



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

ACCREDITED WITH 'A' GRADE BY NAAC

Course Title : Employability skills and Practices

Course code: U20PDHJ01

Topic: Divisibility Rule

Lecture delivered by

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# Introduction

- The purpose of this course is to improve the ability of an individual to solve numerical and mathematical calculation . Quantitative aptitude is the most important requisite for clearing any competitive exam like SSC, RRB, and Bank exams. Numerical aptitude defines the ability of an individual to execute tasks relating to the handling of numbers.

# List of Employability skills

- ❖ Communication
- ❖ Team work
- ❖ Self Management
- ❖ Learning skills
- ❖ Problem solving
- ❖ Technology
- ❖ Leadership
- ❖ Motivation and initiative

# Unit -I

- Divisibility Rules
- Arithmetic LCM, HCF factors
- Arithmetic Unit Digit
- Problem solving
- Algebra linear equation

# Divisibility rules

- Divisibility rules have been mentioned to make the division procedure easier and quicker. If students learn the divisibility rules in maths for 1- 20, they can solve the problems in a better way. For example ,divisibility rule for 13 help us to know which numbers are completely divided by 13.

- Division rules in Maths helps us to check whether a number is divisible by another number without the actual method of division. If a number is completely divisible by another number then the quotient will be a whole number and the remainder is zero.
- The division rules from 1 to 13 are explained here in detail with many solved examples.

# Divisibility Rule of 1

- Every number is divisible by 1.  
Divisibility rule for 1 does n't have any condition. Any number divided by 1 will give the number itself, irrespective of how large the number is.

# Divisibility Rule of 2

- If a number is even or a number whose last digit is an even number i.e 2, 4, 6, 8 including 0, it is always completely divisible by 2.
- **Example:** 508 is an even number and is divisible by 2 but 509 is not an even number, hence it is not divisible by 2.

# Divisibility Rule of 3

- Divisibility rule for 3 states that a number is completely divisible by 3 if the sum of its digits is divisible by 3.
- **Example:** Consider a number 308, To check whether 308 is divisible by 3 or not, take sum of its digits i.e  $(3+0+8=11)$ . Now check whether the sum is divisible by 3 or not. If the sum is a multiple of 3, then the original number is also divisible by 3. Here 11 is not divisible by 3, 308 is also not divisible by 3.

# Divisibility Rule of 4

- If the last two digits of a number are divisible by 4, then that number is a multiple of 4, and is divisible by 4 completely.
- Example: Take the number 2308. Consider the last two digits i.e 8. As 08 is divisible by 8, the original number 2308 is also divisible by 4 .

# Divisibility Rule of 5

- Numbers whose last digit is either 0 or 5 are always divisible by 5.
- Example: 10,595, 1000005,etc.

# Divisibility Rule of 6

- Numbers which are divisible by both 2 and 3 are divisible by 6.

That is , if the last digit of the given number is even and sum of its digits is a multiple of 3, then the given number is also a multiple of 6.

- **Example :** 630, the number is divisible by 2 as the last digit is 0. The sum of digits is  $6+3+0=9$ , which is also divisible by 3.Hence, 630 is divisible by 6

# Divisibility Rule of 7

- The rule for divisibility by 7 is a bit complicated which can be understood by the steps given below:

**Example:** Is 1073 divisible by 7?

- From the rule stated, remove 3 from the number and double it, which becomes 6.
- Remaining number becomes 107, so  
 $107 - 6 = 101$
- Repeating the process one more time, we have  $1 \times 2 = 2$ .
- Remaining number  $10 - 2 = 8$ .
- As 8 is not divisible by 7, hence the number 1073 is not divisible by 7

# Divisibility Rule of 8

- If the last three digits of a number are divisible by 8, then the number is completely divisible by 8.
- **Example:** Take number 24344.
- Consider the last three digits i..e 44. As 344 is divisible by 8, the original number 24344 is also divisible by 8.

# Divisibility Rule of 9

- The rule for divisibility of 9 is similar to divisibility rule for 3.

That is , if the sum of digits of the number is divisible by 9,then the number itself is divisible by 9

**Example:** Consider 78532, the sum of its digits  $(7+8+5+3+2)$  is 25 which is not divisible by 9,hence 78532 is not divisible by 9

# Divisibility Rule of 11

- If the difference of the sum of alternative digits of a number is divisible by 11, then that number is divisible by 11 completely.
- Example: Consider the number 2143,
- Group the alternative digits  
Here 24 and 13 are two groups.  
Take sum of the digits  $2+4=6$  of each group and  $1+3=4$ .
- Now find the difference of the sums  $6-4=2$
- If the difference is divisible by 11, then the original number is also divisible by 11. Here 2 is not divisible by 11. Therefore 2143 is not divisible by 11.

# Divisibility Rule of 12

- If the number is divisible by both 3 and 4, then the number is divisible by 12 exactly.
- Example: 5864

Sum of the digits =  $5+8+6+4=23$  which is not a multiple of 3

Last two digits = 64 which is divisible by 4.

The given number is divisible by 4 but not by 3.  
Hence it is not divisible by 12

# Divisibility Rule of 13

- For any given number , to check if it is divisible by 13, we have to add four times of the last digit of the number to the remaining number and repeat the process until you get a two digit number. Now check if that two-digit number is divisible by 13 or not. If it is divisible, then the given number is divisible by 13.

# Thank YOU



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**Course Title : Employability skills and Practices**

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**Unit -3: Topic: Permuatation and Combination**

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# Unit -3

- What is Permutation?

Permutation relates to the act of arranging all the members of a set into some sequence or order. In other words, if the set is already ordered, then the rearranging of its elements is called the process of permuting.

# What is Combination?

- The combination is a way of selecting items from a collection, such that (unlike permutations) the order of selection does not matter.

# Difference Between Permutation and Combination

Permutation	Combination
Arranging people, digits, numbers, alphabets, letters, and colours	Selection of menu, food, clothes, subjects, team.
Picking a team captain, pitcher and shortstop from a group.	Picking three team members from a group.
Picking two favourite colours, in order, from a colour brochure.	Picking two colours from a colour brochure.
Picking first, second and third place winners.	Picking three winners.

# Permutation Formula

- A permutation is the choice of  $r$  things from a set of  $n$  things without replacement and the order matters.
- $nP_r = (n!) / (n-r)!$

# Combination Formula

- A combination is the choice of  $r$  things from a set of  $n$  things without replacement and order does not matter.

$${}_nC_r = \binom{n}{r} = \frac{{}_nP_r}{r!} = \frac{n!}{r!(n-r)!}$$

- **Example 1: Find the number of permutations and combinations if  $n = 12$  and  $r = 2$ .**

**Solution:** Given,  $n = 12$ ,  $r = 2$

Using the formula given above:

**Permutation:**

- $${}^n P_r = \frac{n!}{(n-r)!} = \frac{(12)!}{(12-2)!} = \frac{12!}{10!} = \frac{(12 \times 11 \times 10!)}{10!} = 132$$

**Combination:**

- $${}^n C_r = \frac{n!}{r!(n-r)!} = \frac{12!}{2!(12-2)!} = \frac{12!}{2!(10)!} = \frac{12 \times 11 \times 10!}{2!(10)!} = 66$$

- **Example 2:** In how many ways a committee consisting of 5 men and 3 women, can be chosen from 9 men and 12 women?
- **Solution:**
- Choose 5 men out of 9 men =  $9C5$  ways = 126 ways
- Choose 3 women out of 12 women =  $12C3$  ways = 220 ways
- The committee can be chosen in 27720 ways.

# What are the real-life examples of permutations and combinations?

- Arranging people, digits, numbers, alphabets, letters, and colours are examples of permutations.
- Selection of menu, food, clothes, subjects, the team are examples of combinations.

- Write the relation between permutations and combinations.
- Permutations and combinations are related as:  
 $nCr = nPr/r!$

# Fundamental Counting Principle

- The **fundamental counting principle or multiplication principle** states that if there are p ways to do one thing, and q ways to do another thing, then there are  $p \times q$  ways to do both things.
- **Example 1:**
- Suppose you have 3 shirts (call them A , B , and C), and 4 pairs of pants (call them w , x , y , and z ). Then you have
- $3 \times 4 = 3 \times 4 = 12$
- Possible Outfits: Aw,Ax,Ay,Az, Bw,Bx,By,Bz  
Cw,Cx,Cy,Cz

- **Example 2:**
- Suppose you roll a 6 -sided die and draw a card from a deck of 52 cards. There are 6 possible outcomes on the die, and 52 possible outcomes from the deck of cards. So, there are a total of
- $6 \times 52 = 312$  possible outcomes of the experiment.

- The counting principle can be extended to situations where you have more than 2 choices. For instance, if there are  $p$  ways to do one thing,  $q$  ways to a second thing, and  $r$  ways to do a third thing, then there are  $p \times q \times r$  ways to do all three things.

- The **rule of sum** or **addition principle** is a basic **counting principle** stated that if we have A ways of doing something and B ways of doing another thing and we can not do both at the same time, then there are  $A + B$  ways to choose one of the actions.

- Find the 3-digit numbers that can be formed from the given digits: 1, 2, 3, 4 and 5 assuming that
  - a) digits can be repeated.
  - b) digits are not allowed to be repeated.
- **Solution:**
  - a) By the multiplication principle, the number of ways in which three-digit numbers can be formed from the given digits is  $5 \times 5 \times 5 = 125$
  - b) By the multiplication principle, the number of ways in which three-digit numbers can be formed without repeating the given digits is  $5 \times 4 \times 3 = 60$

- **Question 2:**
- A coin is tossed 6 times, and the outcomes are noted. How many possible outcomes can be there?
- **Solution:**

When we toss a coin once, the number of outcomes we get is 2 (Either Head or tail)

So, in each throw, the no. of ways to get a different face will be 2.

Therefore, by the multiplication principle, the required no. of possible outcomes is

$$2 \times 2 \times 2 \times 2 \times 2 \times 2 = 64$$

- How many words, with or without meaning, can be formed using all the letters of the word EQUATION, using each letter Exactly once?
- **Solution:**

Number of letters in word EQUATION = 8

$$n = 8$$

If all letters of the word used at a time

$$r = 8$$

$$\begin{aligned}\text{Different numbers formed} &= nPr = {}^8P_8 \\ &= 8!/(8-8)! = 8!/0! \\ &= 8!/1 \\ &= 8!\end{aligned}$$

- How many words can be formed each of 2 vowels and 3 consonants from the letters of the given word – DAUGHTER?
- **Solution:**
- No. of Vowels in the word – DAUGHTER is 3.
- No. of Consonants in the word Daughter is 5.
- No of ways to select a vowel =  ${}^3C_2 = 3!/2!(3 - 2)! = 3$
- No. of ways to select a consonant =  ${}^5C_3 = 5!/3!(5 - 3)! = 10$
- Now you know that the number of combinations of 3 consonants and 2 vowels =  $10 \times 3 = 30$
- Total number of words =  $30 \times 5! = 3600$  ways.

- Find the number of 5-card combinations out of a deck of 52 cards if each selection of 5 cards has exactly one king.
- **Solution:**

Take a deck of 52 cards,

To get exactly one king, 5-card combinations have to be made. It should be made in such a way that in each selection of 5 cards, or in a deck of 52 cards, there will be 4 kings.

To select 1 king out of 4 kings =  ${}^4C_1$

To select 4 cards out of the remaining 48 cards =  ${}^{48}C_4$

$$\begin{aligned}\text{To get the needed number of 5 card combination} &= {}^4C_1 \times {}^{48}C_4 \\ &= 4 \times 2 \times 47 \times 46 \times 45 \\ &= 778320 \text{ ways.}\end{aligned}$$

# Thank You

## Divisibility Rule.

Defn:

If  $a$  and  $b$  are integers,  $a$  divides  $b$  if there is an integer  $c$  such that

$ac = b$  [i.e.  $b$  is a multiple of  $a$ ]  
i.e.  ~~$\frac{b}{a}$~~

The notation  $a|b$  means that  $a$  divides  $b$

For example,  $3|6$  i.e.  $3$  divides  $6$

i.e.  $6$  is a multiple of  $3$ .  
since  $\frac{3 \times 2}{a c} = \frac{6}{b}$

$-2 | 10$  since  $\frac{(-2) (-5)}{a c} = \frac{10}{b}$ .

