 1.) Find the probability of selecting a vowel from the letters F, G, H, I.
Express the probability as a fraction, decimal, and a percent.

- 2.) John has 1 blue shirt, 5 white shirts, and 2 brown shirts. He selects a shirt from his closet with his eyes shut. Find the probability
 - a.) $P(\text{white shirt})$
 - b.) $P(\text{colored shirt})$
 - c.) $P(\text{blue shirt})$

Complement of an Event:

For any event A , the complement is *not* A .

$$P(A) + P(\text{not } A) = 1$$

$$P(\text{not } A) = 1 - P(A)$$

~ to find the probability of a complement of an event you subtract the probability of the event from 1.

Odds - finding a ratio of the number of favorable outcomes to the number of unfavorable outcomes.

Example:

- 3.) There are two quarters, three dimes, a nickel and three pennies in a bowl. What are the odds that a single coin, chosen at random from the bowl, is worth more than six cents?

Experimental Probability

$$P(\text{event}) = \frac{\text{number of times an event occurs}}{\text{total number of trials}}$$

examples:

- 4.) A player makes 7 free throws out of 12 attempts during a game. Based on this game, what is the experimental probability of this player making a free throw?
- 5.) A manufacturer of computer parts checks 100 parts each day. On Monday, 2 of the checked parts are defective.
- What is the experimental probability that a part is defective?
 - Predict the probable number of defective parts in Monday's total production of 1,250 parts?
- 6.) A manufacturer makes computer circuit boards. A random check of 5,000 circuit boards shows that 25 are defective.
- What is the experimental probability that a circuit board is defective?
 - Predict the number of defective circuit boards per month if the company manufactures 41,000 circuit boards in July.