Probably About Probability

$p < .05$

Probability

- Inferential statistics allow us to decide if one condition of an experiment likely produced different results than another condition
- Inferential statistics are based on the concepts of probability
- Thus, probability is an essential aspect of statistics

What Is Probability?

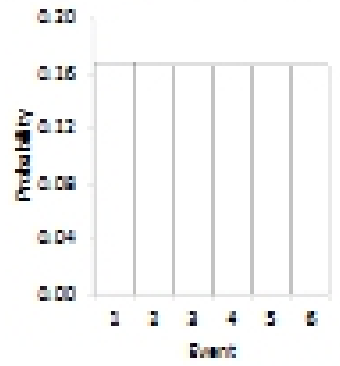
- Probabilities often deal with *events*
- An event is something that happens
  - E.g. Rolling a 3 on a fair die is an event
- The probability of an event is given by the ratio of how often that event occurs and how often all events occur

Probability of Events

- When you role a fair, 6 sided die, each of the six faces has an equal chance of coming up
- Thus, the probability of any single face appearing is given by 1 (how often that event occurs) divided by 6 (the total number of events)

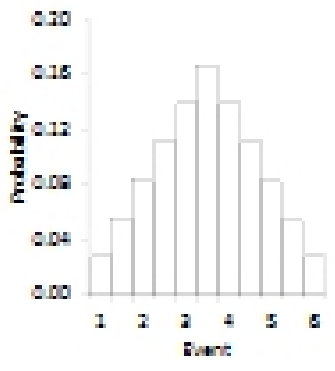
1 Die (6 events)

Event	f	p(Event)
1	1	1/6
2	1	1/6
3	1	1/6
4	1	1/6
5	1	1/6
6	1	1/6

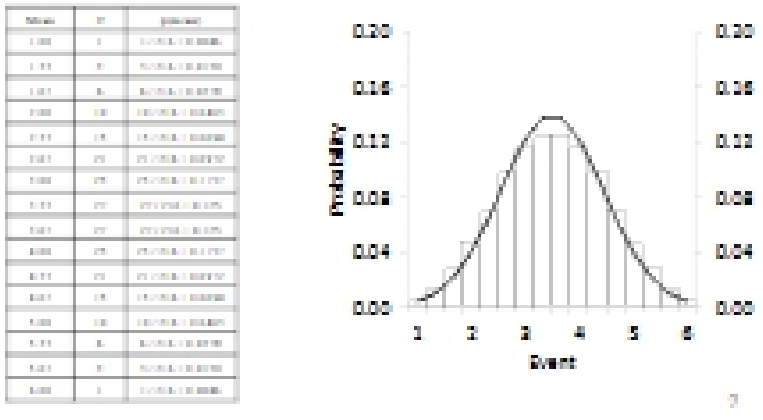


Mean of 2 Dice (36 events)

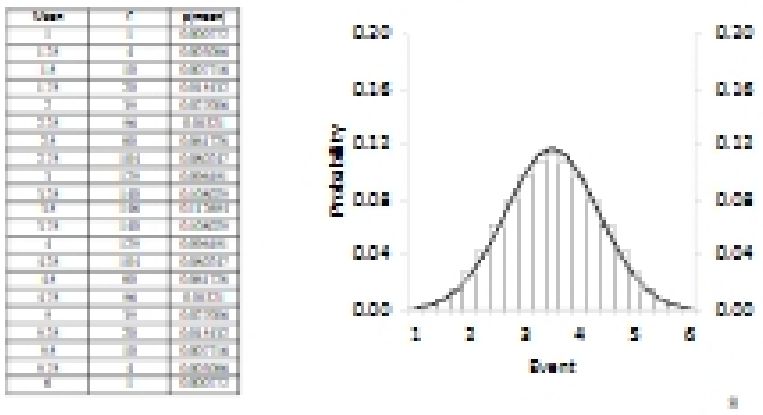
Mean	f	p(mean)
1.0	1	1 / 36 = 0.0278
1.5	2	2 / 36 = 0.0556
2.0	3	3 / 36 = 0.0833
2.5	4	4 / 36 = 0.1111
3.0	5	5 / 36 = 0.1389
3.5	6	6 / 36 = 0.1667
4.0	5	5 / 36 = 0.1389
4.5	4	4 / 36 = 0.1111
5.0	3	3 / 36 = 0.0833
5.5	2	2 / 36 = 0.0556
6.0	1	1 / 36 = 0.0278



Mean of 3 Dice (216 events)



Mean of 4 Dice (1296 events)



Mean of 8 Dice (1,679,616 events)