GENERAL APTITUDE

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What is **Aptitude ?**

It is your natural ability to learn or excel in a certain area.

For example, you could have an **aptitude** for math and logic.

Key to **success**

1. Problem Recognition
2. Speed
3. Practice

Link for **English Basics**

- https://www.learngrammar.net/practice
- https://www.myenglishpages.com/english/exercises.php
- https://www.englisch-hilfen.de/en/exercises_list/alle_grammar.htm
- https://www.grammarbank.com/
- https://www.really-learn-english.com/english-grammar-exercises.html
- https://www.really-learn-english.com/english-reading-comprehension-text-and-exercises.html
- https://www.thefreshreads.com/unseen-passage-for-class-10/
- https://www.englishgrammar.org/exercises/

- Practice Synonyms and Antonyms regularly.
- Read Idioms and Phrases.
- Book - Word Power Made Easy by Norman Lewis
- Book - English Grammar by Wren and Martin

Basic **MATHS**

- Tables at least from 1-30
- Squares from 1-30
- Cubes from 1-30
- Prime numbers from 1-100
- Divisibility rules for 1-20

- Methods for typical multiplications & divisions
- Methods for finding HCF & LCM
- Methods for finding squares & square roots

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Topic Wise Test Plan

TEST NAME	TOPICS
APTI 1	Numbers + LCM + HCF + Ages + Averages
APTI 2	Percentages + Allegations & Mixtures + Profit & Loss
APTI 3	Time & Work + Pipes & Cisterns + Chain Rule
APTI 4	Time & Distance + Trains + Boats + Interest
APTI 5	Clock + Calendar + Probability + Permutation Combination

Numbers

Real

Complex (a+bi)

A complex number is a number that can be expressed in the form a + bi, where a and b are real numbers, and i is a solution of the equation $x^2 = -1$. Because no real number satisfies this equation, i is called an imaginary number

Rational (-2, ¾, 2.25,)

Irrational (√2, 3.14159….)

Integers (∞…,-2,-1,0,1,2….∞)

Whole Nos (0,1,2,3.. ∞)

Negative Nos (∞ ..-2,-1)

Natural Nos (1,2,3… ∞)

Zero (0)

Prime Nos

Composite Nos (3 distinct factors)

Fractions (2/5, 4/3, 3 1/3)

Proper Fractions (2/5, 3/7..)

Improper Fractions (4/3, 8/7..)

Mixed Fractions (3 ⅔, 4 ⅓..)

What is the Difference Between Rational Numbers and Irrational Numbers?

Rational Numbers	Irrational Numbers
Numbers that can be expressed as a ratio of two numbers (p/q form) are termed as a rational number.	Numbers that cannot be expressed as a ratio of two numbers are termed as an irrational number.
Rational Number includes numbers, which are finite or are recurring in nature.	These consist of numbers, which are non-terminating and non-repeating in nature.
If a number is terminating number or repeating decimal, then it is rational. e.g: 1/2 = 0.5	If a number is non-terminating and non-repeating decimal, then it is irrational. e.g: 0.31545673…
Example:- 1/2, 3/4, 11/2, 0.45, 10, etc.	example:-Pi (π) = 3.14159…., Euler's Number (e) = (2.71828…), and √3, √2.

Basic **MATHEMATICAL** operations

- BODMAS
- B - Bracket ( ) , { }, [ ]
- O - Order
- D - Division
- M - Multiplication
- A - Addition
- S - Subtraction.

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BASIC FORMULAE

- 1. $(a + b)^2 = a^2 + b^2 + 2ab$
- 2. $(a - b)^2 = a^2 + b^2 - 2ab$
- 3 . $(a + b)^2 - (a - b)^2 = 4ab$
- 4. . $(a + b)^2 + (a - b)^2 = 2(a^2 + b^2)$
- 5. $(a^2 - b^2) = (a + b)(a - b)$
- 6. $(a + b + c)^2 = a^2 + b^2 + c^2 + 2(ab + bc + ca)$
- 7. $(a^3 + b^3) = (a + b)(a^2 - ab + b^2)$
- 8. $(a^3 - b^3) = (a - b)(a^2 + ab + b^2)$
- 9. $(a^3 + b^3 + c^3 - 3abc) = (a + b + c)(a^2 + b^2 + c^2 - ab - bc - ca)$
- 10. If $a + b + c = 0$, then $a^3 + b^3 + c^3 = 3abc$

Sum of Natural Numbers

- **Rule 1 :** Sum of first n natural numbers = $\frac{n(n+1)}{2}$

e.g. sum of 1 to 74 =74 x (74+1)/2 = 2775.

- **Rule 2 :** Sum of first n odd numbers = n^2

e.g. sum of first seven odd numbers

= (1+3+5+7+9+11+13) = 49 = 7^2.

- **Rule 3** : Sum of first n even numbers = n (n+1)

e.g. sum of first 9 even numbers

= (2+4+6+8+10+12+14+16+18) = 90

= 9 (9+1) = 9 x10 = 90

Sum of Natural Numbers

- **Rule 4 :** Sum of squares of first n natural numbers = $\frac{n(n+1)(2n+1)}{6}$

e.g. sum of squares of first 8 natural numbers

= (1 + 4 + 9 + 16 + 25 + 36 + 49 + 64) = 204

= 8 (8+1)(16+1)/ 6 = 8 x 9 x 17 / 6 = 204

- **Rule 5 :** Sum of cubes of first n natural numbers = $[n(n+1)/ 2]^2$

e.g. sum of cubes of first 4 natural numbers

= (1 + 8 + 27 + 64) = 100

= $[4 (4+1)/2]^2$ = 100

DIVISION

- DIVISION by ZERO is NOT POSSIBLE
- If two numbers are divisible by a number then their sum & difference is also divisible by the number.
- E.g. For 63 is divisible by 9. 27 is also divisible by 9.
- So 63 + 27 = 90 is also divisible by 9
- And 63 – 27 = 36 is also divisible by 9

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DIVISIBILITY RULES

- 2 : Unit place is even or zero(last digit should be divisible by 2)
- 3 : Sum of the digits is divisible by 3. e.g : 324
- 4 : Last 2 digits are divisible by 4 or last 2 digits are 0. e.g : 324
- 5 : Unit digit is 5 or 0
- **6 : Divisible by co primes 2 & 3.** e.g : 324
- 8 : Number formed by last 3 digits is divisible by 8 or last 3 digits are 0. e.g : 1088
- 9 : Sum of all digits is divisible by 9. e.g : 324
- 10: Units digit is 0.

DIVISIBILITY RULES

- 11 : Difference between sum of digits in odd & even places should either be zero or divisible by 11

e.g: 8283

e.g : 918071

- **12 : Divisible by co primes 3 & 4** e.g : 324
- **14 : Divisible by co primes 2 & 7**
- **15 : Divisible by co primes 3 & 5**
- **16 :** No formed by last 4 digits divisible by 16/ last 4 digits 0.
- **18 : Divisible by co primes 2 & 9**
- 20 : Units digit 0 & tens digit is even.

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DIVISIBILITY RULES

- **7 : The difference between the two alternate groups taking 3 digits at a time should either be zero or multiple of 7.**

  eg- 550500006

  eg- 7370356

- **13 : The difference between the two alternate groups taking 3 digits at a time should either be zero or multiple of 13.**

  eg- 200174

DIVISIBILITY RULES

- **17: A number is divisible by 17 if you multiply the last digit by 5 and subtract that from the rest. If that result is divisible by 17, then your number is divisible by 17.**
- For example, for 986, then : 98 - (6 x 5) = 68.
- Since, 68 is divisible by 17, then 986 is also divisible by 17.
- Also, 876 is not divisible by 17 because 87 - (6 x 5) = 57 and 57 is not divisible by 17.

- **19: To determine if a number is divisible by 19, take the last digit and multiply it by 2. Then add that to the rest of the number. If the result is divisible by 19, then the number is divisible by 19.**
- For example, 475 is divisible by 19 because 47 + (5 x 2) = 57, and 57 is divisible by 19.
- But , 575 is not divisible by 19 because 57 + (5 x 2) = 67, and 67 is not divisible by 19.

PROPERTIES OF DIVISIBILITY

To find a number completely divisible by another :

A) **Greatest 'n' digit number exactly divisible by a Number :**

Method : By subtracting the remainder

e.g a) Greatest 3 digit number divisible by 13

Greatest 3 digit number = 999. 999/13 gives remainder 11.

999-11 = 988 = Greatest 3 digit number divisible by 13

B) **Least 'n' digit number exactly divisible by a Number :**

Method : By adding the (divisor – remainder)

e.g b) Least 3 digit number divisible by 13

Least 3 digit number = 100. 100/13 gives remainder 9

100 + (13 – 9) = 104 = Least 3 digit number divisible by 13

PROPERTIES OF DIVISIBILITY

Q. On dividing a number by 999, the quotient is 366 and the remainder is 103. The number is:

A.364724 B.365387 C.365737 D.366757 E. None of these

Soln-

dividend = divisor x quotient + remainder

Required number = 999 x 366 + 103

= (1000 - 1) x 366 + 103

= 366000 - 366 + 103

= 365737

Ans: C

PROPERTIES OF DIVISIBILITY

Q. A number when divided by 5 leaves 3 as remainder. If the square of the same number is divided by 5, the remainder obtained is :

A. 9 B. 4 C. 1 D. 3

Soln:

number when divided by 5 leaves a remainder 3

Let the given number = 5n + 3 ---> using dividend = divisor quotient + remainder

Square of the number = $(5n + 3)^2$

$= 25n^2 + 30n + 9$ --> $(a + b)^2 = a^2 + 2ab + b^2$

$= 5 \times 5n^2 + 5 \times 6n + 5 + 4$

$= 5(5n^2 + 6n + 1) + 4$

Required remainder = 4

Ans: B

Sum of Natural Numbers

Q. The difference between the sum of the first 2n natural numbers and the sum of the first n odd natural numbers is

A. n^2 - n

B. n^2 + n

C. $2n^2$ - n

D. $2n^2$ + n

Ans: B

- Sum of first 2n natural numbers is $\frac{2n(2n+1)}{2}$
- Sum of first n odd numbers = n^2

Sum of Natural Numbers

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e.g. sum of 1 to 74 =74 x (74+1)/2 = 2775.

- **Rule 2 :** Sum of first n odd numbers = n^2

e.g. sum of first seven odd numbers

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- **Rule 3** : Sum of first n even numbers = n (n+1)

e.g. sum of first 9 even numbers

= (2+4+6+8+10+12+14+16+18) = 90

= 9 (9+1) = 9 x10 = 90

PRIME NUMBERS

- A number that is divisible only by itself and 1 (e.g. 2, 3, 5, 7, 11).
- There are 25 prime numbers between 1 - 100
- *1 is neither prime nor composite number.*
- **2 is the only prime number which is even.**
- A number having more than 2 factors is a composite number
- Find prime numbers between 101 and 200??
- There are 21 prime numbers between 101 - 200

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Co-Prime

- When two numbers (they may not be prime) do not have any common factor other than one between them they are called co-prime or relatively prime.
- It is obvious that two prime numbers are always co-prime. e.g : 17 and 23
- Two composite numbers can also be co-prime. e.g: 16 & 25 do not have any common factor other than one.
- Similarly 84 and 65 do not have any common factor and hence are co-prime.

Prime Number

- **Step 1:** Check the units place of that number. If it ends with 0, 2, 4, 6 and 8, it is not a prime number.
- **Note:** **“**Numbers ending with 0, 2, 4, 6 and 8 are never prime numbers**.”**

- **Step 2:** Take the sum of the digits of that number. If the sum is divisible by 3, the number is not a prime number.
- **Note:** **“**Numbers whose sum of digits are divisible by 3 are never prime numbers**.”**

- **Step 3:** After confirming that steps 1 and 2 are false, find the square root of the given number.

- **Step 4:** Divide the given number by all the prime numbers below its square root value.

- **Step 5:** If the number is divisible by any of the prime numbers less than its square root, it is not a prime number; otherwise, it is prime.
- **Exception:** If a large number is ending with 5, then it is always divisible by 5. Hence, it is not a prime number

Prime Number

Q. Find whether 467 is prime or not

Step 1 : Sq root of 467→ Between 21 (441) and 22 (484)

Step 2 : 467 is not divisible by 2, 3, 5, 7, 11, 13, 17, 19. Next prime is 23 which exceeds the square limit.

Therefore 467 is prime.

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Prime Number

- Prime numbers 1-100

1	2	3	4	5	6	7	8	9	10
11	12	13	14	15	16	17	18	19	20
21	22	23	24	25	26	27	28	29	30
31	32	33	34	35	36	37	38	39	40
41	42	43	44	45	46	47	48	49	50
51	52	53	54	55	56	57	58	59	60
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90
91	92	93	94	95	96	97	98	99	100

Prime Number(Assignment)

Q. Which of the following is a prime number?

A. 303 B. 477 C. 113 D. None of these

Ans : C

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Prime Number(Assignment)

Q. The prime numbers dividing 143 and leaving a remainder of 3 in each case are

A. 2 and 11

B. 11 and 13

C. 3 and 7

D. 5 and 7

Ans: D

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Number System(Assignment)

Q. The mean of first 10 even natural numbers is ?

A. 9

B. 10

C. 11

D. 12

Ans: C

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Prime Number(Assignment)

Q. The sum of first four primes is

A. 10

B. 11

C. 16

D. 17

Ans: D

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Prime Number(Assignment)

Q. Which of the following is a prime number?

A. 19

B. 20

C. 21

D. 22

Ans: A

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Prime Number(Assignment)

Q. Find the mean of first six odd natural numbers?

A. 6

B. 11

C. 7

D. 5

Ans: A

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Numbers(Assignment)

Which of the following is the output of 57 x 57 + 43 x 43 + 2 x 57 x 43 ?

A. 10000 B. 5700 C. 4300 D. 1000

Ans : A

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Numbers(Assignment)

Q. Which of the following is the output of 6894 x 99 ?

A. 685506 B. 682506 C. 683506 D. 684506

Ans: B

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Numbers(Assignment)

Q. What is the unit digit in 584 x 428 x 667 x 213 ?

A. 2 B. 3 C. 4 D. 5

Ans: A

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Numbers(Assignment)

Q. The sum of reciprocals of two consecutive numbers is 15/56. The first number is

A. 8 B. 7 C. 6 D. 15.

Ans : B

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Divisibility (Assignment)

Q. What percentage of the numbers from1 to 50 have squares ending in the digit 1?

A. 1 B. 10 C. 11 D. 20

Ans : D

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Numbers(Assignment)

Q. If $64^2 - 36^2 = 20 \times A$, then A = ?

A. 70 B. 120 C. 180 D. 140 E. None of these

Ans: D

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Numbers(Assignment)

Q. On dividing a number by 19 the difference between quotient and remainder is 9. The number is?

A. 370 B. 371 C. 361 D. 352

Ans : B

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Numbers(Assignment)

Q. $(112 \times 5^4) = ?$

A. 67000 B. 70000 C. 76500 D. 77200 E. None of these

Ans: B

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Numbers(Assignment)

Q. Which of the following is a prime number?

A.143 B. 289 C. 117 D. 359

Ans : D

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HCF & LCM

HCF / GCF(Highest/Greatest Common Factor)

- HCF of two or more numbers is the greatest / largest / highest/biggest number which can divide those two or more numbers exactly.

Factors of 6 : 1, 2, 3, 6

Factors of 8 : 1, 2, 4, 8

Common 1 & 2 Highest & Common 2

- **LCM(Least Common Multiple)**
- The LCM of two or more numbers is the smallest / lowest / least number which is exactly divisible by those two or more numbers.

Multiples of 6 : 6, 12, 18, 24, 30, 36, 42, 48, 54,…

Multiples of 8 : 8, 16, 24, 32, 40, 48, 56, 64….

Common 24, 48, …. Lowest & common 24

HCF (Factorization method)

- HCF of 54,72,126 (factorization method)

A. 21 B. 18 C. 36 D. 54

Ans : B

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HCF (Factorization method)

- Eg. HCF for 136, 144, 168

2	136	144	168
2	68	72	84
2	34	36	42
	17	18	21

NO FURTHER COMMON FACTOR

So HCF = 2 x 2 x 2 = 8

Note : HCF is always <= the smallest of given numbers

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HCF (Factorization method) - (Assignment)

- HCF of 54,72,126 (factorization method)

A. 21 B. 18 C. 36 D. 54

Ans : B

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HCF (Difference Method)

- Find HCF of 203,319

Keep smaller here

- (203, 319)
- (116,203)
- (87,116)
- (29,87)
- (29,58)
- (29,29)

HCF =29

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HCF (Difference Method) - (Assignment)

- HCF of 161,253 (difference method)

A. 27 B. 18 C. 23 D. 17

Ans : C

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HCF

Q. Find HCF of 84,125

- (84,125)
- (41,84)
- (41,43)
- (2,41)
- (2,39)

- If nothing is common then HCF =1 and numbers are said to be co prime numbers.

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HCF & LCM

Q. Find the greatest number which can divide 284, 698 &1618 leaving the same remainder 8 in each case?

A. 36 B. 46 C. 56 D. 43.

Soln-

Remainder 8 → (numbers – 8) would be exactly divisible.

→284-8 = 276

→698-8 = 690

→1618-8 = 1610

→Greatest number dividing above 3 = HCF(276, 690, 1610) (difference method)

→HCF = 46

Ans: B

HCF & LCM

Q. Find the greatest number which can divide 62, 132 & 237 leaving the same remainder in each case?

A. 35 B. 46 C. 56 D. 43.

Soln:-

If two numbers a & b are divisible by a number n then

→ Their difference (a-b) is also divisible by n.

→132-62 = 70

→237-132 = 105

→237-62 = 175

→Greatest number dividing above 3 = HCF(70, 105, 175)

→HCF = 35

Ans: A

HCF & LCM

Q. Find the largest number such that 43,65,108 are divisible by that number and we get the remainder as 1,2,3 respectively in each case?

A. 21 B. 27 C.42 D. 63

Soln:

→ (numbers – remainder) would be exactly divisible.

→ 43 – 1 = 42

→ 65 – 2 = 63

→ 108 – 3 = 105

HCF(42,63,105)=21

Ans : A

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HCF & LCM

Q. A teacher has 25 books, 73 pens & 97 erasers. She wants to distribute them equally to maximum number of students so that after distribution she has equal number of books, pens & erasers left. What is the maximum number of students for such a distribution?

A. 32 B. 21 C. 12 D. 24

Soln:-

If two numbers a & b are divisible by a number n then

→ Their difference (a-b) is also divisible by n.

→73-25 = 48

→97-73 = 24

→97-25 = 72

→Greatest number dividing above 3 = HCF(72, 48, 24)

→HCF = 24

Ans: D

HCF & LCM(Assignment)

Q. Find the greatest number which can divide 62, 132 & 237 leaving the same remainder in each case?

A. 35 B. 46 C. 56 D. 43.

Ans : A

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HCF & LCM(Assignment)

Q. Find largest number such that if 45,68 and 113 are divided by that number we get the remainder as 1,2 and 3 respectively.

A. 21 B. 22 C. 26 D. 24

Ans: B

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HCF & LCM(Assignment)

Q. Find the greatest number which can divide 41, 131 & 77 leaving the same remainder in each case?

A. 28 B. 18 C. 36 D. 24

Ans : B

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LCM

Q. LCM for 12,24,20

A. 210 B. 180 C. 120 D. 144

Ans : C

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LCM

- Eg. LCM for 18, 28, 108, 105

2	18	28	108	105
2	9	14	54	105
3	9	7	27	105
3	3	7	9	35
3	1	7	3	35
5	1	7	1	35
7	1	7	1	7
Till all quotients are 1	1	1	1	1

So LCM = 2 x 2 x 3 x 3 x 3 x 5 x 7 = 3780

Note : LCM is always >= the greatest of given nos

LCM(Assignment)

Q. LCM for 12,24,20

A. 210 B. 180 C. 120 D. 144

Ans : C

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LCM (Assignment)

Q. Find LCM of 72,125

A. 9000 B. 1200 C. 1000 D. 800

Ans : A

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Rules to Remember

- Product of two given numbers is equal to the product of their HCF & LCM

  A x B = HCF(A,B) x LCM(A,B)

- If a, b, c are three numbers that divide a number n to leave the same remainder r, the smallest value of ‘n’ is

  n = (LCM of a, b, c) + r e.g 3,4,5 & rem 1

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LCM

Q. Find LCM of 147 & 231

Soln:-

- As we know,
- **HCF X LCM = product**
- Find HCF by difference method
- Put in the formula,
- 21 x LCM = (147 x 231)
- 1617

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LCM

Q. Find LCM of 84 and 125

Soln:-

- As they are co-prime numbers the product is the LCM because HCF =1 (for co-primes)
- HCF x LCM = product
- 1 x LCM = 84 x 125
- LCM = 10500

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LCM

Q. Find the least number which when divided by 12,15,24 leaves a remainder of 5 in each case

- **Soln:**
- Find LCM(12,15,24) = ?

