Wednesday, January 22, 2020 10:38 AM

Precalculus

Section 10.1 Notes - Day 1

Probability

Warm-up: What do you already know about probability? Find the probability of:

a. Tossing a "head" on a single toss of a fair coin.

$$\frac{1}{2} = 0.5$$

b. Tossing two "heads" in a row on two tosses of a fair coin.

$$\frac{1}{2} \cdot \frac{1}{2} = \frac{1}{4}$$

c. Drawing a queen from a standard deck of 52 playing cards.

$$\frac{4}{52} = \frac{1}{13}$$

d. Rolling a sum of 4 on a single roll of two, fair, six-sided dice. $\frac{3}{34} = \frac{1}{12}$

$$\frac{3}{36} = \frac{1}{12}$$

e. Guessing correctly all 6 numbers in a lottery with 46 numbered balls (order doesn't matter).

Probability Vocabulary:

Sample Space:

The set of all possible outcomes = S

Probability of an event:

event occurring=4

Probability functions and distributions:

table or function that assigns probabilities to each outcome

Multiplication Principle of Probability:

P(Both A and B) = P(A and B) = P(A), P(B)

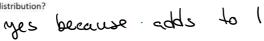
n not P(ngreen)

Examples:

1. Kate loves Jelly Beans, except for black licorice! The table below illustrates the overall flavor proportions in a particular Jelly Bean company's mix.

Flavor	Green	Strawberry	Bunny Blue	Purple	Black
	Apple	Red	Raspberry	Grape	Licorice
Proportion	0.25	0.3	0.2	0.1	0.15

Is this a valid probability distribution?



If Kate picks a Jelly Bean at random, what is the probability that it is:

- a. Green Apple or Bunny Blue Raspberry?
- b. Neither Red nor Purple?

c. Not black licorice?

1-.15= .85

- 2. A pair of dice is rolled, one black and one white. Find the probability of each of the following events:
- a. The total is ten.
- 2 4 5 6
- b. The total is at least ten.
- c. The total is between 3 and 7, inclusive.
- 3. In Ms. Orloff's version of Three Card Poker, she uses only 26 cards 13 black Spades and 13 red Hearts. In a given three card hand that is dealt, what is the probability that the hand consists of:
 - S= zuc3

 - - 0

- b. All spades?
- d. No face cards?
- f. 2 hearts and 1 spade?
 - 13c2,13d1

Problems to try.....

- 1. In your sock drawer you have 12 loose socks, 8 black and 4 blue.
- a. If you choose 2 at random, what is the probability of at least one blue?
- b. If you choose 2 at random, what is the probability of a pair?
- c. If you choose 1 at random, what is the probability you chose the one with a hole in it?

Your teacher is forming a committee of 5 from 28 students (12 girls and 16 boys).

a. What is the probability the committee will have all boys or all girls?

b. What is the probability the committee will have at least one girl?
$$1 - \frac{10^{\circ}5^{\circ}12^{\circ}0}{28^{\circ}5}$$

1-none = at least one

c. What is the probability that Jamie and Ray are on the committee?

d. What is the probability the committee will have no more than 2 boys?