

Profit and Loss:-

$$\text{I. Profit} = \frac{SP - CP}{CP} \times 100$$

$$\text{Profit} = SP - CP$$

$$\text{II. } \text{Loss} = \frac{CP - SP}{CP} \times 100$$

$$\text{Loss} = CP - SP$$

Q:-

$$\begin{aligned} \text{CP} - 8 & \quad (\text{I}) \text{ SP} = 10^{\circ} \\ (\text{II}) \text{ SP}_2 & = 8^{\circ} \end{aligned}$$

$$(\text{I}) \quad \frac{20}{8} \times 10^{\circ} = 25\% \text{ Profit}$$

$$(\text{II}) \quad \frac{20}{20} \times 10^{\circ} = 25\% \text{ Loss}$$

→ if cost price of two articles is same:

Q:- I - 20% profit II - 30% profit

$$\text{Overall Profit} = \frac{20 + 30}{2} = 25\%$$

$$\text{Q:- I - } 20\% \text{ P } \quad \text{II - } 30\% \text{ L } \quad \text{Net Loss} = \frac{+20 - 30}{2} = -5\%$$

→ if selling price is same:-

$$\begin{array}{ll} \text{I} - 20\% \text{ profit} \rightarrow \frac{1}{5} \\ \text{II} - 30\% \text{ loss} \rightarrow \frac{1}{3} \end{array}$$

Net effect

$$10 = 5 \times 2 \quad 6 \times 2 = 12 \quad \text{do same}$$

$$15 = 5 \times 3 \quad 4 \times 3 = 12$$

$$\begin{array}{cc} \text{CP} & \text{SP} \\ 25 & 24 \end{array}$$

$$\frac{1}{25} \times 100 = 4\% \text{ loss}$$

Q16 (ii) :-

Q:-

20 t. profit $\frac{20}{10} \text{ CP } 10 \text{ t. SP of } 300$
 $52141 \text{ CP } 90 \text{ SP of } 40 \text{ t. SP of } 60 \text{ t.}$

Ans

CP	SP
100	120
new	
CP 90×140	126

6 Ratio - 300
 1 Ratio - 50 RF
 $100 \times 5 = 500$

Ans

direct :-

20 t. - Initial

40 t. - Final

$$20 \text{ t. profit} = 10 \text{ t.} + 300 \text{ RF} + 4 \text{ t.}$$

$$\frac{10 \times 40}{100} = 4 \text{ t.}$$

$$6 \text{ t.} = 300 \text{ RF}$$

$$100 \text{ t.} = \frac{300 \times 100}{6}$$

$$= 500 \text{ AMR}$$

Successive profit and 1088 :-

chain :- A - B - C - D - E (shelling) the

solve using successive care.

Q:-

$$A - B \quad 20 \text{ t. profit} = 10$$

$$B - C \quad 20 \text{ t. } 108 \text{ RF} = \frac{1}{10}$$

overall :- 5 : 6

10	9
50	45
100	108

8 t. profit &
 A - C - 4

Discount :-

$$\text{Q:- } CP = 60 \quad MOP = 100 \text{ R.R} \quad Di = 20 \quad SP = 80$$

$$\% \text{ discount} = \frac{20}{100} \times 100 = 20\%$$

$$\text{Profit} = \frac{20}{60} \times 100 = 33\frac{1}{3}\%$$

1. (markup) :- $\text{CP from CP to MOP difference}$
 $\text{markup} = (MOP - CP)$

$$\% \text{ markup} = \frac{40}{60} \times 100 = 66\frac{2}{3}\%$$

L38

$$\text{Q:- } M.P. \left(\frac{100 - D}{100} \right) = SP = CP \left(\frac{100 + P}{100} \right)$$

$$M.P. \left(\frac{100 - D}{100} \right) = CP \left(\frac{100 + P}{100} \right)$$

$$\frac{M.P.}{C.P.} = \frac{100 + P}{100 - D}$$

$$\frac{M.P.}{C.P.} = \frac{100 - L}{100 - D}$$

$$\text{Q:- } CP = 400$$

$$\% \text{ markup} = 25\% : \frac{1}{4} = 14\% \text{ R.R}$$

1. DISCOUNT

$$CP \text{ per unit} = 400$$

$$125 = \frac{400 \times 125}{100} = 500$$

$$700 \text{ units} = 500$$

$$90\% = \frac{500 \times 90}{100} = 450$$

$$10\% = \frac{50 \times 100}{400} = 12\frac{1}{2}\%$$

Permutation & Combination

Date _____
Page _____

→ "word based permutation":—

(i) — K E S H A V

(i) There should be no restriction

$$6! =$$

(ii) all word start with K

$$\frac{6!}{K} = \underline{5} \ \underline{4} \ \underline{3} \ \underline{2} \ \underline{1} = 120$$