If a, b, c are three numbers that divide a number n to leave the same remainder r, the smallest value of 'n' is

n = (LCM of a, b, c) + r e.g 3,4,5 & rem 1

- LCM = 120

- In an LCM problem, if remainder is common then,

  Result = LCM + common remainder

  = 120+5 = 125

LCM

Q. Find the smallest number which when divided by 20,36,45 leaves a remainder 15,31 and 40 respectively.

- **Soln**:
- Find LCM(20,36,45)
- In LCM problem , if difference is common(constant) then,
- **Result = LCM – Common difference**

- 20 36 45
- 15 31 40 } 5
- Result = 180 -5

  = 175

LCM

Q. Four numbers are in the ratio of 10: 12 : 15 : 18. If their HCF is 3, then find their LCM.

A. 420 B. 540 C. 620 D. 680

Ans : B

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LCM

Q. Find the least number which when divided by 5,6,7 and 8 leaves a reminder of 3 but when divided by 9 leaves no remainder.

A. 1677 B. 2523 C. 3363 D. 1683

Ans: D

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HCF/LCM with Decimal point

- Find HCF of 1.08, 0.36 and 0.9
- **Soln**:

1. Convert each of the decimals into like decimals.

1.08, 0.36 and 0.90

2. Write each number without decimal point.

HCF(108,36,90) = 18

3. Put decimal point after the numbers which are in like decimals.

Here it is after 2 numbers(digits)

HCF (1.<u>08</u>, 0.<u>36</u> and 0.<u>90</u>) = 0.<u>18</u>

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HCF(Assignment)

Q. In a school of 437 boys & 342 girls it was decided to divide the girls & boys into separate classes. However it was required that each class consist of the same number of students. What would be the number of classrooms required?

A. 41 classrooms B. 14 classrooms C. 17 classrooms D. 26 classrooms

Ans : A

Same Class Size = HCF (Boys, Girls)

→ HCF (437,342) = 19

→ Boys Classes = 437/19 = 23

→ Girls Classes = 342/19 = 18

→ Total Classes = 23 + 18 = 41

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LCM(Assignment)

Q. Find the least number which when divided by 12,15,40 leaves a remainder of 5 in each case

A. 120 B. 125 C. 130 D. 140

Ans : B

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LCM(Assignment)

Q. If the product of two numbers is 324 and their HCF is 3, then their LCM will be = ?

A. 972 B. 327 C. 321 D. 108

Ans: D

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LCM(Assignment)

Q. Three number are in the ratio of 3 : 4 : 5 and their L.C.M. is 2400. Their H.C.F. is:

A. 40 B. 80 C. 120 D. 200

Ans: A

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LCM(Assignment)

Q. Find the least number which when divided by 16,18,20 and 25 leaves a reminder of 4 but when divided by 7 leaves no remainder.

A. 17004 B. 18000 C. 18002 D. 18004

Ans: D

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HCF & LCM(Assignment)

Q. The HCF of two numbers is 8. Which one of the following can never be their LCM ?

A. 24 B. 48 C. 56 D. 60

Ans: D

If HCF = 8 then LCM should have a factor of 8
Going by options 60 does not have a factor 8. So never be their LCM.

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HCF & LCM(Assignment)

Q. The LCM of three different numbers is 120. Which of the following cannot be their HCF?

A. 8 B. 12 C. 24 D. 35

Ans: D

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HCF & LCM(Assignment)

Q. HCF of 204,1190,1445

A. 17

B. 18

C. 19

D. 21

Ans: A

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HCF & LCM(Assignment)

Q. LCM of 22,54,108,135 and 198 is -

A. 330

B. 1980

C. 5940

D. 11880

Ans: C

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HCF & LCM(Assignment)

Q. Find HCF of 36 and 84

A. 4

B. 6

C. 12

D. 18

Ans: C

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Numbers(Assignment)

Q. The number nearest to 43582 divisible by each of 25, 50 and 75 is ?

A. 43500 B. 43550 C. 43600 D. 43650

Ans: D

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Numbers(Assignment)

Q. What is the smallest 5 digits number which is divisible by 12, 15, and 18?

A.10010 B. 10015 C.10020 D. 10080

Ans: D

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Rules to Remember

- **Fractions :**

LCM = LCM of Numerators / HCF of Denominators

HCF = HCF of Numerators / LCM of Denominators

LCM of 25/12 & 35/18

LCM = 175/6

HCF of 25/12 & 35/18

HCF = 5/36

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HCF & LCM Fractions(Assignment)

- Find HCF & LCM of 5/9 and 25/36
- Ans : HCF = 5/36 and LCM = 25/9

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HCF & LCM(Assignment)

Q. There are three numbers, these are co-prime to each other are such that the product of the first two is 551 and that of the last two is 1073. What will be the sum of three numbers :

A. 80 B. 82 C.85 D. 87

Soln:

numbers are co primes, so there is only 1 as their common factor.
Given that two products have the middle number in common.

So, middle number = H.C.F. of 551 and 1073 = 29;

So first number is : 551/29 = 19
Third number = 1073/29 = 37

So sum of these numbers is = (19 + 29 + 37) = 85

Ans: C

Number system(Assignment)

Q. Find a positive number x, such that the difference between the square of this number and 21 is the same as the product of 4 times the number?

A. 9 B. 27 C. 7 D. 13

Ans : C

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Progression

- **Arithmetic Progression :**
- If quantities increase or decrease by a common difference then they are said to be in AP e.g. 3, 5, 7, 9,11,….
- If a is first term, d is the common difference, l is the last term then
- General form : a, a+d, a+2d, a+3d,…,a+(n-1)d
- n^{th} term Tn = a + (n-1)d , **n = 1, 2, ..**
- Sum of n terms $Sn = \frac{n}{2}[2a + (n-1)d]$

$$\mathbf{Sn = \frac{n}{2}(a + l)}$$

Progression

- Prove that the sum Sn of n terms of an Arithmetic Progress (A.P.) whose first term ‘a’ and common difference ‘d’ is
- S = n/2[2a + (n - 1)d]
- Or, S = n/2[a + l], where l = last term = a + (n - 1)d
- **Proof:**
- a , a+d , a+2d , a+3d,…….., a(n-2)d ,a(n-1)d, as l = last term
- a , a+d , a+2d , a+3d,…….., l-d ,l
- S = a + a+d + a+2d + a+3d + …….. + l-d + l ----------1
- Writing equation 1 in reverse order(sum remains same even if we write in reverse order)
- S = l + l-d + l-2d + l-3d + …….. + a+d + a----------2
- Adding equation 1 and 2
- 2S = (a + l) + (a + l) + (a + l) + --------- +(a + l) + (a + l)
- So for n terms,
- 2S = n(a + l)
- S = $\frac{n}{2}$ (a + l)

Progression

Q. The sum of all two digit numbers divisible by 3 is

A. 550 B. 1550 C. 1665 D. 1680

Soln

Two digit numbers divisible by 3 are :

12, 15, 18, 21, ……, 96, 99.

This is an A.P. with a = 12, d = 3, l=99

Let n be the number of terms.

Last term = a + (n-1)d

99 = 12 + (n-1)x3

3n = 90 , n = 30

Sum = n/2 (a + l) = 30/2 x (12+99)

= 1665

Ans: C

Progression

Q. Find the sum of all natural numbers between 10 and 200 which are divisible by 7

A. 2835 B. 2865 C. 2678 D. 2646

Soln:

Two digit numbers divisible by 7 are :

14, 21, 28, 35, ……, , 196.

This is an A.P. with a = 14, d = 7, l=196

Last term = a + (n-1)d

196= 14 + (n-1)x7

196-14 = (n-1)x7

n-1 = 26

n=27

Sum = n/2 (a + l)

= 27/2 x (14+196)

= 27 × 210 /2

= 27 × 105

= 2835

OR

$$n = \frac{\text{LastTerm} - \text{FirstTerm}}{d} + 1$$

Ans: A

Progression(Assignment)

Q. Find the sum of the series 3,8,13,18, …….,93

A. 912 B. 925 C. 998 D. 936

Ans : A

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Progression

- **Geometric Progression** :
- If quantities increase or decrease by a constant factor then they are said to be in GP e.g. 4, 8, 16, 32, …..
- If a is first term, r is the common ratio, then
- General form : a, ar, ar^2, ar^3,……, ar^{n-1}
- n^{th} term Tn = $ar^{(n-1)}$
- Sum of n terms **Sn =** $\frac{a(r^n - 1)}{(r - 1)}$

Geometric Progression of n terms :

- To prove that the sum of first n terms of the Geometric Progression whose first term 'a' and common ratio 'r' is given by-
- $S = a + ar + ar^2 + ar^3 + ar^4 + \ldots\ldots\ldots\ldots + ar^{n-1}$ ---------- 1
- Multiply both sides of this equation by r
- $Sr = ar + ar^2 + ar^3 + ar^4 + \ldots\ldots\ldots\ldots + ar^{n-1} + ar^n$ ---------- 2

\- - - - - - -

- Eq 2 - Eq 1
- $Sr - S = ar^n - a$
- $S(r - 1) = a(r^n - 1)$
- $S = \frac{a(r^n - 1)}{(r - 1)}$

Geometric Progression

Q. Find the 10th term of the series: 4,16, 64, 256, 1024, ….

A. 4^{10} B. 4^{8} C. 4^{9} D. 1022480

Soln:

The given series is in geometric progression

Where a = 4, r = 4

So $T10 = a \times r^{(10-1)}$

$= 4 \times 4^{(10-1)}$

$= 4^{10}$

Ans: A

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Progression

- What is the difference between arithmetic progression and geometric progression?
- A sequence is a set of numbers, called terms, arranged in some particular order. An arithmetic sequence is a sequence with the difference between two consecutive terms constant. The difference is called the common difference. A geometric sequence is a sequence with the ratio between two consecutive terms constant.

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THANK YOU!

GENERAL APTITUDE

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Averages

- **Simple Average** :
- An average of a set of values is the sum of values divided by the total number of values.
- Average of ‘n’ values = (Sum of the ‘n’ values)/n
- This is also called as Arithmetic Mean.
- Average (A) = Sum (S)/ Number(n)
- S = A x n
- **Weighted Average** :
- When all values whose average we want to find do not have uniform occurrences we calculate the weighted average.
- If values y1, y2, y3…occur w1, w2, w3… times then
- Weighted Avg $= \frac{(w1y1+w2y2+w3y3+ ..)}{(w1+w2+w3..)}$

Averages

Q. In a class of 50 students, 24 secured 60 in Physics, 16 secured 70 marks and the rest secured 80. What is the average score for Physics in the class?

A.64.8 B. 65.4 C. 67.2 D. 66.7

Soln :-

Students	24	16	10.
Marks	60	70	80

Average $= \dfrac{24x60 + 16x70 + 10x80}{24 + 16 + 10}$

$= 3360/50$

$= 67.2$

Ans : C

Averages

- Only For Consecutive Numbers -
- Whenever, we have consecutive numbers or consecutive odd numbers or consecutive even numbers, then always remember the middle number is the Average.
- Examples-
- A. 5,6,7,8,9 → Avg =7
- B. 5,6,7,8 → Avg =6.5
- C. 1,3,5,7,9 → Avg =5
- D. 21,23,25,27 → Avg =24

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Averages

Q. The average age of a class of 22 students is 21 years. The average increased by 1 when the teacher's age also included. What is the age of the teacher?

A. 48 B. 45 C. 43 D. 44

Ans: D

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Averages

Q. The average age of a class of 22 students is 21 years. The average increased by 1 when the teacher's age also included. What is the age of the teacher?

Solution 1:-

- Before teacher , total age of students = 22x21
- After teacher is added,

Total age of all students + Age of the teacher =23×22

- Age of the teacher =23×22−22×21

=22(23−21)

=22×2

=44 years

Averages

- The average age of a class of 22 students is 21 years. The average increased by 1 when the teacher's age also included. What is the age of the teacher?

- **Solution 2:-**
- New value = old avg + (n $\pm$ 1)(diff)

+ if member added
- If member removed

- Where, n = total no. of students

difference = |Old avg – new avg|

- New value = 21 + (22+1)(1)

  = 21 + 23

  = 44 years

Averages

Q. There are 50 students in a class. Their average weight is 45 kg. When one student leaves the class the average weight reduces by 100 g. What is the weight of the student who left the class ?

A. 45 kg. B. 47.9 kg. C. 49.9 kg. D. 50.1 kg.

Soln:

New value = old avg + (n $\pm$ 1)(diff)

= 45 + (50 – 1)(0.1) (as we convert 100g into kg = $\frac{100}{1000}$ = 0.1 kg)

= 45 + 49(0.1)

= 45 + 4.9

= 49.9 kg

Ans: C

Averages

Q. There are 50 students in a class. Their average weight is 45 kg. When one student leaves the class the average weight reduces by 100 g. What is the weight of the student who left the class ?

A. 45 kg. B. 47.9 kg. C. 49.9 kg. D. 50.1 kg.

Soln:

Total weight of 50 students = (45 x 50) kg = 2250 kg

Average weight of 49 students = 45kg -100g = 44.9 kg

So, total weight of 49 students = (44.9 x 49)kg = 2200.1kg

Weight of the students who left the class = 2250 – 2200.1 = 49.9 kg

Ans: C

Averages

Q. The average age of 16 men increases by 3 years when a person 27 years old is replaced by another. How old is the new person?

A.75 B. 30 C. 48 D. 64

Soln:-

Number of men = 16

Let average age be a

→ Total age of 16 men = 16a (Old total)

New average = a+3

→New total age of 16 men = 16 (a+3) = 16a + 48

New Total – Old Total = 48

→ Age of new man = 27 + 48 = 75

Ans : A

Averages

Q. The average age of 16 men increases by 3 years when a person 27 years old is replaced by another. How old is the new person?

A.75 B. 30 C. 48 D. 64

Soln:-

- Average of 16 men increases by 3 years means,
- total age increases by 16 x 3 =48
- If the age of new person same as replaced person then there would have been no change in average.
- But average age of 16 men increased by 3 years
- So, total age of the person replacing another person = 27 + 48 = 75years

Ans : A

Averages

Q. The average age of 8 men is decreased by 2 years when two of them, whose ages are 22 and 28, are replaced by two new men.. What is the average age of two men?

A. 34years B. 30years C. 15years D. 17years

Soln:

- Average of 8 men reduce by 2 years means total age reduces by 16 if two men leave.
- So, the total age of the new men replacing the old men = 22+28–16=34
- => Average = 34/2 = 17 years.

OR

- Total age decreased= (8 * 2) years = 16 years.
- Sum of ages of two new men = (22 + 28 - 16) years = 34 years
- Average age of two new men = (34/2) years = 17 years.
- **Ans: D**

Averages

Q. The average age of students is 7 years and average age of 10 teachers is 50 years. If average age of group of all teachers and students is 8 years. Find the number of students?

A. 420 B. 250 C. 300 D. 270

Soln:

We know, Total = avg x n

	S	T
No.	z	10
Avg	7	50

(student + teacher)x avg = (student) x avg + (teacher) x avg

(z +10) x 8 = (z) x 7 + (10) x 50

8z+80 = 7z + 500

Z= 420 students

Ans :A

Averages(Assignment)

Q. Find average of all the numbers between 6 and 34 which are divisible by 5.

A. 18

B. 20

C. 34

D. 3

Ans: B

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Averages(Assignment)

Q. The average weight of 16 boys in a class is 50.25 kg and that of the remaining 8 boys is 45.15 kg. Find the average weights of all the boys in the class.

A. 47.55 kg B. 48 kg C. 48.55 kg D. 49.25 kg

Ans: C

Average $= \frac{50.25 \times 16 + 45.15 \times 8}{16+8}$

$= (804+361.2)/24$

$= 1165.2 /24$

$= 48.55$

Averages(Assignment)

Q. The average age of a class of 39 students is 15 years. If the age of the teacher be included, then the average increases by 3 months. Find the age of the teacher.

A. 20 years B. 25 years C. 30 years D. 27 years

Ans : B

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Averages(Assignment)

Q. The average marks of a class of 87 students is 56. When a new student was added and average becomes 56.5. Find marks of new student.

A. 56 B. 44 C. 100 D. 90

Ans: C

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Averages(Assignment)

Q. Find the average of first 97 natural numbers.

A. 47 B. 37 C. 48 D. 49 E. 49.5

Ans: D

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Averages(Assignment)

Q. The average age of a class of 30 students is 9years. When teacher's age is also added, the average becomes 10. What is the age of the teacher?

A. 41 years B. 40 years C. 39 years D. 42 years

Ans: B

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Averages(Assignment)

Q. The average of 50 numbers is 30. If two numbers, 35 and 40 are discarded, then the average of the remaining numbers is nearly:

A. 28.32 B. 29.68 C. 28.78 D. 29.27

Ans: B

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Averages(Assignment)

Q. The average age 8 men is increased by 2 years when two of them whose ages are 21 years and 23 years are replaced by two new men . The average age of the two new men is?

A. 22 years B. 24 years C. 28 years D. 30 years

Ans: D

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Averages(Assignment)

Q. The average weight of the students of a class is 60 kg. If eight new students of average weight 64 kg join the class, the average weight of the entire class becomes 62 kg. How many students were there in the class initially ?

A. 8 students B. 16 students C.10 students D. 12 students

Ans: A

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Averages(Assignment)

Q. The average of ten numbers is 8. If the average of first nine numbers is 7. Find the 10th number?

A. 17 B. 16 C.15 D. 12

Ans: A

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Averages(Assignment)

Q. The average marks obtained by 150 students is 30. If the average marks of passed candidates was 40 and that of failed candidates was 20. Find the number of candidates who passed the exam?

A. 25 B. 85 C.75 D. 45

Ans: C

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Averages(Assignment)

Q. The average expenditure of a man for the first five months is Rs. 3600 and for next seven months is Rs. 3900, if he saves Rs.8700 during the year, his average income per month is ?

A. Rs.4500 B. Rs.8500 C. Rs.7500 D. Rs.5400

Ans: A

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Averages(Assignment)

Q. The average of first five multiples of 3 is:

A. 9 B. 10 C. 8 D. 11

Ans: A

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Averages(Assignment)

Q. Find the average of first 100 positive numbers

A. 49.5 B. 50.5 C. 51 D. 100

Ans: B

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Averages(Assignment)

Q. The average expenditure of a man for the first five months of a year is Rs. 5000 and for next seven months is Rs. 5400, if he saves Rs.2300 during the year, his average income per month is ?

A. Rs.5425 B. Rs.5446 C. Rs.5500 D. Rs.5600

Ans: A

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Ages

Ram is at present some age(x) . Age 15 years ago or future age, then

Past ⟷ Present ⟷ Future

(-) (+)

‘n’ times of Ram’s age means ,
= n x age

Ages

Q. Karan's age after 15years will be 5 times his age 5 years back. What is the present age of Karan?

A. 12 years B. 10 years C. 20 years D. 25 years

Soln:

Present age = x

As given,

Future age = x +15

Old age = x-5 5 times is that n times

So , x + 15 = 5(x-5)

x +15 = 5x -25

x = 10 years(Karan's present age)

Ans: B

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Ages

Q. Present age of Sam & Ana are in the ratio 5:4 respectively. Three years hence ,their ratio will become 11:9 respectively. What is Ana's present age?

