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) =

These events ARE mutually exclusive:

P(A or B) = P(A) + P(B)

$= \frac{7}{7} \cdot \frac{2}{5} + \frac{3}{7} \cdot \frac{5}{5} = \frac{14}{35} + \frac{15}{35} = \frac{29}{35}$

The probability that 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? Together they make up 100%, or ALL of the possible outcomes.

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

You reach into a bag containing a bunch of integers. You are told that the probability you pull out an even number is 33%.

What would be the complementary event?
Probability you pull out an odd number

What is the probability that you pull out an odd number on your next trial?

100% - 33% = 67%

When I come home tonight the probability that it is dark is $\frac{3}{7}$.

Find the following probability.

P(when I come home it is light) = $\frac{7-3}{7} = \frac{4}{7}$

since these are complimentary events they must add up to all 7 possible outcomes.

State the complementary event to this:

P(elephant) Complementary Event is:
P(not elephant)

Find P(not elephant) = $\frac{75-13}{75} = \frac{62}{75}$

Given: P(elephant) = $\frac{13}{75}$

You are going to take a 5 question True or False Quiz but you didn't study.

What do you think the probability is you will pass if you guess at all 5 questions?

How many questions do you have to get correct in order to pass?

3, 4, or 5
this would equate to getting 60%, 80% or 100%.

Simulation:

What could you use to simulate guessing at a True/False question? flipping a coin

We'll define HEADS as guessing correctly.

- You will do 25 trials.
- Each trial will consist of flipping 5 coins to simulate guessing at the 5 questions.

Trial #	# Heads
1	
2	
3	
4	
•	
•	
•	
25	

- For each trial record # of coins that come up HEADS
- When done with all 25 trials find the total # of times you got 3, 4, or 5 HEADS i.e. "passing".

# times got 3, 4, or 5 HEADS out of 25 trials:	# of trials
11	25
9	25
11	25
9	25
13	25
Class totals = 53	125

Experimental P(pass) = $53/125$

$= 42.4\%$

Theoretical Probability that pass:

Probability that guess correctly on a T/F question = 0.5

Prob Guess 3 correct = (0.5)(0.5)(0.5)(0.5)(0.5) = 3.125%
(correct, correct, correct, incorrect, incorrect)

How many ways can you get 3 out of 5 questions correct?

Order isn't important: ${}_5C_3 = 10$

$3.125\% \cdot 10 = 31.25\%$

Prob Guess 4 correct = (0.5)(0.5)(0.5)(0.5)(0.5) = 3.125%
(correct, correct, correct, correct, incorrect)

How many ways can you get 4 out of 5 questions correct?

Order isn't important: ${}_5C_4 = 5$

$3.125\% \cdot 5 = 15.625\%$

Prob Guess 5 correct = (0.5)(0.5)(0.5)(0.5)(0.5) = 3.125%
(correct, correct, correct, correct, correct)

How many ways can you get 5 out of 5 questions correct?

Order isn't important: ${}_5C_5 = 1$

$3.125\% \cdot 1 = 3.125\%$

Probability that you guess at all 5 questions on a T/F quiz and pass are:

3 correct OR 4 correct OR 5 correct =

3 correct = 31.25%
\+ 4 correct = 15.625%
\+ 5 correct = 3.125%

50% chance

What if there were 10 questions?

Passing would be getting:
6 correct = 20.51%
7 correct = 11.72%
8 correct = 4.39%
9 correct = 0.98%
or
10 correct = 0.10%

37.7% chance you pass by guessing

What if there were 10 multiple choice questions, with A, B, C, or D as choices?

6 correct = 1.62% chance
7correct = 0.31% chance
8 correct = 0.04% chance
9 correct = 0.003% chance
10 correct = 0.000095% chance

1.97% chance you will pass by guessing

A nationwide survey found that 72% of people in the United States like pizza. Three people are selected at random. Find each probability as a percent to the nearest tenth.

1. What is the probability that all three like pizza?

$(.72) \cdot (.72) \cdot (.72) =$ 37.32%

2. What is the probability that only one of them likes pizza?

$(.72 \cdot .28 \cdot .28) \cdot {}_3C_1 =$ 16.93%

3

there are three ways that one out of the three people could like pizza