Ch 9 Probability

Fundamental Counting Principle

example: 3 sweatshirts, 4 pairs of jeans = 12 outfits

how many 729- _ _ _ _ phone numbers are possible?

10, 000 (10x10x10x10)

how many Ohio license plates are possible that are

L L L # # # #? (26x26x26x10x10x10x10)

Probability notation: P(some event)

P(hw) = 1/2

P(math test this quarter) = 1

if the event will happen for sure probability=1

P(Mr Kish will weigh 20 pounds by Feb) = 0

if the event will not happen the prob = 0.

All probabilities are between 0 and 1.

Toss a quarter and a number cube.

P (H, 3) = 1/2 x 1/6 = 1/12

P (H, even number) = 1/2 x 1/2 = 1/4

P (T, 8) = 0 cannot happen, no 8 on the cube

P (H, a number) = 1/2 x 1= 1/2

When you toss a number cube, there are 6 possible outcomes. The sample space is 1, 2, 3, 4, 5, and 6.

When you toss a dime, what is the sample space?
(H or T). You would give the same answer if I asked what are the possible outcomes.

Factorials

$4! = 4 \times 3 \times 2 \times 1 = 24$

$3! + 5! = 6 + 120 = 126$

$$\frac{10!}{8!} = \frac{10x9x8x7x6x5x4x3x2x1}{8x7x6x5x4x3x2x1} = 90$$

$$\frac{6!}{6!} = 1$$