2-6 Theoretical and Experimental Probability

What is **probability?**

Introduction: Flipping a Fair Coin

It makes sense that every time we flip a fair the probability of flipping tails is

_____ out of _____ or _____!

Theoretical Probability:

$$P(event) = \frac{favorable\ outcomes}{total\ outcomes}$$

Experimental Probability:
Flip a coin 10 times and record how many heads and how many tails you get

	Tally
Number of Heads	
Number of Tails	

Let's take a look at the class data. On average, about how many times did the class flip heads out of 10 flips?

Experimental Probability Examples:

Nike conducted a test on 500 pairs of their sneakers. They found nothing wrong with 490 pairs. What is the probability that a pair of sneakers selected have nothing wrong?

In its store in Myrtle Beach SC, Nike sold 34,000 pairs of sneakers in one year. Based Nike's data how many of those pairs sold would have nothing wrong with them?

Probability Practice:

1. Rolling a Die

P(2) =

P(Even Number) =

2. Flipping A Coin

P(Tails) =

3. Days of the Week

P(Not a 5) =

P(Begins with T) =

4. Deal or no Deal

$$P(1million) = \frac{1}{30}$$

$$P(not1million) =$$

5. Spinner 1-8

P(number > 4) =

Let's take a look at the sample space for the following problem!
A bag contains 3 red chips, 2 blue chips and 5 green chips. **One** chip is chosen at random.

P(blue)	P(red)	P(green *or* red)
P (red *or* blue)	P(red *or* blue *or* green)	P(yellow)

In fact…

The probability of a **certain** event is _____

The probability of an **impossible** event is _____

The results of a survey of 100 randomly selected students at a 2000-student high school are below.

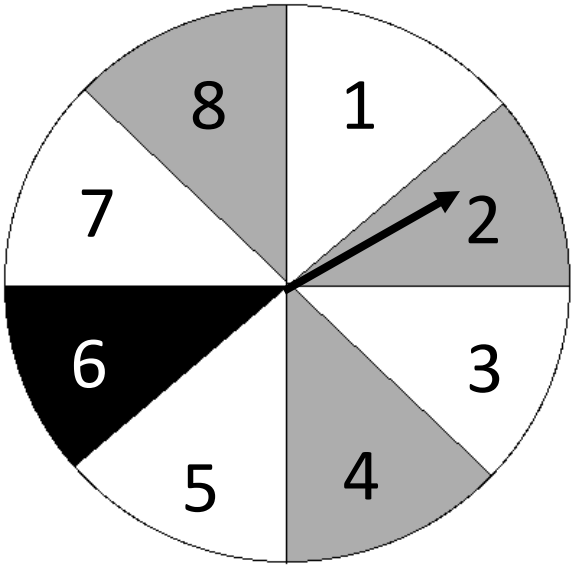
Plans for After Graduation

Response	Number of Respondents
Go to a community college	24
Go to 4-year college	43
Take a year off before college	12
Go to trade school	15
Do not plan to go to college	6

Suppose **one** student is chosen at random…

P(take a year off before college)	P(trade school *or* community college)
P(not 4-year college)	P(no college *or* year off before college)

The following spinner is spun once.



P(odd number *or* black space)	P(prime number *or* grey space)
P(multiple of 2 *or* multiple of 3)	P(less than 3 or grey space)

Practice 2-6 Name _____

Looking at a Standard Deck of Playing Cards

Total Number of Cards _____

How many…

Reds	Blacks	Hearts	Diamonds	Spades	Clubs
Aces	Not Fours	Black Twos	Jack of Clubs	Not Hearts	Blue Tens

If I were to select **one** card at random, find…

1. P(Queen *or* 7)	2. P(Red *or* Clubs)
3. P(Ace *or* Red Jack)	4. P(Not Red *nor* Clubs)

A driver collected data on how long it takes to drive to work.

Time in minutes	20	25	30
Number of trips	4	8	2

5. Find P(trip lasts 25 minutes)	6. Find P(trip lasts 30 min)
7. Find P(trip lasts more than 20 min)	8. Find P(trip lasts 25 minutes or less)