(iii) all word end with V.

$$\underline{5} \ \underline{4} \ \underline{3} \ \underline{2} \ \underline{1} \ \underline{V} = 120$$

(iv) if word start with K and end with V.

$$\underline{\underline{K}} \ \underline{\underline{1}} \ \underline{\underline{4}} \ \underline{\underline{3}} \ \underline{\underline{2}} \ \underline{\underline{1}} \ \underline{\underline{V}} \ \underline{\underline{1}} = 24$$

(v) All vowel are together

$$\boxed{A \ E} \ \underline{\underline{K}} \ \underline{\underline{S}} \ \underline{\underline{H}} \ \underline{\underline{V}} = 5! \times 2!$$

$$= 120 \times 2 = 240$$

$$\boxed{A \ E} \ \boxed{\underline{\underline{K}} \ \underline{\underline{S}} \ \underline{\underline{H}} \ \underline{\underline{V}}} = 3! \times 4!$$

$$= 8 \times 24 = 192$$

all consonant are together

(vi) vowel & consonant are together

$$\boxed{A \ E} \ \boxed{\underline{\underline{K}} \ \underline{\underline{S}} \ \underline{\underline{H}} \ \underline{\underline{V}}} = 2! \times 2! \times 4!$$

$$= 2 \times 2 \times 24 = 96$$

(vii) vowel are never together

$$\boxed{A \ E} \ \underline{\underline{K}} \ \underline{\underline{S}} \ \underline{\underline{H}} \ \underline{\underline{V}} = 5! \times 2! = 240$$

(a) log

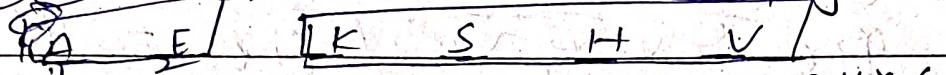
• all permutation ix

$$6! = 720$$

$$\text{never together} = 720 - 240$$

$$= 480$$

(ix) Consonants are never together!



$$\bullet \text{ together} = 3! \times 4! = 24 \times 6 = 144$$

$$\bullet \text{ All} = 720$$

$$\bullet \text{ never together} = 720 - 144 = 576$$

(x) vowel occupy even place!



$$\overline{1} \quad \overline{2} \quad \overline{3} \quad \overline{4} \quad \overline{5} \quad \overline{6}$$

$$e \quad e \quad \text{vowel} = 3$$

$$3P_2 \times 4! - \frac{3! \times 4!}{1!} = 6 \times 24 = 144$$

(xi) vowel consonant occupy odd place!

$$\begin{array}{c} \text{vowel} \\ \text{consonant} \\ \text{K, S, H, V} \end{array} \quad \begin{array}{cccccc} \overline{1} & \overline{2} & \overline{3} & \overline{4} & \overline{5} & \overline{6} \\ \text{even} & & & & & \\ \text{odd} & & & & & \end{array}$$

$$3P_2 \times 4! = 6 \times 24 = 144$$

(2) CORONA 0-2

$$\text{① Two ways} = \frac{6!}{2!} = 6 \times 5 \times 4 \times 3 = 360$$

(i) All vowel together

$$\cancel{6! \times 2!} \leftarrow \cancel{720 \times 2} = \boxed{\begin{array}{ccccc} A & \text{O} & \text{O} & | & \text{C M Y R} \\ \hline & & & | & \\ & & & & \text{L D Y} \end{array}}$$

$$\frac{4! \times 3!}{2!} = 24 \times 3 = 72$$

6

Date _____

Page _____

(iii)

start with consonants

$$C \underset{HCF}{\cancel{5}} \underset{1}{4} \underset{1}{3} \underset{2}{\cancel{2}} \underset{1}{3} \underset{1}{5} \underset{1}{0} = \frac{5!}{2!} = 60$$