A. 6 years B. 24 years C. 28years D. 32years

Soln:

Present age –

S -> 5x, A -> 4x

3 years hence means (+) as its future ratio given and so its fraction

$\frac{5x+3}{4x+3} = \frac{11}{9}$

45x+27 = 44x + 33

x = 6 years

For A,

4x = 4 x 6 = 24 years

Ans: B

Ages

Q. Consider 5 siblings born apart by 3 years each. If the sum of the ages of all children is 50years. What is the age of youngest child?

Soln :

S1 ↔ S2 ↔ S3 ↔ S4 ↔ S5

3 3 3 3

x+12 x+9 x+6 x+3 x youngest

Eldest

Given,

Sum of ages = 50 years

x+12+x+9+x+6+x+3+x = 50

5x + 30 = 50

x = 4 years (age of youngest child)

Ages

Q. A mother said to her daughter " I was as old as you are at the time of your birth". If the mother's age is 38 years now. What was the daughter's age 5 years back?

A. 14years B. 19years C. 38years D. None of these

Soln:

	M	D
Present	38	x
At birth time	38-x	0

I was as old as you are at the time of your birth" shows

M D

38-x = x

38 = 2x

x =19 years(present age of daughter)

5years back, 19-5 = 14 years

Mother's age at time of birth = 38 –x

= 38 – 19

Ans: A = 19 years

Ages

Q. A man was asked to state his age in years. His reply was, "Take my age 3 years hence, multiply it by 3 and then subtract 3 times my age 3 years ago and you will know how old I am". What is the age of the man ?

A. 18 years B. 20 years C. 24 years D. 32 years

Soln:

Let the present age of the man be x years

$3(x+3)-3(x-3)=x$

$(3x+9)-(3x-9)=x$

$x=18$

Ans: A

Ages

Q. Ten years ago, a man was seven times as old as his son. Two years hence, twice his age will be equal to five times the age of his son. What is the present age of the son ?

A. 12 years B. 13 years C. 14 years D. 15 years

Ans: C

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Ages(Assignment)

Q. A is 2 years old than B who is twice as old as C. The total ages of A,B,C be 27. How old is B?

A. 5 years B. 12 years C. 10 years D. None of these

- **Soln**:
- So, we need to first find x here
- A = 2 + B
- B = 2C
- C = x
- So B becomes, B =2x
- So A becomes,
- A = 2 + B
- A = 2 + 2x
- **Ans: C**

Given, the total age = A +B + C =27

Substitute the values here for A,B,C

2 +2x + 2x + x = 27

5x = 25

x=5years

Age of B = 2x = 2 x 5 =10 years

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Ages(Assignment)

Q.A man who is 40 years old has three sons, ages 6, 3 and 1. In how many years will the combined age of his three sons equal 80% of his age?

A.5 B. 10 C. 15 D. 20

Soln:

- Let the condition occur after y years.
- After y years
- Man's age = (40+y)
- Son's ages (6+y), (3+y), (1+y)
- Sum of sons' ages = (10+3y)
- (10+3y) = 80/100(40+y)
- 5(10+3y) = 4 (40+y)
- 50 + 15y = 160 + 4y
- 11y = 110
- y = 10

Ans : B

Ages(Assignment)

Q. The ratio of Present age of A and B is 6:7. A is 7 years younger than C. C's age after 8 years will be 51 years. Then what is the difference between the present ages of A and B?

A. 3 Years B. 4 Years C. 5 Years D. 6 Years E. Cannot be determined

Ans : D

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Ages(Assignment)

Q. The average age of A, B, C, D and E is 40 years. The average age of A and B is 35 years and the average of C and D is 42 years. Age of E is :

A. 48 years B. 46 years C. 42 years D. 45 years

Ans: B

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Ages(Assignment)

Q. 10 years ago, age of father was thrice the age of his son. Ten years hence, father's age will be twice that of his son. The ratio of their present ages is:

A. 5:2 B. 7:3 C. 9:2 D. 13:4

Ans : B

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Ages(Assignment)

Q. The average age of A, B and C is 28 years, if average age of B and C is 29 years. What is the age of A in years?

A. 24 years B. 26 years C. 28 years D. 30 years

Ans: B

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Ages(Assignment)

Q. Sachin is younger than Rahul by 7 years. If their ages are in the respective ratio of 7 : 9, how old is Sachin?

A. 16 years B. 18 years C. 28 years D. 24.5 years E. None of these

Ans: D

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Ages(Assignment)

Q. At present, the ratio between the ages of Arun and Deepak is 4 : 3. After 6 years, Arun's age will be 26 years. What is the age of Deepak at present ?

A. 12 years B. 15 years C. 19.5 years D. 21 years E. None of these

Ans: B

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Ages(Assignment)

Q. The present ages of three persons in proportions 4 : 7 : 9. Eight years ago, the sum of their ages was 56. Find their present ages (in years).

A. 8, 20, 28 years

B. 16, 28, 36 years

C. 20, 35, 45 years

D. None of these

Ans: B

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Ages(Assignment)

Q. The sum of the ages of two brothers 21 years hence will be twice the sum of their ages today. If the difference in their ages is 12 years, how old is the younger brother?

A. 27 years B. 21 years C. 17 years D. 15 years

Ans : D

Soln-

Present age of elder brother = x

Present age of younger brother = y

After 21 years , elder brother = x+21 and younger brother = y+21

As per given condition,

x+21 + y+21 = 2(x + y) ------ (1)

x – y =12 ------(2)

Solving 1 and 2 , we get ,

x = 27 years and y = 15 years

Ratio & Proportion

- **Ratio** : Ratio is a comparison of two numbers (quantities) by division.
- The ratio of a to b is written as
- **a : b = a/b = a ÷ b.**

* Ratio is defined only for two values of same units

ratio between 20 kg & 50 kg is 2:5

Ratio & Proportion

- **Some Useful Results**

- **If a:b = c:d or a/b = c/d**

1. $a \times d = b \times c$
2. $b/a = d/c$ (Invertendo)
3. $a/c = b/d$ (Alternendo)
4. $a+b/b = c+d/d$ (By Componendo)
5. $a-b/b = c-d/d$ (By Dividendo)
6. $(a+b)/(a-b) = (c+d)/(c-d)$ (By Componendo & Dividendo)

Ratio & Proportion

- **Proportion** : A proportion is an expression that states that two ratios are equal.

  i.e. **a : b = c : d** e.g **2 : 3 = 4 : 6** or **2 : 3 :: 4 : 6**

  a, b, c & d are called the 1st, 2nd, 3rd & 4th proportional.

  1st & 4th proportionals are called extreme terms &

  2nd & 3rd proportionals are called mean terms.

  Product of means = Product of extremes. **bc = ad**

- **Continued Proportion**

  Three quantities are said to be in continued proportion if

  a : b = b : c or a/b = b/c

  If a : b :: b : c then $b^2 = ac$ (b is the mean proportion of a & c)

  a : b = b : c = c : d or a/b = b/c = c/d

Ratio & Proportion(Assignment)

Q. If A : B = 2 : 3, B : C = 4 : 5 and C : D = 5 : 9 then A : D is equal to:

A. 11 : 17 B. 8 : 27 C. 5 : 9 D. 2 : 9

Soln:

$$\frac{A}{D} = \frac{A}{B} \times \frac{B}{C} \times \frac{C}{D}$$

$$\frac{A}{D} = \frac{2}{3} \times \frac{4}{5} \times \frac{5}{9}$$

$$\frac{A}{D} = \frac{8}{27}$$

Ans : B

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Ratio & Proportion(Assignment)

Q. What is the value of A+B / A-B, if A/B = 7

A. 4/3 B. 2/3 C. 2/6 D. 7/8

Ans : A

A/B = 7/1

A+B/A-B = 7+1/7-1 = 8/6 =4/3

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Ratio & Proportion

If X : Y = 3 : 4 and Y : Z = 8 : 9 then X : Z is

A. 3 : 4 B .5 : 4 C. 2 : 3 D. 8 : 9

Soln:

X : Y = 3 : 4

(Inverted N)

Y : Z = 8 : 9

= 3x8 : 8x4 : 4x9

= 24 : 32 : 36

= 6 : 8 : 9

Now, X : Z

6 : 9

2 : 3

Ans: C

$$\frac{X}{Z} = \frac{X}{Y} \times \frac{Y}{Z}$$

$$\frac{X}{Z} = \frac{3}{4} \times \frac{8}{9}$$

$$\frac{X}{Z} = \frac{2}{3}$$

Ratio & Proportion(Assignment)

If A : B = 2 : 3 and B : C = 4 : 5 then A : B : C is

A. 2 : 3 : 5 B .5 : 4 : 6 C. 8 : 12 : 15 D. 6 : 4 : 5

Ans : C

- $\frac{A}{B} = \frac{2}{3}$
- $\frac{B}{c} = \frac{4}{5}$

A	:	B	:	C
2	:	3		
		4	:	5

- A : B : C = 2 × 4 : 3 × 4 : 3 × 5
  = 8 : 12 : 15

Ratio & Proportion

Q. A sum of Rs. 1240 is distributed among A, B and C such that the ratio of amount received by A and B is 6 : 5 and that of B and C is 10 : 9 respectively. Find the share of C ?

A.Rs. 480 B.Rs. 360 C.Rs. 400 D.Rs. 630

- **Soln:**
- Given, A : B = 6 : 5 , B : C = 10 : 9
- A : B : C
- 6 : 5

  10 : 9

---

60 : 50 : 45

12 : 10 : 9

A : B : C = 12 : 10 : 9

12x + 10x + 9x = 1240

x = 40

C's share = 9 × 40 = Rs. 360

Ans : B

Ratio & Proportion

If A : B = 2 : 3, B : C = 4 : 5 and C : D = 6 : 7. Find A:B:C:D

A. 2 : 3 : 4 : 5 B. 2 : 12 : 30 : 7 C. 16 : 24 : 30 : 35 D. 4 : 5 : 6 : 7

Soln:

A : B = 2 : 3

B : C = 4 : 5

C : D = 6 : 7

	A	:	B	:	C	:	D
=	ABC	:	BBC	:	BCC	:	BCD
=	2X4X6	:	3X4X6	:	3X5X6	:	3X5X7
=	48	:	72	:	90	:	105
=	16	:	24	:	30	:	35

Ans: C

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Ratio & Proportion

Dividing a given number in the given Ratio :

Let T be the Total Amount . Let the given ratio be a:b:c

This means A is divided into three parts such that

First Part = T x a/(a+b+c)

Second Part = T x b/(a+b+c)

Third Part = T x c/(a+b+c)

And First Part + Second Part + Third Part = T

Any Part = Total Amount x (Its related ratio term / Sum of Ratio Terms)

Ratio & Proportion

Q. Find B's share in Rs 6,300 if A:B = 2:3, B:C = 4:5, C:D = 3:7

A.Rs 1080 B. Rs 1800 C. Rs 810 D. Rs 1200

Soln:

A/B	B/C	C/D
2/3	4/5	3/7

A : B = 2 : 3

B : C = 4 : 5

C : D = 3 : 7

A : B : C : D

8 : 12 : 15 : 35

So B's share = 6300 x 12/70 = 1080

Ans : A

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Ratio & Proportion

Q. Which of the following is a ratio between a number and the number obtained by adding one-fifth of that number to it?

A. 4:5

B. 5:4

C. 5:6

D. 6:5

Ans: C

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Ratio & Proportion(Assignment)

Q. If A:B =2:3, B:C= 4:5 and C:D =6:7 Find A:D is equal to:

A. 16 : 35 B. 8 : 25 C. 4 : 15 D. 2 : 10

Ans : A

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Ratio & Proportion(Assignment)

Q. The difference between two positive numbers is 10 and the ratio between them is 5 : 3. Find the product of the two numbers.

A.375 B.175 C.275 D.125 E.250

Ans : A

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Ratio & Proportion(Assignment)

Q. Two numbers are in ratio 4 : 5 and their LCM is 180. The smaller number is

A.9 B.15 C.36 D.45

Ans : C

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Ratio & Proportion(Assignment)

Q. The average income of all employees is Rs. 20000. The average salary of male employees is Rs. 22000. The average salary of female employees is Rs. 15000. What is the ratio of male employees to female employees?

A. 2 : 5 B. 3 : 4 C. 5 : 2 D. 3 : 5

Ans: C

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Ratio & Proportion(Assignment)

Q. The sum of 3 numbers is 98. If ratio between first and second numbers be 2 : 3 and between second and third be 5 : 8, then the second number is?

A. 30 B. 40 C. 50 D. 60

Ans: A

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Ratio & Proportion(Assignment)

Two numbers are in ratio 7 : 11. If 7 is added to each of the numbers, the ratio becomes 2 : 3. The smaller number is?

A. 39 B. 49 C. 66 D. 77

Ans: B

Let the numbers be 7x and 11x.

(7x+7)/(11x+7)=2/3

22x+14=21x+21

x=7

Smaller number= 7x = 7 x 7 = 49

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Ratio & Proportion(Assignment)

Q. What must be added to each of the numbers 7, 11 and 19, so that the resulting numbers may be in continued proportion?

A. -3 B. -4 C. 3 D. 4

Ans: A

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Ratio & Proportion(Assignment)

Q. The incomes of A & B are in the ratio 3:2. Their respective expenditures are in the ratio 5:3. If each of them saves Rs. 2000, what is the income of B?

A. Rs 12,000 B. Rs 8,000 C. Rs 16,000 D. Rs 6,000

Ans : B

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Ratio & Proportion(Assignment)

Q. When a particular number is subtracted from each of 7, 9, 11 and 15, the resulting numbers are in proportion. The number to be subtracted is -

A. 1 B. 2 C. 3 D. 5

Ans: C

Sol:

- Let the required number be x
- $\frac{7-x}{9-x} = \frac{11-x}{15-x}$
- (7 - x)(15 - x) = (11 - x)(9 - x)
- 105 - 22x + x2 = 99 - 20x + x2
- 2x = 6
- x = 3

Mixtures & Alligation

- **Alligation** : It is the rule which enables us to find the ratio in which two or more ingredients at given prices must be mixed to produce a mixture of a desired price.(mixing / linking)
- **Mean Price** : The cost price of a unit quantity of mixture is called the mean price.
- **Dearer** : The more expensive ingredient

- Note :

Always maintain the order in which problem is given else answer gets changed

Mixtures & Alligation

Type 1 oranges at Rs.60 per kg and Type 2 oranges at Rs.120 per kg and when mixed cost is Rs.75 per kg. Find the ratio in which Type 1 and Type 2 oranges are mixed.

Soln:

Type 1 60

Type 2 120

75

x = d-m

y =m-c

$$\frac{x}{y} = \frac{d-m}{m-c} = \frac{120-75}{75-60} = \frac{45}{15} = \frac{3}{1} = 3:1$$

$$\frac{\text{Quantity of cheaper ingredient}}{\text{Quantity of costlier ingredient}} = \frac{d - m}{m - c}$$

Mixtures & Alligation

$$\frac{\text{Quantity of Lower}}{\text{Quantity of Higher}} = \frac{(\text{C.P. of Higher}) - (\text{Mean Price})}{(\text{Mean Price}) - (\text{C.P. of Lower})}$$

$$\frac{\mathbf{Q}l}{\mathbf{Q}h} = \frac{\mathbf{CP}h - \mathbf{CP}m}{\mathbf{CP}m - \mathbf{CP}l}$$

(**Qty** Low) : (**Qty** High) = (**CP**h-**CP**m) : (**CP**m-**CP**l)

Mixtures & Alligation

Q. CP of rice A is Rs. 15/kg and CP of rice B is Rs.20/kg. If both A and B are mixed in the ratio 2:3. Then find the price per kg of the mixed rice.

A. Rs. 28 B. Rs. 17 C. Rs. 18 D. Rs. 48

Soln:

$$\frac{x}{y} = \frac{d-m}{m-c}$$

$$\frac{2}{3} = \frac{20-m}{m-15}$$

$$m = \frac{90}{5} = \text{Rs.}18$$

Ans: C

Mixtures & Alligation

Q. In what ratio must a grocer mix two varieties of dal worth Rs. 60/kg & Rs. 65/kg, so that selling the mixture at 68.20/kg, he may gain 10%.

Soln:

- Mean price is always CP
- Steps-
- 1. m=?
- 2. m = cost price(CP)
- 3. SP = given
- 4. find x/y=?

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Mixtures & Alligation

In what ratio must a grocer mix two varieties of dal worth Rs. 60/kg & Rs. 65/kg, so that selling the mixture at 68.20/kg, he may gain 10%.

A. 3:2 B. 2:3 C. 3:4 D. 4:3

- SP of 1 kg of mixture = Rs. 68.20
- Gain =10%
- In case of profit, SP = $\frac{\text{C.P. x } \mathbf{(100 + \%gain)}}{100}$
- CP of 1kg of mixture = Rs ($\frac{100}{100+10}$ x 68.2)
- $= \frac{682}{11}$
- Mean price =Rs. 62
- By the rule of alligation, we have :
- C.P. of 1kg dal of 1st kind C.P. of 1kg dal of 2nd kind

Ans: A

x/y = 3/2= 3:2

Mixtures & Alligation

Q. A person blends two varieties of tea, one cost Rs. 160/kg and other cost Rs. 200/kg in the ratio 5 : 4. He sells the blended variety at Rs.192/kg. Find the profit %.

A. 6% B. 8% C. 7% D. 9%

Soln :

$\frac{x}{y} = \frac{d-m}{m-c}$

$\frac{5}{4} = \frac{200-m}{m-160}$

5m -800 = 800 -4m

9m = 1600

m = $\frac{1600}{9}$

SP=Rs.192(given) , CP =mean price

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

$= \frac{192 - \frac{1600}{9}}{\frac{1600}{9}} = \frac{1728 - 1600}{1600} = \frac{128}{16} = 8\%$ **Ans: B**

Mixtures & Alligation

Q. Two jars A and B contain milk and water in the ratio 7:5 and 17:7 respectively. In what ratio mixtures from two vessels should be mixed to get a new mixture containing milk and water in the ratio 5:3?

A. 2:1 B. 1:2 C. 2:3 D. 3:4

Soln:

For these type of questions consider 1 ingredient out of the two ingredients and represent as fraction of one.

A	B	C
m:w	m:w	m:w
7:5	17:7	5:3

We consider milk here, so fraction of milk,

A: $\frac{7}{7+5} = \frac{7}{12}$

B: $\frac{17}{17+7} = \frac{17}{24}$

C: $\frac{5}{5+3} = \frac{5}{8}$

To make calculations easier, convert all denominator into common one

So, find LCM(12,24,8) = 24

A: $\frac{7}{12} \times \frac{2}{2} = \frac{14}{24}$

B: $\frac{17}{24}$

C: $\frac{5}{8} \times \frac{3}{3} = \frac{15}{24}$

forget denominators,

By rule of Alligation,

2:1

Ans: A

Mixtures & Alligation

Q. Two vessels A and B contain spirit and water mixed in the ratio 5:2 and 7:6 respectively. Find the ratio in which these mixtures are mixed to obtain a new mixture in vessel C containing spirit and water in the ratio 8:5?

A. 4:3

B. 3:4

C. 5:6

D. 7:9

Ans: D

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Mixtures & Alligation

Q. How many kg of sugar costing Rs. 9 per kg must be mixed with 27kg of sugar costing Rs. 7 per kg, so that there maybe a gain of 10% by selling the mix at 9.24 per kg ?

A. 62kg B. 63kg C. 53kg D. 59kg

Soln:

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

CP (Mean) = 9.24 x 100/110 = 8.4

- Qty of Low : Qty of High = 0.6/1.4 = 6/14 = 3/7
- 27 / Q_H = 3/7
- Q_H = 27 x 7/3 = 63 kg

Ans: B

Mixtures & Alligation

- **Final concentration = Initial** $\left(1-\frac{R}{Initial}\right)^n$
- where,
- Final concentration is the amount of concentration remaining after the process
- n is the number of times the process is done and
- R is the replaced quantity.
- Initial is the initial concentration

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Mixtures & Alligation

Q. A container contains 40 litres of milk. From this container 4 litres of milk was taken out and replaced by water. This process was repeated further two times. How much milk is now contained by the container?

