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*Shortcuts in*
# Quantitative
# Aptitude
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# Reasoning
## (Verbal, Non-Verbal, Analytical & Critical)
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*Shortcuts in*

# Quantitative
# Aptitude

for Competitive Exams

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Typeset by Disha DTP Team

EBD_7336

# Contents

EBD_7336

# Number System & Simplification

## Type of Numbers

**Natural Numbers (N):** (Counting numbers, Positive Integers) 1, 2, 3, 4 .....∞

**Whole Numbers (W):** (Set of all natural numbers and 0) 0, 1, 2, 3, ...........∞

**Integers (Z):** –∞ ..........–3, –2, –1, 0, 1, 2, 3, 4, 5 ........∞

**Even Numbers:**

Numbers that are exactly divisible by 2. These numbers end in even number or zero. 2, 4, 6, 8, ...............∞

**Odd Numbers:**

Numbers that are not exactly divisible by 2. These numbers end in odd number. 1, 3, 5, 7, 9, .........∞

**Note:** Sum of any two odd numbers is always an even number.

**Example:** $3 + 5 = 8$ (an even number)     $7 + 23 = 30$ (an even number)

Note: Product of any two odd numbers is always an odd number.

**Example:** $3 \times 7 = 21$ (an odd number)     $5 \times 13 = 65$ (an odd number)

**Rational Numbers (Q):** Numbers which can be expressed in the form of $P/q$, where p and q both are integers and q is a non-integer.

**Example :** $\dfrac{2}{3}, \dfrac{3}{5}$ etc.

**Irrational Numbers :** Numbers that cannot be expressed in the form of $\dfrac{p}{q}$

where p and q both are integers i.e., the numbers which are not rational.

**Example:** $\pi, \sqrt{2}, \sqrt{3}, \sqrt{27}$ etc. (Remember 22/7 or 3.14 is approx. value of π)

**Real numbers (R):** Real numbers are combination of rational and irrational numbers.

**Complex or imaginary numbers:** These numbers are written as a + bi where $i^2 = -1$

**Prime Numbers:** A number which is not divisible by any number other than 1 and itself. Such numbers have only two factors, the number itself and 1.

**Example:** 2, 3, 5, 7, 11, 13, 17, 19, 23

⊕ **Shortcut Approach - 1**

When two numbers are divided by a third number, leave the same remainder, then the difference of these two numbers is always perfectly divisible by third number.

**1.** **24345 and 33334 are divided by certain number of three digits and the remainder is the same in both the cases. Find the divisor and the remainder.**

(a) 103, 6 (b) 809, 3 (c) 101, 4 (d) 109, 5

**Sol.** **(c)** Difference = 33334 − 24345 = 8989

Since, 8989 = 101 × 89

∴ 101 is the required 3 digit divisor

On dividing any of the given numbers by 101, we get 4 as remainder.

⊕ **Shortcut Approach - 2**

To find the greatest *n* digits number completely divisible by a divisor. Find the remainder by dividing greatest *n* digits number by the divisor.

Required number = (Greatest *n* digits number) – (Remainder)

**2.** **What is the largest number of 4 digits which is completely divisible by 18?**

(a) 9990 (b) 9984 (c) 9992 (d) None of these

**Sol.** **(a)** Greatest four digits number = 9999

Divisor = 18

```
      555
18 | 9999
     90
     ――
      99
      90
     ――
      99
      90
     ――
       9
```

Remainder = 9

So, required number = 9999 − 9 = 9990

**3.** **What is the greatest odd number of 4-digits which is completely divisible by 17?**

(a) 9996 (b) 9979 (c) 9981 (d) 9991

**Sol.** **(b)** Greatest four digits number = 9999

Divisor = 17

```
      588
17 | 9999
     85
     ――
     149
     136
     ――
     139
     136
     ――
       3
```

Remainder = 3

So, number = 9999 − 3 = 9996

But, 9996 is even number, so subtract

17 from 9996.

Difference = 9996 – 17 = 9979.

(Which is odd number)

Hence, the required number is 9979

### Shortcut Approach - 3

To find the least $n$ digits number completely divisible by a divisor. Find the remainder by dividing least $n$ digits number by the divisor.

Required number = (Least $n$ digits number) + (Divisor – Remainder)

**4 .** **What is the smallest number of 4-digits which is completely divisible by 22?**

(a) 1008    (b) 1010    (c) 1002    (d) 1012

**Sol.** **(d)** The least four digit number = 1000

Divisor = 22

$$22\ \overline{\big)\ \begin{array}{l}1000 \\ 88 \\ \hline 120 \\ 110 \\ \hline 10\end{array}}\ \big(45$$

So, required number

= 1000 + (22 – 10) = 1012

### Shortcut Approach - 4

If sum and difference of two numbers are given, then

Product of the two numbers

$$= \frac{(\textbf{Sum} + \textbf{Difference}) \times (\textbf{Sum} - \textbf{Difference})}{4}$$

**5.** **The product of two terms is 4640 and their difference is 22. Find the sum of their reciprocals.**

(a) $\frac{14}{2025}$    (b) $\frac{69}{2320}$    (c) $\frac{19}{3941}$    (d) $\frac{11}{1347}$

**Sol.** **(b)** Let the numbers be x and y

$$\text{Product} = \left[\frac{(\text{Sum} + \text{Difference})(\text{Sum} - \text{Difference})}{4}\right]$$

$$4640 = \left[\frac{(\text{Sum} + 22)(\text{Sum} - 22)}{4}\right]$$

$$4640 = \left[\frac{(\text{Sum})^2 - (22)^2}{4}\right]$$

$(\text{Sum})^2 = 4640 \times 4 + (22)^2 = 18560 + 484$

$\text{Sum} = (19044)^{1/2} = 138$

Now, $\dfrac{1}{x} + \dfrac{1}{y} = \dfrac{x+y}{xy} = \dfrac{\text{Sum}}{\text{Product}} = \dfrac{138}{4640} = \dfrac{69}{2320}$

## ⊕ Shortcut Approach - 5

Sum of the digits of a given two digit number is $S$. When its digits are interchange their places, the number decreased by $D$. Then,

Given number $= 5\left(S + \dfrac{D}{9}\right) + \dfrac{1}{2}\left(S - \dfrac{D}{9}\right)$

**6. Sum of the digits of a given 2–digit number is 12. When its digits interchange their places, the number decreases by 54. Find the number.**

(a) 93　　(b) 84　　(c) 75　　(d) 66

**Sol. (a)** Given number

$= 5\left[S + \dfrac{D}{9}\right] + \dfrac{1}{2}\left[S - \dfrac{D}{9}\right] = 5\left[12 + \dfrac{54}{9}\right] + \dfrac{1}{2}\left[12 - \dfrac{54}{9}\right]$

$= 5 \times 18 + \dfrac{1}{2} \times 6 = 93$

## ⊕ Shortcut Approach - 6

Sum of the digits of a given two digit number is S. When its digits interchange their places, the number is increased by I. Then

Given number $= 5\left(S - \dfrac{I}{9}\right) + \dfrac{1}{2}\left(S + \dfrac{I}{9}\right)$

**7. Sum of the digits of a given 2-digit number is 13. When its digits interchange their places, the number increases by 9. Find the given number.**

(a) 76　　(b) 94　　(c) 67　　(d) 85

**Sol. (c)** Given number

$= 5\left(S - \dfrac{I}{9}\right) + \dfrac{1}{2}\left(S + \dfrac{I}{9}\right) = 5\left(13 - \dfrac{9}{9}\right) + \dfrac{1}{2}\left(13 + \dfrac{9}{9}\right)$

$= 5 \times 12 + \dfrac{1}{2} \times 14 = 60 + 7 = 67$

---

### ⊕ Shortcut Approach - 7

If difference between a two-digit number and the number obtained by interchanging the digits is given, then difference of the two digits of the two digits number

$$= \frac{\text{Difference in original and new number}}{9}$$

**8.** **If the difference between a two-digit number and the number obtained by interchanging digits is 36, then find the difference of the digits of the original number.**

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

**Sol.** **(d)** (Difference of the digits of the number)

$$= \frac{\begin{pmatrix}\text{Difference of original} \\ \text{and new number}\end{pmatrix}}{9} = \frac{36}{9} = 4$$

---

### ⊕ Shortcut Approach - 8

If ratio of the sum and the difference of two numbers is $a : b$, then

Ratio of the two numbers $= \dfrac{a+b}{a-b}$

**9.** **Ratio of the sum and difference of two numbers is 9 : 1. Find the ratio of these two numbers.**

   (a) 5 : 4   (b) 9 : 5   (c) 2 : 1   (d) 3 : 2

**Sol.** **(a)** Ratio of the two numbers $= \left(\dfrac{a+b}{a-b}\right)$

$$= \left(\frac{9+1}{9-1}\right) = \frac{10}{8} = 5:4$$

---

### ⊕ Shortcut Approach - 9

(i) $(a^n + b^n)$ is divisible by $(a + b)$ when $n$ is odd

(ii) $(a^n - b^n)$ is divisible by both $(a + b)$ and $(a - b)$ when $n$ is even

(iii) $(a^n - b^n)$ is divisible by only $(a - b)$ when $n$ is odd

**10.** **If $(67^{67} + 67)$ is dividing by 68, the remainder is :**

   (a) 61   (b) 67   (c) 63   (d) 66

**Sol.** **(d)** ∵ $(x^n + y^n)$ is divisible by

$(x + y)$ when n is odd

So, $((67^{67} + 1^{67}) + 66)$

$(67^{67} + 1^{67})$ is divisible by 68,

Hence remainder is 66.

⊕ **Shortcut Approach - 10**

When $(x^n + k)$ is divided by $(x - 1)$,

(a) Remainder $= 1 + k$; if $k < (x - 1)$

(b) Remainder $= 1 + $ (Remainder obtained when $k$ is divided by $x - 1$); if $k > x - 1$

**11. Find the remainder on dividing $(9^{16} + 6)$ by 8.**

(a) 5    (b) 7    (c) 2    (d) 3

**Sol.** **(b)** Here $k = 6$ and $x - 1 = 8$

$\therefore$   $k < (x - 1)$

So, Remainder $= 1 + k = 1 + 6 = 7$

⊕ **Shortcut Approach - 11**

A number when divided by $d_1$ and $d_2$ successively, leaves the remainder $r_1$ and $r_2$ respectively. If the number is divided by $d_1 \times d_2$, then

Remainder $= d_1 \times r_2 + r_1$

**12. A certain number when successively divided by 3 and 5 leaves remainder 1 and 2. What is the remainder if the same number be divided by 15?**

(a) 7    (b) 8    (c) 9    (d) 10

**Sol.** **(a)** Remainder $= (d_1 \times r_2 + r_1) = (3 \times 2 + 1) = 7$

⊕ **Shortcut Approach - 12**

To find the number of zeros at the end of a product, write the product as prime factorisation like (in the prime factorise bases are different prime numbers and powers are natural numbers)

Product $= 2^m \times 5^n \times \dots\dots$

Here $m$ and $n$ are natural numbers. Now you know that product of each pair of 2 and 5 gives a zero (0), therefore

The product has $m$ zeros, if $m < n$ and

The product has $n$ zeros, if $m > n$.

