

Lesson #11 week #6 (Topics 1-3)

- Random variable - is a variable whose possible values are outcomes of random events
- uses capital letters e.g. X, Y, ...
- examples of random variables

X = the number of heads after 3 flips of a fair coin

Flip 1      Flip 2      Flip 3      —

$P(X=0) = \frac{1}{8}$        $P(X=1) = \frac{3}{8}$   
 $P(X=2) = \frac{3}{8}$        $P(X=3) = \frac{1}{8}$

Graph (Histogram)  
Distribution of Probability of a Random Variable

Table

X	P(X)
0	1/8
1	3/8
2	3/8
3	1/8

$\Sigma = 1$  (8/8)

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Note 1: All proba Dist. tables have 2 conditions

- ①  $P(X)$  are positive ( $0 \leq P(X) \leq 1$ )
- ②  $\Sigma P(X) = 1$  (we also accept 0.9999)

Note 2: X - Random Variable can be:

- Ⓐ A Discrete Value (Distinct Unique)
- Ⓑ A Continuous Value (Range of values)

ex/

Discrete

- Year you were born
- # of sisters you have

Continuous (Decimals)

- the exact time the runner won the race
- Mass of an atom

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