

What	is the	probal	bestity t	that	FI	Flip	5
coins	, 20-	f thor	1 Land	zn	hoads	2	
ans	TO W	ays to	have.	2	heads	in	
The second secon	5 coir	tosse	28				

$$70 = 5!$$
 $2!(5!-2!)$
 $= (5)$

no of ways You can have 2 hoads in 5 coin tosses

Bionomial coefficient:

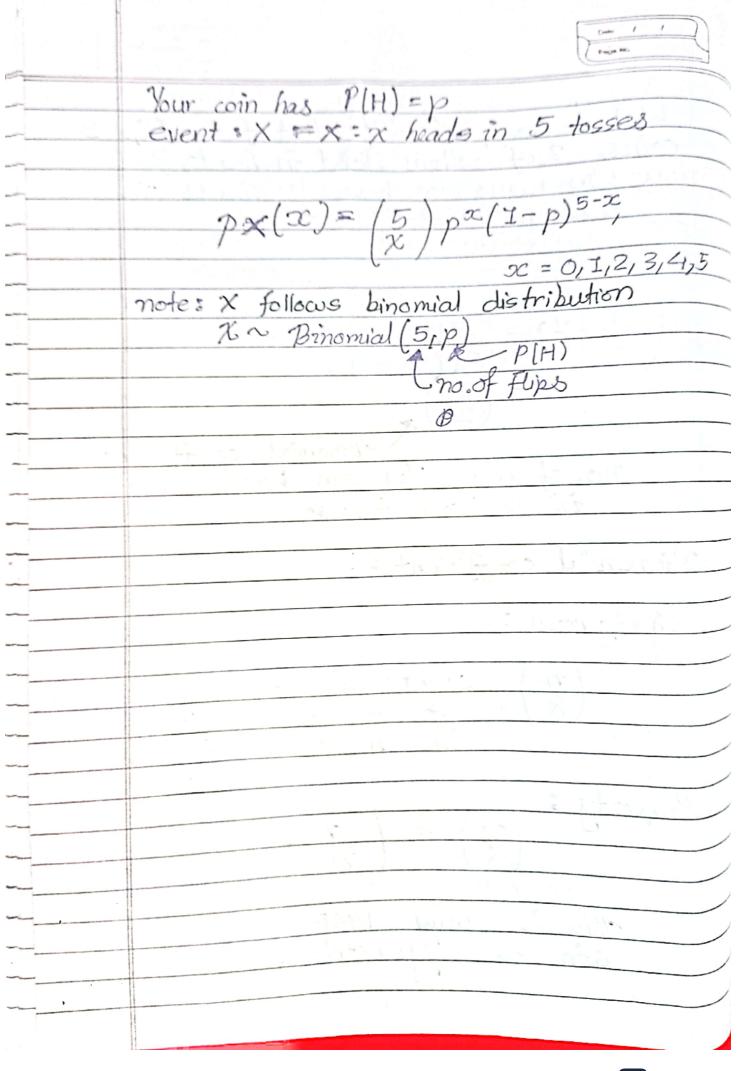
In general:

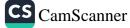
(n) counts all the combinations (K) of for landing K heads in n coin tosses.

Proporty:

 $\begin{pmatrix} n \\ k \end{pmatrix} = \begin{pmatrix} n \\ n-k \end{pmatrix}$

This is why PMF of a fair coin is symmetrical. Shape.







Bernouli distribution & success/failwe sings tris, Binomial distribution = multiple bernouli trials

Cumulative distribution functⁿ => accumulated probability
thisom distribution => Bell-shaped continuous values
Normal distribution => Bell-shaped continuous values
Uniform distribution => Equal probability over a range
Exponential distribution => Time between events
Chi-squared distribution => Skewed distribution
based on degrees of freedom

For normal distribution, mean, median and

mean : average calculated from a dataset to the feet median : middle, value in a dataset control for mode. : frequently occuring value(s)

Expected value: average outcome or value

that one can articipate from

a probability distribution, given

a large number of repeated trials

or occurrences.