The product has $m$ or $n$ zeros, if $m = n$.

**13. Number of zeroes at the end in the product $1 \times 2 \times 3 \times 4 \times \dots \times 25$ is**

(a) 5    (b) 6    (c) 10    (d) 25

**Sol.** **(b)** Let $1 \times 2 \times 3 \times \dots \times 25 = 2^x 5^y z$ where Z is the which is neither divisible by (2) nor by (5)

5, 10, 15, 20, 25 are the multiplier of 5 where 25 has two multiples of 5. (i.e. : $5 \times 1 = 5, 5 \times 2 = 10, 5 \times 3 = 15, 5 \times 4 = 20, 5 \times 5 = 25$) So $y = 6$. It is clear that indices of 2 will be more than 5 means x > y = 6. So their will be maximum 6 pairs of $2 \times 5$. So their will be 6 zeros at the end of the given numbers.

6 means there will be maximum 6 pairs of $2 \times 5$. So their will be 6 zeros at the end of the given numbers.

**14.** If $2 \times 4 \times 6 \times 8 \times 10 \times 12 \times \ldots\ldots \times 60$ will be divisible by $10^n$, then what can be the maximum value of $n$?

(a) 12    (b) 10    (c) 7    (d) 9

**Sol.** **(c)** It is similar previous Question

Here, total power on 5 will be $6 + 1 = 7$.

Hence, Maximum value of $n = 7$

### ✦ Shortcut Approach - 13

**(a)** Unit digit of any power of the numbers with unit digit 0, 1, 5 and 6 are respectively 0, 1, 5 and 6 i.e.

$(\ldots\ldots 0)^n = (\ldots\ldots 0)$
$(\ldots\ldots 1)^n = (\ldots\ldots 1)$
$(\ldots\ldots 5)^n = (\ldots\ldots 5)$
$(\ldots\ldots 6)^n = (\ldots\ldots 6)$

**(b)** If unit digit of any number is other than 0, 1, 5 and 6; then multiply its unit digit by itself least number of times till you get the unit digit as 1, 5 or 6.

Count the number of times you multiply the unit digit by itself.

Let's see

$(2)^4 = 16$      $(3)^4 = 81$      $(4)^2 = 16$
$(7)^4 = 2401$      $(8)^4 = 4096$      $(9)^2 = 81$

Therefore, if $n$ is a natural number, then

Unit digit of $(2)^{4n} = 6$   Unit digit of $(3)^{4n} = 1$
Unit digit of $(4)^{2n} = 6$   Unit digit of $(7)^{4n} = 1$
Unit digit of $(9)^{2n} = 1$

**(c)** Unit digit of a product $a \times b \times c \times \ldots\ldots$ is the unit digit of the product of the unit digit of $a$, $b$, $c$, $\ldots\ldots$

Using the facts given above in section (a), (b) and (c), you can find the unit digit of any power of a number.

**15.** **Find the unit digit of $(624)^{50}$.**

(a) 9    (b) 6    (c) 4    (d) 3

**Sol.** **(b)** Digit at unit place in 624 = 4

Now, $(4)^{50} = (4)^{2 \times 25}$

So, unit digit of $(4)^{2 \times 25} = 6$

Hence, unit digit of $(624)^{50}$ is 6

### ✦ Shortcut Approach - 14

If $N$ is a composite number and $N = a^p\, b^q\, c^r \ldots$ where $a$, $b$, $c$ are different prime numbers and $p$, $q$, $r$ are natural numbers. Then

The number of divisors (factors) of $N$ including 1 and the number $N$ itself

$= (p+1)(q+1)(r+1) \ldots\ldots$

**16.** **Find the different divisors of 37800, excluding unity.**

  (a) 95    (b) 94    (c) 93    (d) 92

**Sol.** **(a)** $37800 = 2^3 \times 3^3 \times 5^2 \times 7^1$

    The number of divisors $= (p+1)(q+1)(r+1)$

    $= (3+1) \times (3+1) \times (2+1) \times (1+1) = 96$

    Therefore number of divisor, excluding unity $= 96 - 1 = 95.$

---

⊕ **Shortcut Approach - 15**

If the sum of squares of two numbers is $x$ and the square of their difference

is $y$, then the product of the two numbers $= \left( \dfrac{x-y}{2} \right)$

---

**17.** **If the sum of squares of two numbers are 58 and square if their difference is 16, then the product of the two numbers is**

  (a) 14    (b) 18    (c) 12    (d) 21

**Sol.** **(d)** Sum of square of two numbers, $x = 58$

    Square of their difference, $y = 16$

  ∴   Product of two numbers $= \dfrac{58-16}{2} = 21$

---

⊕ **Shortcut Approach - 16**

Two different numbers when divided by the same divisor, leaves remainder $x$ and $y$ respectively and when their sum is divided by the same divisor, remainder is $z$. Then the divisor $= x + y - z$

**18.** **If two numbers are each divided by the same divisor, the remainders are respectively 3 and 4. If the sum of the numbers be divided by the same divisor, the remainder is 2. The divisor is :**

  (a) 9    (b) 7    (c) 5    (d) 3

**Sol.** **(c)** Divisor $= x + y - z = 3 + 4 - 2 = 5$

---

⊕ **Shortcut Approach - 17**

If $N$ be a composite number such that

$N = (x)^a (y)^b (z)^c$ ......; where $x$, $y$, $z$, ...... are different prime numbers, then sum of divisors or factors of

$z = \dfrac{x^{a+1}-1}{x-1} \times \dfrac{y^{b+1}-1}{y-1} \times \dfrac{z^{c+1}-1}{z-1} \times$ ......

**19. Find the sum of the factors of 90.**

(a) 214    (b) 234    (c) 224    (d) 226

**Sol. (b)** $(90) = [2 \times (3)^2 \times (5)]$

Hence, sum of divisor

$$z = \frac{\left(x^{(a+1)} - 1\right)}{(x-1)} \times \frac{\left(y^{(b+1)} - 1\right)}{(y-1)} \times \frac{\left(z^{(c+1)} - 1\right)}{(z-1)} \times \dots$$

$$z = \frac{2^2 - 1}{2 - 1} \times \frac{3^3 - 1}{3 - 1} \times \frac{5^2 - 1}{5 - 1} \implies \frac{4-1}{1} \times \frac{27-1}{2} \times \frac{24}{4}$$

$$= 3 \times 13 \times 6$$

$$= 234$$

---

### ⊕ Shortcut Approach - 18

If the product of the numbers is $x$ and the sum of these two numbers is $y$, then the numbers are given by

The larger number $= \left\{ \dfrac{y + \sqrt{y^2 - 4x}}{2} \right\}$ and

The smaller number $= \left\{ \dfrac{y - \sqrt{y^2 - 4x}}{2} \right\}$

---

**20. If the sum of two numbers is 78 and their product is 1352, then find the larger number.**

(a) 52    (b) 26    (c) 25    (d) 62

**Sol. (a)** Larger number

$$= \left\{ \frac{y + \sqrt{y^2 - 4x}}{2} \right\} = \left\{ \frac{78 + \sqrt{(78)^2 - 4 \times 1352}}{2} \right\}$$

$$= \frac{78 + 26}{2} = \frac{104}{2} = 52$$

---

### ⊕ Shortcut Approach - 19

If the product of two numbers is $x$ and the difference between these two numbers is $y$, then the

Large number $= \dfrac{\sqrt{y^2 + 4x} + y}{2}$    and    Smaller number $= \dfrac{\sqrt{y^2 + 4x} - y}{2}$

**21.** **If the product of two numbers is 600 and their difference is 10, the find the smaller number.**

(a) 30    (b) 20    (c) 10    (d) 40

**Sol.** **(b)**  Smaller number $= \dfrac{\sqrt{y^2 + 4x} - y}{2} = \dfrac{\sqrt{(10)^2 + 4 \times 600} - 10}{2}$

$$= \dfrac{\sqrt{2500} - 10}{2} = \dfrac{50 - 10}{2} = 20.$$

## DIVISIBILITY RULES

**Divisibility by 2**
A number is divisible by 2 if its unit's digit is even or 0.

**Divisibility by 3**
A number is divisible by 3 if the sum of its digits is divisible by 3.

**Divisibility by 4**
A number is divisible by 4 if the last 2 digits are divisible by 4, or if the last two digits are 0's.

**Divisibility by 5**
A number is divisible by 5 if its unit's digit is 5 or 0.

**Divisibility by 6**
A number is divisible by 6 if it is simultaneously divisible by 2 and 3.

**Divisibility by 7**
A number is divisible by 7 if unit's place digit is multiplied by 2 and subtracted from the remaining digits and the number obtained is divisible by 7.

**For example:**

$1680 \boxed{7} = 1680 - 7 \times 2 = 1666$

It is difficult to decide whether 1666 is divisible by 7 or not. In such cases, we continue the process again and again till it become easy to decide whether the number is divisible by 7 or not.

$166 \boxed{6} \longrightarrow 166 - 6 \times 2 = 154$

Again $15 \boxed{4} \longrightarrow 15 - 4 \times 2 = 7$, divisible by 7

Hence 16807 is divisible by 7.

**Divisibility by 8**
A number is divisible by 8 if the last 3 digits of the number are divisible by 8, or if the last three digits of a number are zeros.

**Divisibility by 9**
A number is divisible by 9 if the sum of its digits is divisible by 9.

**Divisibility by 10**
A number is divisible by 10 if its unit's digit is 0.

*Shortcuts in*

# Reasoning
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# INDEX

## NON-VERBAL REASONING

## ANALYTICAL REASONING

# Chapter 1

# Analogy & Classification

## ANALOGY

The meaning of analogy is 'similar properties' or similarity. If an object or word or digit or activity shows any similarity with another object or word or digit or activity in terms of properties, type, shape, size, trait etc., then the particular similarity will be called analogy.

