Section 2: Probability

Wednesday, March 15, 2017 1:54 PM

definition: the <u>sample space</u> of an experiment is the set of all possible outcomes

an event is a subset of the sample space

if event E in sample space S has number of outcomes $n(E)$, then

$$P(E) = \frac{n(E)}{n}$$

$P(E)$: probability of E happening

$n(E)$: number of ways E can happen

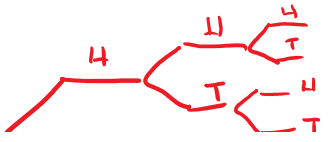
n: total number of outcomes

provided that all outcomes are equally likely

note: $0 \leq P(E) \leq 1$

(1) sample space: { HHH, HHT, HTH, HTT, TTT, TTH, THT, THH }

(can also do a tree diagram



event is getting one or two heads
so 6 of 8 events meet that criteria

$$P(E) = \frac{n(E)}{n} = \frac{6}{8} = \frac{3}{4} \text{ or } 75\%$$

② $S = \{1, 2, 3, \ldots 40\}$

$E = \{5, 10, 15, 20, 25, 30, 35, 40, 7, 14, 21, 28\}$

$$P(E) = \frac{n(E)}{n} = \frac{12}{40} = 0.3$$

③ An experiment consists of rolling a pair of 4-sided dice. Find the probability of getting a sum of at most 4.

sample space:

(11)	(12)	(13)	14
(21)	(22)	23	24
(31)	32	33	34
41	42	43	44

event E: sum of 4 or less

$$P(E) = \frac{n(E)}{n} = \frac{6}{16}$$