Also  $3471 | 0$  since  $\frac{3471 \cdot 0}{a c} = \frac{0}{b}$

Remark:

Don't confuse " $a|b$ " with  $(\frac{a}{b} \text{ or } a \cdot b)$   
 $\text{or } a \div b$ )

The notation " $a|b$ " is read as

$a$  divides  $b$  which is a statement

[This statement could be either true or  
false]

On the other hand  
 $a \div b$  or  $(\frac{a}{b})$  is read a divided by b

This is an mathematical expression  
not a complete sentence.

For e.g.: 6 divides 18 means

If you divide 18 by 6, you  
get remainder 0.  
i.e.

$$6 \overline{)18} \quad \begin{array}{r} 3 \\ 18 \\ \hline 0 \end{array} \quad \frac{18}{6} = 3$$

∴ We can say 6 divides 18

Be sure you understand the difference.

Note:

1) Every number 'a' divides 0  
since  $\frac{0}{a} = 0$  (Remainder = 0)  $\frac{0}{40} = 0$   $\frac{0}{13} = 0$

2) 1 divides everything 'a'

since  $\frac{a}{1} = a$  (Remainder = 0)  $\frac{33}{1} = 33$

3) Every no. is divisible by itself.

Eg: 12 divides 12  $\left[ \frac{12}{12} = 1; \text{Remainder} = 0 \right]$   
47 divides 47  $\left[ \frac{47}{47} = 1, \text{Remainder} = 0 \right]$   
98 divides 98

### Divisibility Rule:

#### Practice:

1) Check the no. 135792 which is divisible by 3 or not

2) If  $628 \times 435$  is exactly divisible by 3, then the min. value which fits in the place of  $x$ .

i.e. find  $x$ ?

Soln:

$$6 + 2 + 8 + x + 4 + 3 + 5 = 28 + x$$

Given:  $3 \mid 28 + x$

i.e.  $28 + x = 3m$  [i.e. multiple of 3]

$$x = 3m - 28$$

Put  $m = 10$   
 $\therefore x = 2$

3) Check <sup>the</sup> 1 2 3 4 5 6 7 8 9 which is  
divisible by 11 or not.  
 $5 + 11$

4) 1 2 3 4 5 6 [It is divisible by 6]

5) 5 6 7 4

∴

6) 1 3 3 1 [It is divisible by 11]

$$1 + 3 = 1$$

$$3 + 1 = 0$$

$$0 \mid 11$$

∴

7) 1 4 6 4 1 [divisible by 11]

1) Find the remainder of  $\frac{37 \times 38 \times 39}{6}$  [CAT Exam Qns]  
NMAT

$$\frac{37 \times 38 \times 39}{6}$$

soln:

Take product of individual Remainder

$$\text{Remainder of } \frac{37}{6} = 1$$

$$\text{Remainder of } \frac{38}{6} = 2$$

$$\text{Remainder of } \frac{39}{6} = 3$$

Required  $\rightarrow$  Remainder of the given

$$\text{no.} = \frac{1 \times 2 \times 3}{6}$$

$$= 0$$

2) Find the remainder of  $\frac{37 + 38 + 39}{6}$

$$1 + 2 + 3 = \frac{6}{6} \therefore \text{Remainder} = 0$$

3) Find remainder of  
$$\frac{37 + 38 + 39 + 40}{6}$$

$$1 + 2 + 3 + 4 = \frac{10}{6}$$

$\therefore$  Remainder = 4

4) Find remainder of  $\frac{37 \times 38 \times 39 \times 40}{6}$

3) Find remainder of  

$$\frac{37 + 38 + 39 + 40}{6}$$

$$1+2+3+4 = \frac{10}{6}$$

$\therefore$  Remainder = 4

4) Find remainder of  $\frac{37 \times 38 \times 39 \times 40}{6}$

~~Ans~~ Remainder = 0

H.C.F and L.C.M [Defn]

The H.C.F defines the greatest factor present in between given two or more numbers, whereas L.C.M defines the least number which is exactly divisible by two or more numbers.

H.C.F is also called the greatest [Highest]

common factor

L.C.M is also called the least Common Divisor

### Example:

(i) H.C.F of 3 and 9 = 3

(ii) H.C.F of 9 and 16

Divisors [or Factors] of 9 are 1, 3, 9

Divisors [or Factors] of 16 are 1, 2, 4, 8, 16

~~H.C.F~~ 1 is the only common factor  
of 9 and 16

$$\therefore \text{H.C.F} \text{ of } 9 \text{ and } 16 = 1$$

(iii) H.C.F of 8 and 16

Divisors of 8 are 1, 2, 4 and 8

Divisors of 16 are 1, 2, 4, 8 and 16

1, 2, 4, 8 are the common factors

$\boxed{\text{H.C.F} = 8}$

(iv) H.C.F of 13 and 16

$\boxed{\text{H.C.F} = 1}$

(iv) L.C.M of 4 and 6

Multiples of 4 are 4, 8, 12, 16, 20, 24, ...

Multiples of 6 are 6, 12, 18, 24, ...

The common multiples for 4 and 6 are  
12, 24, 36, 48, ...

$$\therefore \text{L.C.M} = 12$$

$$4 = 2 \times 2 \\ 6 = 2 \times 3$$

(v) L.C.M of 24, 15

$$120$$

$$2 \times 2 \times 3 \\ = 12$$

Relationship between HCF and LCM

Product of two numbers

$$= (\text{HCF of the two numbers}) \times \\ (\text{LCM of the two numbers})$$

Eg:  
product

Take two nos 4 and 6

$$4 \times 6 = 24$$

$$\text{HCF}(4, 6) = 2$$

$$\text{LCM}(4, 6) = 12$$

$$\therefore \boxed{\text{HCF} \times \text{LCM} = 24}$$

Problem: 1

If  $x:y$  be the ratio of two numbers and  $z$  be their HCF, then L.C.M of the numbers is

- a)  $xyz$     b)  $yz$     c)  $xz/y$     d)  $xy/z$

sln

Let  $a$  and  $b$  be the two numbers

let  $x:y$  be the ratio of two nos 'a & b'

$z$  is the H.C.F of 'a' and 'b'

$$\therefore a = zx$$

$$b = zy$$

By above relation ,

Product of two nos =  $(\text{HCF of } a \& b)(\text{LCM of } a \& b)$

$$ab = z (\text{LCM of } a \& b)$$

$$\Rightarrow (zx)(zy) = z (\text{L.C.M of } a \& b)$$

$$xyz^2 = z (\text{L.C.M of } a \& b)$$

$$xyz = \text{L.C.M of } a \& b$$

# Unit 5

Data Interpretation – II - Problem Solving - Interview Skills- - Mock I- Interview Skills Mock I – Data Sufficiency – I- Problem Solving - Interview Skills- - Mock II- Interview Skills Mock II -Data Sufficiency – II Problem Solving Revision (Contact Hours 12)

1. A factory employs three machines M1, M2 and M3 to manufacture three products X, Y and Z. Each machine runs for 12 hours a day. The following table gives the time taken (in minutes) by each machine to manufacture 1 unit of each of the products.

	M1	M2	M3
X	12	15	16
Y	18	9	15
Z	10	18	12

Ex.1 What is the maximum number of products that can be manufactured in a day?

- 1. 125
- 2. 155
- 3. 200
- 4. 212

$$12\text{hrs} = 12 \times 60 = 720 \text{ min}$$

Min time = Maximum product

$$X = 12$$

$$Y = 9$$

$$Z = 10$$

$$X = 720/12 = 60$$

$$Y = 720/9 = 80$$

$$Z = 720 / 10 = 72$$

The maximum number of products that can be manufactured in a day

$$= 60 + 80 + 72 = 212$$

**Sol:**

Since the maximum number is asked, the machine time of the product being manufactured must be minimum. On machines M1, M2 and M3, products X , Y and Z need minimum time respectively.

Since each machine has 720 minutes of manufacturing time, 72 units of Z, 80 units of Y and 60 units of X can be manufactured on the three machines respectively. Thus, the maximum units that can be manufactured in a day is 212.

2. On a particular day, the demand for 40 units of X and 50 units of Y must be met. If the remaining production is of product Z only, what is the maximum number of units of Z that can be manufactured on that day?
1. 81      2. 85      3. 99      4. None of these

**Sol:** Let X and Y be manufactured on machines where they need minimum manufacturing time.

So, X and Y are manufactured on machines M1 and M2 respectively. Manufacturing 40 units of X on M1 leaves  $720 - 480 = 240$  minutes of manufacturing time.

