## Ch 3.1/ Ch 3.2 Probability and Odds

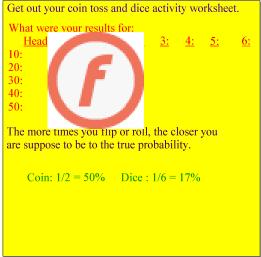
<u>Event</u>: collection of results or outcomes of a procedure

<u>Simple event:</u> is an outcome or event that can't be broken into smaller components.

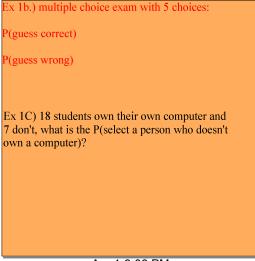
Ex) rolling one dice and getting a 5. Either it is or isn't 5.

Not simple) rolling two die and getting the sum of 7. roll a 3 and a 4 or 2 and a 5 or 1 and a 6.

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Sample space: consists of all possible simple events.

P(A)- represents the probability of an event (A) occurring.

If probability is less than or = to 5%, it is considered unlikely.

## Probability can be found 3 ways:

- 1. formula Probability =  $\frac{\text{# times the event occurs}}{\text{sample space}}$
- 2. simply guessing (not effective)
- 3. Law of large- simulate the procedure.

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Ex 1a) Find the probability of getting hit by lightning:

1. guess 2. simulate 3. calculate

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Ex 1d) What is the probability of a couple having 3 kids with 2 boys and 1 girl(order doesn't matter)?

воу	GIII	
Child 1 Boy Boy	Child 2 Girl Boy	Child 3 Boy Boy
Boy	Boy	Girl
Boy Girl Girl Girl Girl	Girl Boy Girl Girl Boy	Girl Girl Girl Boy Boy

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Ex 1e)

Probability of Thanksgiving falling on Wednesday?

Probability of it falling on Thursday?

Probability on any event is always between 0 or 1.

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Ex 3) Odds = # times an event occurs # times an event doesn't occur

Bag of marbles with 5 green, 2 red, and 7 blue

Ex3a) Odds(green)

Ex 3b) Odds(blue)

Ex 4c) Odds(red)

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Complementary Events: denoted as  $\overline{A}$ , which the event doesn't occur.

$$A + \overline{A} = 1$$

Ex2a) GMC tested new model cars. 50 drivers have been recruited, of which 20 are men.

 $P(\text{not a man}) \text{ or } P(\overline{\text{man}}) = P(\text{women})$ 

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