(iv)

start 0 & end 0

$$\begin{matrix} 0 \\ \cancel{4} \\ \cancel{2} \end{matrix} \text{ start } \begin{matrix} 0 \\ \cancel{4} \\ \cancel{2} \end{matrix} \text{ end } \begin{matrix} 0 \\ \cancel{4} \\ \cancel{2} \end{matrix}$$

$$= 4! \times 2! = 24 \times 2 = 48$$

(v)

vowel occupy even plac:

$$3P_3 \times \frac{3!}{2!} = 3! \times 3 = 6 \times 3 = 18$$

Q:-

$$7!, 11!, 15! \quad HCF = 7! \quad (\text{small})$$

$$LCM = 15! \quad (\text{big})$$

Q:-

10 flowers से फिर से मालाथे कर्ता

सकता है

$$\text{one} = \frac{(n-1)!}{2}$$

$$= \frac{10-1!}{2} = \frac{9!}{2}$$

Q:-

5 persons के circles arrangement करें

से से

$$\text{ans} = (n-1)! = (5-1)! = 4! = 24$$

Q:- 4 letter box का कोड person

8-different letter post करें। कैसे करें (कॉड) (होगा)

$$\text{ans} = 7 \times 6 \times 5 \times 4 = 840$$

* किसी समिति के लिए person का छुनाव-

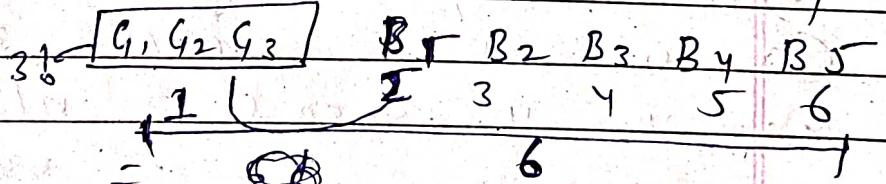
Q 8 men & 3 women से 5 person की committee बनायी ही जिसमें 3 men & 2 women हो।

$$\frac{8!}{5!} \times \frac{3!}{2!} = \frac{8 \times 7 \times 6 \times 5 \times 4}{5 \times 4 \times 3 \times 2} = 168$$

* 8 से कितने तरिके ही जब 5 boy & 3 girl का साथ circle में बैठे हों।

$$5+3 = (8-1)! = 7!$$

Condition: — यदि सभी girl एक साथ हों।



$$(6-1)! \times 3! = 5! \times 3!$$

$$= 120 \times 6 = 720$$

PROBABILITY

Date _____
Page _____

$$\rightarrow \text{Dice} = \{1, 2, 3, 4, 5, 6\}$$

$$P(3) = \frac{1}{6}, P(\bar{3}) = \frac{5}{6}$$

$$P(E) + P(\bar{E}) = 1$$

$$\rightarrow 1, 2, 3, 4, 5, 6, 7, 8, 9, 10$$

$$\left. \begin{array}{l} (a) P(4) = 1/10 \\ (b) P(\text{even}) = 5/10 = 1/2 \\ (c) P(\text{odd}) = 5/10 = 1/2 \\ (d) P(\text{prime}) = 4/10 = 2/5 \end{array} \right\} \begin{array}{l} (e) P(n > 7) = 3/10 \\ (f) P(n \leq 6) = 5/10 = 1/2 \\ (g) P(\text{multiple of } 3) = 3/10 \end{array}$$

\rightarrow 2 white & 4 black probability to be white.

$$P(W) = \frac{3}{7} \quad \begin{array}{|c|c|} \hline \text{White} & \text{Total} \\ \hline 3 & 7 \\ \hline \end{array}$$

\rightarrow How many numbers are from 1 to 100.

$$(a) \text{ divisible by } 3 = \frac{100}{3} = 33.33 \approx 33$$

$$(b) \text{ divisible by } 5 = \frac{100}{5} = 20$$

$$(c) \text{ divisible by } 3 \text{ or } 5 = n(3) + n(5) - n(3 \text{ and } 5)$$

$$= 33 + 20 - 6 = 47$$

Coins :-

$$\boxed{\text{Total outcome of coin} = 2^n}$$

n - number of tossing coin.

