

6-sided Die		Outcomes
A: $\frac{1}{6}$	1:6	1
		2
		3
B: $\frac{0}{6} = 0$		4
		5
C: $\frac{4}{6} = \frac{2}{3}$		6

Probability Rules  
Classical Probability is when  
each outcome in a sample space  
is equally likely to occur.

Ex: Sample space for a die  $\{1, 2, 3, 4, 5, 6\}$   
4 ways of Representing Probability

Fraction	Ratio	Decimal	Percentage
$\frac{1}{6}$	1:6	0.167	16.7%

Experimental Probability (Statistical)  
Empirical  
...is based on observations

Obtained from probability experiments.

Ex: An insurance company that  
in every 100 claims, 4 are fraudulent.

$$P(A) = \frac{\text{Outcome}}{\text{Outcomes of sample space}} = \frac{4}{100}$$

$$\frac{4}{100} = \frac{1}{25} = 0.04 = 4\%$$

~~0.4~~

Subjective Probability:

This is the result of intuition

Or educated guess or estimates.

Law of Large Numbers:

As an experiment is repeated over and over, the experimental probability approaches the theoretical probability.

	Classic	Tallies	Exp. Prob.	100	
1	$\frac{1}{6}$	4	0.16	22	0.22
2	$\frac{1}{6}$	1	0.04	15	0.15
3	$\frac{1}{6}$	1	0.04	12	0.12
4	$\frac{1}{6}$	6	0.24	14	0.14
5	$\frac{1}{6}$	8	0.32	18	0.18
6	$\frac{1}{6}$	5	0.2	19	0.19
0.167					

Complement: