Introduction to Data Science

In the previous video

- How to calculate probabilities
- Calculated probabilities for getting an 8 on a pair of dice

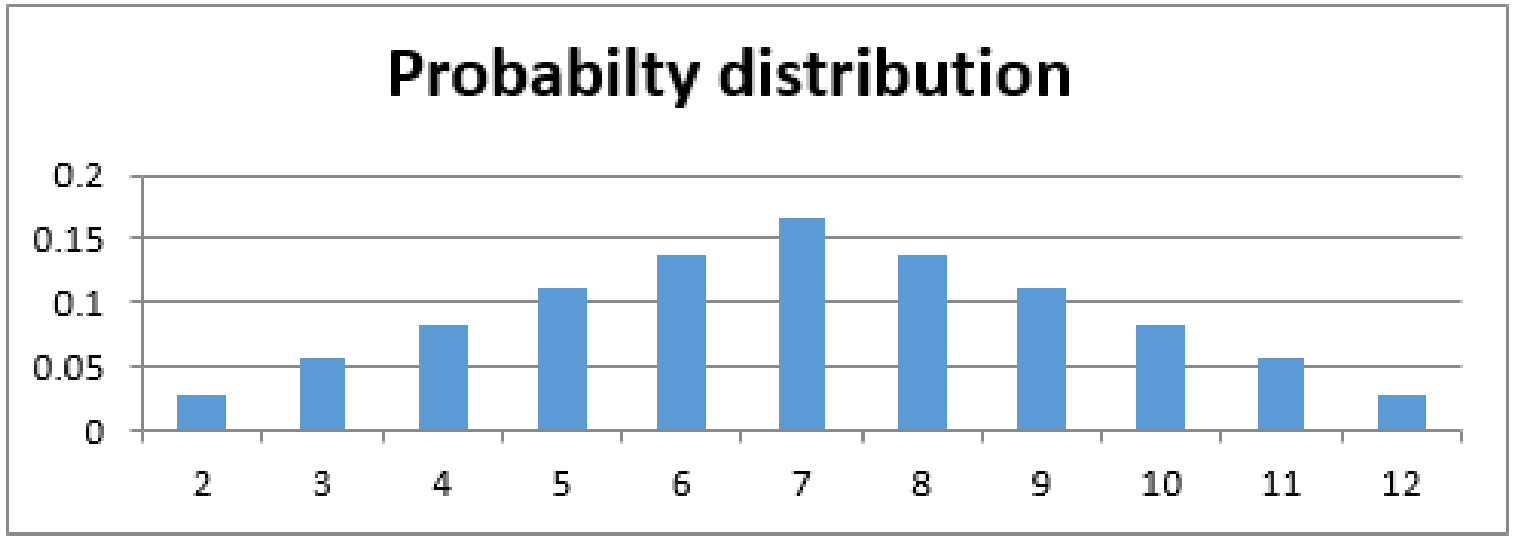
Analytics Vidhya
Learn everything about analytics

In this video

- Graphically represent probabilities

Sum on the dice	Frequency of occuring	Probability
2	1	1/36
3	2	2/36
4	3	3/36
5	4	4/36
6	5	5/36
7	6	6/36
8	5	5/36
9	4	4/36
10	3	3/36
11	2	2/36
12	1	1/36

Representing Probabilities Graphically



Probability Mass Function

Events with just two outcomes

- Toss of a coin – heads and tails
- The outcome of a fight between two people – win and loss

Bernoulli Trials

- An experiment which has exactly two outcomes
- Probability distribution of the number of successes in n Bernoulli trials is known as a Binomial distribution

Bernoulli Trials

- Suppose your favorite football team is playing against a weaker team. Chances for your team to win are 75% while for the other team are 25%. Your team wins the series if they win more games out of 5. Figure out the probability of your team winning the series.

