

10/9/18

* Conditional probability: probability that an event occurs given another event has occurred.

$P(F|E)$ = "probability of event F given event E"

$$P(F|E) = \frac{1}{3}$$

F = "roll a three"

$$P(F) = \frac{1}{6}$$

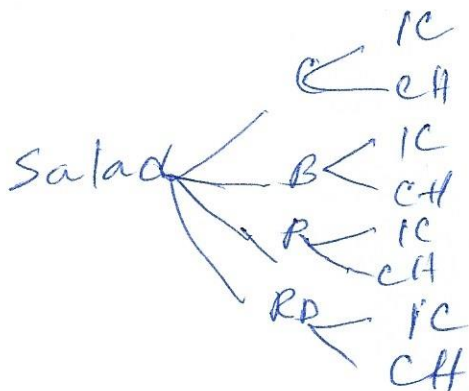
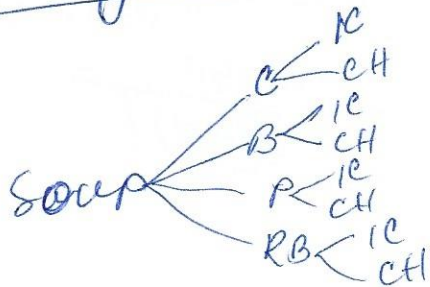
E = "rolling an odd number"

if F and E are two events, then

$$P(F|E) = \frac{P(E \cap F)}{P(E)}$$

$$= \frac{N(E \cap F)}{N(E)}$$

* Counting technique.



multiplication rule of Counting

if a task consists of a sequence of choices

in which there are p selections for the 1st choice, q selections for the 2nd choice, r selection for the 3rd choice and so on

the no. of ways to make these selections is $p \cdot q \cdot r \cdot \dots$

$$2 \cdot 4 \cdot 2 = 16$$

Factorial symbol

If $n \geq 0$ is an integer, the factorial symbol

$$n! = n(n-1)(n-2) \cdots 3 \cdot 2 \cdot 1$$

$$1! = 1$$

$$0! = 1$$

$$14! = \frac{14 \times 13 \times \cdots \times 1}{1!} = \frac{14 \times 13 \times 12 \cdots 1}{1}$$

Permutations: order matters.

A permutation is an ordered arrangement in which r objects are chosen from n distinct different objects, $r \leq n$. The symbol

$$nPr = \frac{n!}{(n-r)!} = \frac{14!}{(14-3)!}$$