Expected value of a function: The expected

value of a function of a random

variable represents the average value

that the function is expected to

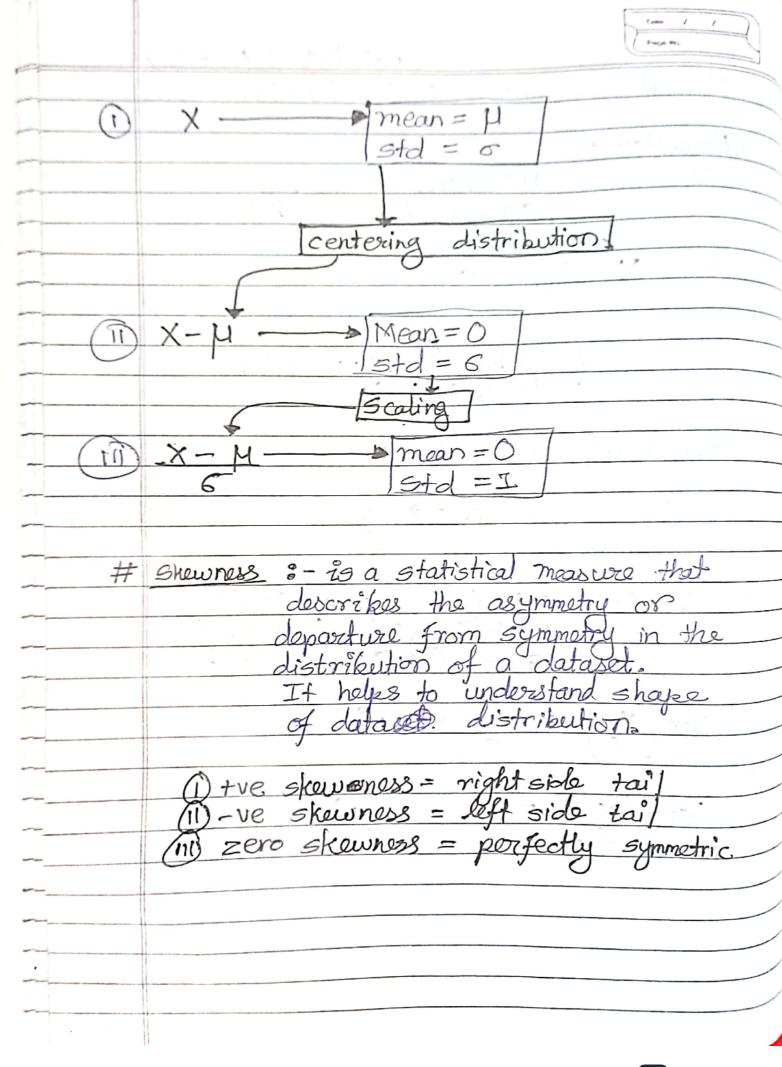
take on considering the underlyping

probability distribution of the

random variable.

Variance: E(X-H2) = E[x2 - ZHX + H2] = E[X2] - & E[ZHX] + E[H] = E[X2] - ZHE[X] + H2 = E[x2] - 2E[x]. E[x] + E[x] = E[x2] - 2E[x]2 + E[x]2 = E[x2] - E[x]2 Standard deviation variance has problem of units. variance: $Var(X) = \bigcirc E[(X-\mu)^2]$ E[X2]-E[X72 Say X is measured in Then E[X] is measured in moters Vaz(X) is measured in m2 -Standard deviation

(H-6) (4±26) (M±36) Normal distribution: 68-95-99.7 rule Paravoters H: centre of the ball X~N(4,02) Everything is Nicor When, Standardizing a distribution: $Var(cx) = E[(cx)^{2}] - E[cx]^{2}$ $= E[c^{2}x^{2}] - (c E[x])^{2}$ $= c^{2}E[x^{2}] - c^{2}E[x]^{2}$ $Var\left(\frac{X}{6}\right) = \frac{1}{6^2} Var\left(X\right)$ std (X) = I std(X)





	describes the tailedness on masure that
	describes the tailedness or peakedness of a probability distribution, indicating whether the data's distribution is heavy-tailed or light-tailed compared to normal distribution
	light-tailed compared to normal distribution
	(i) Mesokurtic (Kwotosis = 0) (ii) Leptokurtic (tve Kwotosis) (iii) Platykwrtic (-ve Kwotosis)
	(I) Platykurtic (-ve kurtosis)
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