A. 26.34 litres B. 27.36 litres C. 28 litres D. 29.16 litres

Ans: D

- The volume of milk remaining after the three processes is,
- $V=N(1-\frac{R}{N})^n$ where,

N is the original amount of milk,
n is the number of processes and
R is the replaced quantity.

$= 40(1-\frac{4}{40})^3$

$= 40(1-\frac{1}{10})^3$

$= 40(0.729)$

$=29.16$

Mixtures & Alligation(Assignment)

Q. A container contains 100 L of milk. From this container 10 L of milk was taken out and replaced by water. This process was further repeated three times. How much milk does the container have now?

A. 72.9 litres B. 65.61 litres C. 34.39 litres D. 81 litres

Ans: B

Final concentration = Initial concentration (1−Replaced/Initial)n

Mixtures & Alligation(Assignment)

Q. The ratio of milk to water in 80 litres of a mixture is 7 : 3. The water (in litres) to be added to it to make the ratio 2 : 1 is ?

A. 4 litres B. 5 litres C. 6 litres D. 8 litres

Soln:

Mixture = 80 litres

Milk	:	Water	
7	:	3	= 7+3 = 10(total parts of mixture)

Quantity of Milk = $\frac{7}{10}$ x 80 = 56 litres

Quantity of Water = $\frac{3}{10}$ x 80 = 24 litres

Let quantity of water added be 'x' litres

$\frac{56}{24+x} = \frac{2}{1}$ 56 = 48 + 2x

x = 4 litres of water is to be added.

OR

Let, Milk = 7x and Water = 3x

7x + 3x = 80 litres

10x = 80

x = 8litres

Milk = 7x = 7x8 = 56 litres

Water = 3x =3x 8 = 24 litres

$\frac{56}{24+x} = \frac{2}{1}$ 56 = 48 + 2x

x = 4 litres of water is to be added.

Ans : A

Mixtures & Alligation(Assignment)

Q. What quantity of sugar costing Rs 21.20 per kg must be mixed with 144 kg of sugar priced at Rs 26.20 per kg so that 10% may be gained by selling mix at Rs 25.30/kg ?

A. 256 kg B. 265 kg C. 244 kg D. 144 kg

Ans: A

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Mixtures & Alligation(Assignment)

Q. Find the ratio in which the contains of 2 jars A & B containing spirit & water in the ratio 1:3 & 3:2 respectively must be mixed so that resulting mixture contains 45% spirit?

A. 2:3 B. 3:5 C. 3:2 D. 3:4

Ans D

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Mixtures & Alligation(Assignment)

Q. Two solutions have milk : water ratio of 2:3 and 4:5. In what ratio must they be mixed such that the resultant solution has milk : water ratio of 3:4?

A. 8:3 B. 3:8 C. 5:9 D. 9:5

Ans : C

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Mixtures & Alligation(Assignment)

Q. In what ratio rice at Rs. 9.30/kg be mixed with rice at Rs. 10.80/kg. So that the mixture be worth Rs. 10/kg.

A. 6:5 B. 8:7 C. 3:7 D. 6:1

Ans : B

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Mixtures & Alligation(Assignment)

Q. The ratio, in which tea costing Rs. 192 per kg is to be mixed with tea costing Rs. 150 per kg so that the mixed tea when sold for Rs. 194.40 per kg, gives a profit of 20%.

A. 2 : 5 B. 3 : 5 C. 5 : 3 D. 5 : 2

Ans : A

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Mixtures & Alligation(Assignment)

Q. In what ratio must a mixture of 30% alcohol strength be mixed with that of 50% alcohol strength so as to get a mixture of 45% alcohol strength?

A. 1 : 2 B. 1 : 3 C. 2 : 1 D. 3 : 1

Ans : B

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Mixtures & Alligation(Assignment)

Q. A mixture of 70 litres of alcohol and water contains 10% of water. How much water must be added to the above mixture to make the water 12.5% of the resulting mixture?

A. 1 litre B. 1.5 litres C. 2 litres D. 2.5 litres

Ans: C

- Water=10% of 70 lit=7 lit,
- alcohol=90% of 70 lit=63 lit.
- Let, x lit water must be added.
  $\frac{(7+x)}{63} = \frac{12.5\%}{87.5\%}$
- 7 +x = 787.5/87.5
  7 + x = 9
- x=2 litres

Mixtures & Alligation(Assignment)

Q. In what ratio should two qualities of coffee powder having the rates of ₹47 per kg and ₹32 per kg be mixed in order to get a mixture that would have a rate of ₹37 per kg?

A. 1 : 2 B. 4 : 1 C. 1 : 3 D. 3 : 1 E. 1 : 4

Ans: A

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Mixtures & Alligation(Assignment)

Q. How many kilograms of tea worth Rs. 3. 60 per kg. must be mixed with 8 kg. of tea worth Rs. 4.20 per kg. so that by selling the mixture at Rs. 4.40 per kg. There may be a of 10%.

A) 4 kg B) 3 kg. C) 6 kg. D) 8 kg.

Ans: A

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Mixtures & Alligation(Assignment)

Q. The ratio of milk to water in 20 litres of a mixture is 3 :1. The Milk (in litres) to be added to the mixture so as to have milk and water in the ratio 4 : 1 is ?

A. 7 litres B. 4 litres C. 5 litres D. 6 litres

Ans: C

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Mixtures & Alligation(Assignment)

Q. In what ratio must water be mixed with milk costing Rs. 12 per litre to obtain a mixture worth of Rs. 8 per litre?

A. 1 : 2 B. 2 : 1 C. 2 : 3 D. 3 : 2

Ans: A

By the rule of alligation :

Ratio of water to milk

= 4 : 8

= 1 : 2

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Profit & Loss

- **Basics**

Profit (Gain) = (S.P – C.P)

Loss =(C.P – S.P)

% gain = (Gain / C.P) x 100

% loss = (Loss / C.P) x 100

- **Multipliers to find S.P**

In Case of Profit : S.P. = C.P. x **(100 +%gain)/100**

In Case of Loss : S.P. = C.P. x **(100 - %loss)/100**

i.e For sale at 25% profit S.P. = 125 % of C.P.

For sale at 25% loss S.P. = 75% of C.P.

Profit & Loss

Q. A man bought certain no of oranges at the rate of 5 for Rs 4 and sold them at the rate of 4 for Rs 5. Find his overall profit/loss percentage?

A. 25.5% Pr B. 36.5% Pr C. 56.2% Pr D. 64.5% Pr

Soln

Cost Price			Selling Price		
Oranges→		Rs	Oranges→		Rs
5	→	4	4	→	5
20	→	16	20	→	25

SP>CP, so profit

P% = (SP –CP)/CP x 100

= (25-16)/16 x 100

= 225/4 = 56.20%

Ans: C

Cost Price			Selling Price		
Oranges→		Rs	Oranges→		Rs
5	→	4	4	→	5
1	→	$\frac{4}{5}$	1	→	$\frac{5}{4}$

SP>CP, so profit

P% = (SP –CP)/CP x 100

$$= \frac{\left(\frac{5}{4} - \frac{4}{5}\right)}{\frac{4}{5}} \times 100 = \frac{\left(\frac{9}{20}\right)}{\frac{4}{5}} \times 100$$

= 225/4 = 56.20%

Profit & Loss

Q. A man bought banana at the rate of 8 for Rs 34 and sold them at the rate of 12 for Rs 57 How many banana should be sold to earn a net profit of Rs. 45?

A. 90 B. 100 C. 135 D. 150

Soln:-

- Cost Price
- banana → Rs
  - 8 → 34
  - 1 → $\frac{34}{8} = \frac{17}{4}$

Selling Price

banana → Rs

12 → 57

1 → $\frac{57}{12} = \frac{19}{4}$

- SP>CP, so profit
- Profit = (SP –CP)
- $= \frac{19}{4} - \frac{17}{4} = \frac{1}{2}$

No. of banana to make a profit of Rs.45 $= \frac{\text{Profit total}}{\text{Pofit one}} = \frac{45}{1/2}$ = 90 banana

Ans: A

Profit & Loss

Q. A shopkeeper purchases 11 sword for Rs.10 and sells them at the rate of 10 sword for Rs. 11. He earns a profit % of?

A. 11% B. 15% C. 20% D. 21%

Ans: D

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Profit & Loss

Q. If selling price is doubled, the profit triples. Find the profit %.

A. $66\frac{2}{3}$ % B. 100% C. $105\frac{1}{3}$ % D. 120%

Soln:

Let, CP = C , SP=S

As they ask profit % , we know profit = SP – CP

As per given,

3(S-C) = 2S-C

3S -3C = 2S-C

S = 2C

But, Profit = S –C = 2C – C = C

Profit % = $\frac{\text{profit}}{\text{CP}}$ x 100 = $\frac{C}{C}$ x 100 = 100%

Ans : B

Profit & Loss

Q. If the cost price of 6 pencils is equal to the selling price of 5 pencils, then the gain per cent is

A. 10% B. 20% C. 15% D. 25%

Soln:

Let the cost price of one pencil be Rs.1.
CP of 5 pencils =Rs. 5

CP of 6 pencils =Rs. 6

as, SP of 5 pencils = CP of 6 pencils

SP of 5 pencils = Rs.6
if, SP >CP so it's a profit
profit = SP − CP
= 6 − 5
= 1
Profit % = profit/cp x 100

= 1/5 x100

= 20%

SP=CP + gain
6 times CP is equal to 5 times SP

6CP=5SP
6CP=5(CP + gain)
6CP=5CP+5gain
CP=5 gain

Gain % = gain/CP x100
= 1/5 x 100
= 20%

Ans: B

Mixtures & Alligation

Q. A person blends two varieties of tea, one cost Rs. 160/kg and other cost Rs. 200/kg in the ratio 5 : 4. He sells the blended variety at Rs.192/kg. Find the profit %.

A. 6% B. 8% C. 7% D. 9%

Soln :

$\frac{x}{y} = \frac{d-m}{m-c}$

$\frac{5}{4} = \frac{200-m}{m-160}$

5m -800 = 800 -4m

9m = 1600

m = $\frac{1600}{9}$

SP=Rs.192(given) , CP =mean price

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

$= \frac{192 - \frac{1600}{9}}{\frac{1600}{9}} = \frac{1728 - 1600}{1600} = \frac{128}{16} = 8\%$ **Ans: B**

Profit & Loss(Assignment)

If gain is half of SP, the gain percentage is ____?

A. 50% B. 33.33% C. 25% D. 100%

Soln:

we know profit = SP – CP

As per given,

1/2SP = SP-CP

CP = SP – 1/2SP

SP = 2CP

But, Profit = SP –CP = 2CP– CP= CP

Profit % = $\frac{\text{profit}}{\text{CP}}$ x 100 = $\frac{\text{CP}}{\text{CP}}$ x 100 = 100%

Ans : D

Profit & Loss(Assignment)

Q. A bookseller sells 84 books at the cost of 72 books. Find his profit or loss%

A. 14.28% B. 28.24% C. 20.4% D. 12.86%

Ans : A

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Profit & Loss(Assignment)

Q. By selling 100 pencils, a shopkeeper gains the selling price of 20 pencils. His gain per cent is

A) 25 B) 20 C) 15 D) 12

Ans: A

SP –CP =gain here gain = SP of 20 pencils

S.P. of 100 pencils − C.P. of 100 pencils = S.P. of 20 pencils
S.P. of 80 pencils = C.P. of 100 pencils

Let C.P. of 1 pencil = Rs. 1
S.P. of 80 pencils = Rs. 100

C.P. of 80 pencils = Rs. 80

Profit % = $\frac{100-80}{80}$ ×100 = 25%

Profit & Loss(Assignment)

Q. A man bought a horse & carriage together for Rs 15600 & sold them together, the horse at 36% profit & the carriage at 15% loss. If selling price of both is equal. Find the cost of the carriage?

A.Rs.6000 B. Rs.7600 C. Rs.3600 D. Rs.9600

- **Soln**
- Let CP of horse be H & Carriage be C → H+C= 15600
- SP of both is equal
- So, comparing the CPs
- 136H/100 = 85C/100
- H = 5C/8
- 5C/8 + C = 15600
- 13C/8 = 15600
- C = 1200 x 8
- C = 9600

Ans: D

Profit & Loss(Assignment)

Q. A vendor bought 6 oranges for Re 10 and sold them at 4 for Re 6. Find his loss or gain percent.

A. 8% gain B. 10% gain C. 8% loss D. 10% loss

Ans: D

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Profit & Loss(Assignment)

Q. A shopkeeper sells his goods at 10% loss but uses a weight of 750gms instead of 1kg. Find profit %

A. 20% Pr B. 14.28% Pr C. 30% Pr D. 25% Ls

Ans: A

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Profit & Loss(Assignment)

Q. A fruit seller buys oranges at 4 for Rs. 3 and sells them at 3 for Rs. 4. Find its profit percent.

A. 43.75% Pr B. 77.7% Pr C. 75% Pr D. 65.7% Ls

Ans: B

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Profit & Loss(Assignment)

Q. A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

A. Rs. 1090 B. Rs. 1160 C. Rs. 1190 D. Rs. 1202

Ans: C

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Profit & Loss(Assignment)

Q. 100 oranges are bought at the rate of Rs. 350 and sold at the rate of Rs. 48 per dozen. The percentage of profit or loss is:

A. 14 2/7% gain B. 15% gain C. 14 2/7% loss D. 15 % loss

Ans: A

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Profit & Loss(Assignment)

Q. A shopkeeper sells his goods at 20% profit and to make an extra profit he gives only 800 gm per kg. Find his profit %

A. 25% Pr B. 33.33% Pr C. 50% Pr D. 25% Ls

Soln

CP	SP	Profit
100	120	20
80	120	40

% Profit = 40/80 x 100

= 1/2 x 100

= 50%

Ans: C

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Percentage

- Percentage is a fraction whose denominator is 100(per 100)

Fraction x100	% ÷100	Fraction	%
3/4	75%	5/4	125%
4/5	80%	3/2	150%
2/3	66.66 %	1/16	6.25%
5/6	83.33 %		
6/5	120%		

Fraction	%	Fraction	%	Fraction	%
1/1	100%	1/6	16.66 %	1/11	9.09 %
1/2	50%	1/7	14.28 %	1/12	8.33 %
1/3	33.33 %	1/8	12.5 %	1/13	7.69 %
1/4	25%	1/9	11.11 %	1/14	7.14 %
1/5	20%	1/10	10%	1/15	6.66 %

Percentage

Q. x is 83.33% of y. So y is ____% of x

Solution:

x = 83.33y

$x = \frac{5}{6} y$

So, $y = \frac{6}{5} x$

y = 120% (from chart)

Fraction x100	% 100	Fraction	%
3/4	75%	5/4	125%
4/5	80%	3/2	150%
2/3	66.66 %	1/16	6.25%
5/6	83.33 %		
6/5	120%		

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Percentage

Q. x is 80% of y. So y is ____% of x

Solution:

x = 80y

$x = \frac{4}{5} y$

So, $y = \frac{5}{4} x$

y = 125%

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Percentage

Q. A number x is increased by 20% then the number is decreased by 20%. Find the net % change.

- **Soln** :
- If a number is increased / decreased by x% then there is always a loss of $-(x/10)^2$
- Net % Change = $-(20/10)^2$ = -(400/100) = - 4% (loss)
- **OR**
- Let the number be 100
- 100↑ by 20% =120
- So 20%↓of 120 = 96

- 100 120 96

-4% = net change

Percentage

Q. A number x is increased by 50% then the number is increased by 20% and again by 10%. Find the net % change

Soln:

- Let the number be 100
- 100↑ by 50% =150
- Again, 150↑ by 20% =30, So 150 + 30 = 180
- 10%↑of 180 = 18, So, 180 + 18 = 198

- 100 150 180 198

98% = net change

Percentage

- **Two Step change of Percentage**

  In first step if number is changed by a% and the result is again changed by b% the net percentage change of original number is given by

  Net % Change in Number = a + b + ab/100 (+ve or –ve)

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Percentage

Q. If a number is increased by 12 % & then decreased by 18% then the net % change in number is

Soln:

Net % Change in Number = a + b + ab/100 (+ve or –ve)

% Change = 12 – 18 + (12 x -18)/100

= -6 – 2.16

= - 8.16%

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Percentage

- Expenditure = Price x Consumption
- $P \propto \frac{1}{\text{Consumption}}$
- So, for expenditure to remain constant, when one quantity increases the other quantity should decrease proportionally.
- Eg: If the price of a commodity is decreased by 20% and its consumption is increased by 20%, what will be the increase or decrease in expenditure on the commodity?
- Soln:

Net % Change = a + b + ab/100 (+ve or –ve)

% Change = -20 + 20 + (-20 x 20)/100

= 0 -4 = -4%

OR

100 === 20%↓(Decrease in Price) ===> 80 === 20%↑(Increase in Consumption) ===> 96.

Thus, there is a decrement of 4%

Percentage

Q. Two numbers are respectively 40% and 60% more than a third number. The ratio of the two numbers is:

A. 7:8 B. 3 : 5 C. 4 : 5 D. 6 : 7

Soln:-

- Let the third number be 100
- First number = 40% more than 100 = 100 + 40%of 100 = 100+40 = 140
- Second number = 60% more than 100 = 100 + 60%of 100 = 100 + 60 = 160
- Ratio = $\frac{\text{first number}}{\text{second number}} = \frac{140}{160} = \frac{7}{8} = 7 : 8$

Ans: A

Percentage using x

Q. Two numbers are respectively 40% and 60% more than a third number. The ratio of the two numbers is:

A. 7:8 B. 3 : 5 C. 4 : 5 D. 6 : 7

Soln:-

- Let the third number be x.
- First number = 40% more than x = x + 40%of x $= x + \frac{40}{100}x = \frac{100x+40x}{100} = \frac{140x}{100}$
- Second number = 60% more than x = x + 60%of x $= x + \frac{60}{100}x = \frac{100x+60x}{100} = \frac{160x}{100}$
- Ratio = $\frac{\text{first number}}{\text{second number}} = \frac{\frac{7x}{5}}{\frac{8x}{5}} = \frac{7}{8} = 7 : 8$

Ans: A

Percentage(Assignment)

Q. If the price of sugar increases by 25%, by what percent will a housewife have to reduce her consumption to leave total expenditure on sugar unchanged?

A. 25% B. 35% C. 20% D. 15%

Ans: C

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Percentage(Assignment)

Q. If the radius of a circle is decreased by 50%, find the percentage decrease in its area.

- A. 55% B. 65% C. 75% D. 85%
- **Soln**:
- Area of a circle = πr^2 where r is the radius
  => Area is directly proportional to r^2
- Assume the old radius is = r1=100
- $A_1 = \pi \times 100^2 = 10000\pi$

  Assume the new radius is = r2=50

  $A_2 = \pi \times 50^2 = 2500\pi$

  Decrease in area = $10000\pi - 2500\pi = 7500\pi$

  Percentage decrease in area = $\frac{difference}{old}$ x100 = $\frac{7500\pi}{10000\pi}$ x 100 = 75%
- **Ans : C**

Percentage(Assignment)

Q. 1.14 expressed as a per cent of 1.9 is:

A. 6% B. 10% C. 60% D. 90%

Ans: C

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Percentage(Assignment)

Q. A number x is increased by 20% then the number is increased by 10% and again by 50%. Find the net % change.

A. 77% B. 75% C. 88% D. 98% E. 99%

Ans : D

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Percentage(Assignment)

Q. If the altitude of a triangle increases by 5% and the base of the triangle increases by 7%, by what percent will the area of the triangle increase?

A. 12.25% B. 12.35% C. 6.00% D. 5.25%

Ans B

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Percentage(Assignment)

Q. The length and breadth of a room are increased by 25% and 40% respectively. While the height is decreased by 20%.Find % change.