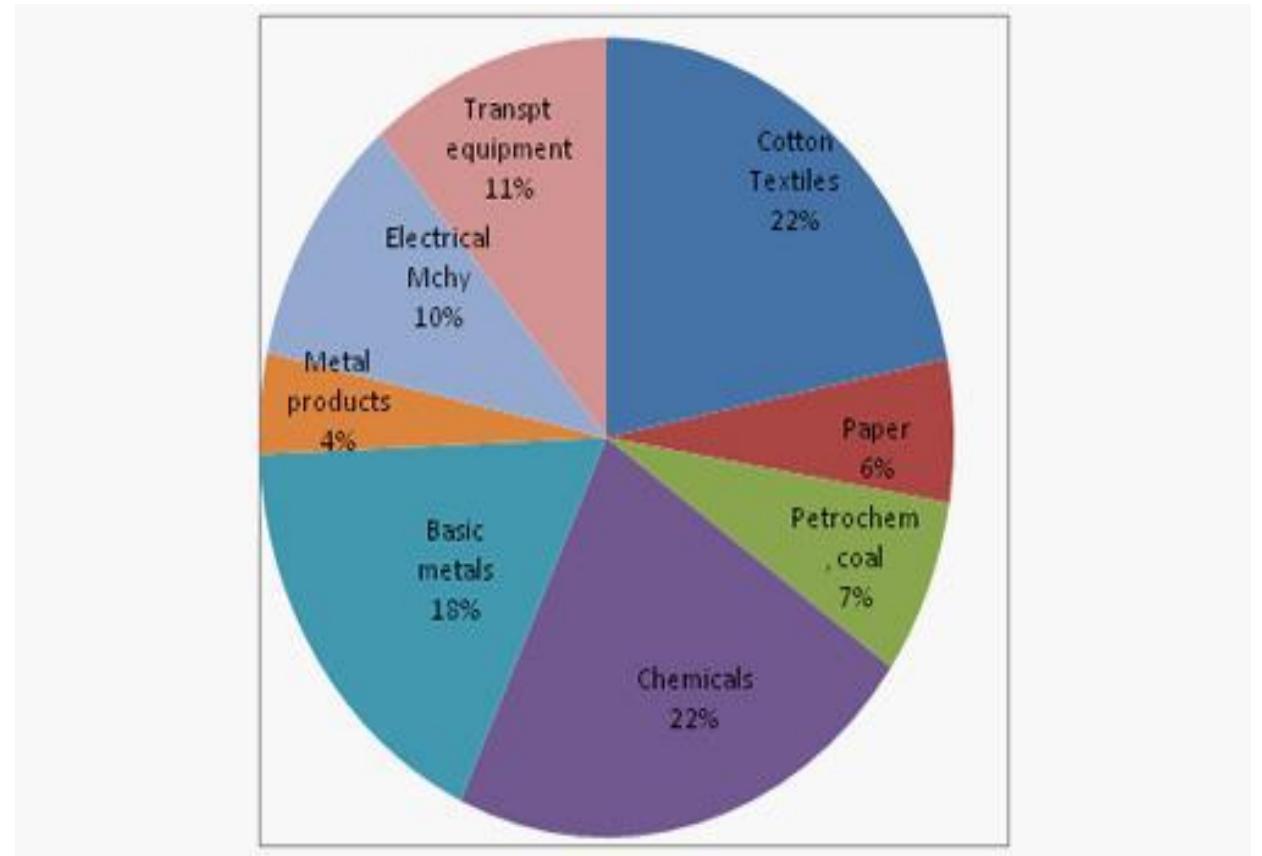
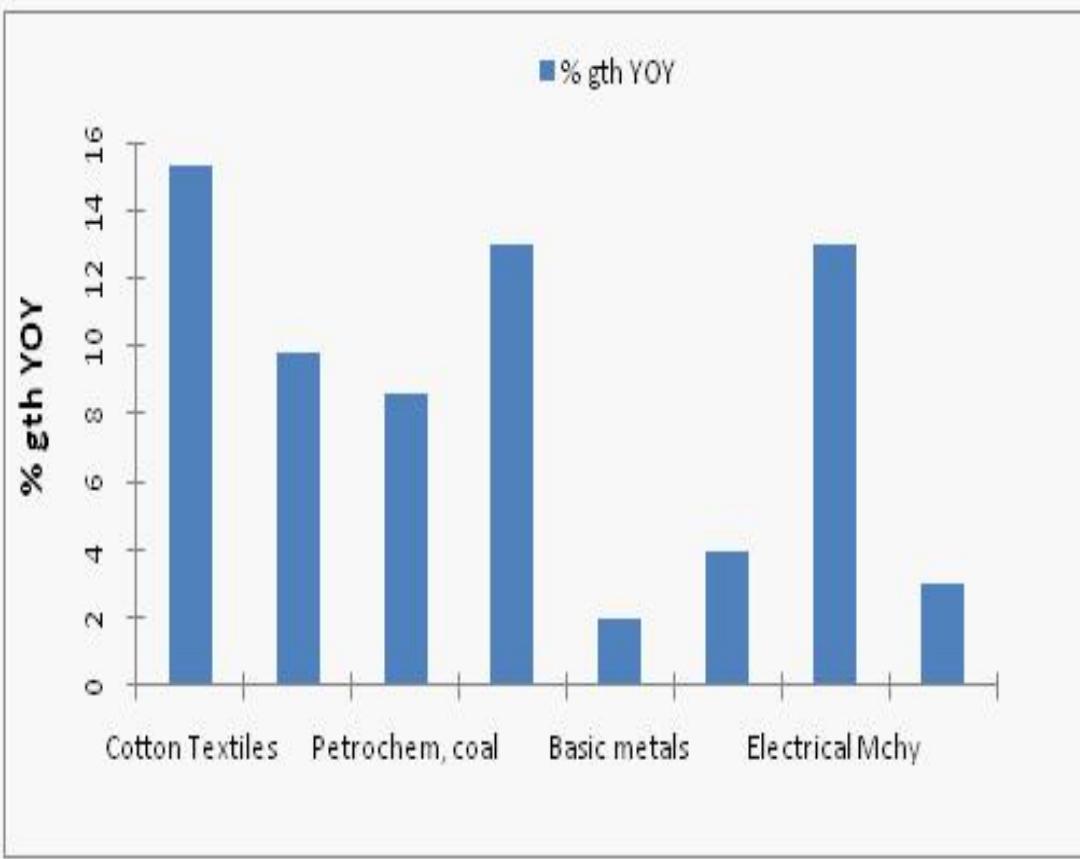
So, 24 units of Z can be manufactured on this machine. Manufacturing 50 units of Y on M2 leaves  $720 - 450 = 270$  minutes of manufacturing time.

So, 15 units of Z can be manufactured on this machine. Since M3 has 720 minutes of manufacturing time, 60 units of Z can be manufactured on this machine. So, the total units of Z that can be manufactured is 99

3. A unit of Y can be manufactured only after 3 units of X and 4 units of Z have been manufactured. What is the minimum time required to manufacture 15 units of Y?

- 1. 1359 minutes
- 2. 1442 minutes
- 3. 1556 minutes
- 4. 1655 minutes

Sol :Before manufacturing 15 units of Y, 45 units of X and 60 units of Z must be manufactured. X-M1 → 540 minutes, Z-M1(18 units) → 180 minutes, Z-M3(42 units) → 504 minutes , Y-M2(15 units) → 135 minutes. So, the total is 1359 minutes



4.What was the % YOY growth in industrial output, between the two years?

- 1. 9.52%
- 2. 4.5%
- 3. 6.3%
- 4. Cannot be determined

Sol: Option 1

Explanation: Percentage YOY growth in industrial output

$$= (15 \times 0.22) + (10 \times 0.06) + (9 \times 0.07) + (13 \times 0.22) + (2 \times 0.17) + (4 \times 0.04) + (13 \times 0.10) + (3 \times 0.11) = 9.52 \%$$

5.If in 1997-98, Paper were to account for 12% weight in the overall industrial output, at what rate should it grow assuming that the other sectors grow at 10 % each?

- 1. 20%
- 2. 120%
- 3. 225%
- 4. None of these

Sol: Option 2

Explanation: The best answer is 2.

Current weight of paper is 6%.

Assuming total output as 100, paper accounts for 6 units.

In 97-98 total output would be 110 if paper has to account for 12% then it has to be  $110 \times 0.12$

= 13.2 units so growth rate is to be

$$7.2/6 = 120\%.$$

6.If the overall industrial output in 1997-98 were to grow by 10 % and the growth of the chemical sector during this period was 26 %, what % weight would it have in the industrial output in 1997-98?

- 1. 25.2%
- 2. 18.7%
- 3. 28.8%
- 4. 31.4%

Sol: Option 1

Explanation: The best answer is 1.

New weight would be  $22 \times 1.26/1.1$

$$= 25.2\%$$

- 7.If the cotton textile sector continued to grow at the same rate, in how many more years will its output double?
1. 4 yr. 3 months 2. 4 yr. 11 months 3. 5yr. 3 month 4. 5yr. 9 months

Sol: Option 1

Explanation: The best answer is 1.

Current growth rate of cotton sector = 15%.

Applying the CI basic, the total time becomes roughly 5 yrs and 3 months.

The question is how many more years, hence option 1st is the answer.

8. Which one of the following cannot be inferred?
1. The top three sectors accounted for more than 60% weight in the overall industrial production of the country.
  2. The smallest three sectors accounted for less than 20% weight in the overall industrial production of the country.
  3. Metals accounted for over a fifth of the overall industrial production of the country.
  4. Mining, necessarily, could not have accounted for more than a fifth of the industrial production of the country.

Sol: Option 4

Explanation: The best answer is 4.

- 1. Top 3 sectors accounted for  $23 + 22 + 17 = 60\%$
- 2. Each of the smallest 3 sectors = 4, 6, and 7% of the weight
- 3. Metals accounted for 18% which is slightly more than  $1/6$  of output(very close to  $1/5$ )
- 4. Nothing is mentioned about mining

9. A sum of questions is called:

- (A) Testing
- (B) Assessment
- (C) Examination
- (D) Test

10. In measurement the first step is:

- (A) Marking of the test
- (B) Administering the test
- (C) Development of the test
- (D) Decision of what to measure

11. Which instrument is used for measuring the sample of Behaviour?

- (A) Evaluation
- (B) Assessment
- (C) Measurement
- (D) Test

12. The main purpose of the evaluation is to make:

- (A) Judgment
- (B) Opinion
- (C) Prediction
- (D) Decision

13. Which type of evaluation is used to monitor the learning process?

- (A) Summative evaluation
- (B) Diagnostic evaluation
- (C) Formative evaluation
- (D) Placement evaluation

14. Which of these are vital for any organisation?

- a) Debates
- b) Group discussions
- c) Speeches
- d) Arguments

15. Which of these qualities are important in a group discussion?

- a) Emotional stability
- b) Hostility
- c) Ignorance
- d) Aggressiveness

16. In a group discussion, one must communicate with \_\_\_\_\_

- a) Hostility
- b) Ignorance
- c) Knowledge
- d) Long sentences

17. When is the worst time to break into a discussion?

- a) When everyone is silent
- b) When one person is talking
- c) When two or three people are talking simultaneously
- d) When there is less time left

18. Which of these must be avoided in a group discussion?

- a) Speaking facts
- b) Asking questions
- c) Speaking fast
- d) Speaking with clarity

19. Which is not compulsory to mentioned in a job description CV?

- (A). Date
- (B). Name
- (C). Nationality
- (D). Education

20. Which of the following is not revealed in a bio-data?

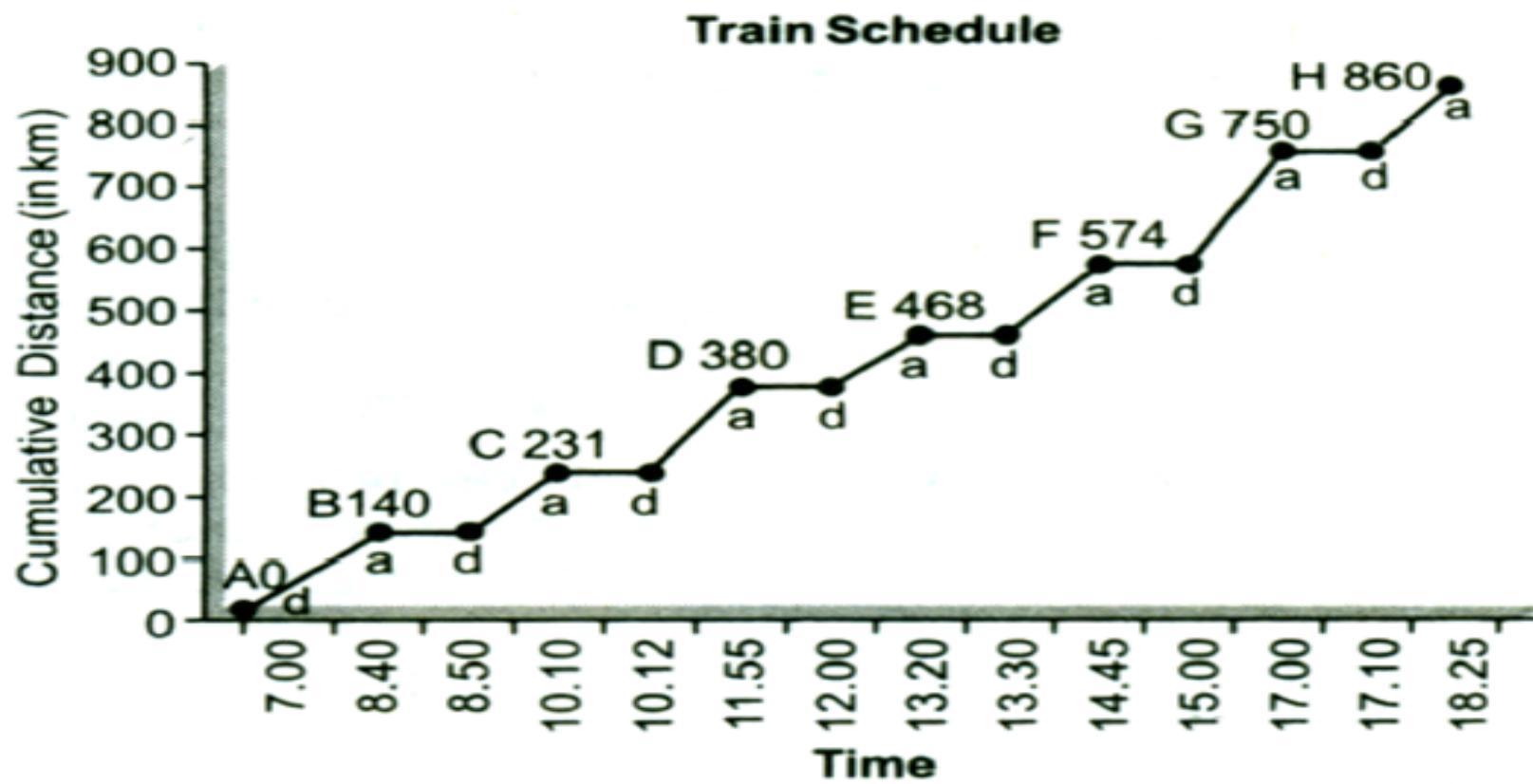
- (A). Career aim
- (B). Address
- (C). Name
- (D). References

21.What is the preliminary objective in a group discussion?