The relationship of analogy can be established in two ways :

(i) A : B :: C : D

(ii) A : B :: C : D
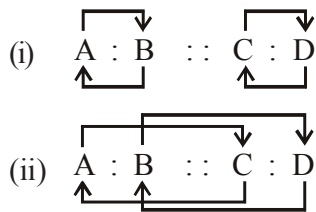
## TYPES OF ANALOGY

1. **Word Analogy**
2. **Letter Analogy**
3. **Number Analogy**
4. **Mixed Analogy**

### Word Analogy

In word analogy, candidates have to find the relationship between given words in a pair.

### 1. TOOL & OBJECT BASED ANALOGY

This establishes a relationship between a tool and the object in which it works.

> **EXAMPLE**

Scissors    :    Cloth

### 2. SYNONYM BASED ANALOGY

In such type of analogy two words have similar meaning.

> **EXAMPLE**

Huge    :    Gigantic

### 3. WORKER & TOOL BASED ANALOGY

This establishes a relationship between a particular tool and the person of that particular profession who uses that tool.

> **EXAMPLE**

Writer    :    Pen

### 4. WORKER & PRODUCT BASED ANALOGY

This type of analogy gives a relationship between a person of particular profession and his/her creations.

> **EXAMPLE**

Writer    :    Book

### 5. CAUSES & EFFECT BASED ANALOGY

In such type of analogy 1st word acts and the $2^{nd}$ word is the effect of that action.

> **EXAMPLE**

Work    :    Tiredness

### 6. OPPOSITE RELATIONSHIP (ANTONYM) BASED ANALOGY

In such type of analogy the two words of the question pair are opposite in meaning.

> **EXAMPLE**

Poor    :    Rich

**7. GENDER BASED ANALOGY**

In such type of analogy, one word is masculine and another word is feminine of it or It is a 'male and female' or 'sex' relationship.

> **EXAMPLE**

Man        :        Woman

**8. CLASSIFICATION BASED ANALOGY**

This type of analogy is based on biological, physical, chemical or any other classification. In such problems the $1^{st}$ word may be classified by the $2^{nd}$ word and vice-versa.

> **EXAMPLE**

Oxygen    :      Gas

**9. FUNCTION BASED ANALOGY**

In such type of analogy, 2nd word describes the function of the $1^{st}$ word.

> **EXAMPLE**

Singer     :      Sings

**10. QUANTITY AND UNIT BASED ANALOGY**

In such type of analogy $2^{nd}$ word is the unit of the first word and vice-versa.

> **EXAMPLE**

Distance   :      Mile

**11. FINISHED PRODUCT & RAW MATERIAL BASED ANALOGY**

In such type of analogy the $1^{st}$ word is the raw material and $2^{nd}$ word is the end product of that raw material and vice-versa.

> **EXAMPLE**

Yarn       :      Fabric

**12. UTILITY BASED ANALOGY**

In such type of analogy the $2^{nd}$ word shows the purpose of the $1^{st}$ word or vice-versa.

> **EXAMPLE**

Pen :        Writing

**13. SYMBOLIC RELATIONSHIP BASED ANALOGY**

In such type of analogy, the $1^{st}$ word is the symbol of the $2^{nd}$ word and vice-versa.

> **EXAMPLE**

White     :      Peace

**14. ADULT & YOUNG ONE BASED ANALOGY**

In such type of analogy, the $1^{st}$ word is the adult one and $2^{nd}$ word is the young one of the $1^{st}$ word or vice-versa.

> **EXAMPLE**

Cow       :      Calf

**15. SUBJECT & SPECIALIST BASED ANALOGY**

In such type of analogy the $2^{nd}$ word is the specialist of $1^{st}$ word (subject) or vice-versa.

> **EXAMPLE**

Heart     :      Cardiologist

**16. HABIT BASED ANALOGY**

In this type of analogy $2^{nd}$ word is the habit of $1^{st}$ and vice-versa.

> **EXAMPLE**

Cat        :      Omnivorous

**17. INSTRUMENT AND MEASURE-MENT BASED ANALOGY**

We see in this type of analogy, the $1^{st}$ word is the instrument to measure the $2^{nd}$ word and vice-versa:

> **EXAMPLE**

Hygrometer :      Humidity

**18. INDIVIDUAL & GROUP BASED ANALOGY**

Second word is the group of $1^{st}$ word (or vice-versa) in such type of analogy.

> **EXAMPLE**

Cow       :      Herd

### 19. STATE & CAPITAL BASED ANALOGY

1st word is the state and 2nd word is the capital of that state (1st word) (or vice-versa) in the analogy like this.

**》EXAMPLE**

Bihar       :       Patna

### 20. ANALOGY BASED ON INDIVIDUAL & DWELLING PLACE

In such type of analogy 1st word is the individual & 2nd word is the dwelling place of that individual (1st word) and vice-versa.

**》EXAMPLE**

Horse   :       Stable

### 21. ANALOGY BASED ON WORKER AND WORKING PLACE

In this type of analogy the 1st word represents a person of particular profession and 2nd word represents the working place of that person (1st word) and vice-versa.

**》EXAMPLE**

Doctor      :       Hospital

### 22. ANALOGY BASED ON TOPIC STUDY

1st word is the study of the 2nd word (or vice-versa) in the analogy like this.

**》EXAMPLE**

Birds       :       Ornithology

## Letter Analogy

In letter analogy, candidate has to find out the relationship between given letters or group of letters.

### 1. FORWARD ALPHABETICAL SEQUENCE BASED ANALOGY

**》EXAMPLE**

CD : FG : : PQ : UV

Here, CD and FG are in the natural alphabetical sequence. Similarly, PQ & UV are in the natural alphabetical sequence.

### 2. BACKWARD OR OPPOSITE ALPHABETICAL SEQUENCE BASED ANALOGY

**》EXAMPLE**

DC : GF : : QP : VU

In fact this case is opposite of case I

### 3. VOWEL – CONSONANT RELATION BASED ANALOGY

**》EXAMPLE**

ATL : EVX : : IPR : ORS

Here, the 1st two words start with the 1st two vowels A & E and the next two words start with the next two vowels I & O. Last two letter of every word are consonants.

### 4. SKIP LETTER RELATION BASED ANALOGY

**》EXAMPLE**

ABC : FGH : : IJK : NOP

Here, between ABC & FGH two letters skip and they are D & E. Similarly, between IJK & NOP two letters skip and they are L & M.

### 5. JUMBLED LETTERS RELATION BASED ANALOGY

**》EXAMPLE**

(i)   LAIN : NAIL : : EVOL : LOVE
      Here, the 1st term gets reveresed to produce the 2nd term and similar relation is shown in between 3rd and 4th term.

❑    Shortcut    Approach

**I:** While solving the problems based on alphabet, you must have in your mind the exact positions of every letters of alphabet in forward order as well as in backward or reverse order as given below:

Letters positions in forward alphabetical order:

| A | B | C | D | E | F | G | H | I | J | K | L | M | N | O | P | Q | R |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

| S | T | U | V | W | X | Y | Z |
|---|---|---|---|---|---|---|---|
| 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |

Letters positions in backward or reverse alphabetical order:

| Z | Y | X | W | V | U | T | S | R | Q | P | O | N | M | L | K | J | I |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 |

| H | G | F | E | D | C | B | A |
|---|---|---|---|---|---|---|---|
| 19 | 20 | 21 | 22 | 23 | 24 | 25 | 26 |

**II:** Just keep in mind, the following positions of the letters in the English alphabet (forward order).

(i)

| E | J | O | T | Y |
|---|---|---|---|---|
| 5 | 10 | 15 | 20 | 25 |

EJOTY ⟶ Remember this word

(ii)

| C | F | I | L | O | R | U | X |
|---|---|---|---|---|---|---|---|
| 3 | 6 | 9 | 12 | 15 | 18 | 21 | 24 |

CFILORUX ⟶ Remember

(iii)   D    H    L    P    T    X
        ↓    ↓    ↓    ↓    ↓    ↓
        4    8    12   16   20   24

DHLPTX ⟶ Remember
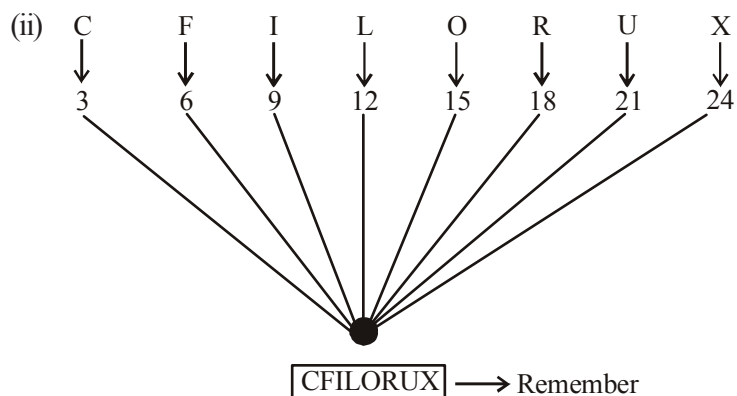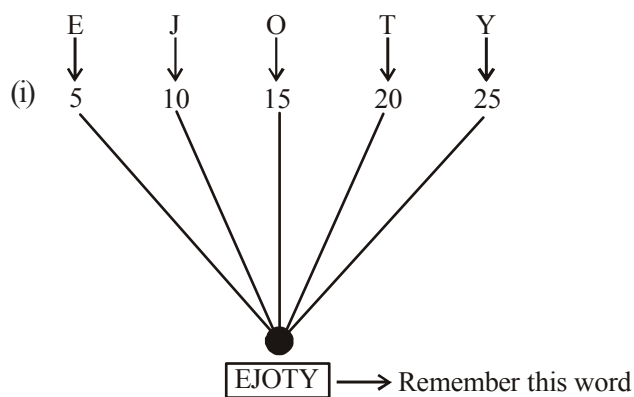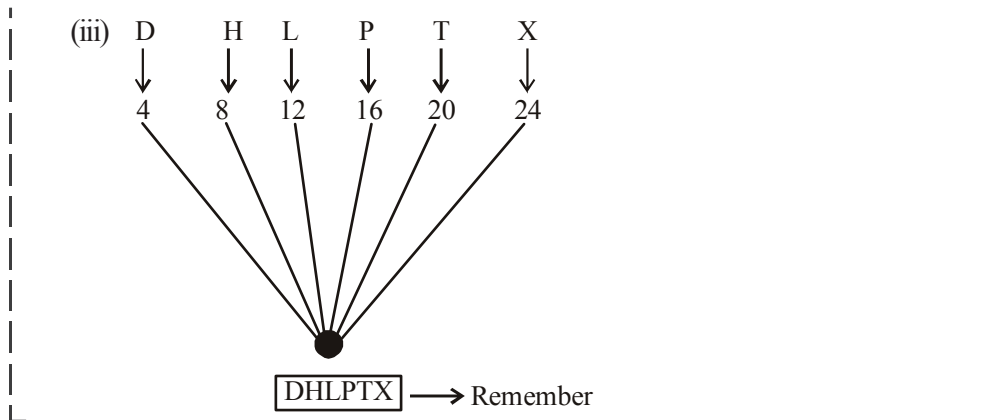
## Number Analogy

In this, candidate has to find out the relationship between the numbers or group of numbers.