A. 16% B. 40% C. 60% D. 30%

Ans B

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Percentage(Assignment)

Q. If the length of a rectangle is increased by 37.5% and its breadth is decreased by 20%, find the change in its area.

A. 15% increase B. 13% decrease C. 10% increase D. 10% decrease

Ans: C

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Percentage(Assignment)

Q. The ratio 5 : 4 expressed as a percent equals :

A. 125% B. 80% C. 40% D. 12.5%

Ans: A

Required % = 5/4 × 100 = 125%

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Percentage(Assignment)

Q. 12% of 5000 = ?

A. 600 B. 620 C. 680 D. 720

Ans: A

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Percentage(Assignment)

Q. 280% of 3940 = ?

A. 10132

B. 11032

C. 11230

D. 11320

Ans: B

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Percentage(Assignment)

Q. 15% of 578 + 22.5% of 644 = ?

A. 231.4

B. 231.6

C. 231.8

D. 233.6

Ans: B

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THANK YOU!

GENERAL APTITUDE

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Time & Work

- Work (Effort) = Manpower x time.
- If A can do a piece of work in x days then work done by A in one day is equal to 1/x of the entire work.
- If A is twice as good a workman as B then A will take half the time taken by B to do a same piece of work.
- If number of people to do a certain work is increased (or decreased) the time taken to do the same work will decrease (or increase)
- Total work = LCM
- Efficiency = (Total work)/(Total time)
- OR
- Total work = Efficiency x Total time

Time & Work

Q. A, B & C can complete a certain work in 10, 12 & 15 days respectively. If all of them work together in how many days will the work get completed?

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Time & Work

Q. A, B & C can complete a certain work in 10, 12 & 15 days respectively. If all of them work together in how many days will the work get completed?

Soln:

We know, Total work = Days x units/day

LCM(10,12,15) = 60

60 (Total Work)

units/day	6	5	4
days	10	12	15
	(A)	(B)	(C)

In one day, A+B+C = 6+5+4 = 15units

So to complete TW = 60 units, days = ?

days = $\frac{60}{15}$ = 4. So 4 days are needed to complete the work.

Time & Work

Q. Two persons A & B can complete a work in 20 & 30 days respectively. If both of them start together but A stops after 10 days then how many days will the work last?

A.7 days B. 8 days C. 15 days D. 10 days

Soln: LCM(20,30) = 60

60 (Total Work)

units/day	3	2
days	20	30
	(A)	(B)

A after 10 days, 3 x 10 = 30 units & B after 10 days = 2 x 10 = 20units

Total units =60 , Remaining units = total – A + B(after 10 days)

= 60-50=10units

Days needed to do 10 units work = $\frac{10}{2}$ = 5 days

So Total Duration = 10 + 5 = 15 days

Ans: C

Time & Work

Q. Two persons A & B can complete a work in 20 days , B & C can complete it in 24 days & C and A can complete it in 40 days. Find in how many days will B complete the work alone?

A.30 days B. 40 days C. 50 days D. 60 days

- **Soln**: LCM(20,24,40) = 120

120 (Total Work)

units/day	6	5	3
days	20	24	40
	(A+B)	(B+C)	(C+A)

No of workers

2 x (A+B+C) = 6+5+3 = 14 i.e. 2(A+B+C)'s 1 day work

A + B+C = 14/2 =7

B = 7 – (A+C)

B alone = 7 – 3 = 4 units/day

To find days needed by B = $\frac{\text{Total work}}{\text{units/day}} = \frac{120}{4}$ = 30 days

So , 30 days are needed by B to complete the work alone.

Ans :A

Time & Work

Q. A & B can do a piece of work in 20 & 16 days respectively. If they work on alternate days each starting with A in how many days was the work completed?

A. 19 days B. 18 days C. 16 days D. 30 days

- **Soln**: LCM(20,16) = 80

80 (Total Work)

units/day	4	5
days	20	16
	(A)	(B)

- Day 1, A = 4 units
- Day2, day 1 work added
- B = 5 + 4 = 9units
- 9 units --- 2 days
- 80 units --- ?
- Days = $\frac{80 \times 2}{9}$ = $\frac{160}{9}$ = 17.7777 = 17.78 days
- **Ans B**

Time & Work

- Efficiency = capacity to do work
- Efficiency and time are inversely proportional
- Efficiency $\propto \frac{1}{T}$
- Efficiency and work are directly proportional
- Efficiency $\propto$ W

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Time & Work

Q. A is twice as efficient as B and completes a certain work in 12 days less than B. In how many days will both of them complete the same work?

A. 6 days B. 8 days C. 7 days D. 3 days

Soln:

A B

2x - x = 12

x = 12

As , Efficiency $\propto \frac{1}{T}$

A = 12 days and B = 2x = 2 x 12 = 24 days

- LCM(12,24) = 24

24(Total Work)

units/day	2	1
days	12	24
	(A)	(B)

A + B = 2 +1 =3 units/day

Days = $\frac{TW}{units/day}$ = $\frac{24}{3}$ = 8 days

Ans B

or

Days ratio is inversely proportional to efficiency ratio.

	A	B
Eff (Ratio)	2	1
Days (Ratio)	1	2
Days	***x-12***	***x***

→ 2(x-12) =x

→ x =24 days

→ x – 12

→24 -12 = 12 days

Time & Work

Q. A, B & C can complete a work in 10, 12 & 15 days respectively. All three together completed the work & they are paid Rs 6000. Find the share of C

A. 3000 B. 2400 C. 2000 D. 1600

- **Soln**: LCM(10,12,15) = 60

60(Total Work)

units/day	6	5	4
days	10	12	15
	(A)	(B)	(C)

Together,

(A+B+C) = 6+5+4 = 15 units/day

Total paid amount to (A+B+C) = 6000

C = $\frac{4}{15}$ x 6000

= Rs. 1600

Ans: D

Time & Work(Assignment)

Q. Two persons A & B can complete a work in 24 & 30 days respectively. If both of them start together .After how many days should B stop working so that A completes the remaining work in 6 days?

A.7 days B. 8 days C. 9 days D. 10 days

Ans D

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Time & Work(Assignment)

Q. Two persons A & B can complete a work in 20 days , B & C can complete it in 30 days while C & A can complete it in 24 days. Find in how many days will B complete the work alone?

A.36 days B. 48 days C. 56 days D. 64 days

Ans B

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Time & Work(Assignment)

Q. A is thrice as good a workman as B and can finish a piece of work in 60 days less than B. Find the time to complete the work if both of them work together

A. 20 days B. 22.5 days C. 24.5 days D. 22 days

Ans: B

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Time & Work(Assignment)

Q. 2 workers A & B can finish a job in 8 days and 12 days respectively ,after the completion of work they were paid Rs.200. Find share of B.

A. Rs. 120 B. Rs. 80 C. Rs. 40 D. Rs. 60

Ans: B

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Work & Time(Assignment)

Q. A, B & C can do a piece of work in 12, 20, & 30 days respectively. If A is assisted everyday alternately by B & C in how many days was the work completed?

A. 6 days B. 8 days C. 7 days D. 3 days

Ans: B

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Work & Time(Assignment)

Q. A can do a piece of work in 10 days, B in 12 days and C in 15 days. They all start work together, but A leaves 2 days later and B leaves 3 days before completion of the work. In how many days was the work completed?

A.7 days B. 5 days C. 8 days D. 10 days

Ans: A

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Work & Time(Assignment)

Q. Apurva can do a job in 12 days. She and Amit completed the work together and were paid Rs.54 and Rs.81 respectively. How many days are needed to complete the job together?

A. 4.8 days B.4.2 days C. 4 days D. 3.6 days

Ans: A

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Pipes & Cisterns

- A cistern may have inlet pipe or outlet pipe.
- Conventionally filling a tank is treated as positive work and emptying a tank as negative work.
- Net work done = (Sum of work done by inlets) – (sum of work done by outlets)

Pipes & Cisterns

Q. Two pipes can fill the reservoir in 10 hours and 12 hours respectively. While third pipe empties full tank in 20 hours. If all the three pipes operate simultaneously , how much time will the tank be filled?

Soln:

- LCM(10,12,20) = 60

60(Total Work)

units/hr	6	5	3
hrs	10	12	20
	(A)	(B)	(C)
	(+)	(+)	(-)

A+B = 6 +5 = 11

As, C empties the tank so, 11 -3 =8 units/hr

Quantity filled in 1 hour if all the pipes are opened together

Time to fill = $\frac{\text{TW}}{\text{units/hr}} = \frac{60}{8}$ = 15/2 hrs

Pipes & Cisterns

Q. Two pipes A and B can fill a tank in 24 minutes and 32 minutes respectively. If both the pipes are opened simultaneously, after how much time should B be closed so that the tank is full in 18 minutes

A . 2 min B. 4 min C. 6 min D.8 min

Soln:

LCM(24,32) = 96

96(Total Work)

units/hr	4	3
hrs	24	32
	(A)	(B)

WD = time x units/hr

Work done by A alone = 18 x 4=72units

Remaining work =Total units – work done by A = 96 – 72 = 24units

B should be closed after $= \frac{24}{3} = 8$ mins.

Ans : D

Pipes & Cisterns

Q. 12 buckets of water fill a tank when the capacity of each bucket is 13.5 litres. How many buckets will be needed to fill the same tank, if the capacity of each bucket is 9 litres?

A. 8 B. 15 C. 16 D. 18

Ans: D

Capacity of the tank = (12 × 13.5) litre

= 162 litres

Capacity of each bucket = 9 litres

Number of buckets needed = 162 /9

= 18 buckets

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Pipes & Cisterns

Q. Bucket P has thrice the capacity as bucket Q. It takes 60 turns for bucket P to fill the empty tank. How many turns it will take for both P and Q, having each turn together to fill the tank?

A. 30 B. 40 C. 45 D. 90

Soln-

P =3Q

60 turns of P = capacity of tank

60P = capacity of tank

60(3Q) = capacity of tank

180Q = capacity of tank

P+Q work together.

Amount of water poured together = P + Q

= 3Q + Q = 4Q

Number of turns = 180Q/4Q = 45 turns

Ans: C

Pipes & Cisterns(Assignment)

Q. There are 3 pipes attached to a tank A, B & C. A alone can fill the tank in 60 min, B can fill the tank in 45 min & C can empty the full tank in 30 min. If all three pipes are opened together in how much time will the tank be full?

A. 5 hrs B. 4 hrs C. 3 hrs D. 2 hrs

Ans: C

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Pipes & Cisterns(Assignment)

Q. A pump can fill a tank with water in 2 hours. Because of a leak, it took 2 1/3 hours to fill the tank. The leak can drain all the water of the tank in:

A. 4 1/3 hours B. 7 hours C. 8 hours D. 14 hours

- **Soln :**

- Work done $= \frac{XY}{Y - X}$ where, X = number of hrs to fill tank , Y = number of hrs to fill tank with leakage
- $2\frac{1}{3} = \frac{7}{3}$
- Work done $= \frac{2 \times \frac{7}{3}}{\frac{7}{3} - 2} = \frac{\frac{14}{3}}{\frac{1}{3}} = 14$

- Leak will empty the tank in 14 hours
- **Ans: D**

Pipes & Cisterns(Assignment)

Q. Two pipes A and B can fill a cistern in $37\frac{1}{2}$ minutes and 45 minutes respectively. Both pipes are opened. The cistern will be filled in just half an hour, if B is turned off after:

A. 5 mins B. 9 mins C. 10 mins D. 15 mins

Ans : B

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Pipes and Cisterns(Assignment)

Q. Two pipes A & B can fill the cistern in 20 min & 25 min respectively. Both are opened together but at the end of 5 min B is turned off. How much total time will the cistern take to fill up?

A. 5 min B. 10 min C. 12 min D. 16 min

Ans: D

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Pipes and Cisterns(Assignment)

Q. Two pipes A and B can fill a tank in 36 minutes and 45 minutes respectively. Another pipe C can empty the tank in 30 minutes. First A and B are opened. After 7 minutes, C is also opened. The tank is filled up in

A. 39 minutes B. 46 minutes C. 40 minutes D. 45 minutes

Ans: B

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Pipes and Cisterns(Assignment)

Q. Two pipes A and B can fill a tank in 15 minutes and 20 minutes respectively. Both the pipes are opened together but after 4 minutes, pipe A is turned off. What is the total time required to fill the tank?

A. 10 min. 20 sec.

B. 11 min. 45 sec.

C. 12 min. 30 sec.

D. 14 min. 40 sec.

Ans: D

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Chain Rule

- In earlier problems the rate of doing work of each person or pipe varied.
- In chain rule problems all entities are of the same efficiency or work capacity.
- The entities may be men, women, tractors, engines, pumps, horses, lawn mowers etc.
- Work Done = No. of Men x Days x Hrs/day
- W = MxDxH
- W1 = M1xD1xH1, W2=M2xD2xH2
- $\frac{W1}{W2} = \frac{M1xD1xH1}{M2xD2xH2}$

Chain Rule

Q. 18 men working for 5 hours per day can complete a job in 8 days. How many men working for 8 hours a day for 6 days will be required?

A. 24 B. 15 C. 16 D. 17

Men x Days x Hrs/day = Work Done

Case 1

18 x 8 x 5 = 720 man-hrs

Case 2

M x 6 x 8 = 720 man-hrs

M x 6 x 8 = 18 x 8 x 5

M = 15

Ans B

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Chain Rule

Q. 20 men or 40 women working for 9 hours a day can finish a work in 80 days. In how many days will 10 men & 10 women working together for 12 hours a day finish the work?

A. 60 days B. 70 days C. 80 days D. 90 days

Men x Days x Hrs/day = Work Done

Also 20 Men = 40 Women → 1M = 2 W(convert to one unit i.e. women or children)

20 men ---- 40 women

1men ------ ? (2women)

Case 1

40W x 80 x 9 = work

Case 2

(20W +10W) x D x 12 = work

30W x D x 12 = 40W x 80 x 9

D = 80 days

Ans C

Chain Rule

Q. 8 men or 12 women or 16 children working for 8 hours a day can finish a work in 52 days. In how many days will 1 man & 1 woman & 1 child working together for 8 hours a day finish the work?

- A. 180 days B. 192 days C. 216 days D. 164 days
- **Men x Days x Hrs/day = Work Done**
- Also 8 Men = 16 children → 1M = 2 C
- And 12 Women = 16 children → 1W = 4/3 C
- **Case 1**
- 16C x 52 x 8 = work
- **Case 2**
- (2C +4/3C+C) x D x 8 = work
- (2C +4/3C+C) x D x 8 = 16C x 52 x 8
- 13C/3 x D x 8 = 16C x 52 x 8
- D = 192 days

Ans: B

Chain Rule

Q. 12 men and 16 boys can do a piece of work in 5 days. 13 men and 24 boys can do it in 4 days. The ratio of the daily work done by a man and a boy is –

A. 2 : 1 B. 3 : 1 C. 3 : 2 D. 5 : 4

Soln:

W = M x D and W = M x D

W= (12m+16b) x 5 W = (13m+24b) x 4

= 60m + 80b = 52m + 96b

As , work done is same, equating both sides ,we get,

60m + 80b = 52m + 96b

60m – 52m = 96b – 80 b

8m = 16b

m = 2b m : b = 2 : 1

Ans: A

Chain Rule(Assignment)

Q. 12 men & 18 women working together for 9 hours a day finish the work in 150 days. 30 men & 15 women working together for 10 hours a day finish the work in 81 days. In how many days will 12 men & 12 women working together for 12 hours a day finish the work?

A. 115 days B. 120 days C. 130 days D. 135 days

Ans: D

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Chain Rule(Assignment)

Q. 24 workers working 8 hours a day can construct a wall in 5 days. In how many days can 45 workers working 4 hours a day construct 3 such walls?

A. 18 days B. 16 days C. 4 days D. 7 days

Ans : B

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Chain Rule(Assignment)

Q. 24 workers working 5 hours a day can construct a bungalow in 8 days. In how many days can 40 workers working 8 hours a day construct 2 such bungalows?

A. 3 days B. 6 days C. 4 days D. 8 days

Ans : B

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Chain Rule(Assignment)

Q. 32 painters working 5 hours a day can paint a building in 10 days. In how many days can 40 workers working 6 hours a day paint 3 such buildings?

A. 10 days B. 16 days C. 20 days D. 28 days

Ans : C

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Chain Rule(Assignment)

Q. 8 men or 12 women can construct a wall in 33 days . In how many days can 10men and 21 women construct the wall.

A. 10 days B. 11 days C. 22 days D. 15 days

Ans : B

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Chain Rule(Assignment)

Q. 36 men working for 12 hours a day can build a wall 45 mt long, 52 mt high & 63 mt broad in 91 days. In how many days will 80 men working for 9 hours a day build a wall 50 mt long, 72 mt high & 30 mt broad ?

A. 24 days B. 35 days C. 40 days D. 47 days

Men x Days x Hrs/day = Work Done (Volume of Wall)

Case 1

36 x 91 x 12 = 45 x 52 x 63

Case 2

$$\frac{80 \times D \times 9}{36 \times 91 \times 12} = \frac{50 \times 72 \times 30}{45 \times 52 \times 63}$$

D = 40 days

Ans C

Chain Rule(Assignment)

Q. 12 men or 18 women can construct a wall in 33 days . In how many days can 20men and 24 women construct the wall.

A. 10 days B. 11 days C. 22 days D. 15 days

Ans : B

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Chain Rule(Assignment)

Q. 12 men can do a piece of work in 24 days. How many days are needed to complete the work, if 8 men do this work ?

A. 28 days

B. 36 days

C. 48 days

D. 52 days

Ans: B

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Probability

- How likely an event is supposed to happen.
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}}$
- AND → multiply(x) e.g:- 1green and 1 blue ball in a box
- OR → Add (+) e.g:- 1 red or 1 blue ball in a box
- 1 bag has 3 balls, what is the probability of you picking up 2 balls?
  - $3C_2 = \frac{3 \text{ x } 2}{1 \text{ x } 2} = 3$

Total no. of balls
the bag contains

0ut of which how many balls
We need to choose
(tells number of times 3 has to be reduces)

Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}}$

Points to Remember

- The **probability** of an event will not be less **than** 0.
- This is because 0 is impossible (sure that something will not happen).
- The **probability** of an event will not be **more than 1**. This is because **1** is certain that something will happen.
- The probability of an event is **a number** describing the chance that the event will happen.
- An event that is certain to happen has a probability of 1.
- An event that cannot possibly happen has a probability of 0.
- If there is a chance that an event will happen, then its probability is between 0 & 1.

Probability

- **Atleast** – min to max
- Eg:- 2 bags out of 3

min max

So various probabilities to be done is 2 and 3

- **Atmost** - max to min
- Eg:- 1 bag has 3 balls out of which probability to pick up 2 balls

atmost 2 → max 2 , 1 , 0 (min)

Probability

Q. A bag contains 2 red, 3 green and 2 blue balls. Two balls are drawn at random. What is the probability that none of the balls drawn is blue?

A. 10/21 B. 11/21 C. 2/7 D. 5/7

- **Soln-**
- Total balls = 2+3+2 =7 balls in the bag
- None = blue (neglect whichever color is written after none)
- Draw =2 balls
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{2R \text{ or } (1R \text{ and } 1G) \text{ or } 2G}{7C_2} = \frac{2C_2 + (2C_1 \times 31) + 3C_2}{7C_2} = \frac{10}{21}$

Ans : A

Probability

Q. In a box, there are 8 red, 7 blue and 6 green balls. One ball is picked up randomly. What is the probability that it is neither red nor green?

