

Calculating Probability

Sections 12.4

Lecture 22

Robb T. Koether

Hampden-Sydney College

Fri, Feb 19, 2016

Outline

1 Calculating Probability

2 Assignment

Outline

1 Calculating Probability

2 Assignment

Calculating Probability

- If all the outcomes in the sample space are equally likely, then the probability of an event is

$$P(\text{event}) = \frac{\text{no. of outcomes in the event}}{\text{no. of outcomes in the sample space}}.$$

- If the outcomes are not equally likely, then it's a good idea to rewrite the sample space so that they are equally likely.

Example

Example (Calculating Probability)

- In the coin-tossing procedure, what is the probability of heads?

Example

Example (Calculating Probability)

- In the coin-tossing procedure, what is the probability of heads?
- In the single-die-rolling procedure, what is the probability of an odd number?

Example

Example (Calculating Probability)

- In the coin-tossing procedure, what is the probability of heads?
- In the single-die-rolling procedure, what is the probability of an odd number?
- In the two-dice-rolling procedure, what is the probability of a sum of 7?

Example

Example (Calculating Probability)

- In the coin-tossing procedure, what is the probability of heads?
- In the single-die-rolling procedure, what is the probability of an odd number?
- In the two-dice-rolling procedure, what is the probability of a sum of 7?
- In the two-dice-rolling procedure, what is the probability of getting one even number and one odd number?

Example

Example (Calculating Probability)

- Let the procedure be to toss 3 coins (nickel, dime, quarter) and observe how each coin lands.
- What is the sample space?

Example

Example (Calculating Probability)

- Let the procedure be to toss 3 coins (nickel, dime, quarter) and observe how each coin lands.
- What is the sample space?
- What is the probability of getting exactly 2 heads?

Example

Example (Calculating Probability)

- Let the procedure be to toss 3 coins (nickel, dime, quarter) and observe how each coin lands.
- What is the sample space?
- What is the probability of getting exactly 2 heads?
- What is the probability of getting 3 heads?

Example

Example (Calculating Probability)

- Let the procedure be to toss 3 coins (nickel, dime, quarter) and observe how each coin lands.
- What is the sample space?
- What is the probability of getting exactly 2 heads?
- What is the probability of getting 3 heads?
- What is the probability of getting at least 2 heads?

Example

Example (Calculating Probability)

- Let the procedure be to toss 3 coins (nickel, dime, quarter) and observe how each coin lands.
- What is the sample space?
- What is the probability of getting exactly 2 heads?
- What is the probability of getting 3 heads?
- What is the probability of getting at least 2 heads?
- What is the probability of getting no heads?

Outline

1 Calculating Probability

2 Assignment

Assignment

Assignment

- Read Sections 12.3.
- Apply Your Knowledge: 5, 6, 7.
- Check Your Skills: 22, 23, 25, 26, 27.
- Exercises 32, 33, 35, 36, 38.