Mutually Exclusive Events:

When two events CAN'T happen at the same time.

Two events are NOT mutually exclusive if:

they CAN happen at the same time.

Are these events Mutually Exclusive?

1. Playing the guitar and playing the harmonica? NO
2. Rolling a die and getting a multiple of 5 and getting an even number. Yes
3. Wearing a pair of running shoes and wearing a pair of cowboy boots. Yes

Probability of (A or B)

If A and B are NOT mutually exclusive:

$P(A \text{ and } B) = P(A) \bullet P(B)$ (USUALLY)

$P(A \text{ or } B) = P(A) + P(B) - P(A \text{ and } B)$

If A and B ARE mutually exclusive:

$P(A \text{ or } B) = P(A) + P(B)$

The coach wants the star player to take the next shot. The probability that the player makes a 3-point basket is $\frac{2}{5}$. The probability that the player makes a 2-point basket is $\frac{3}{7}$. Find the following probability as a fraction.

P(makes a 3pt basket or makes a 2-pt basket) =

$\frac{7}{7} \cdot \frac{2}{5} + \frac{3}{7} \cdot \frac{5}{5}$

$\frac{14}{35} + \frac{15}{35}$

$\frac{29}{35}$

The probability that I eat a Peanut Butter & Jelly sandwich today is 90%. The probability that I drink a Coke today is 85%. Find the following probability as a percent rounded to the nearest hundredth.

P(eat PB&J or drink Coke) =

$.90 + .85 - (.90)(.85) = 98.5\%$

$90 + 85 - (.90)(.85)(100)$

$90 + 85 - (.85)(90)$

A survey was conducted in the US and Canada to find out what people's favorite sport was. The results are shown below. One person from each country is chosen. Find each probability as a percent to the nearest tenth.

United States

Baseball	Football	Soccer	Hockey
28%	41%	9%	22%

Canada

Baseball	Football	Soccer	Hockey
9%	6%	7%	78%

1. Person from US that likes Football and a person from Canada that likes Hockey.

$(.41) \cdot (.78) = 32\%$

2. Two people that like Soccer.

$(.07) \cdot (.09) \times 100 = .6\%$

3. A person from the US that likes Hockey or Football and a person from Canada that likes Baseball.

$(.63) \cdot (.09) = 5.7\%$

You can now finish Hwk #23

Due Tuesday

Sec 9-7

Pages 534-536

Problems 11, 12, 16, 19, 20, 22, 36, 39, 48-50

The probability that you ride a bike is 62%. The probability that you walk is 38%. These two probabilities are Mutually Exclusive. Find the following probability as a percent.

P(ride bike or walk)= $62\% + 38\% = 100\%$

What is true about these two events? they add up to 100% which means that they are the only two outcomes possible.

When two mutually exclusive event make up all possible outcomes they are called COMPLIMENTARY EVENTS.

Work in pairs. One person will roll a pair of dice and the other person will record the results.

Roll a pair of dice 25 times each and record if the results are:

1. Two odd #'s
2. Two even #'s
3. One even and one odd #

For your pair find these experimental probabilities.

P(two odd #'s)= P(two even #'s)=

P(one even and one odd #)=

Results from entire 3rd hour:

	# of times get 2 odds	# of times get 2 evens	# of times get one of each
1.	7	6	12
2.	4	7	14
3.	5	1	19
4.	7	6	12
5.	7	6	12
6.	6	6	13
7.	5	7	13
8.	8	7	10
9.	6	6	13
10.	9	5	11
Totals:	64	57	129

Grand Total = 250

Experimental prob

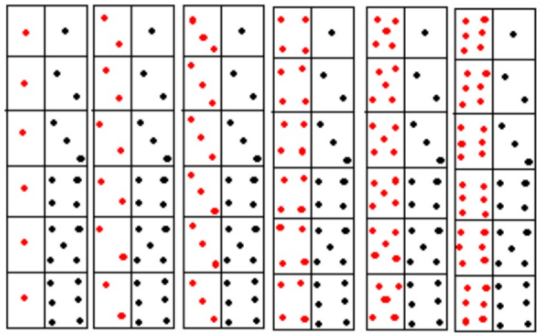
$P(2\text{ odds}) = \frac{64}{250} = 25.6\%$

$P(2\text{ evens}) = \frac{57}{250} = 22.8\%$

$P(1\text{ of each}) = \frac{129}{250}$ 51.6%

Theoretical Probabilities:

There are 36 possible outcomes when rolling a pair of dice.



P(2 odds)= $\frac{9}{36} = 25\%$

p(2 evens)= $\frac{9}{36} = 25\%$

P(one of each)= $\frac{18}{36} = 50\%$

The experimental and theoretical probabilites were pretty close.

They weren't exactly the same but would be closer if we did more trials(rolled the dice more times).