$$2C_1 \times 2C_1 \\ 2 \times 2 = 1$$

$$\frac{3}{2}x = 2$$

$$\frac{2}{1} = 2$$

$$3C_0 = 3$$

$$3 \times \frac{6}{8} = \frac{3}{4}$$

Date _____
Page _____

Q:- Two unbiased coins are tossed up simultaneously. Total outcome = $2^n = 2^2 = 4$

$$(i) \text{ Two tails} = \frac{2C_2}{4} = \frac{1}{4}$$

$$(ii) \text{ one head} = \frac{2C_1}{4} = \frac{2}{4} = \frac{1}{2}$$

$$(iii) \text{ at least one tail} = \frac{2C_1 + 2C_2}{4} = \frac{2+1}{4} = \frac{3}{4}$$

$$(iv) \text{ At most one tail} = \frac{2C_0 + 2C_1}{4} = \frac{2+1}{4} = \frac{3}{4}$$

$$(v) \text{ no tail} = \frac{2C_0}{4} = \frac{1}{4}$$

Q:- Three unbiased coins are tossed up together find probability.

$$(1) \text{ All head} = \frac{3C_3}{8} = \frac{1}{8}$$

$$(2) \text{ at least one tail} = \frac{3C_1 + 3C_2 + 3C_3}{8} = \frac{3+3+1}{8} = \frac{7}{8}$$

$$(3) \text{ exactly 2 head} = \frac{3C_2}{8} = \frac{3-2}{8} = \frac{1}{4}$$

Ex

base on dice problem

- when a dice is thrown once sample space = $(6)^n = 6^1 = 6$
 $\{1, 2, 3, 4, 5, 6\}$

Q:- A dice thrown probability of a prime number:— {1, 2, 3, 5, 6}

(1) $P(\text{prime}) = \frac{5}{6} = \frac{1}{3} A$

(2) multiple of 2, 0 & 3.

$$\{2, 4, 6, 3\} = \frac{4}{6} = \frac{2}{3} A$$

Q:- dice throw twice find probability
total outcomes = $6^2 = 36$

(i) sum of 7 = $\frac{4}{36} = \frac{1}{9}$
 $(2, 5) \vee (3, 4) \vee \dots$

Toices of find sum:

case 1: if sum is greater than 6 then sum subtract from 13 + then divide 36 (outcomes)

Ex:- (1) sum of 10

$$\frac{13 - 10}{36} = \frac{3}{36} = \frac{1}{12}$$

(2) sum of 12

$$\frac{13 - 12}{36} = \frac{1}{36} \sim$$

case 2:- if sum is 1 to 6
then subtract 1

(1) sum of 6 = $6 - 1 = \frac{5}{36} \sim$

(2) sum of 4 = $\frac{9 - 1}{36} = \frac{1}{36} = \frac{1}{12} \sim$

13

1e89

6

same

13

13

same

Page

(i)

at least a sum of 9.

$$9 \rightarrow 13 - 9 = 4$$

$$10 \rightarrow 13 - 10 = 3$$

$$11 \rightarrow 13 - 11 = 2$$

$$12 \rightarrow 13 - 12 = 1$$

$$\frac{1}{36} = \frac{5}{18}$$

10

Q:- If two dice thrown

(i) A multiple of 2 on one dice
and a multiple of 3 on the other
dice

(2, 3) (3, 2)

(2, 6) (6, 2)

(4, 3) (3, 4)

(4, 6) (6, 4)

(6, 3) (3, 6)

(6, 6)

11

36

(*)

Card base question:-

Card

52

diamond



heart



spade



club



Red

Red

Black

Black

1 A C9

1 A C9

1 A C9

1 A C9

2-10

2-10

2-10

2-10

face card

King

Jack

Queen

13

13

13

13

= 52

Q:- Pack of 52 card. An ace.

$$\textcircled{1} \quad p(\text{ace}) = \frac{4}{52} = \frac{1}{13} \quad \text{and} \quad \textcircled{3} \quad p(\text{a heart}) = \frac{1}{52}$$

$$\textcircled{2} \quad p(\text{ace red}) = \frac{2}{52} = \frac{1}{26} \quad \textcircled{4} \quad p(\text{ace club}) = \frac{1}{52}$$

$$\textcircled{5} \quad p(\text{ace black}) = \frac{2}{52} = \frac{1}{26} \quad \textcircled{6} \quad p(\text{ace diamond}) = \frac{1}{52}$$

$$\textcircled{7} \quad p(\text{ace spade}) = \frac{1}{52}$$

$$\textcircled{8} \quad \text{face card} = \frac{12}{52} = \frac{3}{13}$$

$$\textcircled{9} \quad \text{red face card} = \frac{6}{52} = \frac{3}{26}$$

$$\textcircled{10} \quad \text{face card heart} = \frac{3}{52}$$

Q: 12