1. **EVEN AND ODD NUMBERS BASED ANALOGY**

   ▶ EXAMPLE   84 : 51 : : 72 : 37
   (Here, 84 & 72 are even and 51 & 37 are odd numbers respectively)

2. **ADDITION AND SUBTRACTION OF NUMBERS BASED ANALOGY**

   ▶ EXAMPLE   234 : 9 : : 136 : 10
   (Here, $2+3+4=9$ and $1+3+6=10$)

3. **MULTIPLICATION AND DIVISION OF NUMBERS BASED ANALOGY**

   ▶ EXAMPLE   3 : 21 : : 5 : 35
   (Here, $3 \times 7 = 21$ and $5 \times 7 = 35$)

4. **SQUARES & CUBES OF NUMBERS BASED ANALOGY**

   ▶ EXAMPLE   4 : 16 : : 8 : 64
   (here, $4^2 = 16$ and $8^2 = 64$)

## Mixed Analogy

In this, candidate has to find out the relationship between the given group of letters and a number on one side.

▶ EXAMPLE   AB : 12 : : CD : : 34
(Here, A  B         C   D
        ↓ ↓  and   ↓   ↓
        1 2         3   4
(positional         (positional
value)              vlaue)

## CLASSIFICATION

In classification we take out an element out of some given elements and the element to be taken out is different from the rest of the elements in terms of common properties, shapes, sizes, types, nature, colours, traits etc. In this way, the rest of the elements form a group and the element that has been taken out is not the member of that group as this single element does not possesses the common quality to be possessed by rest of the elements.

## TYPES OF CLASSIFICATION

1. **Letter/meaningless word based classification**

2. **Meaningful word based classification**

3. **Digit based classification**

4. **General knowledge based classification**

## 1. LETTER/MEANINGLESS WORD BASED CLASSIFICATION

Such classifications are based on letters of English alphabet. So many groups of letters are given in the question in which one group is different from remaining groups and hence the different group will be our answer.

> EXAMPLE

(a) **PQT**       (b) **UVY**
(c) **DEH**       (d) **IJN**
(e) **FGJ**

**Sol.** (a) Here, P   Q   (R   S)   T

            2 letter gap

(b) U   V   (W   X)   Y

            2 letter gap

(c) D   E   (F   G)   H

            2 letter gap

(d) I   J   (K   L   M)   N

            3 letter gap

(e) F   G   (H   I)   J

            2 letter gap

Hence, correct option is (d).

## 2. MEANINGFUL WORDS BASED CLASSIFICATION

In such type of classification we have to take odd word out of the given group of meaningful words.

> EXAMPLE

(a) **Slim**       (b) **Trims**
(c) **Greets**       (d) **Grid**
(e) **Fight**

**Sol.** (a) Here,   Sl(i)m    (b)   Tr(i)ms

         1 vowel       1 vowel

(c) Gr(ee)ts       (d) Gr(i)d

      2 vowels         1 vowel

(e) F(i)ght

      1 vowel

Hence, correct option is (c).

## 3. DIGIT BASED CLASSIFICATION

In such type of classifications digits or numbers are given to find out one number that is not a part of the group of remaining numbers.

> EXAMPLE

(a) **122**       (b) **128**
(c) **199**       (d) **200**
(e) **388**

**Sol.** 199 is an odd number while all the other options are even numbers.

## 4. GENERAL KNOWLEDGE BASED CLASSIFICATION

Such classification is done on the basis of our general knowledge. No doubts that this is a word based classification but without having general knowledge this type of questions can not be solved.

> EXAMPLE

(a) **Cat**       (b) **Dog**
(c) **Tiger**       (d) **Octopus**
(e) **Lion**

**Sol.** Octopus is the only animal out of given options which is a water animal. Rest of the options are land animals.

---

❑     **Shortcut Approach**

**Step I :** See all the given options with a serious eye.

**Step II :** Try to make relation of similarity among the given options.

**Step III :** Find out the one word not having the common similarity like other options and that one word will be your answer.

# PRACTICE EXERCISE

**DIRECTIONS (Qs. 1-2) :** *In the following questions, select the related letters/number from the given alternatives.*

1.  43 : 57 : : 111 : ?
    (a) 135      (b) 133
    (c) 134      (d) 136
2.  AZBY : CXDW : : EVFU : ?
    (a) GTHS      (b) FUVE
    (c) ZYEU      (d) BXWD

**DIRECTION (Q. 3) :** *In the following question, select the related word pair from the given alternatives.*

Power : Watt : : ? : ?
(a) Pressure : Newton
(b) Force : Pascal
(c) Resistance : Mho
(d) Work : Joule

**DIRECTION (Q. 4) :** *In the following question, select the related number pair from the given alternatives.*

9143 : 9963 : : 6731 : ?
(a) 1368      (b) 5666
(c) 8964      (d) 9694

**DIRECTION (Q. 5) :** *In the following question, select related letters pair from the given alternatives.*

KLMN : IJKL : : TUVW : ?
(a) RSUT      (b) VWXY
(c) STUV      (d) RSTU

**DIRECTIONS (Qs. 6-8) :** *In the following questions, select the related word from the given alternatives.*

6.  Influenza: Virus :: Ringworm: ?
    (a) Bacteria      (b) Fungi
    (c) parasite      (d) Protozoa

7.  LMNO : NQTW :: GHIJ : ?
    (a) ILOR      (b) ILRO
    (c) ILMO      (d) LRMO
8.  103 : 10609 : : 106 : ?
    (a) 10606      (b) 10306
    (c) 11236      (d) 13636

**DIRECTIONS (Qs. 9-12):** *In the following questions, find the odd word/ letters/number pair from the given alternatives.*

9.  (a) D F O U      (b) N P S W
    (c) K M P T      (d) D F I M
10. (a) 286      (b) 166
    (c) 495      (d) 583
11. (a) Wing Commander
    (b) Air Marshal
    (c) Captain
    (d) Group Captain
12. (a) 243 - 132
    (b) 183 - 54
    (c) 108 - 97
    (d) 99 - 63

**DIRECTIONS (Qs. 13-15):** *Choose the odd word/number from the given alternatives.*

13. (a) Chennai      (b) Daman
    (c) Raipur      (d) Shimla
14. (a) Sirius
    (b) Proximacentauri
    (c) Deimos
    (d) Alpha centauri
15. (a) 2890      (b) 3375
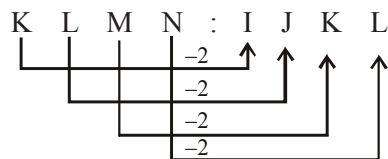    (c) 1728      (d) 1331

# HINTS & SOLUTIONS

**1.** **(b)** As, $6^2 + 7 = 43$
$(7^2) + 8 = 57$
Similarly,
$(10)^2 + 11 = 111$
$(11)^2 + 12 = 133$

**2.** **(a)** 
$A \xrightarrow{+2} C \qquad E \xrightarrow{+2} G$
$Z \xleftarrow{+2} X \qquad V \xleftarrow{+2} T$
$B \xrightarrow{+2} D \qquad F \xrightarrow{+2} H$
$Y \xleftarrow{+2} W \qquad U \xleftarrow{+2} S$

**3.** **(d)** As, Power is measured by Watt.
Similarly, Work is measured by Joule.

**4.** **(c)** As,
$9143 \Rightarrow 9 + 1 + 4 + 3 = 17$
$9963 \Rightarrow 9 + 9 + 6 + 3 = 27$
Similarly,
$6731 \Rightarrow 6 + 7 + 3 + 1 = 17$
$8964 \Rightarrow 8 + 9 + 6 + 4 = 27$

**5.** **(d)** As,

K L M N : I J K L

Similarly,

T U V W : R S T U
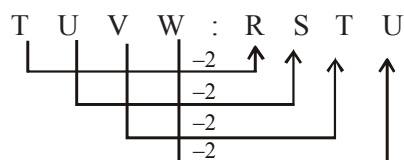
**6.** **(b)** As, Infuenza is caused by virus.
Similarly, Ring worm is caused by Fungi.

**7.** **(a)** As,

L M N O
+2 +4 +6 +8
N Q T W

Similarly,

G H I J
+2 +4 +6 +8
I L O R
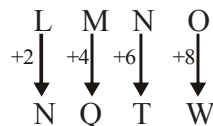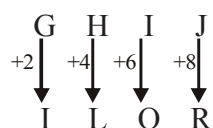
**8.** **(c)** As, $(103)^2 = 10609$
Similarly, $(106)^2 = 11236$

**9.** **(a)**

N P S W, K M P T
+2 +3 +4 +2 +3 +4

and D F I M
+2 +3 +4

But, D F O U
+2 +9 +6
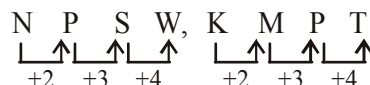
**10.** **(b)** As, $2 \; ⑧ \; 6 = 2 + 6 = ⑧, 4 \; ⑨ \; 5 = 4 + 5 = ⑨$ and $5 \; ⑧ \; 3 = 5 + 3 = ⑧$
but, $1 \; ⑥ \; 6 = 1 + 6 = 7 \neq 6$

**11.** **(c)** Captain is odd one out.

**12.** **(d)** 99-63 is odd one out.

**13.** **(b)** Except Daman, all others are capital.

**14.** **(c)** Except Deimos (It is a satellite), all others are star systems.

**15.** **(a)** Except 2890, All are cube of a number.
$(15)^3 = 3375, (12)^3 = 1728,$
$(11)^3 = 1331.$

# Series

## INTRODUCTION

A series is a sequence of numbers/alphabetical letters or both which follow a particular rule. Each element of series is called 'term'. We have to analyse the pattern and find the missing term or next term to continue the pattern.

