9/7/2006

T-Th 12:45 - 2:10

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On Demand Videos

Mathematics

A Survey of Mathematics
3x5 Card
Name
Address
Phone
High School
Major
Future Plans
Check the class notes on my webpage:

www.mcs.edu
Chapter 12 Probability

1. 300 BC Egypt Gambling
2. 1500's Cardano (Italy)
   Gambler manual
3. 1600's Renaissance "rebirth"
   Pascal
   Fermat
12.1 Empirical Probability

Experiment

Ex: Flip a fair coin once.
Outcomes: Head or Tail

Empirical Probability—an experiment as performed.
If E is an event, then the empirical probability of E, denoted

\[ P(E) = \frac{\# \text{ times that } E \text{ occurs}}{\# \text{ times the experiment is performed}} \]

Ex: Flip a fair coin 25 times.
Record the \# of Heads. I got 11 Heads.
Find the empirical probability of a Head.

\[ P(\text{Head}) = \frac{11}{25} = 0.44 \]
Ex. Flip a fair coin

Possible outcomes: Head or Tail

These are "equally likely events"

The theoretical probability of getting a Head is

\[ P(\text{Head}) = \frac{\text{# ways to get a Head}}{\text{total # possible outcomes}} \]

\[ P(\text{Head}) = \frac{1}{2} \text{ or } 0.5 \]
Sample Space

Possible outcomes: 1, 2, 3, 4, 5, 6

Find $P(\text{even} \geq 3)$

$P(\text{even} > 3) = \frac{6}{2} = \frac{3}{1}$
52 Cards

26 Red

13 Hearts 13 Diamonds

26 Black

13 Spades 13 Clubs

4 Suits

For each suit

Ace, King, Queen, Jack, 10, 9, 8, 7, 6, 5, 4, 3, 2

Face Cards
Picture Cards

Ex. Draw one card from a standard deck.

\[ \text{(# of Black card greater than 5)} = \frac{10}{52} \]

Spades 6, 7, 8, 9, 10

Clubs 6, 7, 8, 9, 10

\[ = \frac{5}{26} \]
Tuesday

Buy the book
Read the handouts
Read 12.1 > 12.2

Flip a fair coin 25 times
Record # heads.
Find: P(Head)

12.1 Those assigned 1-9 odd
12.2 1-25 odd