- (A). catch the group's attention
- (B). prove your superiority
- (C). act as a self-appointed leader of the group
- (D). create sub-groups

22.A panel interview as known as \_\_\_\_\_.

- a) Panel interview
- b) Face to face interview
- c) Board interview
- d) Group Interview



23: What is overall average speed (excluding stoppage time) for the entire trip?

- (a) 46 km/h
- (b) 75 km/h
- (c) 81 km/h
- (d) 65 km/h

24: How much percentage of time was spent travelling between the cities?

- (a) 76%
- (b) 42.4%
- (c) 7.6%
- (d) 92%

25: Ratio of total stoppage time in first and second half of the total distance is:

- (a) 2 : 1
- (b) 1 : 3
- (c) 3 : 1
- (d) 1 : 2

26: Between how many pairs of consecutive stations does the train run below the overall average speed of the entire trip?

- (a) 3
- (b) 2
- (c) 1
- (d) 4

**ANS;** <https://youtu.be/SsNJzQCLBJ0>

# Finding units digit

Nos	$1_1$	$1_2$	$1_3$	$1_4$	cyclicity
2	2	4	8	6	4
3	3	9	7	1	4
4	4	6	4	6	2
5	5	5	5	5	1
6	6	6	6	6	1
7	7	9	3	1	4
8	8	4	2	6	4
9	9	1	9	1	2

Formula :  ~~$\frac{N}{l}$~~   ~~$\frac{l-1}{l}$~~

$$l^r \text{ or } \begin{cases} l = 2, 4, 6, 8 & U.D = 6 \\ l = 3, 7, 9 & U.D = 0 \end{cases}$$

↓

Remainder = 0

$$1) \quad \begin{array}{r} 71 \\ 1453 \\ \hline 4 \sqrt{17} \\ \hline 31 \\ 28 \\ \hline r = 3 \end{array}$$

$d = 3,$

$$\text{Formula: } d^r = 3^3 = 27$$

$$2) \quad \begin{array}{r} 444 \\ 444 \\ \hline 2 \sqrt{222} \\ \hline r = 0 \end{array}$$

$d = 4$

U. D = 6 = last digit

$$3) \quad 2016^{2015} - 2015^{2016}$$

$\ell = 6$ , cyclicity of 6 = 1

$$\begin{array}{r} 1 \overline{) 2015} \\ \hline r=0 \end{array} \quad \left| \quad \begin{array}{l} 2015^{2016} \\ \ell = 5 \\ \boxed{U.D = 5} \end{array} \right.$$

$U.D = 6$

$\therefore \boxed{U.D = 6 - 5 = 1}$

# Finding units digit

nos	$1_1$	$1_2$	$1_3$	$1_4$	cyclici
2	2	4	8	6	4
3	3	9	7	1	4
4	4	6	4	6	2
5	5	5	5	5	1
6	6	6	6	6	1
7	7	9	3	1	4
8	8	4	2	6	14
9	9	1	9	1	2

Formula :  ~~$\frac{d}{l}$~~   ~~$\frac{l}{d}$~~ .

$$\begin{array}{ll}
 l^r \text{ or } & \left\{ \begin{array}{ll} l = 2, 4, 6, 8 & U.D = 6 \\ l = 3, 7, 9 & U.D = 1 \\ \downarrow & \\ \text{Remainder} = 0 & \end{array} \right.
 \end{array}$$

Formula to find last digit of  $x^y$

Case (i)  $r > 0$  where  $r$  is the remainder when  $y$  divided by cyclicity of  $x$

$\therefore$  Formula =  $l^r$ ,  $l$  is the last digit of  $x$ .

Case (ii)  $r = 0$

Sub case (i), For  $d = 2, 4, 6, 8$

unit digit or last digit = 6

Sub case (ii) For  $d = 3, 7, 9$

unit digit or last digit = 1

Sub case (iii) For  $d = 5$

last digit = 5

$$1) \quad \begin{array}{r} 71 \\ 1453 \\ \hline \end{array}$$

$$d = 3,$$

$$4 \overline{)71} \\ \underline{-31} \\ 28 \\ \underline{\quad} \\ r = 3$$

$$\text{Formula: } d^r = 3^3 = 27$$

$$2) \quad \begin{array}{r} 444 \\ 444 \\ \hline \end{array}$$

$d = 4$

$r = 0$

$2 \overline{)444} \\ \underline{-222} \\ 224 \\ \underline{-22} \\ r = 0$

$\boxed{U.D = 6} = \text{last digit}$

1993

3)  $2016^{2015} - 2015^{2016}$

$\ell = 6$ , cyclicity of 6 = 1

$$1 \overline{) 2015}$$

$$\overline{r=0}$$

$$U \cdot D = 6$$

$$2015^{2016}$$

$$\ell = 5$$

$$U \cdot D = 5$$

$$\therefore U \cdot D = 6 - 5 = 1$$

$$18^{36}$$

4) (i)  $18^{36}$  - last digit  $\ell = 8, U \cdot D = 6$

(ii)  $1994^{1993} \rightarrow \ell = 4, U \cdot D = 4$

(iii)  $2001^{\cancel{2002}} \rightarrow \ell = 1$

$$\boxed{17^{49}}$$

$$17^{49}$$

$$87^{88}$$

$$\ell = 7$$

$$87^{88}$$

$$\boxed{r=0}$$

$$U \cdot D = 7$$

Find the remainder if  $18^{36}$  is divided by 7

soln:

First we find the cyclicity of 18 when divided by 7.

$$18 \div 7, \text{ remainder} = 4$$

$$18^2 \div 7 \quad \text{remainder} = 2$$

$$18^3 \div 7 \quad \text{remainder} = 1$$

Hence cyclicity = 3

$$\frac{36}{3} = 12 \text{ which is a multiple of 3.}$$

$$\therefore 18^3 \div 7, \text{ remainder} = 1$$

Similarly  $(18^3)^{12} \div 7$ , we get remainder = 1

## Calendar Problem

1 week = 7 days

1 year = 52 weeks + 1 odd day (extra day)

1 leap year = 52 weeks + 2 odd days

Ordinary year  $\rightarrow$  28<sup>th</sup> Feb

leap year  $\rightarrow$  29<sup>th</sup> Feb.

Days:

0 - S      1 - M,    2 - T,    3 - W,    4 - Thu

5 - F ,    6 - SAT

Month's

[J	F	M]	[A	M	J]	[Jul	A	S]	[O	N	D]	
0	3	6	3	6	1	4	6	2	5	0	3	5

Year:

1600 - 1699	$\rightarrow$ 6	1900 - 1999	$\rightarrow$ 0
1700 - 1799	$\rightarrow$ 4	2000 - 2099	$\rightarrow$ 6
1800 - 1899	$\rightarrow$ 2		

Qn: What was the day of the week  
on 26<sup>th</sup> Jan 1947?

sln:

- 1) Last two digits of 1947 = 47
  - 2) Divide by 4 = 11 (Take Quotient)  
$$\begin{array}{r} 47 \\ \hline 4 \end{array}$$
  - 3) Take the date = 26
  - 4) Take no. of M = 0
  - 5) Take no. of X = 0
- 
- (84)

Divide 84 by 7, we get remainder = 0

∴ The <sup>day</sup> corresponding to 0 is sunday

2) What was the day of the week on 5<sup>th</sup> Oct 2016?

Soln:

Last two digits = 16

Divide  $\frac{16}{4}$  (Take Quotient) = 4

Take the date = 5

Take no. of M = 0

Take no. of Y = 6  
31  
—  
31

Divide  $\frac{31}{7}$ , remainder = 3

Note: ∵ Day = Wednesday

[If the month is Jan or Feb,

subtract 1 from total sum, then  
take remainder]

[This method is applicable only for the leap year]

What was

### Odd days:

23 days  $\rightarrow$  3 week + 2 odd day

12 days 1 week + 5 odd day

42  $\rightarrow$  6 week + 0 odd day

30  $\rightarrow$  4 week + 2 odd day.

odd days in 100 / 200 / 300 / 400 yrs

Qn:

Find the no. of odd days in 0-20 yrs

0 - 20 yrs

How many leap yrs



5 leap yrs

$$5 \times 2 = 10 \text{ (odd days)}$$

$\therefore$  Total 25 odd days

How many

non-leap yrs



15 non-leap yrs

$$15 \times 1 = 15 \text{ odd days}$$

25 odd days



3 week + 4 odd day.



Thursday:

∴ 31st Dec 20 = Thursday.

## Combination (Defn)

An arrangement of objects in which the order is not important is called a combination. This is different from permutation where the order matters.

For eg, suppose we are arranging the letters A, B and C. In a permutation, the arrangement ABC & ACB are different. But, in a combination, the arrangements ABC and ACB are the same because the order is not important.

## Combination formula

$${}^n C_r = \frac{n!}{(n-r)! r!} = \frac{n P_r}{r!}$$

Pbm In how many ways can a coach choose three swimmers from among five swimmers.

Soln There are 5 swimmers 3 is to be taken at a time.

$$C(5,3) = \frac{5!}{(5-3)! \cdot 3!}$$

$$= \frac{5 \times 4 \times 3 \times 2}{2 \times 3 \times 2}$$

$$= 10$$

Eg2 six friends want to play enough games of chess to be sure every one plays everyone else. How many games will they have to play?

Soln:

There are 6 players

2 is to be taken at a time.

$$C(6,2) = 6 C_2 = \frac{6 \times 5 \times 4 \times 3 \times 2}{(2 \times 1)}$$

$$= \frac{6 P_2}{2!} = \frac{6 \times 5}{2 \times 1}$$

$$= 15$$

3) In a lottery, each ticket has 5 one-digit numbers 0-9 on it.

- a) You win if your ticket has the digits in any order. What are your chances of winning?
- b) You would win only if your ticket has the digits in the required order. What are your chances of winning?

Soln

There are 10 digits.

5 is to be taken at a time.

a)  $C(10, 5) = \frac{P(10, 5)}{5!} = \frac{10 \times 9 \times 8 \times 7 \times 6}{5!}$   
 $= 252$

b) Since the order matters, we should use permutation instead of combination.

$$P(10, 5) = \frac{10 \times 9 \times 8 \times 7 \times 6}{5!} = 30240.$$

Defn

1) A Permutation is an arrangement or ordering. For a permutation, the order matters.

2)  $n$ -factorial ( $n!$ ) gives the no. of permutations of  $n$  items.

$$n! = n(n-1)(n-2)(n-3)\dots(3)(2)(1)$$

3) Permutations of  $n$  items taken  $r$  at a time.

$P(n, r)$  represents the no. of permutations of  $n$  items  $r$  at a time.

$$P(n, r) = \frac{n!}{(n-r)!}$$

Problem

1) A licence plate begins with three letters. If the possible letters are A, B, C, D and E, how many different permutations of these letters can be made if no letter is used more than once?

Soln:

Using reasoning:

For the first letter, there are 5 possible choices. After that letter is

chosen, there are 4 possible choices  
Finally, there are 3 possible choices  
 $5 \times 4 \times 3 = 60$ .

Using the permutation formula:

The problem involves 5 things taken 3 at a time.  
(A, B, C, D, E)

$$P(5, 3) = \frac{5!}{(5-3)!} = \frac{5!}{2!} = 60$$

2) In how many ways can a president, a treasurer and a secretary be chosen from among 7 candidates?

Soln

using reasoning:

For the first possible, there are 7 possible choices.

After that candidate is chosen, there are 6 possible choices.

Finally, there are 5 possible choices.

$$7 \times 6 \times 5 = 1\cancel{20} 210$$

or

$$\text{using formula, } P(7, 3) = \frac{7!}{4!}$$

$$= 210$$

3) A zip code contains 5 digits.

How many different zip codes can be made with the digits 0-9 if no digit is used more than once & the first digit is not 0?

Soln :

Using reasoning:

For the first position, there are 9 possible choices (since 0 is not allowed).