## TYPES OF SERIES

```
                          SERIES

  Number      Alphabet    Alpha-numeric   Mixed      Continuous Pattern   Correspondence
  series      series      series          series     series               series

A series that  A series that  A series in    A series which  A series of letters,  A series consists of
is made by     is made by     which both     is created by   which follow a        three sequence with
only           only           alphabets and  the combination certain pattern, is   three different
number or digit alphabetic     numbers are    of two or more  given with four /     elements (for ex.
               letters        used           than two series five times blank       capital letters,
                                                             spaces in between.     numbers and small
                                                             The missing letters    letters). An element
1. Ascending series                                          in order is correct    of each sequence is
2. Descending series                                         answer.                correspond to the
3. Oscillating series                                                               element of other
                                                                                    sequence on the
                                                                                    basis of the similarity
                                                                                    in position.
```

## NUMBER SERIES

**Number series** is a form of numbers in a certain sequence, where some numbers are mistakenly put into the series of numbers and some number is missing in that series, we need to observe first and then find the accurate number to that series of numbers.

### Remember

- Even and odd numbers.
- Prime and composite numbers.
- Square and square roots of a numbers.
- Cube and cube roots of a numbers.
- Arithmetic Operations
  - → Addition
  - → Subtraction
  - → Division
  - → Multiplication

## Types of Number Series

### 1. PERFECT SQUARE SERIES

This type of series are based on square of a number which is in same order and one square number is missing in that given series.

▶ EXAMPLE **841, ?, 2401, 3481, 4761**
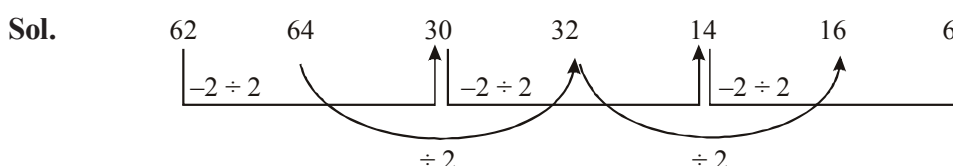
**Sol.** $29^2, 39^2, 49^2, 59^2, 69^2$

## 2. PERFECT CUBE SERIES

Perfect Cube series is a arrangement of numbers in a certain order, where some number which is in same order and one cube is missing in that given series.

**EXAMPLE** **4096, 4913, 5832, ?, 8000**

**Sol.** $16^3, 17^3, 18^3, 19^3, 20^3$

**EXAMPLE** **62, 64, 30, 32, 14, 16, ?**

**Sol.**



## 4. PRIME SERIES

When numbers are a series of prime numbers.

**EXAMPLE** **2, 3, 5, 7, 11, 13, __ , 19**

**Sol.** Here, the terms of the series are the prime numbers in order. The prime number, after 13 is 17. So, the answer to this question is 17.

## 5. ALTERNATE PRIMES

It can be explained by below example.

**EXAMPLE** **5, 11, 17, 23, __, 41**

**Sol.** Here, the series is framed by taking the alternative prime numbers. After 23, the prime numbers are 29 and 31. So, the answer is 31.

## 6. The difference of any term from its succeding term is constant (either increasing series or decreasing series):

**EXAMPLE** **4, 7, 10, 13, 16, 19, __, 25**

**Sol.** Here, the differnce of any term from its succeding term is 3.

$7 - 4 = 3$

$10 - 7 = 3$

So, the answer is $19 + 3 = 22$

## 3. MIXED NUMBER SERIES

Mixed number series is a arrangement of numbers in a certain order. This type of series are more than are different order which arranged in alternatively in single series or created according to any non conventional rule.

## 7. The difference between two consecutive terms will be either increasing or decreasing by a constant number:

**EXAMPLE** **2, 10, 26, 50, 82, __**

**Sol.** Here, the difference between two consecutive terms are

$10 - 2 = 8$

$26 - 10 = 16$

$50 - 26 = 24$

$82 - 50 = 32$

Here, the difference is increased by 8 (or you can say the multiples of 8). So the next difference will be 40 (32 + 8). So, the answer is 82 + 40 = 122

## 8. The difference between two numbers can be multiplied by a constant number:

**EXAMPLE** 15, 16, 19, 28, 55, __

**Sol.** Here, the differences between two numbers are

16 – 15 = 1
19 – 16 = 3
28 – 19 = 9
55 – 28 = 27

Here, the difference is multiplied by 3. So, the next difference will be 81. So, the answer is 55 + 81 = 136

**9. The difference can be multiples by number which will be increasing by a constant number:**

**EXAMPLE** 2, 3, 5, 11, 35, __

**Sol.** The difference between two number are

3 – 2 = 1
5 – 3 = 2
11 – 5 = 6
35 – 11 = 24

**10. Every third number can be the sum of the preceding two numbers :**

**EXAMPLE** 3, 5, 8, 13, 21, __

**Sol.** Here, starting from third number

3 + 5 = 8
5 + 8 = 13
8 + 13 = 21

So, the answer is 13 + 21 = 34

**11. Every third number can be the product of the preceeding two numbers :**

**EXAMPLE** 1, 2, 2, 4, 8, 32. __

**Sol.** Here, starting from the third number

1 × 2 = 2
2 × 2 = 4
2 × 4 = 8
4 × 8 = 32

So, the answer is 8 × 32 = 256

**12. Every succeeding term is got by multiplying the previous term by a constant number or numbers which follow a special pattern.**

**EXAMPLE** 5, 15, 45, 135, __

**Sol.** Here,

5 × 3 = 15
15 × 3 = 45
45 × 3 = 135

So, the answer is 135 × 3 = 405

**13. In certain series the terms are formed by various rule (miscellaneous rules). By keen observation you have to find out the rule and the appropriate answer.**

**EXAMPLE** 4, 11, 31, 90, __

**Sol.** Terms are,

4 × 3 – 1 = 11
11 × 3 – 2 = 31
31 × 3 – 3 = 90

So, the answer will be 90 × 3 – 4 = 266

**14. TRIANGULAR PATTERN SERIES:**

Sometimes the difference between consecutive terms of a series, again form a series. The differences between the consecutive terms of the new series so formed, again form a series. This pattern continues till we attain a uniform difference between the consecutive terms of the series.

**EXAMPLE**

2, 12, 36, 80, 150, ?

**Sol.** As discussed above, we may lebel the given series as I and then form series II to IV as shown, below:

Series-I: 2    12    36    80    150    ?
Series-II: 10    24    44    70    ?
Series-III:     14    20    26    ?
Series-IV:         6    6

Clearly, the pattern in series III is +6. So, missing term in series III = 26 + 6 = 32

Missing term in series II = 70 + 32 = 102

Missing term in series I = 150 + 102 = 252

Thus the missing term = 252

(i.e. 150 + 70 + 26 + 6)

## Remember

### Elementry Idea of Progressions:

1. **ARITHMETIC PROGRESSION (A. P.):**

   The sequence of the form $a$, $a + d$, $a + 2d$, $a + 3d$, ...... is known as an A.P., whose $n^{th}$ term is $a + (n-1)d$. Here '$a$' is first term and '$d$' is common difference.

2. **GEOMETRIC PROGRESSION (G. P.):**

   The sequence of the form $a$, $ar$, $ar^2$, $ar^3$, ...... is known a G.P., whose $n^{th}$ term is $ar^{n-1}$.

### WRONG NUMBER:

In this type of questions, a series of numbers is given which follow a certain pattern and one its term does not fit into the series. The candidate is required to identify the pattern involved in the formation of series and then find out that number which does not follow the specific pattern of the series. This particular number is the wrong term in the series.

▶ EXAMPLE

One number is wrong in the following series. Find out this wrong number.

1, 5, 9, 15, 25, 37, 49

**Sol.** The pattern is as follows

$$\begin{array}{ccccccc} & & & 17 & & & \\ 1 & 5 & 9 & \textcircled{15} & 25 & 37 & 49 \\ \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow & \downarrow \\ 1^2 & (2^2+1) & 3^2 & (4^2+1) & 5^2 & (6^2+1) & 7^2 \end{array}$$

Hence number 15 is wrong and should be replaced by 17.

❑ **Shortcut Approach**

(1) **If numbers are in ascending order in the number series,** then the numbers may be **added or multiplied** by certain numbers from the first number.

(A) 19    23    26    30    33    ?
    19    23    26    30    33    37

    $\boxed{+4}\quad\boxed{+3}\quad\boxed{+4}\quad\boxed{+3}\quad\boxed{+4}$

(B) 1    3    12    60    ?
    1    3    12    60    360

    $\boxed{\times 3}\quad\boxed{\times 4}\quad\boxed{\times 5}\quad\boxed{\times 6}$

(2) **If numbers are in descending order in the number series,** then the numbers may be **subtracted or divided** by certain numbers from the first number.

(A) 34    18    10    6    4    ?
    34    18    10    6    4    3

    $\boxed{-16}\quad\boxed{-8}\quad\boxed{-4}\quad\boxed{-2}\quad\boxed{-1}$

(B) 720    120    24    6    2    ?
    720    120    24    6    2    1

    $\boxed{/6}\quad\boxed{/5}\quad\boxed{/4}\quad\boxed{/3}\quad\boxed{/2}$

(3) **If numbers are in mix order (increasing and decreasing) in the number series,** then the numbers may be in **addition, subtraction**, **multiplication, division, square and cube** in the alternate numbers.

(A)
200    165    148    117    104    ?
200    165    148    117    104    77

$\boxed{(14)^2+4}\ \boxed{(13)^2-4}\ \boxed{(12)^2+4}\ \boxed{(11)^2-4}\ \boxed{(10)^2+4}\ \boxed{(9)^2-4}$

**(B)**

| 14 | 17 | 31 | 48 | ? | 127 |
|----|----|----|----|----|----|
| 14 | 17 | 31 | 48 | 79 | 127 |

14+17=31  17+31=48  31+48=79  48+79=127

**(4)** Check the direct formula if any.
**(5)** Check whether all numbers are odd, even or prime.
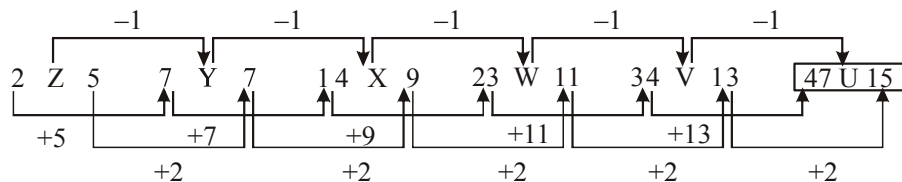**(6)** Check whether all the number are perfect squares or cubes.

## ALPHABET SERIES

A series that is made by only alphabetic letters.

## ALPHA NUMERIC SERIES

These kind of problems used both mathematical operation and position of letters in the alphabet in forward, backward order.
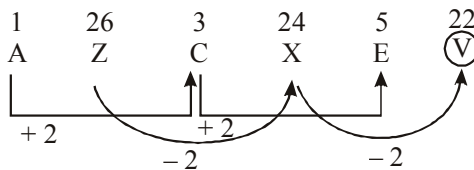
▶ EXAMPLE  2 Z 5, 7 Y 7, 14 X 9, 23 W 11, 34 V 13, ?

