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Random Variable is a real valued  
function which assigns a real value  
to each sample point in the sample space.  
Example: Tossing a fair coin  
Sample space

A Random Variable which  
takes on or at most countable  
values is called discrete random variable.  
Example: (i) No. of heads

(ii) No. of defective

EX Four bad oranges  
16 good oranges find  
the No. of bad oranges

## Random Variable

Random Variable is a real valued function which assigns a real number to each sample point in the sample space.

Example :- Tossing a fair coin thrice then sample space

## Discrete Random Variable :-

A Random Variable which takes finite or at most countable number of values is called discrete random variable.

Example :- (i) No. of heads obtained when two coins are tossed

(ii) No. of defective items in a lot

EX Four bad oranges are mixed with 16 good oranges find Prob. Dist<sup>n</sup> of the No. of bad oranges

## Random Variable

Random Variable is a real valued function which assigns a real number to each sample in the sample space.

Example :- Tossing a fair coin thrice then

HH, THH, HTT, THT, TTH, TTT

X = No. of heads

## Discrete Random Variable

A Random Variable which takes finite or at most countable number of values is called discrete random variable.

Example :- (i) No. of heads obtained when two coins are tossed

(ii) No. of defective items in a lot

EX Four bad oranges are mixed with 16 good oranges find Prob. Dist<sup>n</sup> of the No. of bad oranges

## Random Variable

Random Variable is a real valued function which assigns a real value to each sample point in the sample space.

Example :- Tossing a fair coin  
Sample space

$$S = \{ \underline{HHH}, \underline{HHT}, \underline{HTH}, \underline{HTT}, \underline{TTH}, \underline{THT}, \underline{TTH}, \underline{TTT} \}$$

$$X(S_1) = 3$$

$$X(S_2) = X(S_3) = X(S_4) = 2$$

$$X(S_5) = X(S_6) = X(S_7) = 1$$

$$X(S_8) = 0$$

## Discrete Random Variable

A Random Variable which takes finite or at most countable number of values is called discrete random variable.

Example :- (i) No. of heads obtained when two coins are tossed.

(ii) No. of defective items in a lot.

EX Four bad oranges are mixed with 16 good oranges find Prob. Distn of the No. of bad oranges.

2	3
---	---

to each s  
Example

a fair coin three times

space

HT, HT, TH, HT, TH, TH, TH

Probability Distribution

X (No. heads)

	1	2	3

$f(x) = P(X=x)$

$f(x), p_x$

EX

EX

(1)

Example :-

fair coin thrice then

$\checkmark$   $\checkmark$   $\checkmark$   $\checkmark$   $\checkmark$   
HTH, THH, HHT, THT, HTH, HTH

EX

Probability Distribution

$X$ (No. head)	0	1	2	3
$p$	$\frac{1}{8}$	$\frac{3}{8}$		

## Random Variable

Random Variable is a real valued function which assigns a real number to each sample point in the sample space.

Example :- Tossing a coin three times then

Sample

$$S = \{ \overset{\checkmark}{HHH}, \overset{\checkmark}{HHT}, \overset{\checkmark}{HTH}, \overset{\checkmark}{HTT}, \overset{\checkmark}{THT}, \overset{\checkmark}{THT}, \overset{\checkmark}{TTH}, \overset{\checkmark}{TTT} \}$$

$$X(S_1) = 3$$

$$X(S_2) = X(S_3)$$

$$X(S_5) = X(S_6)$$

$$X(S_8) = 0$$

## Discrete Random Variable

A Random Variable which takes finite or at most countable number of values is called discrete random variable.

Example :- (i) No. of heads obtained when two coins are tossed.

(ii) No. of defective items in a lot.

EX

Four bad oranges are mixed with 16 good oranges find Prob. Dist<sup>n</sup> of the No. of bad oranges.

Probability Dist<sup>n</sup>

(No. of heads)	0	1	2	3
p	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$



## Discrete Random Variable

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Example :- (i) No. of heads obtained when two coins are tossed.

(ii) No. of defective items in a lot.

EX Four bad oranges are mixed with 16 good oranges find Prob. Distn of the No. of bad oranges.

$X$  (No. of bad oranges)

	Probability Distn			
$X$ (No. heads)	0	1	2	3
$p$	$\frac{1}{8}$	$\frac{3}{8}$	$\frac{3}{8}$	$\frac{1}{8}$

$$S = \{ \overline{HHH}, \overline{HHT}, \overline{HTH}, \overline{HTT}, \overline{THT}, \overline{THT}, \overline{TTH}, \overline{TTT} \}$$
$$X(S_1) = 3$$
$$X(S_2) = X(S_3) = X(S_4) = 2$$
$$X(S_5) = X(S_6) = X(S_7) = 1$$
$$X(S_8) = 0$$

$\sqrt{X(x), p_x}$

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