A. 1/3 B. ¾ C. 7/19 D. 8/21 E. 9/21

Soln:

- Total balls = 8+7+6 = 21 balls in the box
- Neither red nor green means only blue
- Draw =1 ball
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{1 blue\ out\ of\ total\ 7}{21C_1} = \frac{7C_1}{21C_1} = \frac{7}{21} = \frac{1}{3}$

Ans: A

Probability

Q. In a class, there are 15 boys and 10 girls. Three students are selected at random. The probability that 1 girl and 2 boys are selected, is:

A. 21/46 B. 25/117 C. 1/50 D. 3/25

Soln:

- Total students = 15 + 10 =25 students in a class
- Draw =3 students

Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{10C_1 \text{ x } 15C_2}{25C_3} = \frac{21}{46}$

Ans : A

Probability

Q. What is the probability of getting a sum 5 from two throws of a dice?

A. 1/9 B. 1/8 C. 1/7 D. 1/6

Soln-

Dice =6 faces = 6 possibilities

So in two throws of dice, total possibilities = **6 x 6= 36**

Sum =5,so favourable outcomes are - { (1,4), (4,1) , (2,3) , (3,2) }

$$\text{Probability} = \frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{4}{36} = \frac{1}{9}$$

Ans : A

Probability

Q. Three unbiased coins are tossed. What is the probability of getting utmost two heads?

A. ¾ B. ¼ C. 3/8 D. 7/8

- **Soln-**
- Total possibilities = {TTT, TTH, THT, HTT, THH, HTH, HHT, HHH}
- Event of getting utmost 2 heads = max 2H or 1H or 0H
- Possibility of getting 2 H = {TTT, TTH,THT, HTT, THH, HTH, HHT}
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{7}{8}$

Ans: D

Probability

- A Standard deck of playing cards consist of 52 cards, among them there are 4 subgroups/suits –
- The four suits with there names , symbols and color –

1. The suit of Hearts → 13 cards
2. The suit of Diamonds → 13 cards
3. The suit of Clubs → 13 cards
4. The suit of Spades → 13 cards

26 red cards

26 black cards

Probability

Cards (52)

Spade	Club	Diamond	Heart
1 King	1 King	1 King	1 King
1 Queen	1 Queen	1 Queen	1 Queen
1 Jack	1 Jack	1 Jack	1 Jack
1 Ace	1 Ace	1 Ace	1 Ace
2-10 Cards	2-10 Cards	2-10 Cards	2-10 Cards
Total = 13	**Total** = 13	**Total** = 13	**Total** = 13

Probability

- King, Queen and Jack (or Knaves) are **face cards**. So, there are **12 face cards** in the deck of 52 playing cards.
- **Jokers** are not normally considered to be **face cards**

- **Aces**
- There are 4 Aces in every deck, 1 of every suit.

Probability

Q. From a pack of 52 cards, two cards are drawn together at random. What is the probability of both the cards being kings?

A. 1/15 B. 25/57 C. 35/256 D. 1/221

- **Soln-**
- **Total cards in a pack =52**
- Total kings in a pack = 4
- Drawn =2
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{4C_2}{52C_2} = \frac{1}{221}$

Ans : D

Probability(Assignment)

Q. Two dice are rolled. Find the probability of getting a sum of 8 or 11 on both the dices.

A. 5/36 B. 9/36 C. 7/36 D. 11/36

Ans: C

- Favorable outcomes for sum of 8 or 11 on both the dices are-
- (2,6),(3,5),(4,4),(5,3),(6,2),(5,6),(6,5)
- Number of favorable outcomes = 7
- Probability = $\frac{7}{36}$

Probability(Assignment)

A man tossed two dice. What is the probability that the total score is a prime number?

A. 5/12 B. 5/14 C. 5/20 D. 5/24

- **Soln-**
- **Dice =6 faces = 6 possibilities**
- 2 Dice = 6 x 6 = 36 possibilities
- Sum = prime number
- So favourable outcomes are - { (1,1), (1,2) , (1,4), (1,6) , (2,1) , (2,3) , (2,5) , (3,2) , (3,4) , (4,1) , (4,3) , (5,2) , (5,6) , (6,5) , (6,1) }
- Probability = $\frac{\text{Favourable outcome}}{\text{Total number of outcomes}} = \frac{15}{36} = \frac{5}{12}$

Ans : A

Probability(Assignment)

Q. A brother and sister appear for an interview against two vacant posts in an office. The probability of the brother's selection is 1/5 and that of the sister's selection is 1/3. What is the probability that one of them is selected?

A. 1/5 B. 2/5 C. 1/3 D) 2/3

Soln: -

(brother is selected and sister is not selected) OR (brother is not selected and sister is selected)

$$\text{Probability} = \frac{1}{5} \times \frac{2}{3} + \frac{4}{5} \times \frac{1}{3}$$

$$= \frac{6}{15}$$

$$= \frac{2}{5}$$

sister not selected = 1 – prob. of sister selected

$$= 1 - \frac{1}{3}$$

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

brother not selected = 1 – prob. of brother selected

$$= 1 - \frac{1}{5}$$

$$= \frac{4}{5}$$

Ans: B

Probability(Assignment)

Q. Probability of occurrence of event A is 0.5 and that of event B is 0.2. the probability of occurrence of both A and B is 0.1. what is the probability that none of A and B occur?

A. 0.4 B. 0.5 C. 0.2 D. 0.1

Soln:

probability of sure event = 1

- Given P(A) = 0.5 and P(B) = 0.2
- P(A or B) = P(A ∪ B) = P(A) + P(B) – P(A ∩ B)

  = 0.5 + 0.2 – 0.1 = 0.6
- And P(neither A nor B) = P(A' ∩ B') = 1 – P(A ∪ B) = 1 – 0.6 = 0.4.

Ans: A

- Note: P(A∪B) = P(A) + P(B) - P(A∩B)
- This is also known as the addition theorem of probability.

Probability(Assignment)

Q. A bag contains 4 white, 5 red and 6 blue balls. Three balls are drawn at random from the bag. The probability that all of them are red, is?

A. 1/22 B. 3/22 C. 2/91 D. 2/77

Ans : C

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Probability(Assignment)

Q. What is the probability of getting a sum 9 from two throws of a dice?

A. 1/6 B. 1/8 C. 1/9 D. 1/12

Ans : C

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Probability(Assignment)

Q. A bag contains 6 black and 8 white balls. One ball is drawn at random. What is the probability that the ball drawn is white?

A. ¾ B. 4/7 C. 1/8 D. 3/7

Ans : B

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Probability(Assignment)

Q. A bag contains 6 blue balls, 3 white balls and 4 green balls. If two balls are drawn at random what is the possibility that they are not of the same color?

A. 6/13 B. 7/13 C. 9/13 D. 10/13

- **Ans: C**

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Probability(Assignment)

Q. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is a face card (Jack, Queen and King only)?

A. 1/13 B. 1/4 C. 3/13 D. 9/52

Ans: C

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Probability(Assignment)

Q. One card is drawn at random from a pack of 52 cards. What is the probability that the card drawn is not a face card (Jack, Queen and King only)?

A. 5/13 B. 10/13 C. 1/13 D. 1/26

Ans: B

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Probability(Assignment)

Q. A basket contains 6 apples ,4 pears and 3 oranges. If two fruits are picked up at random, what is the probability that both are pears?

A. 4/13 B. 1/13 C. 2/13 D. 3/26

Ans: B

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Calendar

- In Non Leap year –
  - 365 days
  - 1 year = 52 weeks + 1 odd day(extra day)
  - 28th February
- In Leap year –
  - 366 days
  - 1 year = 52 weeks + 2 odd days
  - 29th February
- A **century leap year** is a **year** that is exactly divisible by 400
  - **years** 1600 and 2000 were **century leap years**; (400,800,1200,1600,2000 – century leap years till date)
  - **years** 1700, 1800, and 1900 were not **century leap years**.
- To find the day of a week on a given date we use the concept of "**odd days**".
- 01/01/0001 A.D(Anno Domini) was a Monday and 1st day of week so 1st January 0001 was a Monday.

Calendar

- In a century,
  - 24 leap year
  - 76 non leap years

    100 years

Leap year non leap year

$24 \times 2 + 76 \times 1$

$= \frac{48}{7}$ $= \frac{76}{7}$

remainder

$6 + 6 = 12 \div 7 = 5 \leftarrow$ remainder

5 extra(odd) days in a century (100 years)

100 years = 5 odd days $\longleftarrow$ remainder

200 years = $10 \div 7 = 3$ odd days

300 years = $15 \div 7 = 1$ odd days

400 years = 0 odd days (as century leap year)

Calendar

Years	No. of odd
Ordinary year	1
Leap year	2
100 years	5
200 years	3
300 years	1
400 years	0

Calendar

Day of week	No. of odd
Sunday	0
Monday	1
Tuesday	2
Wednesday	3
Thursday	4
Friday	5
Saturday	6

Calendar

Month		Remainder
January	31 ÷ 7	3
February	28 ÷7 or 29 ÷ 7	0(non leap) or 1(leap)
March	31 ÷ 7	3
April	30 ÷ 7	2
May	31 ÷ 7	3
June	30 ÷ 7	2
July	31 ÷ 7	3
August	31 ÷ 7	3
September	30 ÷ 7	2
October	31 ÷ 7	3
November	30 ÷ 7	2
December	31 ÷ 7	3

Calendar

Q. What was the day of the week on 15th August, 1947?

Soln:

Completed till 1946

1946

$\frac{1900}{400} = 300$ → 1 odd day

$\frac{46}{4} = 11$(quotient)

46 + 11 = 57 $\frac{57}{7} = 1$(remainder)

In 1946, odd days are,

1900 46

1 + 1 = 2 odd days

1946 month date

Total odd days = 2 + 2 + 1 = 5 odd days

As per table for days of a week , 5 ⟷ Friday

As month is August, go till July as per table,

J F M A M J J

3 + 0 + 3 + 2 + 3 + 2 + 3 = 16

Now, $\frac{16}{7} = 2$ (remainder)

For date ,

$\frac{15}{7} = 1$ (remainder)

Calendar

For Months -

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

For years -

1600 – 1699	6
1700 – 1799	4
1800 – 1899	2
1900 – 1999	0
2000 – 2099	6

Calendar

Q. What was the day of the week on 26th January, 1947?

Soln:

1. Last 2 digits of the year → 47
2. Divide by 4 (47 ÷ 4) = 11(quotient)
3. Take the date → 26
4. Take the no. of month → 0 (from table)
5. Take the no. of year → 0 (from table)

84 (add)

6. Divide by 7 → $\frac{84}{7}$ = 0 (remainder)

Check table for day of the week

0 ⟷ Sunday

Calendar

Q. What was the day of the week on 29th February, 2012?

Soln:

1. Last 2 digits of the year → 12
2. Divide by 4 (12 ÷ 4) = 03(quotient)
3. Take the date → 29
4. Take the no. of month → 03 (from table)
5. Take the no. of year → 06 (from table)

53 (add)

6. Divide by 7 → $\frac{53}{7}$ = 4 (remainder)

subtract 1 from remainder

In this case for all dates of **January & February** in a leap year , 4 -1 =3

Check table for day of the week

3 ⟷ Wednesday

Calendar

It was Sunday on Jan 1, 2006. What was the day of the week Jan 1, 2010?

A. Sunday B. Saturday C. Friday D. Wednesday

Ans: C

On 31st December, 2005 it was Saturday.

Number of odd days from the year 2006 to the year 2009 = (1 + 1 + 2 + 1) = 5 days.

On 31st December 2009, it was Thursday.

on 1st Jan, 2010 it is Friday.

Calendar

Q. If we have preserved the calendar of 2017. Find the next immediate year in which we can reuse.

A. 2027 B.2023 C. 2025 D. 2029

Soln:

x/4 (x = given year)

$\frac{2017}{4}$ = 1 (remainder)

For any year divide by 4, the possibility of remainder is 0,1,2,3

If remainder = 0 → x + 28

If remainder = 1 → x + 6

If remainder = 2/3 → x + 11

So, $\frac{2017}{4}$ = 1(remainder)

2017 + 6 = 2023 **Ans: B**

Calendar

Q. Which of the following days can never be the last day of a century?

A. Sunday B. Monday C. Tuesday D. Wednesday

- **Soln**:
- The last day of century can be only
- 1 odd day(Monday)
- 3 odd days (Wednesday)
- 5 odd days (Friday)
- 7 or 0 odd days (Sunday)
- So, century can never end in **Tuesday** , **Thursday** or **Saturday**.
- **Ans: C**

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Calendar(Assignment)

- Q. The day on 5th April of a year will be the same day on 5th of which month of the same year?
- A. 5th July B. 5th August C. 5th June D. 5th October

- **Ans A**

- April & July for all years have the same calendar. So, a day on any date of April will be the same day on the corresponding date in July.
- The same day will fall on 5th July of the same year.

Calendar(Assignment)

Q. What was the day of the week on your birthdate?

Q. 13th October 2019 is a Sunday. Find the day on 13th October 1989?

A. Sunday B. Monday C. Friday D. Wednesday

Ans: C

Q. 1st March 2006 falls on a Wednesday .What day does 1st March 2010 fall on?

A. Tuesday B. Monday C. Friday D. Wednesday

Ans: B

Q. Today is Monday. Which day will be after 64 days?

A. Tuesday B. Monday C. Friday D. Wednesday

Ans: A

Q. Today is Monday. After 30 days it will be?

A. Tuesday B. Monday C. Friday D. Wednesday

B. Ans: D

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Calendar(Assignment)

Q. 15th August 1947 was a Friday. Find the day on 15th August 1977?

- Soln:

```
  1977
- 1947
-------
   30 years
```

Leap years between 1947 to 1977

1948	1964	8 years
1952	1968	
1956	1972	
1960	1976	

30 + 8 = 38

total years leap

$\frac{38}{7}$ = 3 (remainder)

As 15th August 1947 was a Friday ,

So, Friday + 3 days = **Monday**

Calendar(Assignment)

Q. 4th January 2016 falls on Monday. What day of the week does 4th January 2017 lies?

A. Wednesday B. Thursday C. Tuesday D. Monday

Soln:

Normal year = 1 odd day

Leap year = 2 odd days

Jan 4, 2016 → Monday

\+ 2 (as leap year)

Jan 4,2017 → Wednesday

Ans: A

Calendar(Assignment)

Q. Wednesday falls on 5th of a month .So which day will fall 5 days after 22nd of the same month?

A. Tuesday B. Friday C. Thursday D. Wednesday

Ans: B

5th = Wednesday

+7

12th = Wednesday

+7

19th = Wednesday

22nd = Saturday

+5

27th = Thursday

5 days after 22nd will be **Friday**

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Calendar(Assignment)

Q. What dates of May 2002 did Monday fall on?

Soln:

Lets take date = 1st May 2002

1. Last 2 digits of the year → 02
2. Divide by 4 (02 ÷ 4) = 00(quotient)
3. Take the date → 01
4. Take the no. of month → 01 (from table)
5. Take the no. of year → 06 (from table)

   10 (add)

6. Divide by 7 → $\frac{10}{7}$ = 3 (remainder)

Check table for day of the week

3 ⟷ Wednesday

1st May 2002 falls on Wednesday

1	2	3	4	5	6
W	Th	F	Sa	Su	M

↑ first Monday

Now add 7 to it to find remaining Mondays

Dates on which Monday falls are -
6 , 13 , 20, 27

Calendar(Assignment)

Q. On what dates of April, 2001 did Wednesday fall?

A. 1st, 8th, 15th, 22nd, 29th

B. 2nd, 9th, 16th, 23rd, 30th

C. 3rd, 10th, 17th, 24th

D. 4th, 11th, 18th, 25th

Ans: D

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Calendar(Assignment)

Q. What is the day on 22 April 2222?

A. Monday B. Tuesday C. Saturday D. Sunday

Ans: A

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Calendar(Assignment)

Which of the following is not a leap year?

A. 700 B. 800 C. 1200 D. 2000

Ans: A

The century divisible by 400 is a leap year.
The year 700 is not a leap year.

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Calendar(Assignment)

Q. Today is Monday. Which day will be on 61st day?

Soln:

1 week = 7 days. Taking the multiple of 7

56 - Monday	or	63 - Monday
57 – Tuesday		62 - Sunday
58 – Wednesday		61 - Saturday
59 – Thursday		
60 – Friday		
61 - Saturday		
56 + 5 = 61 days		63 – 61 = 2 days
(add 5 days)	or	(subtract 2 days)

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Calendar(Assignment)

Q. January 1, 2007 was Monday. What day of the week lies on Jan. 1, 2008?

A. Monday

B. Tuesday

C. Wednesday

D. Sunday

Ans: B

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Partnership

Q.A started business with Rs. 45,000 and B joined afterwards with 30,000. If the profit at the end of a year was divided in the ratio 2 : 1 respectively, then B would have joined A for business after.

A. 1 month B. 2 months C. 3 months D. 4 months

Soln:

- Capital of A = Rs. 45,000 Capital of B = Rs. 30,000
- Ratio of P1:P2=2:1
- using formula,
- $\frac{C1T1}{C2T2} = \frac{P1}{P2}$
- In this type , the time period is 12 months i.e. one year
- $\frac{45000 \times 12}{30000 \times T2} = \frac{2}{1}$
- T2=9
- B would join business after (12 - 9) = 3 months
- **Ans: C**

Partnership

Q. If 4 (A's capital) = 6 (B's capital) = 10 (C's capital), then out of a profit of Rs. 4650, C will receive _____

A) Rs.700 B) Rs.800 C) Rs.900 D) Rs.1000

Soln:

4A = 6B = 10C

A= 10/4C = 5/2C and B = 10/6C = 5/3C

A + B + C = 4650

5/2C + 5/3C + C = 4650

C = 900

Share of C or C will receive Rs.900

Ans: C

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Partnership

Q. A, B & C enter into a partnership with total of Rs 8,200. A's capital is Rs 1000 more than B's & Rs 2000 less than C's. What is B's share of annual profit of Rs 2,460?

A. Rs 1320 B. Rs 720 C. Rs 420 D. Rs 520

Ans: C

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Partnership(Assignment)

Q. A started a business by investing Rs. 32000. After 4 months B joined him with some investments. At the end of the year the total profit was divided in the ratio 6:5. How much capital was invested by B?

A. Rs. 30,000 B. Rs. 28000 C. Rs. 40000 D. Rs. 19000

Ans: C

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Partnership(Assignment)

Q. Three persons stared a placement business with a capital of Rs. 3000. B invests Rs. 600 less than A and C invests Rs. 300 less than B. What is B's share in a profit of Rs. 886 ?

A. Rs. 443

B. Rs. 354.40

C. Rs. 265.80

D. Rs. 177.20

Ans: C

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Partnership(Assignment)

Q. Anand and Deepak started a business investing Rs.22,500 and Rs.35,000 respectively. Out of a total profit of Rs. 13,800. Deepak's share is

A. Rs 9600 B. Rs 8500 C. Rs 8450 D. Rs 8400

Ans: D

Ratio of their shares-

= 22500 : 35000

= 9 : 14

Deepak's share = Rs.(13800×14/23)

= Rs. 8400

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Partnership(Assignment)

Q. A started a business with Rs. 21,000 and is joined afterwards by B with Rs. 36,000. After how many months did B join if the profits at the end of the year are divided equally?

A. 4 B. 5 C. 6 D. 7

Ans: B

- Capital of A = Rs. 21000 Capital of B = Rs. 36000
- Ratio of P1:P2=1:1
- **using formula,**
- $\frac{C1T1}{C2T2} = \frac{P1}{P2}$
- In this type , the time period is 12 months i.e. one year
- $\frac{21000\times12}{36000\times T2} = \frac{1}{1}$
- T2=7
- B would join business after (12 - 7) = 5 months

Partnership(Assignment)

Q. A,B,C subscribes Rs. 50000 for a buisness. A subscribes Rs. 4000 more than B and B Rs. 5000 more than C. Out of a total profit of Rs. 35000, A receives :

A. Rs. 8400

B. Rs. 11900

C. Rs. 13600

D. Rs. 14700

Ans: D

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THANK YOU!