After that number is chosen, there are 9 possible choices (since 0 is now allowed).

Then there are 8 possible choices,

7 possible choices and 6 possible choices.

$$9 \times 9 \times 8 \times 7 \times 6 = 27,216$$

Using Permutation formula:

We can't include the first digit in the formula because 0 is not allowed. For the next 4 positions, we are selecting from 9 digits.

$$9 \times P(9, 4) = 9 \times \frac{9!}{(9-4)!} \\ = 27,216$$

Permutations with repeated items:

The no. of different permutations of  $n$  objects where there are  $n_1$  indistinguishable (repeated) items,  $n_2$  repeated items,

$\vdots$   
 $n_k$  repeated items is  $\frac{n!}{n_1! n_2! \cdots n_k!}$

Pbm

1) Find the no. of words, with or without meaning, that can be formed with the letters of the word

'CHAIR'

Soln 'CHAIR' contains 5 letters.  
 Therefore, the no. of words that can be formed with these 5 letters =  $5! = 120$

2) Find the no. of words, with or without meaning, that can be formed with the letters of the word 'INDIA'.

Soln:

INDIA contains 5 letters

Here, I comes twice.

∴ No. of words formed by

$$\text{INDIA} = \frac{5!}{2! 1! 1! 1!}$$

$$= 60$$

3) Find the no. of words, with or without meaning, that can be formed with the letters of the word SWIMMING?

Soln:

The word SWIMMING contains 8 letters, of which, I occurs twice and M occurs twice.

∴ No. words formed by

$$\text{SWIMMING} = \frac{8!}{2! 2! 1! 1! 1! 1!}$$

$$= 10080$$

4) How many different words can be formed with the letters of the word 'SUPER' such that the vowels always come together?

Soln

The word 'SUPER' contains 5 letters. In these cases, we group the letters that should come together and consider that group as one letter.

So, the letters are S, P, R, (UE).

Now the no. of words are 4

Therefore, the no. of ways in which 4 letters can be arranged is  $4!$

In O & E, the no. of ways in which U & E can be arranged is 2!

Here, Required no. =  $4! \times 2!$   
= 48.

3) Check 123456789 which is  
divisible by 11 or not.

$5 + 11$  [This no. is not divisible by 11]

4) 123456 [It is divisible by 6]

5) 5674 [It is divisible by 2]

$\begin{array}{r} 74 \\ \times 8 \\ \hline 5674 \end{array}$  (or 2 divides 5674)  
i.e.  $2 \mid 5674$

6) 1331 [It is divisible by 11]

$$1+3 = 4 \quad \text{Difference} = 4-4=0$$

$$3+1 = 4 \quad \therefore 11 \mid 0$$

$$\cancel{0+1} \quad \frac{0}{11} = 0$$

$\therefore 11$  divides 0 " (or 0 is divisible by 11)

7) 14641 [divisible by 11]

$$\left. \begin{array}{l} 1+6+1 = 8 \\ 4+4 = 8 \\ 8-8 = 0 \end{array} \right\}$$

$\therefore 11 \mid 0$  i.e.  $\frac{0}{11} = 0$  *Remainder 3* and 3"

## Profit and loss

formula:

$$\text{Profit} = SP - CP \quad \text{where } SP = \text{selling price}$$

$CP = \text{cost price}$

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

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

$$\text{Selling price} = \left( \frac{100 + G \%}{100} \right) \times CP$$

$$C.P = \left( \frac{100}{100 + G \%} \right) \times SP$$

$$S.P = \left( \frac{100 - L \%}{100} \right) \times CP$$

$$CP = \left( \frac{100}{100 - L \%} \right) \times SP$$

1) A person buys a book for Rs 200 and sells it for Rs. 225. What will be his gain percent?

Soln:

$$\% \text{ Profit} = \frac{S.P - C.P}{C.P} \times 100$$

$$= \frac{225 - 200}{200} \times 100$$

$$= \frac{25}{200} \times 100$$

$$= 12.5\%$$

2) A person buys a watch for Rs. 500 and sells it for Rs. 300. Find his loss percent?

Soln:

$$\% \text{ Loss} = \frac{C.P - S.P}{C.P} \times 100$$

$$= \frac{500 - 300}{500} \times 100$$

$$= \frac{200}{500} \times 100$$

$$= 40\%$$

3) A gold bracelet is sold for Rs 14500 at a loss of 20%. What is the cost price of the gold bracelet?

sln:

$$\text{Given: } S.P = 14500$$

$$\text{Loss \%} = 20\%$$

Formula:

$$C.P = \frac{100}{(100 - L\%)} \times S.P$$

$$= \frac{100}{(100 - 20)} \times 14500$$

$$= \frac{100}{80} \times 14500$$

$$C.P = 18125$$

4) H.W

By selling a cycle for Rs 4860, a student loses 19%. His cost price?

$$[ \text{Ans: } C.P = 6000 ]$$

5) A calculator is bought for Rs. 350 and sold at a gain of 15%. What will be the selling price of calculator (in Rs.)

Soln:

Given: CP = 350

Profit% = 15%.

$$\begin{aligned} SP &= \frac{(100 + G\%)}{100} \times CP \\ &= \frac{100 + 15}{100} \times 350 \\ &= \frac{115}{100} \times 350 \\ &= 1402.5 \end{aligned}$$

6) By selling a cell phone for Rs. 2400, a shopkeeper make a profit of 25%. Then find his profit percentage, if he had sold it for Rs. 2040.

Soln:

= Given: SP = 2400 ; Profit% = 25%.

$$CP = \frac{100}{(100 + G\%)} \times S.P$$

$$= \frac{100}{100+25} \times 2400$$

$$= \frac{100}{125} \times 2400$$

$$\begin{array}{r} 4 \\ \times 2400 \\ \hline 480 \\ 4 \overline{) 1920} \\ 3 \end{array}$$

$$CP = 1920$$

If he sold at 2040, then

$$\text{profit} = 2040 - 1920$$

$$= 120$$

$$\text{Profit \%} = \frac{120}{2040} \times 100$$

$$\text{Profit \%} = \frac{2040 - 1920}{1920} \times 100$$

$$= \frac{120}{1920} \times 100$$

$$= 6.25 \%$$

## Discount

Marked price:

$$\boxed{\text{Discount} = MP - SP}$$

$$\boxed{\text{Discount \%} = \frac{MP - SP}{MP} \times 100}$$

From ①  $D(MP) = (MP - SP)/100$

$$D(MP) = 100(MP) - 100(SP)$$

$$100(SP) = 100(MP) - D(MP)$$

$$\boxed{SP = \frac{100 - D(MP)[100 - D]}{100}}$$

$$MP = \frac{100 \times SP}{(100 - D)}$$

## Single Equivalent Discount.

Convert successive discount to single Equivalent discount.

A shop keeper buys a t-shirt from a retailer at Rs. 500. He decides to sell it for Rs. 800. Then he puts a discount of 20% on the t-shirt. After this discount the selling price of the t-shirt becomes

$$\text{Discount} = \frac{20}{100} \times 800$$

$$= 160$$

If we look from the customer's point of view, we will find 20% off on the t-shirt. But from shop keeper's point, he is actually selling his product  $\text{Rs. } 800 - \text{Rs. } 160 = \text{Rs. } 640$

for Rs. 640 even after giving a discount of 20%, which he bought for Rs. 500. This means that the shopkeeper is having a profit of Rs. 140 even after the discount offered.

### Successive discount:

Let the original price of a CD be. A shopkeeper offers a discount of  $y\%$  and again  $z\%$  on the new price. What will be the selling price of the CD.

Formula :

$$\text{Total Discount} = \left( y + z - \frac{yz}{100} \right) \%$$

Eg:

In a store the successive discounts offered on a bag are 10% & 20%. Find single equivalent discount?

$$\text{single equivalent discount} = 10 + 20 - \frac{(10 \times 20)}{100}$$

$$= 30 - \frac{200}{100}$$

$$= 28 \% // \text{Ans.}$$

Plm: The marked price of an article is Rs. 500. It is sold at successive discount of 20% and 10%. The selling price of the article is:

Soh:

single equivalent discount

$$= 20 + 10 - \left( \frac{10 \times 20}{100} \right)$$

$$D = 28 \%$$

$$\therefore S.P = \frac{MP [100 - 28]}{100}$$

$$= 500 \times \frac{72}{100}$$

$$= 360$$

H-W

2)

An item is marked for Rs. 240 for sale. If two successive discounts of 10% and 5% are allowed on the sale price, the selling price of the article is.

solt: [Ans : 205.2]

3) ~~A Find the single equivalent discount to successive discounts of 10%, 20% and 25%.~~

solt:

Ques 0

## Solving Quadratic Eqn :

$$\text{Formula} = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Quadratic eqn :  $ax^2 + bx + c = 0$  ..

H.W

$$\left. \begin{array}{l} 1) \quad 12x^2 - x - 35 = 0 \\ 2) \quad 3x^2 + 4x - 15 = 0 \\ 3) \quad 24x^2 - 65x + 21 = 0 \\ 4) \quad 18x^2 + 9x - 35 = 0 \end{array} \right\} \begin{array}{l} (3x+5)(4x-7) \\ (x+3)(3x-5) \\ \\ (3x+5)(6x-7) \end{array}$$



# Bharath

INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Declared as Deemed - to - be - University under section 3 of UGC Act 1956)

ACCREDITED WITH 'A' GRADE BY NAAC

- Course Title : Employability skills and Practices  
Course code : U20PDHJ01  
Topic Unit 2 : Quadratic Equation, Profit and loss

Lecture delivered by

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# What is the Definition of Employability Skills?

- According to [STEMNET](#) (Science, Technology, Engineering, and Mathematics Network), "employability" is defined as "transferable skills needed by an individual to make them 'employable.' Employability relates to your knowledge, skills, and attitudes, how you use those assets, and how you present them to employers in today's context.

- Today, your education and experience may only be enough to qualify for a job but, but, to be successful in most roles in the field of emerging technologies, you will need soft skills like communication, team-work, and problem-solving. These 'soft skills' that will equip you to carry out your role in the company to the best of your ability are also referred to as 'employability skills.'

- "Building blocks" of any career; these skills are what make you employable across roles, sectors, and industries. Employers usually want to see that you already have these 'soft skills' before hiring, because they are much harder to teach.

# Why are Employability Skills Important?

These set of "job-readiness" skills are, in essence, behaviors that are necessary for every job and are essential attitudes that allow you to grow in your career and also efficiently let you:

- connect with co-workers
- solve problems
- be a part of and understand your role within the team
- make responsible choices for your job and your career
- be independent and take charge of your career

# What is Quadratic Equation?

- **Quadratic equations** are the polynomial equations of degree 2 in one variable of type  $f(x) = ax^2 + bx + c$  where  $a, b, c, \in R$  and  $a \neq 0$ . It is the general form of a quadratic equation where ‘a’ is called the leading coefficient and ‘c’ is called the absolute term of  $f(x)$ . The values of  $x$  satisfying the quadratic equation are the roots of the quadratic equation  $f(x)$ .
- The quadratic equation will always have two roots. The nature of roots may be either real or imaginary.

- A quadratic polynomial, when equated to zero, becomes a quadratic equation. The values of  $x$  satisfying the equation are called the roots of the quadratic equation.
- **General form:**  $ax^2 + bx + c = 0$
- **Examples:**  $3x^2 + x + 5 = 0$ ,  $-x^2 + 7x + 5 = 0$ ,  $x^2 + x = 0$ .