Bernoulli Trials

$P(W) = p$

$P(L) = q$

5 games, 2 won

$^5C_2 (0.75)^2 (0.25)^3$

WWLLL

WLLWL

$\frac{5}{5-2 \mid 2} = {}^5C_2$

Known out of n trials

$P(X=k) = {}^nC_k \, p^k \, q^{n-k}$

$q = 1 - p$

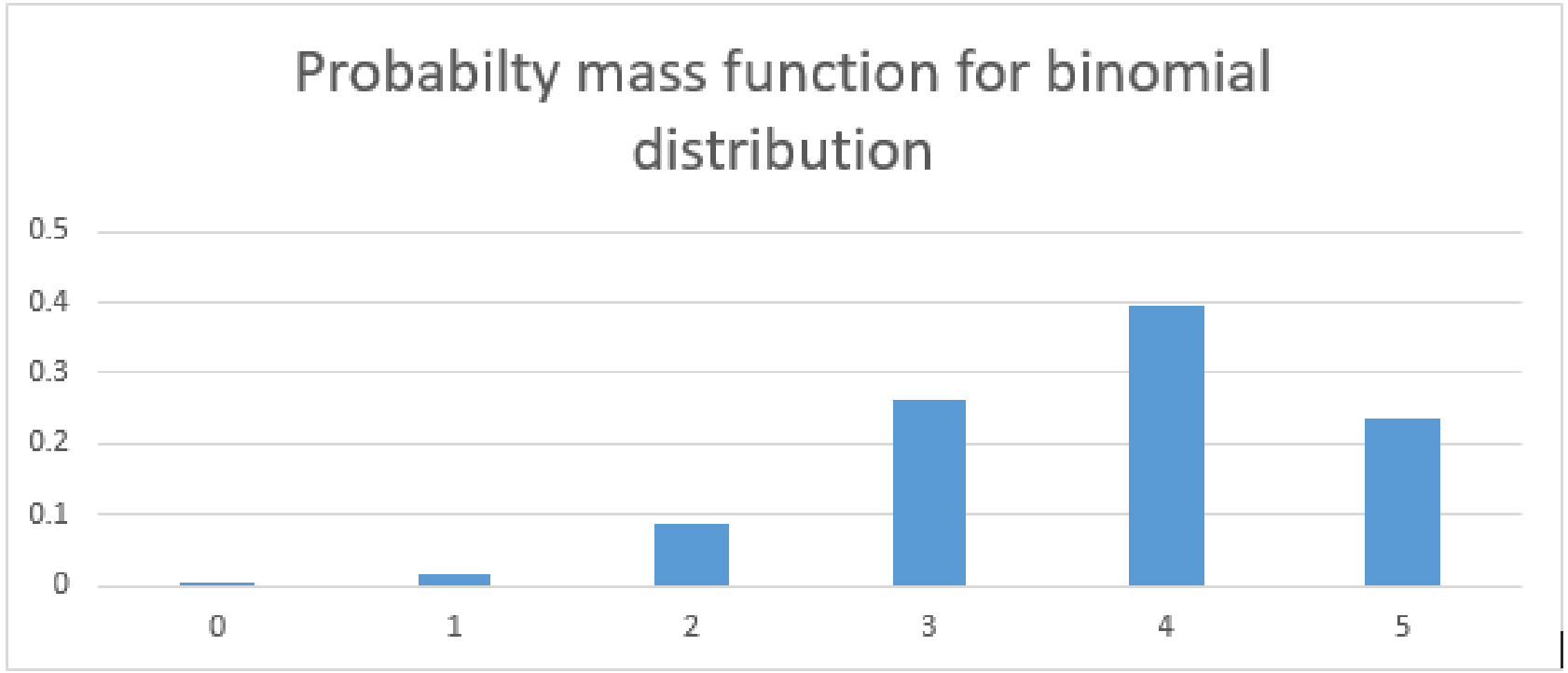
$P(X=2) = {}^5C_2 (0.75)^2 (0.25)^3 = 0.088$

$P(X=3) = {}^5C_3 (0.75)^3 (0.25)^2 = 0.264$

$P(X=4) = {}^5C_4 (0.75)^4 (0.25)^1 = 0.395$

$P(X=5) = {}^5C_5 (0.75)^5 (0.25)^0 = 0.237$

Probability Mass Function



p=q=0.5