GENERAL APTITUDE

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Time & Distance

- **Speed = Distance / Time**
- **Distance = Speed x Time**
- Ram travels from A to B traveling distance of 10 km in 4 hrs. His speed is
- **10/4 = 2.5 km/hr**
- Ram moves from Pune to Satara at the same speed taking 1 day & 10 hrs. The distance between Pune & Satara is
- **(24+10) x 2.5 = 34 x 2.5 = 85 km**
- Ram now wants to reach back to Pune in 17 hours So he should travel back at a speed of
- **85/17 = 5 km/hr**

Time & Distance

- If the same distance is traveled at different speeds S1 & S2 then average speed is given by-

$$Sa = \frac{(2 \times S1 \times S2)}{(S1 + S2)}$$

If the same distance is traveled at different speeds S1 ,S2 & S3 then average speed is given by-

$$Sa = \frac{(3 \times S1 \times S2 \times S3)}{(S1S2 + S2S3 + S1S3)}$$

- **Imp : Convert every term to same units**
- **1 Km/hr = 5/18 m/s & 1 m/s = 18/5 km/hr**
- If a bowler has a run up of 100 m & he runs at a speed of 36 km/hr the time he takes to complete his runup is
- **36 x 5/18 m/s = 10m/s**
- **100m ÷10 m/s = 10 s**

Time & Distance

If different distance D1,D2 & D3 travelled is at different speeds S1 ,S2 & S3 then average speed is given by-

$$Sa = \frac{(D1 + D2 + D3)}{\left(\frac{D1}{S1} + \frac{D2}{S2} + \frac{D3}{S3}\right)}$$

- Q. A man covers 10kms at a speed of 5 km/hr, 30kms at a speed of 7 km/hr and 20kms at a speed of 15 km/hr. Find out the average speed.
- $Sa = \frac{(10 + 30 + 20)}{\left(\frac{10}{5} + \frac{30}{7} + \frac{20}{15}\right)}$ = 7.77 km/hr

Time & Distance

- **Speed & distance are directly proportional.**
- **S α D**
- **Distance & Time are directly proportional.**
- **D α T**
- **Speed & time are inversely proportional.**
- **S α 1/T**
- **Relative speed** is **defined** as the **speed** of a moving object with respect to another. When two objects are moving in the same direction, **relative speed** is calculated as their difference and if objects are moving in opposite direction then calculate as their sum.
- **Relative speed = X-Y (same direction)**
- **Relative speed = X+Y (opposite direction)**

Relative Speed-

Objects Moving in Same direction

Relative Speed = $V_1 - V_2$

Relative Speed = $V_2 - V_1$

Objects Moving in Opposite Direction

Relative Speed = $V_1 + V_2$

Time & Distance

Q. A car traveled 20% of the time at 30 km/hr, 50% of the time at 40 km/hr and rest of the journey at 50 km/hr. What is the average speed of the car over the whole journey?

A. 40 km/hr B. 35 km/hr C. 41 km/hr D. 45 km/hr

Soln:

Avg Speed = total dist / total time

Assume Journey = T hr

Total Distance = (0.2Tx30 + 0.5Tx40 + 0.3Tx50)

= 6T + 20T + 15T

= 41T

Average Speed = 41T/T = 41 kmph

Ans: C

$$Sa = \frac{(D1 + D2 + D3)}{\left(\frac{D1}{S1} + \frac{D2}{S2} + \frac{D3}{S3}\right)}$$

$$= \frac{(20x30 + 50x40 + 30x50)}{\left(\frac{20x30}{30} + \frac{50x40}{40} + \frac{30x50}{50}\right)}$$

$$= \frac{4100}{100} = 41 \text{ km/hr}$$

Time & Distance

Q. At 7:30 am two trains start from their respective stations A & B in opposite direction, 930 km apart at speeds of 60 km/hr & 90 km/hr respectively. At what time do they meet?

A.12:30 pm B. 1:30 pm C. 1:42 pm D. 1:50 am

Soln:

- Time = Distance/ Speed
- Time = 930 km / (60+90)km/hr (relative Speed adds up)
- Time = 6.20 hours = 6 hrs 12 min
- Time of meeting 1:42 pm

Ans: C

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Time & Distance

Q. Walking at a speed of 4/5 of the original speed a person reaches office 8 min late (8 mins more than normal time). Find the time required usually.

A.24 min B. 30 min C. 32 min D. 44 min

Soln:

	Original	New
Speed	S	4S/5
Time	T	T+8

Speed x Time = Distance is constant

→ST = 4S/5 x (T+8)

→T = 4/5 x (T+8)

→5T/4 = T+8

→$\frac{5T}{4}$ - T =8

→ Normal Time T = 32 mins

Ans: C

Time & Distance

Q. A boy rides his bicycle 10km at an average speed of 12km/hr and again travels 12km at an average speed of 10km/hr. His average speed for the entire trip is approaximately

A. 10.4km/hr B. 10.8 km/hr C. 11 km/hr D. 12.2km/hr

Soln:

$$Sa = \frac{(D1 + D2)}{\left(\frac{D1}{S1} + \frac{D2}{S2}\right)}$$

Ans: B

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Time & Distance(Assignment)

Q. A boy starts from his house for college at a fixed time. If he walks at the rate of 5 kmph he is late by 7 mins. If he walks at 6 kmph he is 5 min early. Find College to home distance.

A. 5 km B. 6 km C. 7 km D. 6.5 km

	Original	Case1	Case2
Speed	s	5	6
Time	t	t+7	t-5

Speed x Time = Distance is constant

→ st = 5 x (t+7)/60 = 6 x (t-5)/60

→ 5t + 35 = 6t – 30

→ t = 65 mins

→ Using Case 1 Distance = 5 x (65+7)/60 = 6 km

Ans B

Time & Distance(Assignment)

Q. One day a person travels to office at 5/6 of his usual speed. He takes t minutes more than normal time. What is his normal time?

A. 2t B. 3t C. 4t D. 5t

Soln:

	Original	New
Speed	S	5S/6
Time	T	T+t

Speed x Time = Distance is constant

→ST = 5S/6 x (T+t)

→T = 5/6 x (T+t)

→6T/5= T+t

→T/5 = t → Normal Time T = 5t

Ans: D

Time & Distance(Assignment)

Q. A boy goes to school from home at a speed of 10km/hr and return back at 30km/hr. Find his average speed.

A. 15 km/hr B. 14.5 km/hr C. 10 km/hr D. 20 km/hr

Ans: A

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Time & Distance(Assignment)

Q. A person travels equal distance with speeds of 3 km/hr, 4 km/hr and 5 km/hr and taken a total time of 47 minutes. The total distance (in km) is :

A. 2 km B. 3 km C. 4 km D. 5 km

Ans: B

If the same distance is traveled at different speeds S1 ,S2 & S3 then average speed is given by-

$$Sa = \frac{(3 \times S1 \times S2 \times S3)}{(S1S2 + S2S3 + S1S3)} = \frac{(3 \times 3 \times 4 \times 5)}{(3x4 + 4x5 + 3x5)} = \frac{20x9}{47}$$

Total Dist = Speed x time

$$= \frac{20x9}{47} \times \frac{47}{60}$$

$$= 3 \text{ km}$$

Time & Distance(Assignment)

Q. A man covers half of his journey at 6 km/h and the remaining half at 3 km/h. His average speed is-

A. 9 km/hr B. 4.5 km/hr C. 4 km/hr D. 3 km/hr

Soln:

- Average speed= $\frac{2xy}{x+y} = \frac{2 \times 6 \times 3}{6+3} = \frac{36}{9}$ = 4 km/hr

Ans: C

Time & Distance(Assignment)

Q. On a journey, across Delhi, a Taxi averages 30 kmph for 60% of the distance, 20 kmph for 20% of it and 10kmph for the remainder. The average speed for the whole journey is :

A. 20km/hr B. 22.5 km/hr C. 24.625km/hr D. 25km/hr

Ans: A

SUNBEAM

Time & Distance(Assignment)

Q. A distance is covered by a cyclist at a certain speed. If a jogger covers half of the distance in double the time, the ratio of the speed of the jogger to that of the cyclist is :

A. 1 : 4 B. 4 : 1 C. 1 : 2 D. 2 : 1

Ans: A

SUNBEAM

Time & Distance(Assignment)

Q. Walking at a speed of 20% more than the original a person requires 6 min less than normal time. Find the time required usually

A.24 min B. 30 min C. 36 min D. 44 min

- **Ans C**

SUNBEAM

Time & Distance(Assignment)

Q. Walking at a speed of 12 km/hr a person reaches 10 min late. But if he walks at 20 km/hr he reaches 14 min early. Find the distance.

A.9 km B. 12 km C. 14 km D. 15 km

Ans: B

SUNBEAM

Time & Distance(Assignment)

Q. Two cars started simultaneously travelling toward each other from town A and town B 480km apart. It took first car travelling from town A to town B and car covered the distance in 8hrs and car from town B to town A covers distance in 12hrs. Find distance from town A when they meet?

A. 288km B. 250km C. 380km D. 240km

Ans: A

- Speed of first car = Distance/ time = 480 /8 = 60km/hr
- Speed of second car = Distance/ time = 480 /12 = 40km/hr

- The cars will meet in = 480 / (60+40) = 4.8 hrs (relative Speed adds up as travelling in opposite directions)
- Dist from A where they will meet = speed of car from A x time

  = 60 x 4.8 = 288km

Time & Distance(Assignment)

Q. A car travels 1/3 of the distance on a straight road with a velocity of 10 km/h, next one-third with a velocity of 20 km/h and the last one-third with a velocity of 60 km/h. Then the average velocity of the car (in km/h) during the whole journey is-

A. 18km/hr B. 24km/hr C. 30km/hr D. 20km/hr

Ans: A

$$\text{Time} = \frac{\text{Dist}}{\text{Speed}}$$

$$\text{Total Time} = \frac{1/3D}{10} + \frac{1/3D}{20} + \frac{1/3D}{60}$$

$$= \frac{D}{30} + \frac{D}{60} + \frac{D}{180}$$

$$= \frac{6D + 3D + 1D}{180}$$

$$= \frac{10D}{180} \text{ hrs}$$

$$\text{Avg velocity} = \frac{\text{Dist}}{\text{time}}$$

$$= \frac{D}{\frac{10D}{180}}$$

$$= \frac{180D}{10D}$$

$$= 18 \text{ km/hr}$$

Time & Distance(Assignment)

Q. A man riding his bicycle covers 150 metres in 25 seconds. What is his speed in km per hour ?

A. 25 km/hr

B. 21.6 km/hr

C. 23 km/hr

D. 20 km/hr

Ans: B

SUNBEAM

Time & Distance(Assignment)

Q. A motorist travelled the distance between two towns, which is 65 km, in 2 hours and 10 minutes. Find his speed in meter per minute.

A. 200 meters/min

B. 500 meters/min

C. 600 meters/min

D. 700 meters/min

Ans: B

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Trains

- **Trains**
- Let S1 = speed of train, S2 = Speed of Object

  L1 = length of the train, L2 = Length of the object.

  t = time taken by train to completely pass the object

Case A : Stationary object without considerable length

L1 = S1x t

Trains

Q. A train running at the speed of 60 km/hr crosses a pole in 9 seconds. What is the length of the train ?

A. 120 metres B. 180 metres C. 324 metres D. 150 metres

Ans : D

Case A : Stationary object without considerable length

L1 = S1x t

= 60x5/18 x 9

=150m

SUNBEAM

Trains

- **Trains**
- Let S1 = speed of train, S2 = Speed of Object

  L1 = length of the train, L2 = Length of the object.

  t = time taken by train to completely pass the object

Case B : Stationary object with considerable length

L1+L2 = S1x t

Time & Distance

Q. A train of length 600 m crosses a man standing on a platform in 45 sec & the same train crosses the complete platform in 2 min. What is the length of the platform?

A. 500 m B. 700 m C. 900 m D. 1000 m

- **Soln**:
- Case A : **L1 = S1x t** (Train passing the man)
- 600 = S1 x 45
  S1 = 600/45
  = 40/3
- Case B : **L1+L2 = S1x t** (Train passing the platform)
- 600+L2 = 40/3 x 120
- L2 = 1600 -600
- L2 = 1000 m
- **Ans D**

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Trains

- **Trains**
- Let S1 = speed of train, S2 = Speed of Object

  L1 = length of the train, L2 = Length of the object.

  t = time taken by train to completely pass the object

Case C : Moving object without considerable length

L1 = (S1±S2) x t

Time & Distance

Q. A train of length 600m running at a speed of 60km/hr crossed a man coming from the opposite direction on a bike in 20 sec. Find the speed of the bike.

A.24 km/hr B. 36 km/hr C. 40 km/hr D. 48 km/hr

Soln:

60 km/hr = 60 x 5/18 = 50/3 m/s

Case B : **L1 = (St+Sb) x t** (Train passing the bike)

600 = (50/3+Sb) x 20

Sb = 40/3 m/s x 18/5 = 48 km/hr

Ans: D

Trains

- **Trains**
- Let S1 = speed of train, S2 = Speed of Object

  L1 = length of the train, L2 = Length of the object.

  t = time taken by train to completely pass the object

Case D : Moving Object with considerable length

L1+L2 = (S1±S2) x t

Time & Distance

Q. Two trains of lengths 120 m and 180 m respectively running in opposite directions at a speed of 50 km/hr and 40 km/hr respectively. In what time will they cross each other?

A. 16 sec B. 10 sec C. 12 sec D. 14 sec

Soln:

When two trains crosses each other in opposite direction then their Distance & Relative Speeds get added.

s1 = 125/9 s2 = 100/9 s1+s2 = (125+100)/9 = 225/9

Time taken = Total Distance/Relative speed of two trains

= (120+180) / 225/9

= (300) / (225/9)

= 12 sec

Ans: C

Time & Distance(Assignment)

Q. Two trains of same length cross an electric pole in 12 sec & 20 sec respectively. Find in how much time do they cross each other while traveling in same direction?

A.45 sec B. 50 sec C. 60 sec D. 75 sec

Soln:

Case A : **L1 = S1x t** (Trains passing the pole)

L1 = S1 x 12 → S1 = L1/12

L1 = S2 x 20 → S2 = L1/20

Case B : **L1+L2 = (S1±S2) x t** (Train passing other train)

2L1 = (L1/12 –L1/20) x t

2 = (1/12 – 1/20) x t

2 = 1/30 x t → t = 60 sec.

Ans: C

Time & Distance(Assignment)

Q. Two trains of lengths 200 mt & 400 mt cross each other completely in 15 sec & 1.25 min respectively while going in opposite & same direction. Find the speed of the slower train.

A.24 m/s B. 16 m/s C. 40 m/s D. 8 m/s

Soln:

Case A : **L1+L2 = (S1+S2) x t** (Trains passing opp direction)

200+400 = (S1+ S2) x 15

S1+S2 = 40 m/s ……(1)

Case B : **L1+L2 = (S1-S2) x t** (Trains passing same direction)

200+400 = (S1-S2) x 75

S1-S2 = 8 m/s …….(2)

2S1 = 48 → S1 = 24, S2=16

Ans: B

Time & Distance(Assignment)

Q. Person crosses a 600 m long street in 5 minutes. What is his speed in km per hour?

A. 3.6 B. 7.2 C. 8.4 D. 10

Ans: B

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Time & Distance(Assignment)

Q. An aeroplane covers a certain distance at a speed of 240 kmph in 5 hours. To cover the same distance in 1 2/3 hours, it must travel at a speed of:

A. 300 kmph B. 360 kmph C. 600 kmph D. 720 kmph

Ans: D

SUNBEAM

Time & Distance(Assignment)

Q. The ratio between the speeds of two trains is 7 : 8. If the second train runs 400 km in 4 hours, then the speed of the first train is:

A. 70 km/hr B. 75 km/hr C. 84 km/hr D. 87.5 km/hr

Ans: D

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Time & Distance(Assignment)

Q. A man on tour travels first 160 km at 64 km/hr and the next 160 km at 80 km/hr. The average speed for the first 320 km of the tour is:

A. 35.55 km/hr B. 36 km/hr C. 71.11 km/hr D. 71 km/hr

Ans: C

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Trains(Assignment)

Q. A train 125 m long passes a man, running at 5 km/hr in the same direction in which the train is going, in 10 seconds. The speed of the train is:

A. 45 km/hr B. 50 km/hr C. 54 km/hr D. 55 km/hr

Ans: B

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Time & Distance(Assignment)

Q. Two trains run on parallel tracks in the same direction with speeds of 42 km/hr & 60 km/hr. A person sitting in the faster train crossed the slower train completely in 1.2 min. Find the length of the slower train.

A.240 m B. 360 m C. 420 m D. 480 m

Ans: B

Note – Man in the train has same speed as train but no length

Using case 3 from trains → Moving object without length

L1 = (S1 – S2) x t

Time & Distance

- **Boats & Streams**
- If Speed of boat in still water = **x kmph**
- Speed of the stream = **y kmph** then

- Speed of the boat downstream **Sd = (x+y) kmph**
- Speed of the boat upstream **Su = (x-y) kmph**

- Speed of Boat in still water **X = ½ (Sd + Su)**
- Speed of the stream **Y = ½ (Sd – Su)**

Boats & Streams

Q. A boat goes 16 km upstream & returns back to original place in 6 hrs. If the speed of water is 2 kmph. Find the speed of boat in still water.

A.3 kmph B. 4 kmph C. 6 kmph D. 8 kmph

Soln

Let speed of boat = x, Speed of water y = 2

Case A : **Su = x-2**

Case B : **Sd = x+2**

Total time = Tu + Td

6 = 16/(x -2) + 16/(x+2)

6(x-2)(x+2) = 16(x+2) + 16(x-2)

6x^2 -24 = 16(2x)

6x^2 – 32x -24 =0

3x^2 -16x – 12 =0 → 3x^2 -18x + 2x -12 =0 → (3x+2)(x-6)=0

→ x= 6 kmph

Ans: C

Boats & Streams

Q. A man notices that it takes him thrice the time to row up than to row down the same distance. Find the speed of the boat in still water if the speed of water is 5 kmph?

A. 8 kmph B. 8.5 kmph C. 10 kmph D. 10.5 kmph

Soln

Td : Tu = 1 : 3 → Sd : Su = 3 : 1

Let speed of boat = x, Speed of water = 5

→Sd = x+5, Su = x-5

→Sd/Su = (x+5)/(x-5)

→3/1 = (x+5)/(x-5)

→3(x-5) = x+5

→3x-15 = x+5 → 2x =20 → x= 10 kmph.

Ans: C

Boats & Streams(Assignment)

Q. A person covers 200 m in 15 sec while going upstream & 5 km in 3 min while going downstream. Find the speed of boat in still water.

A. 44 m/s B. 74 m/s C. 74 km/hr D. 80 km/hr

Ans: C

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Boats & Streams(Assignment)

Q. A man rows at the rate of 12 kmph in still water. It takes him 4 hr 16 min to row to a place 24 km away & back. What is the speed of water?

A. 3 kmph B. 2.5 kmph C. 2 Kmph D. 1.5 kmph

Ans : A

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Boats & Streams(Assignment)

Q. A man notices that it takes him 5 times the time to row up than to row down the same distance. Find the speed of the boat in still water if the speed of water is 20 kmph?

A. 22 kmph B. 25 kmph C. 27 Kmph D. 30 kmph

Ans: D

SUNBEAM

Clocks

Clocks

- → 360°
- → 60 minute spaces of 6° each
- → 12 Hours space of 30° each

Clocks

- The Face or dial of a watch is a circle whose circumference is divided into 60
- equal parts, called ***minute spaces***.
- A clock has two hands, the smaller one is called *the* ***hour hand*** **or** ***short hand***
- while the larger one is called the ***minute hand*** **or** ***long hand.*****.**
- i) In 60 minutes, the minute hand gains 55 minutes on the hour hand.
- ii) In every hour, both the hands coincide once.
- iii) The hands are in the same straight line when they are coincident or opposite to
- each other.
- iv) When the two hands are at right angles, they are 15 minute spaces apart.
- v)When the hand's are in opposite directions, they are 30 minute spaces apart.
- vi)Angle traced by hour hand in 12 hrs = 360°.
- vii)Angle traced by minute hand in 60 min. = 360°.

Clocks

- 12 hr x 30° = 360°
- At night 12, day starts , both hands are at same place.
- Every hour they coincide once **but between 11-12 it coincides at 12**, so its 11 times only.
- The two hands coincide -
  - 11 times in 12 hours
  - 22 times in 24 hours
- The two hand are in opposite direction –
  - 11 times in 12 hours
  - 22 times in 24 hours
  - **Between 5-7 it happens only once at 6 o'clock.**
- The two hand make right angles –
  - 22 times in 12 hours
  - 44 times in 24 hours

Clocks

- The hands of a clock coincide 11 times in every 12 hours (Since between 11 and 1, they coincide only once, *i.e.,* at 12 o'clock).