# Quadratic Equation Formula

- $(\alpha, \beta) = [-b \pm \sqrt{b^2 - 4ac}]/2a$

1. The roots of the quadratic equation:  $x = (-b \pm \sqrt{D})/2a$ , where  $D = b^2 - 4ac$

2. Nature of roots:

$D > 0$ , roots are real and distinct (unequal)

$D = 0$ , roots are real and equal (coincident)

$D < 0$ , roots are imaginary and unequal

3. The roots  $(\alpha + i\beta), (\alpha - i\beta)$  are the conjugate pair of each other.

# Nature of Roots of Quadratic Equation

If the value of discriminant = 0 i.e. $b^2 - 4ac = 0$	The quadratic equation will have equal roots i.e. $\alpha = \beta = -b/2a$
If the value of discriminant $< 0$ i.e. $b^2 - 4ac < 0$	The quadratic equation will have imaginary roots i.e $\alpha = (p + iq)$ and $\beta = (p - iq)$ . Where 'iq' is the imaginary part of a complex number
If the value of discriminant $(D) > 0$ i.e. $b^2 - 4ac > 0$	The quadratic equation will have real roots
If the value of discriminant $> 0$ and D is a perfect square	The quadratic equation will have rational roots
If the value of discriminant $(D) > 0$ and D is not a perfect square	The quadratic equation will have irrational roots

# Profit and loss: Introduction

- **Profit and Loss** formula is used in mathematics to determine the price of a commodity in the market and understand how profitable a business is. Every product has a cost price and selling price. Based on the values of these prices, we can calculate the profit gained or the loss incurred for a particular product. The important terms covered here are cost price, fixed, variable and semi-variable cost, selling price, marked price, list price, margin, etc. Also, we will learn the Profit and Loss formula here.

# Profit and Loss Basic Concepts

- Profit(P)
- The amount gained by selling a product with more than its cost price.
- Loss(L)
- The amount the seller incurs after selling the product less than its cost price, is mentioned as a loss.
- Cost Price (CP)
- The amount paid for a product or commodity to purchase it is called a cost price. Also, denoted as CP. This cost price is further classified into two different categories:

- **Fixed Cost:** The fixed cost is constant, it doesn't vary under any circumstances
- **Variable Cost:** It could vary depending as per the number of units
- Selling Price (SP)
- The amount for which the product is sold is called Selling Price. It is usually denoted as SP. Also, sometimes called a sale price.

- Marked Price Formula (MP)
- This is basically labelled by shopkeepers to offer a discount to the customers in such a way that

Discount = **Marked Price – Selling Price** and  
Discount Percentage = **(Discount/Marked price) x 100.**

# Profit and Loss Formulas

Now let us find profit formula and loss formula.

- The profit or gain is equal to the selling price minus cost price.
- Loss is equal to cost price minus selling price.
- **Profit or Gain = Selling price – Cost Price**
- **Loss = Cost Price – Selling Price**

- Profit percentage = (Profit /Cost Price) x 100
- Loss percentage = (Loss / Cost price) x 100

# Profit and Loss Examples

- If a shopkeeper brings a cloth for Rs.100 and sells it for Rs.120, then he has made a profit of Rs.20/-.
- If a salesperson has bought a textile material for Rs.300 and he has to sell it for Rs.250/-, then he has gone through a loss of Rs.50/-.
- Suppose, Ram brings a football for Rs. 500/- and he sells it to his friend for Rs. 600/-, then Ram has made a profit of Rs.100 with the gain percentage of 20%.

# Solved Problems

- **Q. 1: Suppose a shopkeeper has bought 1 kg of apples for 100 rs. And sold it for Rs. 120 per kg. How much is the profit gained by him?**
- **Solution:**
- Cost Price for apples is 100 rs.
- Selling Price for apples is 120 rs.
- Then profit gained by shopkeeper is ;  $P = SP - CP$
- $P = 120 - 100 = \text{Rs. } 20/-$

- **Q.2: For the above example calculate the percentage of the profit gained by the shopkeeper.**
- **Solution:**
- We know, Profit percentage =  $(\text{Profit} / \text{Cost Price}) \times 100$
- Therefore, Profit percentage =  $(20/100) \times 100$   
= 20%.

- **Q.3: A man buys a fan for Rs. 1000 and sells it at a loss of 15%. What is the selling price of the fan?**
- **Solution:** Cost Price of the fan is Rs.1000
- Loss percentage is 15%
- As we know, Loss percentage =  $(\text{Loss}/\text{Cost Price}) \times 100$
- $15 = (\text{Loss}/1000) \times 100$
- Therefore, Loss = 150 rs.
- As we know,
- Loss = Cost Price – Selling Price
- So, Selling Price = Cost Price – Loss
- $= 1000 - 150$
- Selling Price = R.850/-

- **Q.4: If a pen cost Rs.50 after 10% discount, then what is the actual price or marked price of the pen?**
- **Solution:**  $MP \times (100 - 10) / 100 = 50$
- $MP \times (90/100) = 50$
- $MP = (50 \times 100)/90$
- $MP = \text{Rs. } 55.55/-$

# Profit and Loss Tricks

- You have learned until now how to calculate profit as well as loss and also the percentage of them. Now let us learn some tricks or formulas to solve maths problems based on gain and loss, starting from the general formulas.

- Profit,  $P = SP - CP$ ;  $SP > CP$
- Loss,  $L = CP - SP$ ;  $CP > SP$
- $P\% = (P/CP) \times 100$
- $L\% = (L/CP) \times 100$
- $SP = \{(100 + P\%)/100\} \times CP$
- $SP = \{(100 - L\%)/100\} \times CP$
- $CP = \{100/(100 + P\%)\} \times SP$
- $CP = \{100/(100 - L\%)\} \times SP$
- Discount = MP - SP
- $SP = MP - \text{Discount}$

- When there are two successful profits say m% and n%, then the net percentage profit equals to  $(m+n+mn)/100$
- When the profit is m% and loss is n%, then the net % profit or loss will be:  $(m-n-mn)/100$
- If a product is sold at m% profit and then again sold at n% profit then the actual cost price of the product will be:  $CP = [100 \times 100 \times P/(100+m)(100+n)]$ . In case of loss,  $CP = [100 \times 100 \times P/(100-m)(100-n)]$
- If P% and L% are equal then,  $P = L$  and  $\%loss = P^2/100$

- **Points to remember:**
- For-profit, the selling price should be more than the cost price
- For loss, cost price should be more than the selling price.
- The percentage value for profit and loss is calculated in terms of cost price.

# What is units digit

- **Units digit** of a number is the **digit** in the one's place of the number. i.e It is the rightmost **digit** of the number. For example, the **units digit** of 243 is 3, the **units digit** of 39 is 9.

- For the concept of identifying the unit digit, we have to first familiarize with the concept of cyclicity. Cyclicity of any number is about the last digit and how they appear in a certain defined manner. Let's take an example to clear this thing:
- The cyclicity chart of 2 is:  
 $2^1 = 2$   
 $2^2 = 4$   
 $2^3 = 8$   
 $2^4 = 16$   
 $2^5 = 32$
- Have a close look at the above. You would see that as 2 is multiplied every-time with its own self, the last digit changes. On the 4<sup>th</sup> multiplication,  $2^5$  has the same unit digit as  $2^1$

- This shows us the cyclicity of 2 is 4, that is after every fourth multiplication, the unit digit will be two.
- Cyclicity table:  
The cyclicity table for numbers is given as below:

<b>Number</b>	<b>Cyclicity</b>
<b>1</b>	<b>1</b>
<b>2</b>	<b>4</b>
<b>3</b>	<b>4</b>
<b>4</b>	<b>2</b>
<b>5</b>	<b>1</b>
<b>6</b>	<b>1</b>
<b>7</b>	<b>4</b>
<b>8</b>	<b>4</b>
<b>9</b>	<b>2</b>
<b>10</b>	<b>1</b>

For any given number  $x^y$ , follow the steps which is given below

- Case 1: If  $r > 0$  : The formula for units digit is  $l^r$  where  $l$  is the last digit and  $r$  is the remainder when  $y$  divided by cyclicity of last digit  $l$
- Case 2: If  $r = 0$ :
- Subcase i: For  $l = 2, 4, 6, 8$  , Unit digit =6
- Subcase ii: For  $l = 3, 7, 9$ , Unit digit =1

**The digit in the unit place of the number  $7^{295} \times 3^{158}$  is**

- A. 7
- B. 2
- C. 6
- D. 4

- **Solution**

The Cyclicity table for 7 is as follows:

$$7^1 = 7$$

$$7^2 = 49$$

$$7^3 = 343$$

$$7^4 = 2401$$

- Let's divide 295 by 4 and the remainder is 3. Thus, the last digit of  $7^{295}$  is equal to the last digit of  $7^3$  i.e. 3.

- The Cyclicity table for 3 is as follows:

$$3^1 = 3$$

$$3^2 = 9$$

$$3^3 = 27$$

$$3^4 = 81$$

$$3^5 = 243$$

- Let's divide 158 by 4, the remainder is 2. Hence the last digit will be 9.

Therefore, unit's digit of  $(7^{925} \times 3^{158})$  is unit's digit of product of digit at unit's place of  $7^{925}$  and  $3^{158} = 3 * 9 = 27$ . Hence option 1 is the answer.

-

# Discount vs Rebate

- Discount and rebate are commonly used terms in today's dynamic markets, especially the e-commerce world. Rebated and discount are distinct forms of price-cuts which directly or indirectly promote the overall sales of a business. Both the terms may sound similar, however, there is a considerable difference between discount and rebate. applied.

# Difference Between Discount and Rebate

- It is provided by a seller to the buyer for reasons such as; **inferior quality of goods, inaccurate quantity, missing buyer-specific features in the final product, delayed supply, etc.** Unlike, **trade discount** which is provided mainly for high quantity buying, a rebate is for reasons which help a supplier to provide healing touch in a situation that is unfavourable during the process of selling.

- Example of Rebate – Goods worth 10,000 were sold by Unreal Corp. to ABC Corp. but some of the goods were of poor quality, therefore, after a mutual agreement Unreal Corp. allowed a rebate of 1,000 i.e. 10%.

- Discount – It is granted by a seller to the buyer in two distinct forms; trade discount and cash discount. It may be **allowed out of the selling price** (also known as maximum retail price or catalogue price) or **as a reduction from the net amount payable**.
- Trade Discount – It is provided to encourage large quantity buying and is mostly provided to resellers.
- Cash Discount – it is provided to encourage early payment. This helps the seller to maintain cash flow and healthy working capital.

- Example of Discount – Goods worth 10,000 were sold by Unreal Corp. to ABC Corp. @10% each. Cash discount allowed @5% if payment is made within 15 days. This means a trade discount of 10% and an additional 5% discount if the payment is made within 15 days of the sale.

# What is a profile video for personal branding?

- A profile video is a short video with a duration of 1 to 2 minutes that gives an overview of your personal brand. It introduces who you are, what you do, the audience you're targeting, and how you can add value to their organization. Your objective is to be able to create a profile for your brand within this brief time. It is typically the first video your audience sees on your website, so create a quality video to have the best first impression. The most important thing to remember is that the content that you give out and how you put it out — the medium, the language, etc. — must be relevant to the target audience.

- It is basically a short video that acts like a supplement to your conventional resume, giving information about your qualifications and skills. It lets you go beyond the traditional methods of applying for a job. If done correctly, it enhances your efforts to promote yourself to prospective employers. But if not done professionally, it can also ruin your chances of getting an interview! So it must be done right.

# Why should you go for one?

- A Video resume is an enhancement and not a replacement for your conventional resume. It showcases your creativity, your knack to think out of the box and most significantly, your personal characteristics and qualities, which a customary resume doesn't do justice to. Furthermore, it gives your potential employers an opportunity to appraise how you communicate, convey your thoughts and present yourself. Apart from demonstrating what your skills are and what all you've accomplished, video resumes also expose facets of your personality which paper resumes cannot communicate.

# How to prepare an effective video?

- To start with, a Video Resume should be like a supplement to your paper resume! It should be simple, professional and 2-3 minutes long. You don't have to narrate your entire resume as employers already have a copy with them. So don't use your 120 seconds to speak what they already know. Instead, use your time to tell and show employers what they can't find out from your resume alone. For example, talk about an accomplishment and elaborate how you attained it. Include aspects you like in a job or a place of work. Employers like to know your strengths and weaknesses and how you plan to align them with the company's culture and vision. Also, with your video resume don't go overboard by making it too funky or too creative. Keep it simple and professional like you sitting with a plain backdrop.