**Sol.**



## MIXED SERIES

A series formed with the combination of more than one series.

▶ EXAMPLE  A, Z, C, X, E, ?

**Sol.** There are two interwoven series.



∴ ? = V

▶ EXAMPLE  **G, H, J, M, ?**

**Sol.**   G H J M Q
         +1 +2 +3 +4

❑ Shortcut Approach

- Remember all the alphabets and their place number.
- Intervals like :

E  J  O  T  Y ,  C  F  I  L  O  R  U  X
↓  ↓  ↓  ↓  ↓    ↓  ↓  ↓  ↓  ↓  ↓  ↓  ↓
5 10 15 20 25   3  6  9 12 15 18 21 24

▶ EXAMPLE  **Z, L, X, J, V, H, T, F, __, __**

**Sol.** The given sequence consists of two series
(i) Z, X, V, T, __
(ii) L, J, H, F, __. Both consisting of alternate letters in the reverse order.
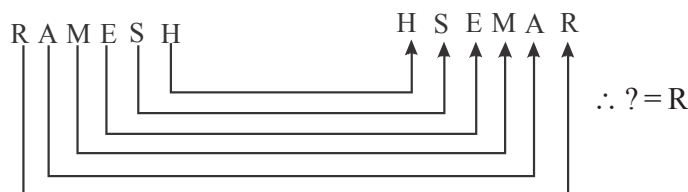∴ Next term of (i) series = R, and Next term of (ii) series = D

**Reverse Order Repetition Series:**

In such series, first part is written in reverse order of the second part of the series.

**EXAMPLE**  R, A, M, S, H, H; S, E, M A, ?

**Sol.**
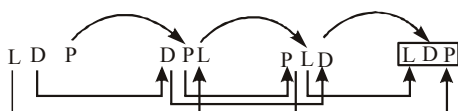


$\therefore$ ? = R

## SERIES HAVING GROUP OF LETTERS AS ITS ELEMENTS:

In such series, each element consists of group of letters instead of a single letter.

**EXAMPLE**  LDP, DPL, PLD, ?

**Sol.**



$\therefore$ ? = LDP

## CONTINUOUS PATTERN SERIES

It is a series of small/capital letters that follow a certain pattern like repetition of letters.

**EXAMPLE**  b a a b – a b a – b b a – –

**Sol.** b a a b $\underline{b}$ a / b a a $\underline{a}$ b b a / $\underline{b}$ a

## CORRESPONDENCE SERIES:

This type of series consists of three sequences with three different elements (usually capital letters, digits and small letters). On the basis of the similarity in position in the three sequences, a capital letter is found to correspond with a unique digit and a unique small letter, whenever it occurs. The candidate is required to trace out this correspondence and accordingly choose the elements to be filled in at the desired places.

**EXAMPLE**

C B – – D – B A B C C B
– – 1 2 4 3 – – ? ? ? ?
a – a b – c – b – – – –

**Sol.** Comparing the positions of the capital letters, numbers and small letters, we find a corresponds to c and 1 correspond to a. So, a and 1 correspond to c. b corresponds to A and 2 corresponds to b. So, b and 2 correspond to A. Also, 4 corresponds to D. Therefore, the remaining number i.e. 3 corresponds to B. Hence, BCCB corresponds to 3113.

# PRACTICE EXERCISE

**DIRECTIONS (Qs. 1-2):** *In the following Questions, which one set of letters when sequentially placed at the gaps in the given letter series shall complete it?*

1. ccbab _ caa _ bccc _ a _
   (a) babb       (b) bbba
   (c) baab       (d) babc

2. a _ _ dba _ _bcad _ _ _da _ _ _cd
   (a) bccdbcab   (b) abcddcba
   (c) cbcddcba   (d) aabbccdd

**DIRECTIONS (Qs. 3-4):** *A series is given, with one term missing. Choose amongst the given responses choose the meaningful one.*

3. CUS, DVT, EWU, _____
   (a) FXV       (b) VXF
   (c) XFV       (d) XVF

4. 206, 221, 251, 296, ?, 431
   (a) 326       (b) 356
   (c) 311       (d) 341

5. A series is given, with one term missing. Choose the correct alternative from the given ones that will complete the series.
   CAT , DBT , ECT , ?
   (a) DCT       (b) FDT
   (c) FCT       (d) FAT

**DIRECTIONS (Qs. 6-10) :** *What should come in place of the question mark (?) in the following number series?*

6. 2   16   112   672   3360   13440 ?
   (a) 3430      (b) 3340
   (c) 40320     (d) 43240
   (e) None of these

7. 4   9   19   ?   79   159   319
   (a) 59        (b) 39
   (c) 49        (d) 29
   (e) None of these

8. 4000   2000   1000   500   250   125   ?
   (a) 80        (b) 65
   (c) 62.5      (d) 83.5
   (e) None of these

9. 588   563   540   519   ?   483   468
   (a) 500       (b) 496
   (c) 494       (d) 490
   (e) None of these

10. 121   ?   81   64   49   36   25
    (a) 92       (b) 114
    (c) 98       (d) 100
    (e) None of these

**DIRECTIONS (Qs. 11-15) :** *Each of the following number series, a wrong number is given. Find out that number.*

11. 3 5 13 43 178 891 5353
    (a) 43        (b) 178
    (c) 891       (d) 5353
    (e) None of these

12. 80640 10080 1440 240 48 10 4
    (a) 240       (b) 48
    (c) 1440      (d) 10
    (e) None of these

13. 3 5 10 12 17 23 24
    (a) 5         (b) 17
    (c) 24        (d) 23
    (e) None of these

14. 1, 11, 38, 78, 175, 301
    (a) 11        (b) 78
    (c) 175       (d) 301
    (e) None of these

15. 17, 39, 85, 179, 369, 879
    (a) 369       (b) 211
    (c) 179       (d) 879
    (e) None of these

# Tips & Techniques in English
## for Competitive Exams

# Contents

# 1

# *Tenses*

Tense is the form taken by a verb to indicate time and continuance or completeness of an action or event.

Tenses are of three main types viz. Present Tense, Past Tense and Future Tense. Further, each of these is sub-divided into four categories i.e. Simple Tense, Continuous Tense, Perfect Tense and Perfect Continuous Tense.

## (I) PRESENT TENSE

It expresses an action that is currently going on or habitually performed, or a state that currently or generally exists.

Examples: She ***plays*** hockey and then ***goes*** home.

He ***goes*** to dance classes.

I ***get up*** every day at four o'clock in the morning.

Sun ***rises*** in the east.

**(1) Simple Present Tense** : It is used to describe universal truths, habits, unchanging situations and scheduled activities.

Examples for repeated or regular actions in the present time period:

➢ I ***take*** the tram to the office.

➢ Prakash ***works*** eight hours every day.

➢ The train to Mumbai ***leaves*** at 10 P.M.

## Examples for facts:

➢ We ***belong*** to India.

➢ Sun ***sets*** in the west.

➢ The president of the USA ***lives*** in the White House.

## Examples for habits:

➢ They ***travel*** to their farmhouse every weekend.

➢ She ***brushes*** her teeth twice a day.

➢ I ***get*** up early every day.

## Formation of Simple Present Tense:

➢ The first person (I) takes the first form of verb like- I ***go*** and I ***work*** there etc.

➢ The second person (You) takes the first form of verb like- You ***come*** and You ***run*** etc.

➢ In the third person singular number, the verb always ends with 's' like-
He *wants*, She *gives*, She *thinks* and She *runs* etc. In case the verb is
ending with 'y', it changes to 'ies' like- She *flies* and He *cries* etc.
➢ In the third person plural number, the first form of verb is used like- They
*come* and They *go* etc.

**(2) Present Continuous Tense** : It is used for those actions which are happening
now or are unfinished. This tense is also used when the action is temporary
and it is also known as Present Progressive Tense.

*Examples:*

➢ He is *weeping*.
➢ She is *talking* with the guests.
➢ The baby is *sleeping* in the crib.

Present Continuous Tense is also used to express something not happening right
now or will not happen in the near future, for example- You are not *watching* the
game, She is not *sitting* over there and I am not *going* to the meeting after work
etc. Moreover, The Present Continuous Tense is also used in questions as well,
for example- Is he *laughing*?, Are you *coming*? and Are they *listening* to the
teacher? etc.

**(3) Present Perfect Tense** : It is used to indicate the completion of an activity
or an action that occurred at some point in the past. Though, the time of
the action is not exactly known, this tense is mostly used to refer to actions
completed in the immediate past (not a very long time ago).

*Examples:*

➢ I *have eaten* my meal.
➢ I *have finished* cooking.
➢ He *has bought* a car.

**Note**:

In the present perfect sentences, the past participle of 3rd form of verb is used with
the auxiliary verbs 'has' or 'have 'depending upon the subject of the sentence. For
example, if the subject of the sentence is 'She, He, It or a singular noun' then the
auxiliary verb 'has' is used and when the subject of the sentence is 'They, You or
a plural noun' then the auxiliary verb 'have' is used.

*Examples:*

➢ She *has qualified* the exam.
➢ They *have helped* us.
➢ You *have done* a good job.
➢ He *has not started* a business.
➢ It *has come*.

**(4) Present Perfect Continuous Tense** : It is used for an action which started in
the past and is continuing at the present time. A time reference is also used in
the sentence to show the time of action. The specific words 'since' and 'for'
are used to show the time of action.

'Since' is used if the exact starting time of action is known like - since Sunday and since 6 A.M etc. and on the other hand, 'For' is used to express the amount of time like - for 10 days and for six months etc.

The auxiliary verbs 'have been' or 'has been' is used depending upon the subject of the sentence. If the subject of the sentence is 'She, He, It or a singular noun' then the auxiliary verb 'has been' is used and if the subject of the sentence is 'They, You or a plural noun' then the auxiliary verb 'have been' is used.

Structure: Subject + Auxiliary verb + Main verb + Time-reference and Subject + Have been/ Has been + Present Participle (verb+ing) + Time-reference

*Examples:*

➢   He *has been living* in the USA *since* 1990.
➢   She *has been working* in this company *since* 2002.
➢   He *has been studying* this book *for* three months.
➢   They *have been waiting* for me *for* three hours.
➢   Ravi *has been writing* for this newspaper *since* 25th May, 2007.
➢   I *have been watching* the movie *for* two hours.

