

NAME _____

Module 20 Solving Problems Using Probability, Statistics, and Discrete Math
Lesson 2 Solving Basic Probability Problems

guided notes

Lesson Objectives

- Find experimental probability.
- Find theoretical probability.
- Find the probability of the complement of an event.

The probability of an event is the **likelihood** that the event will occur.

The probability of an event can be expressed as a real number from zero to one, inclusive. An event with a probability of zero is **impossible**. An event with a probability of one is **certain** to occur.

The closer the probability of an event is to one, the **more likely** it is that the event will happen.

Experimental Probability = number of **successful** trials ÷ **total** number of trials.

Theoretical Probability = number of **favorable** outcomes ÷ **total** number of outcomes.

The Law of Large Numbers states as the number of trials increases, the experimental probability gets **closer** to the theoretical probability.

Use the table on the right to answer Questions 1 and 2.

A fair die was rolled 20 times. The number of times each number landed face up is shown.

1 Find the experimental probability of rolling a four.
 $P(4) = \frac{1}{4}$

2 Find the theoretical probability of rolling a four.
 $P(4) = \frac{1}{6}$

Number	Number of times face up
1	4
2	2
3	3
4	5
5	2
6	4

Complementary events are two mutually exclusive events; one of which must happen.

Mutually exclusive events are events that cannot happen

at the same time _____.

The formula $P(\text{not } A) = 1 - P(A)$ _____ is used to find the probability of the complement of an event.

3 The probability of winning a carnival game is $\frac{3}{25}$. Find the probability of NOT winning the game. **$P(\text{not winning}) = \frac{22}{25}$** _____