# **Some more effective tips for your video resume:**

- Dress appropriately and smartly
  - Talk into the camera and maintain good eye contact
  - Speak clearly and not too fast
  - Smile and introduce yourself
  - Eliminate disruptions or any background noises
  - Wrap up with a thank you and your contact details

Thank You

# **EMPLOYABILITY SKILLS AND PRACTICES**

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**CHENNAI.**

# **SYLLABUS**

## **Employability Skills and Practices**

### **Unit 4**

Geometry II - Problem Solving - Group Discussion- Mock IV- Mensuration Problem Solving- Resume Writing- Tips and Strategies Resume Writing- Evaluation – Data Interpretation I- Interview Skills- Introduction (Contact Hours 12)

### **Unit 5**

Data Interpretation – II - Problem Solving - Interview Skills- - Mock I- Interview Skills Mock I – Data Sufficiency – I- Problem Solving - Interview Skills- - Mock II- Interview Skills Mock II -Data Sufficiency – II Problem Solving Revision (Contact Hours 12)

## Meaning of employability skills

Employability Skills can be defined as the transferable skills needed by an individual to make them 'employable'.  
... Employability depends on your knowledge, skills and attitudes, how you use those assets, and how you present them to employers.

## EMPLOYABILITY SKILLS

8 job skills you should have

1. Communication.
2. Teamwork.
3. Problem solving.
4. Initiative.
5. Planning and organizing.
6. Self-management.
7. Learning.
8. Technology.

# RESUME WRITING

## What is resume

A resume is a formal document that a job applicant creates to itemize his or her qualifications for a position. A resume is usually accompanied by a customized cover letter in which the applicant expresses an interest in a specific job or company and draws attention to the most relevant specifics on the resume.

# Resume Writing

## How to write a resume

1. Add Your Contact Information and Personal Details.
2. Start with a Heading Statement (Resume Summary or Resume Objective)
3. List Your Relevant Work Experience & Key Achievements.
4. List Your Education Correctly.
5. Put Relevant Skills that Fit the Job Ad.

# What are the 3 F's of resume writing?

1. Function
2. Form
3. (e) Ffectiveness

## Function:

The function of a resume is to inform the audience about you in order to accomplish something. What you're trying to accomplish depends on what you're trying to do. This might include getting a job, getting into college, winning a scholarship, or being selected for an internship. There are many reasons to show people your resume.

## Form:

Resumes need to look a certain way. This is considered their form. People who read resumes expect them to include specific information, such as your name, address, contact information, education, past jobs, volunteer experience, and special skills. If a resume does not look like a traditional resume, the reader may be confused and think the writer is not educated about writing proper resumes.

## (e)Effectiveness:

For a resume to be effective, it must demonstrate your knowledge of both function and form. An effective resume

- Has a clear purpose that shows why you are writing it
- Is visually appropriate and appealing, or easy to read
- Includes all the necessary information about the writer
- Is grammatically correct with no errors in punctuation or spelling

# **TIPS AND STRATEGIES RESUME WRITING**

1. Customize your resume for each position you are applying for.
2. Make sure the rest of your resume supports your summary, profile, or objective.
3. Include key words on your resume.
4. Be concise.
5. List your past work accomplishments (not just your responsibilities) using some form of measures.

## **TIPS AND STRATEGIES RESUME WRITING**

### **1. Customize your resume for each position you are applying for.**

Use your summary or profile section to highlight your skills and expertise as they relate to the specific job. Better yet, carry this customization throughout the entire resume. It may be convenient to create several versions of your resume based on common positions you will be applying for so you can eliminate the amount of customization you will have to do for each job.

### **2. Make sure the rest of your resume supports your summary, profile, or objective.**

If you include in your summary that you have been a consistent top seller for your region, you should include specific examples in the body of your resume to reinforce this statement.

### **3. Include key words on your resume.**

Keep the job description close by when you are customizing your resume so you are including key words and fit the job, field, or occupation. Recruiters often scan a resume in under 15 seconds. They are looking for key words that show you have the skills and knowledge required for the position.

### **4. Be concise.**

Because some recruiters look at as many as 500 resumes to fill one position, they want to see your accomplishments, skills, and experiences in as few words as possible. Bullet points and concise language can showcase your communication skills while highlighting your areas of expertise.

### **5. List your past work accomplishments (not just your responsibilities) using some form of measures.**

Hiring managers want to compare your skills and abilities to the other candidates they are considering. For example, tell them what percentage you increased in sales, the number of staff you managed, or the specific scope of a project.

## TIPS FOR DESIGNING A GREAT RESUME

1. Use white space and bullet points to help emphasize what you want the hiring manager to know about you. If the hiring manager is scanning to see if you meet the requirements but can't easily spot the information, you may get overlooked.
2. Use bold and italics to emphasize key words or skills. Be careful to not overuse this technique, though. If there are too many elements in bold or italics, the emphasis is lost.
3. Use a larger-point font for headings and subheadings. This can help direct attention to certain areas of your resume and also demonstrates a strong level of organization.
4. Use a conservative font, like Times New Roman or Arial. If the font is difficult to read, your resume may not get past the first look.
5. Include adequate white space. This can be done around your headings, blocks of text, and with margins. Hiring managers can use this area to take notes before, during, or after an interview.

# COMMON RESUME MISTAKES TO AVOID

- ❖ Don't submit your resume for a position for which you are not qualified. This was the No. 1 pet peeve among HR professionals on a recent LinkedIn discussion. Make sure you meet at least the basic requirements. Think creatively because sometimes the work you have performed outside of the field may help you meet job requirements.
- ❖ Don't lie. Whether or not it's intentional, including false, inaccurate, or misleading information brings your ethics into question and can even be illegal. Keep in mind that hiring managers are much more likely to Google and/or conduct background checks on candidates to eliminate dishonest ones.

- ❖ Don't disregard references. While you do not need to post your reference information on your resume, you should at least have them listed in a separate document that can be easily supplied if requested. Make sure your references are willing and ready to discuss your skills and abilities with a potential employer.
- ❖ Don't use more than two fonts. This can make a document difficult to read. The reader's eye needs familiar and easy-to-read fonts, like Times New Roman and Tahoma.
- ❖ Don't use clip art on your resume. Clip art is not generally considered professional, and any style or formatting design should be minimal. However, if you are applying for a job in a creative industry, then showcasing your design abilities on your resume may be more acceptable and appealing.

- ❖ Don't include pictures. Unless it is required for the position, your photo is not necessary.
- ❖ Don't include personal or health-related information. This includes your birth date, height and weight, health or marital status, religion, or affiliations in clubs that are not related to your career. While it may be appropriate in other cultures and for certain jobs, personal information should generally not be included if you are submitting a resume for a job in the United States.
- ❖ Don't include salary information unless you are specifically asked to do so.
- ❖ Don't misspell anything. Misspelling words, especially words about the position, make you appear careless and unreliable. Use a spell checker, and have at least two other people proofread your resume for typos and errors

# Evaluation

Evaluation is the systematic assessment of the design, implementation or results of an initiative for the purposes of learning or decision-making.

## **1. Systematic:**

An evaluation should be as systematic and impartial as possible. An evaluation is methodical, providing information that is credible, reliable, and useful to enable the incorporation of lessons learned into decision-making process of users.

## **2. Assessment:**

Evaluation assessment considers value, merit, worth, significance or quality. It may aim to identify what works, for whom, in what respects, to what extent, in what contexts, and how. It may examine expected and achieved accomplishments, the results chain, processes, contextual factors and causality in order to understand achievements.

- <https://www.toppr.com/guides/quantitative-aptitude/data-interpretation/>

### **3. Initiatives:**

Evaluation can focus on any kind of initiative such as programs, projects, sub-programs, sub-projects, and/or their components or elements.

### **4. Purposes:**

Evaluation can be conducted for the purposes of decision making, judgments, conclusion, findings, new knowledge, organizational development and capacity building in response to the needs of identified stakeholders leading to improvement, decisions about future programming, and accountability ultimately informing social action ameliorating social problems and contributing to organizational or social value.

## **Basic Evaluation**

Evaluation is a process that critically examines a program. It involves collecting and analyzing information about a program's activities, characteristics, and outcomes. Its purpose is to make judgments about a program, to improve its effectiveness, and to inform programming decisions.

# Why Measurement and Evaluation is Important

- Identify and solve problems.
- Find ways to improve management.
- Determine the value of the facility or event.
- Measure success or failure.
- Identify and measure impacts.
- Satisfy sponsors and other stakeholders.
- Gain acceptance, credibility, and support.

# Objectives Of Evaluation

## Objectives

1. Explain why evaluation is important.
2. Identify and choose outcomes to evaluate a training program.
3. Discuss the process used to plan and implement a good training evaluation.
4. Discuss the strengths and weaknesses of different evaluation designs.
5. Choose the appropriate evaluation design based on the characteristics of the company and the importance and purpose of the training.
6. Conduct a cost-benefit analysis for a training program.

## **Data Interpretation**

Data interpretation is the process of reviewing data through some predefined processes which will help assign some meaning to the data and arrive at a relevant conclusion. It involves taking the result of data analysis, making inferences on the relations studied, and using them to conclude.

## Qualitative Data Interpretation

### 1. Observations:

Detailing behavioral patterns that occur within an observation group. These patterns could be the amount of time spent in an activity, the type of activity and the method of communication employed.

### 2. Documents:

Much like how patterns of behavior can be observed, different types of documentation resources can be coded and divided based on the type of material they contain.

### 3. Interviews:

One of the best collection methods for narrative data. Enquiry responses can be grouped by theme, topic or category. The interview approach allows for highly-focused data segmentation.

## **Why Data Interpretation Is Important**

The purpose of collection and interpretation is to acquire useful and usable information and to make the most informed decisions possible. From businesses, to newlyweds researching their first home, data collection and interpretation provides limitless benefits for a wide range of institutions and individuals.

## **Characteristics of Data analysis and interpretation.**

1. Data identification and explanation
2. Comparing and contrasting of data
3. Identification of data outliers
4. Future predictions

## Data Interpretation

Data Interpretation is the process of making sense out of a collection of data that has been processed. This collection may be present in various forms like bar graphs, line charts and tabular forms and other similar forms and hence needs an interpretation of some kind. Here we will learn about data interpretation with the help of many important techniques and examples. We will see how we can make sense out of the graphical data and other forms of it. We shall learn to use it to solve the most common questions that are present in this section of the quantitative aptitude.