## Some examples of interrogative sentences are:

➢   Has *she been working* as a professor *for* five years?
➢   Have *they been making* a noise *for* two hours?
➢   Has *she been writing* the report *since* 1st March, 2016?
➢   Has *your mother been teaching* you *since* 2001?

## (II) PAST TENSE

It expresses an action or event that has happened or a state that previously existed.

*Examples:*

➢   He *went* home yesterday.
➢   The work *was finished* on 4th June.
➢   She *worked* in a sugar factory.
➢   My father *believed* in superstitions.

**(1) Simple Past Tense** : It is used to talk about a completed action in a time before now. The time of the action can be in the recent past or the distant past.

Examples for an action completed in the past:
➢   The steamer *sailed* yesterday.
➢   He *went* home some time back.
➢   She *used to* carry an umbrella.

**(2) Past Continuous Tense :** It is used to mention an ongoing action of the past or an action that continued sometime in the past. It is also known as Past Progressive Tense. In these sentences, 1st form of the verb + ing and auxiliary verbs 'was' or 'were' is used depending upon the subject of the sentence. If the subject of the sentence is 'I, She, He or a singular noun then the auxiliary

verb 'was' is used and if the subject of the sentence is 'You, They or a plural noun then the auxiliary verb 'were' is used.

***Examples:***

- ➤ He *was waiting* for his mother.
- ➤ She *was riding* a bike.
- ➤ The dog *was barking* at them.
- ➤ I *was planning* for the holidays.
- ➤ They *were eating* their meal.
- ➤ You *were not preparing* for the exam.

**(3) Past Perfect Tense** : It is used to show that something happened before another action in the past or simply, it is used to express two actions that happened in the past. Moreover, in this case, it is necessary to show which action/event happened earlier than the other.

***Examples:***

- ➤ I *had done* my homework when Hari *came* to see me.
- ➤ They *lost* many games because *they had* not practised enough.
- ➤ You *had studied* French before you *moved* to Italy.
- ➤ When I *reached* the station, the train *had departed*.
- ➤ I *had just gone* out when it *started* raining.

**(4) Past Perfect Continuous Tense** : It is used when an action/event that began before a certain point of time in the past and was continuing at the given point of time in the sentence. The sentence includes a 'time-reference' i.e. 'since' and 'for' to show when the action started in past or for how long the action was continued in the past.

**Sentence structure:**

Subject + Auxiliary verb + Main verb + Time-reference

Subject + Had been + Present Participle + Object + Time-reference

***Examples:***

- ➤ She *had been watching* the game *for* two hours.
- ➤ He *had been working* for a newspaper *for* seven years.
- ➤ I *had been applying* for jobs *since* May 2013.
- ➤ She *had been teaching since* October, 2010
- ➤ Had *she been waiting* for her husband *for* three years.

## (III) FUTURE TENSE

It expresses an action/event that has not yet happened or a state that does not yet exist.

***Examples:***

- ➤ I *will* go there.
- ➤ They *will* not play football.
- ➤ I *shall* meet him if he calls me.

**(1) Simple Future Tense** : It is used to express an action that will occur or happen in the future.

*Examples:*

➢ I *will* buy a laptop at the end of this month.
➢ We *will* shift to a new apartment the next week.
➢ My father *will* buy me a bicycle on my birthday.
➢ He *will* leave for Canada day after tomorrow.
➢ She *will* get admission in a new school.

**(2) Future Continuous Tense** : It is used to express an on-going or continued action which will occur at some time in the future. In these sentences, the first form of the verb + ing is used along with the auxiliary verbs 'will be or 'shall be'.

*Examples:*

➢ He *will be singing* a song for the audience.
➢ I *shall be reading* the paper then.
➢ He *will be meeting* us next week.
➢ I *will be writing* a report.

**(3) Future Perfect Tense** : It is used to indicate the completion of an action/ event in the future. In these sentences, the third form of the verb is used with the auxiliary verbs 'will have' or 'shall have'.

*Examples:*

➢ I *shall have written* my exercise by that time.
➢ He *will have completed* his project by Sunday.
➢ I *will have taken* my lunch.
➢ He *would have finished* his task.

**(4) Future Perfect Continuous Tense** : It is used to indicate an action represented as being in progress over a period of time that will end in the future. Time period is generally mentioned along with it. 'Since' or 'for' is used in the sentence for time-reference. In these sentences, first form of the verb + ing is used along with the auxiliary verbs 'will have been' or 'shall have been'.

*Examples:*

➢ By next July, we shall have been living here for four years.
➢ The child will have been sleeping since 10 P.M.
➢ The doctor will have been treating patients for three years.
➢ You will have been using my bike for six months.
➢ The company will not have been advertising posts for two years.

## TENSES IN A NUTSHELL

| Tenses | | Present | Past | Future |
|---|---|---|---|---|
| Simple | Rule : | Subject + V1 Form | Subject + V2 Form | Subject + will + V1 Form |
| | When to be used : | Universal Truths, planned and scheduled activities, description of routines. | Activity started in the past, got over in the past. | Only when there is possibility of the activity happening, not certainty. |
| Continuous | Rule : | Subject + is/am/are + ING Form | Subject + was/were + ING Form | Subject + Will be + ING Form |
| | When to be used : | When an Activity started some time ago, is still continuing while speaking. | An activity is going on. Before it is over, it is interrupted by another activity. | There is a certainity of the Activity happening in the future. |
| Perfect | Rule : | Subject + Has/ Have + V3 Form | Subject + has + V3 Form | Subject + Will have + V3 Form |
| | When to be used : | When an Activity is over but it still has an effect on the present. | An activity started in the past and was concluded. Another Activity also happened. REFERS TO ACTIVITY 1. | Refers to Activity 1, which will have been completed, by the time Activity 2 happens. |
| Perfect Continuous | Rule : | Subect + has been + ING Form + Since/ for | Subject + had been + ING Form + since/for | Subject + Will have been + ING Form + since/for |
| | When to be used : | An Activity started in the past but we are not sure when it will conclude/ end. | NOT USED IN CONVERSA-TIONAL ENGLISH | NOT USED IN CONVERSA-TIONAL ENGLISH |

**Additional notes:**

➢ Events occurring at the same time must be given in the same tense.

*Examples*

When he *fainted*, his brother *was* with him; When he *was writing* his report, his mother *was preparing* meal for him, etc.

➢ Will or Shall can't be used twice in the same sentence even if both the actions refer to future tense.

*Examples*

I shall come if he will call me. **(WRONG)**

I shall come if he calls me. **(RIGHT)**

➢ With the phrase 'as if 'or 'as though', the past tense and plural form of the verb should be used.

*Examples* - He behaves *as if* he *were* the owner.

It looks *as if* they *have had* a shock.

It looks *as though you've* not *met* him before.

➢ With the word 'wish', four verbs are used namely, *were, had, could and would.*

'*Were*' is used when the wish seems to be unrealizable like, I wish I were a king.

'*Had*' is used when our wish is lament over the past happening like, I wish I had accepted that offer.

'*Would*' is used when we refer to the future like I wish I would get a ticket.

'*Could*' is used when we wish that something which has already happened should have happened otherwise like, He did not go because he was busy yesterday, I wish he could go with you.

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## IMPORTANT TIPS AND TECHNIQUES

• Learn all the three forms of verbs (V1, V2, V3), so that you do not confuse; and can confidently spell the correct form used in a particular tense.

• Learn the forms and variations of all the twelve tenses and also their usage to be able to use them correctly.

• Practice makes perfect. Practise solving tenses based MCQs as much as you can.

# 2

# *Modals*

Modals are verbs that are used to indicate modality i.e. the mood or the attitude of the speaker which may be likelihood, ability, obligation, request, wish, duty and suggestion etc. The commonly used modals are can, could, may, might, would, shall, should, need, must and ought etc.

| MODALS | USAGE | EXAMPLES |
|---|---|---|
| Can | To express ability | I can speak Russian fluently. |
| Can | To request permission | Can I open the door? |
| Could | To request politely | Could you please do it for me? |
| May | To express possibility | It may rain. |
| May | To request permission | May I come in? |
| May | Wish or Prayer | May you live long! |
| May | Purpose | He works hard so that he may pass. |
| Might | Less possibility | She might be sleeping now. |
| Must | To express obligation | You must leave now. |
| Must | To express strong belief | He must be over 80 years old. |
| Must | Logical certainity | Living alone in such a big city must be difficult. |
| Should | To give advice | You should stop smoking. |
| Should | Duty/Obligation | We should obey the laws. |
| Should | To express probability | She should be in the temple. |
| Would | To request or Offer | Would you like to have a cup of tea? |
| Would | Habitual action or Past Routine | She would study at noon. |
| Would | Wish | I would be glad to help you. |

| Ought<br>* (It is stronger than both should and must.) | To express moral obligation | We ought to love our parents. |
| --- | --- | --- |
| Will | Wish, Request, Demand | Will you please pick up the phone? |
| Will | Prediction, Assumption | I think it will rain on Monday. |
| Will | Promise | I will quit smoking. |
| Will | To express habits | Her mom is strange; she will sit for hours without talking. |
| Need not | To express an action which is not necessary | He need not go there again. |

## IMPORTANT TIPS & TECHNIQUES

- Use the Modal as it is
  Don't change its form and turn it into the present, future or past forms. You can't add *(s)*, *(ed)* or *(ing)*.
- Use the base form of the verb after a modal.
- If you need to use Modals in the negative form, then use only "not" AFTER the modal verb.

# 3    *Infinitives, Gerunds and Participles*

Infinitives, Gerunds and Participles are verb forms that perform peculiar functions, other than principal verbs in sentences. They are called verbals.

## INFINITIVES

Infinitives are, basically, *to+verb* phrases functioning as nouns.

They follow verbs such as agree, begin, continue, decide, fail, hesitate, hope, intend, learn, neglect, offer, plan, prefer, pretend, promise, refuse, remember, start, try that require no agent of action; and advise, allow, convince, remind, encourage, force, hire, teach, instruct, invite, permit, tell, implore, incite, appoint, order which need an agent of action.

*FORM:* **To + verb**

Stemming from the **To + verb** formula, infinitives appear in various forms as under:

*(i) To + V1*                           [present infinitive, active voice]

*Examples:*

➢   Most children hate *to study*.
➢   Try as you may, you are not cut out *to succeed*.
➢   He promised *to deliver* but his credibility was suspect.
➢   The employees were asked *to furnish* the details of their assets.
➢   This team is expected *to win* the match.