## TOOLS

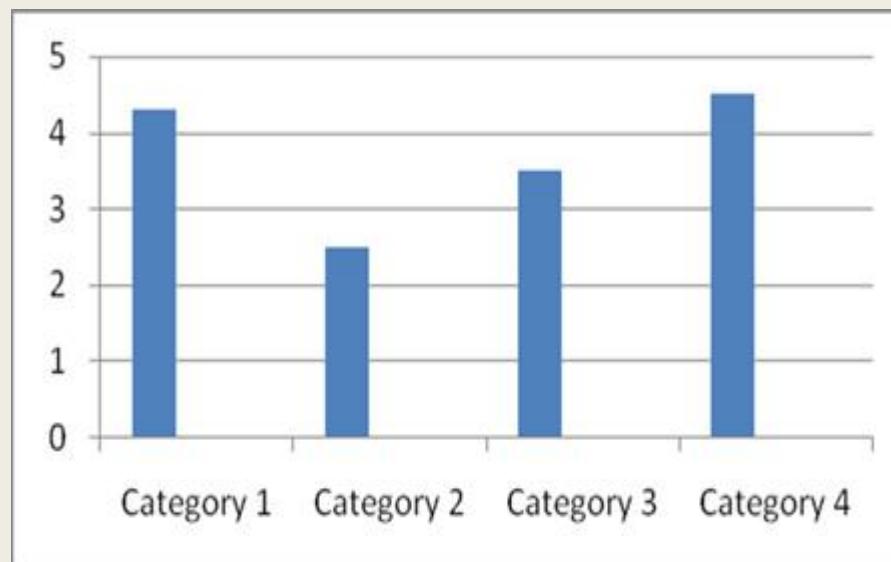
1. Bar Graph
2. Line Chart
3. Tabular Form
4. Caselet Form
5. Radar
6. Pie Chart
7. Missing Data Interpretation
8. Data Interpretation Practice Questions

## **1. Bar Graph**

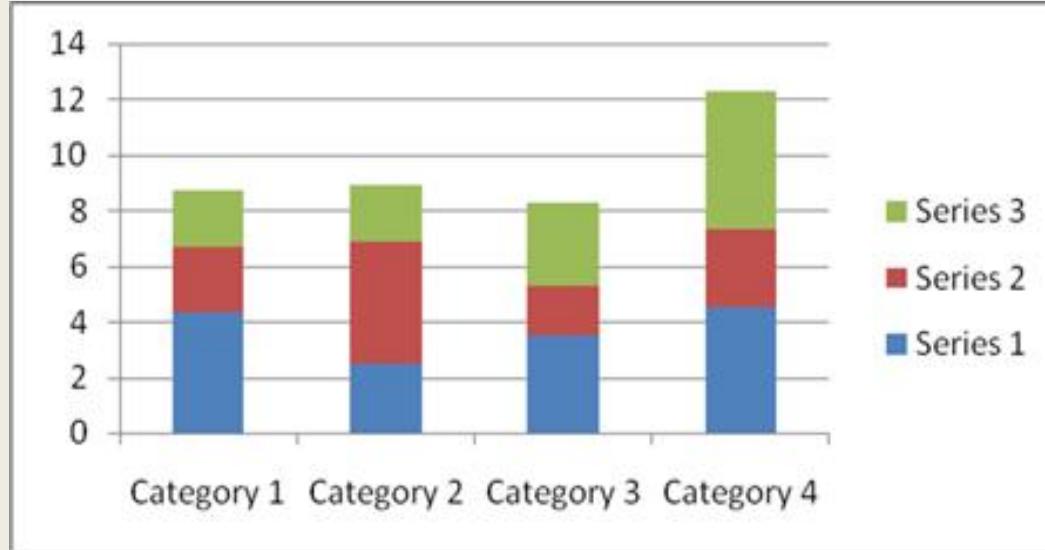
A bar graph is a pictorial representation of data in the form of bars or buildings on a graph. Let's see the different types of questions and methods to solve them accurately.

### **Types**

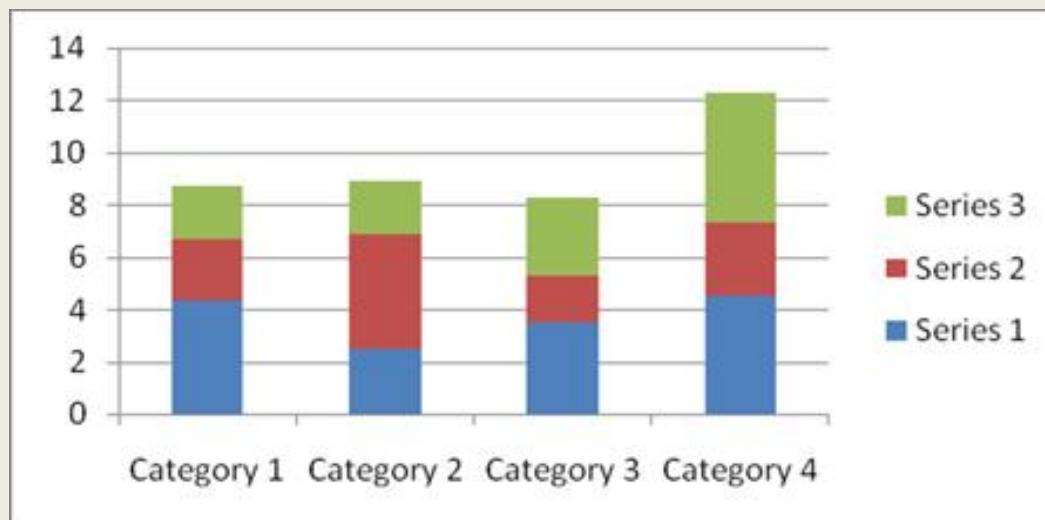
#### **1. Simple bar graph.**



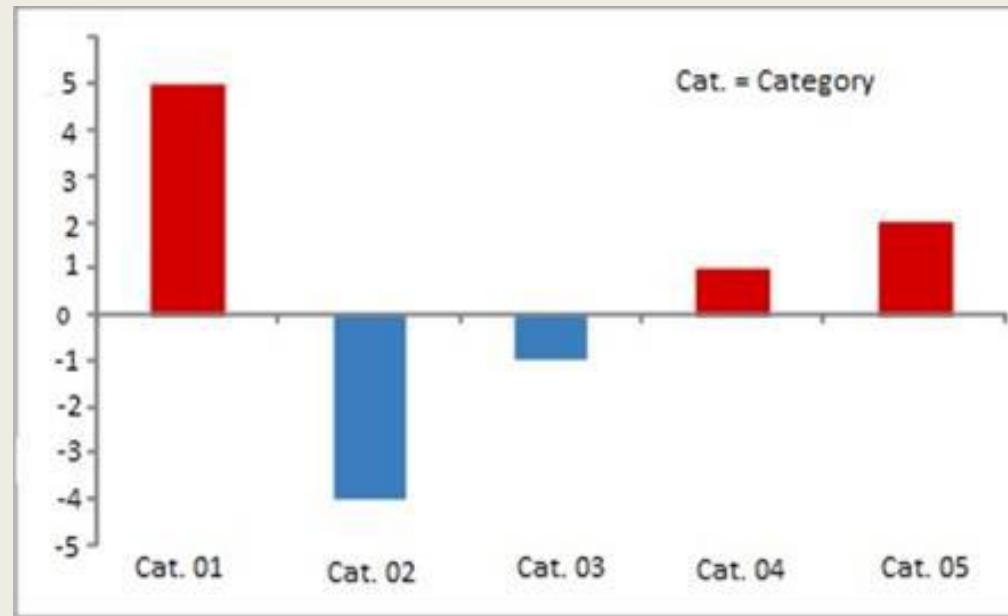
## 2. Composite bar graph



## 3. Stacked bar chart



#### 4. Bar charts to show deviation



# **INTERVIEW SKILLS**

An interview is a procedure designed to obtain information from a person through oral responses to oral inquiries. An interview is a face-to-face conversation between the interviewer and the interviewee, where the interviewer seeks replies from the interviewee for choosing a potential human resource.

## **DEFINITION OF INTERVIEW**

Interviews, when broken down into two separate terms, are ‘inter’ and ‘view’ which means seeing each other. An interview is a formal and in-depth conversation between interviewer and interviewee; they exchange the desired information, which checks the interviewee’s capability.

An interview is a structured conversation where employers ask questions, and the interviewee provides answers. Interviews can be unstructured, open-ended, and free-wheeling conversations without predetermined questions.

## **OBJECTIVES OF INTERVIEW**

1. It helps to verify the exactness of the provided facts and data by the candidate.
2. The interview helps to obtain the additional set of abilities or information of the interviewee.
3. The interview checks the candidate's suitability for the job.
4. It provides general and necessary facts and information about the job and the company.
5. An interview gives an insight into the candidate's analytical knowledge and creativity they possess.
6. Explanation about the job role is given at the time of the interview. The interviewer tells the company's expectations from him or her.
7. Through the interview process, the recruiter gets to know about the candidate's skills and lacks the potential abilities so that they could be trained.
8. Information flows from both directions, and the interviewee gets to know about the company and the employer.

## **TYPES OF INTERVIEW**

1. Structured Interview
2. Unstructured Interview
3. Stress Interview
4. One to One Interview
5. Panel Interview
6. Telephonic Interview
7. Video Interview
8. Depth Interview

## 1.Structured Interview

It is the traditional form of an interview. Preset standardized questions are asked from the interviewee and are the same for all the candidates. It is the kind of interview that gives the chance to examine the skills and abilities of all the candidates impartially.

## 2.Unstructured Interview

It is just the opposite of structured interviews. It is a free-flowing conversation. Here the interviewer already has a definite idea in mind about the questions to be asked. Generally, questions are made and asked during the interview. An unstructured interview does not follow any formal rules and procedures.

## 3.Stress Interview

These kinds of interviews are very rare. In this, the interviewer gives a stressful situation to the interviewee to test how they react and manage the crisis at a given time. The interviewer inclines to make the interviewee nervous by asking tons of harsh questions at the same time, by completely ignoring him/her, by interrupting them in the middle of an answer and creating a whole new situation.

## 4. One to One Interview

It is the general interview. There are just two persons, i.e., the interviewer and the interviewee, and a formal discussion takes place about the candidate's skills and abilities. The interviewer asks general and technical questions to check the suitability.

## 5. Panel Interview

A panel interview is also known as a board interview. A panel of company members, usually more than two, who are in senior positions, take the candidate's interview. Each one gives different scores to the candidates and combines up to see if the candidate is qualified or not. In a panel interview, candidates are often victims of personal biases, and it is not feasible for organizations that take many interviews daily.

## **6. Telephonic Interview**

Telephonic interview is conducted over the phone and is economical and less time-consuming. Through these interviews, the company can select promising persons for the job. Its main objective is to limit the list of candidates and appoint the best ones. These are actually more accurate than one to one interviews for judging interviewees' intelligence and interpersonal skills. The candidates are usually surprised by the unexpected call from the recruiter.

## **7. Video Interview**

These interviews are conducted through various video conferences or online chats or messaging due to inexpensiveness. It's just like a personal interview where the recruiter informs about the interview a few hours before the scheduled time. It is done if the interviewee lives far-off and cannot make it to the interviewer's place due to valid reasons.

## **8. Depth Interview**

As the term itself says, it characterizes the interviewee in-depth. It covers the candidate's life history, academic qualifications, interests, hobbies, and professional work experience. The interviewer here is a listener and wants to know in detail about the candidates, so they allow a free flow of conversation and make a friendly approach.

# Interviews Important

1. Interviews are necessary for the selection procedure as they help the interviewer choose who is efficient and who is not.
2. Resumes do not present a clear picture or inabilities of a candidate; through the interview procedure, recruiters get to know where a candidate lacks and needs training.
3. Interviews are a necessary procedure to know a candidate's potential.
4. Through the interviewing employer and the interviewee gets to know each other, and the flow of necessary information takes place, and all doubts are cleared.
5. The employer gets to know about the interviewee's actual skills and checks his/her general skills of writing and speaking through the quality of the answers.
6. Employers also get to know about the individuality and personality of the candidate. Also, analyze his/her social behavior and confidence in their body language.

# GROUP DISCUSSION



# **GROUP DISCUSSION**

Group Discussion or GD is a type of discussion that involves people sharing ideas or activities. People in the group discussion are connected with one basic idea. Based on that idea, everyone in the group represents his/her perspective. ... It is not fixed that the group discussion is always performed around the table.

# **GROUP DISCUSSION SKILLS**

1. Reasoning. Try to find the GD topic category that you are comfortable with. ...
2. Speaking. If the given topic is familiar, you must start the GD. ...
3. Time Management. ...
4. Presentation. ...
5. Paraphrasing/summarizing. ...
6. Creativity. ...
7. Listening. ...
8. Proactive.

# **TYPES OF GROUP DISCUSSION**

1. **Structured Group Discussion:** In this type of group discussion, the topic is given to the participants by the selectors and a time-frame is allotted to complete the discussion. This is the most commonly followed technique for a group discussion.
2. **Unstructured Group Discussion:** In unstructured group discussions, unlike in the case of structured group discussions, the candidates themselves decide the topic with mutual consent. This formal method of group discussions is rarely used.
3. **Role Play:** In this type of group discussion, the candidates are given specific roles to play in the backdrop of a given situation. Within the framework of their role, the participants have to solve the problems inherent in the situation given to them.
4. **Group Discussion with a Nominated Leader:** Generally, no-one is nominated as leader of a group discussion and all participants are treated as equal. But in this type of a group discussion, a person is nominated as a facilitator or a leader of the group. He may summarize the discussion or solutions discussed at the end of the group discussion. Sometimes the leader is nominated by the group members themselves.