*(ii) To + be + V2*                      [present infinitive, passive voice]

*Examples:*

➢   Young and old alike crave *to be appreciated*.
➢   Some great men walk the earth *to be revered* forever.
➢   Though extremely talented, he was destined *to be doomed*.
➢   Derek bolted like a bullet even as Sam appeared *to be hurt*.
➢   Having prepared an excellent meal, he was sure *to be lauded* by the guests.

*(iii) To + have + V3*                     [perfect infinitive, active voice]

*Examples:*

➢   Mother seems *to have forgotten* to shut the door.
➢   I remember *to have met* her in your birthday party.
➢   He claims *to have seen* them sneak into the premises.

➢ The duo is reported *to have stolen* all the valuables in the house.
➢ They are believed *to have spoken* the truth.

**(iv) To + have been + V3**                          [perfect infinitive, passive voice]

*Examples:*

➢ He seemed *to have been warned* of dire consequences.
➢ She appeared *to have been taken* for a ride.
➢ The witness looked *to have been harassed* by the police.
➢ The sky appeared *to have been washed blue* after the downpour.
➢ They admitted *to have been mistaken* in viewing her negatively.

**(v) To + be + V1-ing**                                        [continuous infinitive]

*Examples:*

➢ You seem *to be enjoying* the show very much.
➢ The traffic seems *to be delaying* the arrival of the minister.
➢ He is too artless *to be lying* through his teeth.
➢ Terrorists are perceived *to be seeking* attention through their misdeeds.

**(vi) To + have been + V1-ing**                          [perfect continuous infinitive]

*Examples:*

➢ The clerk confessed *to have been helping* the embezzlers.
➢ The fugitive was reported *to have been living* with a nomadic tribe.
➢ Failed and defeated, he was suspected *to have been contemplating* suicide.
➢ The movie looked *to have been doing well* before protesters brought it down.
➢ They appear *to have been going* the wrong way.

[*Note*: *Passive voice is not possible in continuous forms*]

**(vii)** [To] **Verb**                               [bare infinitive or direct infinitive]

Bare infinitives associate with specific words as discussed below*:*

▸ the verbs **make, bid, see, hear, feel, know, watch, help, let, have, expect** with the <u>agent</u> of the action

*Examples:*

➢ He made <u>them</u> [to] *see* the truth behind the apparent.
➢ They bade <u>him</u> [to] *ascend* the stage and *speak*.
➢ It made <u>him</u> [to] *feel* the pain of the sufferers.
➢ The incident helped <u>them</u> [to] *know* their servants as human beings.
➢ You helped <u>me</u> [to] *overcome* my depression.
➢ I watched the <u>ship</u> [to] *disappear* down the horizon.
➢ I saw <u>them</u> [to] *leave* in a huff.
➢ On his request, the administration let <u>him</u> [to] *preside* over the conference.
➢ I will not have <u>you</u> [to] *scold* him for no fault of his.

▸ **need** and **dare** only as auxiliaries in negative and interrogative forms

*Examples:*

  ➢   Mother, you need not [to] *worry* for me.
  ➢   Need you [to] *work* so hard?
  ➢   Dare he [to] *cross* the forest in the dark?
  ➢   I dare not [to] *question* his authority.

▸   **and**, **but**, **or**, **except**, **as... as**, **than**

*Examples:*

  ➢   He did nothing more **than** [to] *play* the whole day.
  ➢   The banished people had nothing to do **except** [to] *curse* their fate.
  ➢   He liked to travel **as** much **as** [to] *wander* in the forests.
  ➢   Would you want to finish the work **or** [to] *have* your dinner first?
  ➢   The activists do nothing **but** [to] *make* people aware of the anomalies.
  ➢   Isn't it foolish to fight **and** [to] *complain* of injuries?

▸   **better, rather, , sooner... than, as soon...as** in combination with **would** or **had**

*Examples:*

  ➢   The invitees **would better/had better** [to] l*eave* as it is quite late.
  ➢   He **would rather/had rather** [to] *start* if he hopes to meet the deadline.
  ➢   She **would as soon** [to] *sing* **as** [to] *dance.*
  ➢   I **would sooner** [to] *fight and die* **than** [to] *surrender*.
  {*Note*: All these phrases are synonyms of 'prefer', which itself takes a 'gerund' instead of an 'infinitive'; e.g., Soldiers prefer *dying* for the country.}

## SOME SPECIAL ADDITIONS WITH INFINITIVES

▸   **How + infinitive**

   This construction is followed by **show, know, teach, learn, ask, tell, remember, forget, discover,** and **find,** etc., to express manner or method.

*Examples:*

  ➢   Let me show you ***how to operate*** this new device.
  ➢   They know ***how to deal*** with the situation.
  ➢   The class is learning (how) ***to create*** a story in dialogues.
  ➢   This should be enough to teach him ***how to respect*** his elders.
  ➢   We shall ask the instructor ***how to go*** about it.
  ➢   So far so good, now tell me ***how to conclude*** the dissertation.
  ➢   I am sorry; I do not remember ***how to solve*** this kind of problems.
  ➢   Curiously, he forgot ***how to unravel*** the maze he had himself created.
  ➢   The mission discovered ***how to harvest*** relevant data from the junk.
  ➢   He is desperate to find out ***how to impress*** the girl he fancies.

▶  **Noun + infinitive**

Preposition is essential in some infinitives following a noun to complete the sense.

*Examples:*

➢  As long as you are engaged, please give me a book *to read*.

(no preposition)

➢  Can I have a glass of water *to drink?*                    (no preposition)
➢  I am afraid, I have no pen *to write* **with.**              (preposition required)
➢  They are looking for a penthouse *to live* **in.**          (preposition required)

▶  Adjective + infinitive

**Too** is used before the adjective to convey a negative sense; **Enough** is used after the adjective to convey a positive meaning.

*Examples:*

➢  I am **too** tired *to venture* any further.
➢  This is **too** good *to be* true.
➢  She is smart **enough** *to deal* with any untoward incident.
➢  The foundation should be strong **enough** *to bear* the impact of any tremor.

## ERRONEOUS USE OF THE SPLIT INFINITIVE

Insertion of an adverb within an infinitive is an oft-committed mistake that must be avoided.

*Examples:*

➢  I request you *to **kindly** grant* me the said leave.              **(incorrect)**
➢  I request you ***kindly** to grant* me the said leave.              **(correct)**
➢  The audience was instructed to ***quietly** take* their seats.      **(incorrect)**
➢  The audience was instructed *to take* their seats ***quietly***.    **(correct)**

*FUNCTION:* As a *Noun* (subject of verb, object of verb, object of preposition, subjective or objective complement), *Adjective,* or *Adverb.*

**As subject of verb :**

➢  *To err* is human; *to forgive*, divine.
➢  *To wait and watch* is the only option we have.
➢  *To pass the buck* is easy.

   **As object of verb :**

➢  The president-elect promised *to deliver* on the promises.
➢  The college staff threatened *to strike* work.
➢  He manages *to balance* work and home effortlessly.

**As object of preposition :**

➢ The invaders had no option but *to surrender*.

➢ Vagabonds love nothing except *to wander*.

➢ He lives a pauper only *to die* a millionaire.

**As objective complement :**

➢ Alia asked her *to leave* as it was getting dark.

➢ They wanted him *to lead* the team.

➢ No student wished the examinations *to stay*.

**As subjective complement**

➢ My parents' desire is *to see* me well settled in life.

➢ The mark of a true man is *to behave* courteously.

➢ The delegation called *to apprise* him of the situation.

**As adjective**

➢ Napoleon nurtured the ambition *to rule* the world.

➢ Man is driven by the desire *to make* a name for himself.

➢ The play is too satiric *to earn* critical acclaim.

**As adverb**

➢ We must work *to make* this happen.

➢ These kids are anxious *to learn*. (adverb)

➢ He was pained *to see* the widespread destruction. (adverb)

## GERUNDS

Gerunds are the <u>***V1-ing***</u> form of verbs functioning as nouns.

**FORM: V1-ing**

Retaining the ***V1-ing*** form, gerunds appear in specific constructions as under:

**(i) Direct gerund**

Direct gerunds are often preceded by

▶ verbs such as **consider, propose, practise, risk, regret, resist, prefer, enjoy, love, like, dislike, hate, detest, start, finish, begin, stop, miss,** etc.

*Examples:*

➢ I have requested them to consider *using* the new technology.

➢ Will you stop *screaming* like that, please?

➢ It is high time they began *accepting* the change.

▶ phrases such as **can't** (or **couldn't**) **help** and **it is no use/good**

*Examples:*

➢ They couldn't help *praising* her effusively.

➢ She can't help *lying* through her teeth.

➢ It is no use *crying* over spilt milk.

➢ It is no good *trying* to reform this serial offender.

▸ verbs such as **forgive, pardon, hate, like**, **miss** and phrasal verbs, such as **don't mind, fed up of**, **give up**, in combination with a noun in the possessive case( **Ravi's, my mother's, boys'**, etc.) or a possessive adjective (**my, his, her, their,** etc.)

*Examples:*

➢ Teachers hate students' *speaking* out of turn.
➢ Please forgive their *trespassing* for one last time.
➢ Nobody misses my *singing* as much as she does.
➢ He doesn't mind his father's *scolding* so much.
➢ I am fed up of his *frowning* and *scowling*.
➢ She seems to have given up her *masquerading*.

**(ii) preposition + gerund**

▸ Gerunds mostly appear in this very construction usually with **prepositions other than 'to'.**

➢ Some phrases that precede gerunds are:
➢ aim at, abstain from, bent on, break free from, call for, confident of, dissuade from, desirous of, end up, fond of, harm in, intent on, interested in,
➢ keep on, prohibit from, refrain from, sick of, take pride in, wary of, yearn for,
➢ zealous in

*Examples:*

➢ These aspirants are desirous of *making* a name for themselves.
➢ The delegation is wary of *trying* after a series of setbacks.
➢ There is no harm in *accepting* one's mistake.
➢ They seem to be intent on *proving* him wrong.
➢ They yearned for *having* a glimpse of the star.

▸ The preposition '**for**' + gerund is used to convey **reason/cause** or **purpose.** Use of **to** (i.e., infinitive form) in such cases is erroneous and must be avoided.

*Examples:*

**Reason/cause :**
➢ He is infamous for *creating* disturbance during office hours. **(correct)**
➢ He is infamous to *create* disturbance during office hours. **(incorrect)**

**Purpose :**
➢ This is for ensuring the safety of inmates. **(correct)**
➢ This is to ensure the safety of the inmates. **(incorrect)**

▸ Gerunds follow the **preposition 'to'** only when they are preceded by phrasal verbs containing **to**, such as given to, accustomed to, prone to, used to, boil down to, in addition to, with a view to, look forward to, etc.