AM	**PM**
12:00	12:00
1:05	1:05
2:11	2:11
3:16	3:16
4:22	4:22
5:27	5:27
6:33	6:33
7:38	7:38
8:44	8:44
9:49	9:49
10:55	10:55

The hands overlap about every 65 minutes, not every 60 minutes.

∴ The hands coincide 22 times in a day.

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Remember

- **Relative speed of minute hand with respect to hour hand = $\frac{11}{12}$ ms/min**

Clocks

Relative speed of minute hand with respect to hour hand = $\frac{11}{12}$ ms/min

Q. At what time between 4 and 5 o'clock will the hands of a watch be together/coincide?

A. 10 $^{9}/_{11}$ min past 4 B. 21 $^{10}/_{11}$ min past 4 C. 11 $^{10}/_{11}$ min past 4 D. 21 $^{9}/_{11}$ min past 4

Soln:

- **Ans: D**
- Draw diagram of clock here

Distance travelled by minute hand is 20min-spaces.
So D =20

$$T = \frac{D}{S}$$
$$= \frac{20}{11/12}$$
$$= \frac{20 \times 12}{11}$$
$$= \frac{240}{11}$$
$$= 21\frac{9}{11} \text{ mins. past 4}$$

Clocks

Relative speed of minute hand with respect to hour hand = $\frac{11}{12}$ ms/min

Q. At what time between 3 & 4 o'clock will the hands of the clock be in the opposite direction.

A. 40 $^{9}/_{11}$ min past 3 B. 30 $^{10}/_{11}$ min past 3

C. 49 $^{1}/_{11}$ min past 3 D. 41 $^{9}/_{11}$ min past 3

Ans : C

- Draw diagram of clock here

Distance travelled by minute hand is 45min-spaces.
So D =45

$$T = D/S$$
$$= \frac{45}{11/12}$$
$$= \frac{45 \times 12}{11}$$
$$= \frac{540}{11}$$
$$= 49\frac{1}{11} \text{ mins. past 3}$$

Clocks

Relative speed of minute hand with respect to hour hand = $\frac{11}{12}$ ms/min

Q. At what time between 7 and 8 o'clock will the hands of a clock be in the same straight line but, not together? ←means in opposite direction

A. 5 min. past 7 B.5 $\frac{2}{11}$ min. past 7 C. 5 $\frac{3}{11}$ min. past 7 D. 5 $\frac{5}{11}$ min. past 7

Soln:

- **Ans: D**
- Draw diagram of clock here

Distance travelled by minute hand is 5min-spaces.
So D =5

$$T = D/S$$
$$= \frac{5}{11/12}$$
$$= \frac{5 \times 12}{11}$$
$$= \frac{60}{11}$$
$$= 5\frac{5}{11} \text{ mins. past 7}$$

Clocks

Q. What is the angle between the hands of a clock at 7:23 am?

A.90° B. 85.5° C. 83.5° D. 81.5°

Soln:

angle = | 30H -11/2 M | OR |30H – 5.5 M|

$= 30 \times 7 - \frac{11}{2} \times 23$

= 210 - 253/2

= 210 – 126.5

= 83.5°

Ans : C

Clocks

Find the reflex angle between 2 hands of a clock at 10:25

A. 187.5° B. 192.5° C. 197.5° D. 207.5°

Soln:

angle = | 30H -11/2 M | OR |30H – 5.5 M|

= 30 x 10 - 11/2 x 25

= 300 – 275/2

= 300 – 137.5

= 162.5 °

But reflex angle is greater than 180 ° and less than 360 °

360 – 162.5 = 197.5 °

- **Ans: C**

Clock(Assignment)

Q. Time piece kept in home is such that hour hand points to North at 9am..In which direction minute hand and hour hand point respectively at 10:30am?

A. West, North-East B. East, North-West
C. North, South-East D. South, North-West

Ans: A

Clock(Assignment)

Q. How many rotations will the hour hand of a clock complete in 72 hours?

A. 3

B. 6

C. 9

D. 12

Ans: B

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Clocks - Method1(Assignment)

- The minute hands of a clock meet at intervals of 70 mins. How much does the clock gain or lose in one day?
- A. 90 $^{10}/_{77}$ min B. 93 $^{39}/_{77}$ min C. 93 $^{35}/_{143}$ min D. None of these
- **Soln:**
- In a clock that runs correctly, hands overlap every 720/11 mins.
- In this clock hands are together after every 70 mins.
- So gain/loss in 70 mins = 720/11 - 70 mins = (720-770)/11 = -50/11
- 70 min → 50/11 min loss
- 24 x 60 min → x
- So loss in one day = ($^{50}/_{11}$ x 24 x 60) /70 = 93 $^{39}/_{77}$ min
- **Ans: B**

Clocks – Method2(Assignment)

Q. The minute hands of a clock meet at intervals of 70 mins. How much does the clock gain or lose in one day?

- A. $90\ ^{10}/_{77}$ min B. $93\ ^{39}/_{77}$ min C. $93\ ^{35}/_{143}$ min D. None of these
- **Soln**:
- The minute hand of a clock overtakes the hour hand at intervals of M minutes of correct time.
- The clock gains or loses in a day by=(720/11−M)(60×24/M) minutes.
- Here M = 70.
- The clock gains or losses in a day by-
- Gain/loss =(720/11−M)(60×24/M)

=(720/11−70)(60×24/70)

$$=\left(\frac{720-770}{11}\right)\left(\frac{6 \text{ x } 24}{7}\right)$$

$$=\left(\frac{-50}{11}\right)\left(\frac{144}{7}\right) = \frac{-7200}{77}$$

$= 93\ ^{39}/_{77}$ min

Clock(Assignment)

Q. A clock is set at 4am. It loses 16 minutes in 24 hours. What will be the correct time when the clock indicates 9pm on the 4th day?

- A. 8pm B. 7pm C. 10pm D. 11pm
- **Ans C**
- Time from 4am on a day to 9pm on the 4th day = 89 hours
- 23 hrs 44 minutes of this clock = 24 hours of the correct clock as this clock loses 16 minutes in 24 hours.
- 23 hrs 44 minutes = 23 $\frac{44}{60}$ = 23 $\frac{11}{15}$ = $\frac{356}{15}$ hrs
- Now, $\frac{356}{15}$ hrs of this clock = 24 hours of correct clock
- 89 hours of this clock = ?
- $\frac{24\times11}{356}$ * 89 = 90 hours of the correct clock, i.e. the correct clock gains one hour over the incorrect clock.
- The correct time on the fourth day will be 10pm.
- **OR**
- time from first day 4am to 4th day 9pm = 89 hours
- 16mins loss - in 24hrs
- ? - in 89hrs
- so loss = 59.33mins == 1hr
- as loss is of 1hr ,so correct clock will indicate 10pm when this clock will show 9pm

Clocks(Assignment)

Q. An accurate clock shows 8 o'clock in the morning. Through how many degrees will the hour hand rotate when the clock shows 2 o'clock in the afternoon?

A. 144º B. 150º C. 168º D. 180º

- Soln:
- In one hour ----- the hour hand rotates 30°
- In 6 hours ------ the hour hand rotates 180°
- **OR**
- Number of hours from 8am till 2pm= 6hrs
  The rotation of an hour hand in one hour= 30°
  Total degree of rotation= 360°

  Therefore, the Angle traced by the hour hand in 6 hours is= (360/12)x6 = **180°**
- **Ans: D**

Clocks(Assignment)

Q. What is the angle between the hands of a clock at 7:20 ?

A. 100° B. 1921/2° C. 195° D. 197 1/2°

Ans : A

What is the angle between the hands of a clock at 2:30 ?

A. 144° B. 150° C. 105° D. 180°

Ans : C

What is the angle between the hands of a clock at 3:30 ?

A. 144° B. 150° C. 105° D. 75°

Ans : D

SUNBEAM

Clocks(Assignment)

Q. The minute hand of a clock overtakes the hour hand at intervals of 65 mins of correct time. How much does the clock gain or lose in one day?

A. $10\ ^{10}/_{143}$ min B. $10\ ^{21}/_{143}$ min C. $10\ ^{100}/_{143}$ min D. None of these

Ans: A

SUNBEAM

Clocks(Assignment)

Q. A clock is so placed that at 12 noon its minute hand points towards North-east. In which direction does its hour hand point at 1:30 p.m ?

A. West B. East C. North D. South

Ans: B

Diagram is shown as per the conditions in the question. Clearly at 1.30 p.m hour hand shall point - East.

Permutation & Combination

- What is permutation?
- It is the number of ways a group of things can be arranged.

E.g: Consider 3 letters A,B,C . In how many ways they can be arranged?

- A B C
- A C B
- B A C
- B C A
- C A B
- C B A

6 ways to arrange these 3 letters

- For 3 letter / 4 letter words its possible but for more number of letters we need a formula-
- $nPr = \frac{n!}{(n-r)!}$

Permutation & Combination

Q. Consider 4 letters A,B,C,D and arrange them in 3 spaces

- - - 3 spaces

No . Of letters = 4

No of spaces = 3

nPr = $4P_3 = \frac{4!}{(4-3)!} = \frac{4!}{1!}$ =4! = 4 x 3 x 2 x 1 = 24 ways it can be arranged

Q. Arrange 7 letters A,B,C,D,E,F,G in 4 spaces

- - - - 4 spaces

nPr = $7P_4 = \frac{7!}{(7-4)!} = \frac{7!}{3!} = \frac{5040}{6}$ = 840

Permutation & Combination - Remember

$0! = 1$

$1 ! = 1$

$2! = 2 \times 1 = 2$

$3! = 3 \times 2 \times 1 = 6$

$4! = 4 \times 3 \times 2 \times 1 = 24$

$5! = 5 \times 4 \times 3 \times 2 \times 1 = 120$

$6! = 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 720$

$7! = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040$

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Permutation & Combination

Q. In how many ways can the letters of the word 'LEADER' be arranged?

A. 72 B. 144 C. 360 D. 720 E. None of these

Soln:

The word LEADER has 6 letters. So I can be arranged in 6! ways.

Out of these 6 letters , 2 letters are repeated (letter E repeated twice)

So we write it as - $\frac{6!}{2!}$

6! ways to arrange letters in the word LEADER

2! In the denominator as letter E is repeated twice

$$= \frac{6\times5\times4\times3\times2\times1}{2\times1}$$

= 360 ways

Ans : C

Permutation & Combination

Q. In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

A. 360 B. 480 C. 720 D. 5040 E. None of these

Soln:

L E A D I N G → vowels in this word are E,A I

Remaining letters(consonants) are - L D N G

now we can arrange the vowels together in the remaining spaces as

_ L _ D _ N _ G_ in 5! ways and vowels be rearranged in those spaces in 3! ways

5! X 3! = 720 ways

Ans : C

Permutation & Combination

Q. In how many different ways can the letters of the word 'CORPORATION' be arranged so that the vowels always come together?

A. 810 B. 1440 C. 2880 D. 50400 E. 5760

Soln:

C O R P O R A T I O N------- vowels in this word are O,O,A,I,O

Remaining letters(consonants) are - C R P R T N

now we can arrange the vowels together in the remaining spaces as

_C_R_P_R_T_N_ in 7! ways and vowels be rearranged in those spaces in 5! Ways

But the repeated letters are 2R in consonants and 3O in vowels

$$\frac{7!}{2!} \times \frac{5!}{3!} = 50400 \text{ ways}$$

Ans : D

Permutation & Combination

Q. Out of 7 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

A. 210 B. 1050 C. 25200 D. 21400 E. None of these

Soln:

we need to form a 5letter word with 3consonants & 2vowels = C C C V V

Ways to select, (3 consonants out of 7) AND (2 vowels out of 4)

$= 7C_3 \times 4C_2 \times 5!$ ← each group has 5 letters and they can be arranged in 5! ways

$= \frac{7\times6\times5}{3\times2\times1} \times \frac{4\times3}{2\times1} \times 5!$

$= 35 \times 6 \times 120$

$= 25200$ ways

Ans : C

Permutation & Combination

Q. From a group of 7 men and 6 women, five persons are to be selected to form a committee so that at least 3 men are there on the committee. In how many ways can it be done?

A. 564 B. 645 C. 735 D. 756 E. None of these

Soln:

We may have (3 men and 2 women) or (4 men and 1 woman) or (5 men only).

Required number of ways= (7C3 x 6C2) + (7C4 x 6C1) + (7C5)

$$= \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{6 \times 5}{2 \times 1}\right) + (7C3 \times 6C1) + (7C2)$$ → [using $^nC_r = {}^nC_{(n-r)}$]

$$= 525 + \left(\frac{7 \times 6 \times 5}{3 \times 2 \times 1} \times \frac{6}{1}\right) + \left(\frac{7 \times 6}{2 \times 1}\right)$$

$$= 525 + 210 + 21$$

$$= 756$$

Ans: D

Difference between permutation and combination

Combination (order does not matter)

"My fruit salad is a combination of apples, grapes and bananas" We don't care what order the fruits are in, they could also be "bananas, grapes and apples" or "grapes, apples and bananas", its the same fruit salad.

Permutation (When the order does matter)

"The combination to the safe is 472". Now we **do** care about the order. "724" won't work, nor will "247". It has to be exactly **4-7-2**.

Difference between permutation and combination

What is permutation?

Permutation: The various ways of arranging a given number of things by taking some or all at a time are all called as permutations.
Permutation includes word formation, number formation, circular permutation, etc. **In permutation, objects are to be arranged in particular order.** It is denoted by $^{n}P_{r}$ **or P(n, r).**

Example: Arrange the given 3 numbers 1, 2, 3 by taking two at a time.
Now these numbers can be arranged in 6 different ways: **(12, 21, 13, 31, 23, 32).**

Here,

12 and 21, 13 and 31 or 23 and 32 do not mean the same, because here order of numbers is important.

Difference between permutation and combination

- **What is combination?**

  Combination: Each of different groups or selections formed by taking some or all number of objects is called a combination.

  Combination is used in different cases which include team/group/committee.

  In combination, objects are selected randomly and here order of objects doesn't matter. It is denoted by $^{n}C_{r}$ **or C(n, r) or** $^{n}C_{r} = {}^{n}C_{(n-r)}$.

  Example: If we have to select two girls out of 3 girls X, Y, Z, then find the number of combinations possible.

  Now only two girls are to be selected and arranged. Hence, this is possible in 3 different ways: **(XY, YZ, XZ,).**

  Here,
  You cannot make a combination as XY and YX, because these combinations mean the same.

Permutation & Combination(Assignment)

Q. In a group of 6 boys and 4 girls, four children are to be selected. In how many different ways can they be selected such that at least one boy should be there?

A. 159 B. 194 C. 205 D. 209 E. None of these

Soln:

(1 boy and 3 girls) or (2 boys and 2 girls) or (3 boys and 1 girl) or (4 boys).

= (6C1 x 4C3) + (6C2 x 4C2) + (6C3 x 4C1) + (6C4)

= (6C1 x 4C1) + (6C2 x 4C2) + (6C3 x 4C1) + (6C2) → using $^{n}C_{r} = {}^{n}C_{(n-r)}$(to reduce calculation)

$$= (6 \times 4) + \left(\frac{6 \times 5}{2 \times 1} \times \frac{4 \times 3}{2 \times 1}\right) + \left(\frac{6 \times 5 \times 4}{3 \times 2 \times 1} \times 4\right) + \frac{6 \times 5}{2 \times 1}$$

= (24 + 90 + 80 + 15)

= 209

Ans: D

Permutation & Combination(Assignment)

Q. How many 4-letter words with or without meaning, can be formed out of the letters of the word, 'LOGARITHMS', if repetition of letters is not allowed?

A. 40

B. 400

C. 5040

D. 2520

Ans: C

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Permutation & Combination(Assignment)

Q. In how many different ways can the letters of the word 'MATHEMATICS' be arranged so that the vowels always come together?

A. 10080

B. 4989600

C. 120960

D. None of these

Ans: C

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Permutation & Combination(Assignment)

Q. In how many different ways can the letters of the word 'OPTICAL' be arranged so that the vowels always come together?

A. 120

B. 720

C. 4320

D. 2160

E. None of these

Ans: B

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Permutation & Combination(Assignment)

Q. How many Permutations of the letters of the word APPLE are there?

A.600 B.120 C.240 D.60

Ans: D

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Permutation & Combination(Assignment)

Q. How many different words can be formed using all the letters of the word ALLAHABAD?

A.7560

B.7890

C.7650

D. None of these

Ans: A

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Permutation & Combination(Assignment)

Q. Find the value of ${}^{50}P_2$

A. 4500
B. 3260
C. 2450
D. 1470

Ans : C

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Permutation & Combination(Assignment)

Q. How many words can be formed by using letters of the word ‘DELHI’?

a. 50
b. 72
c. 85
d. 120

Ans : D

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Permutation & Combination(Assignment)

Q. Find the number of ways the letters of the word ‘RUBBER’ can be arranged?

A. 450
B. 362
C. 250
D. 180

Ans: D

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Permutation & Combination(Assignment)

Q. Out of 5 consonants and 4 vowels, how many words of 3 consonants and 2 vowels can be formed?

A. 60
B. 200
C. 5230
D. 7200

Ans : D

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Permutation & Combination(Assignment)

Q. In how many ways can a group of 5 men and 2 women be made out of a total of 7 men and 3 women?

A. 63

B. 90

C. 126

D. 45

E. 135

Ans: A

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THANK YOU!

GENERAL APTITUDE

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Interest

If P = Principal, R = Rate of interest, N = Time in years, I = Interest, A = Amount

Then **A = P + I**

Simple Interest

S.I. = (P x R x N) / 100

Basic principal remains constant.

S.I. is good example of AP(Arithmetic Progression)

Compound Interest

$A = P (1+ R/100)^T$

T = periods of compounding,

C.I. = A – P

R = rate for compounding period

Basic principal keeps on increasing as we get interest on interest.

C.I. is good example of GP(Geometric Progression)

Interest

Q. A shopkeeper with an OD facility at 18% with a bank borrowed Rs. 15000 on Jan 8, 2011 and returned the money on June 3, 2011 so as to clear the debt. The amount that he paid was -

A. Rs. 16080 B. Rs. 16280 C. Rs. 16400 D. None of these

Soln:

- P = 15000, r= 18%,
- T = 23(jan)+28(febNonleap)+31(march)+30(April)+31(may)+3(june) = 146 days
- 146/365 days = 2/5 years.
- SI = 15000 x 18 x 2/5 x 1/100 = 30x18x2 = 1080

Amount = P + SI

=15000+1080

=Rs. 16080

Ans: A

Interest

Q. A sum of money at simple interest amounts to Rs. 815 in 3 years and to Rs. 854 in 4 years. The sum is:

A. Rs. 650 B. Rs. 690 C. Rs. 698 D. Rs. 700

Soln:-

amount after 4 years = amount after 3 years + simple interest in one year

S.I. in one year = Rs. (854 - 815) = Rs. 39.

S.I. for 3 years = Rs.(39 x 3) = Rs. 117.

Principal = amount - interest

Principal = 815 - 117

= Rs. 698.

Ans: C

Interest

Q. A farmer borrowed Rs.3600 at 15% simple interest per annum. At the end of 4 years, he cleared this account by paying Rs.4000 and a donkey. The cost of the donkey is -

A. Rs. 1000 B. Rs. 1200 C. Rs. 1550 D. Rs. 1760

Soln:

SI for 4 years = Rs.(3600×0.15×4)=Rs.2160

Amount after 4 years = Rs. (3600+2160)= Rs. 5760

Cost of donkey = Rs. (5760-4000)= Rs. 1760

Ans: D

Interest

Q. P =Rs. 2000, R =10%, N =2yrs , Find A and CI

Soln:

$A = 2000(1 + \frac{10}{100})^2$

$= 2000(\frac{110}{100})^2$

$= 2000(\frac{121}{100})$

= Rs. 2420

CI = 2420 – 2000 = Rs. 420

2000 → 10% =200

10% 10%

2000 ⟶ 2200 ⟶ 2420

CI = 2420 – 2000 = 420

Interest

Q. Simple interest on a certain sum of money for 3 years at 8% per annum is half the compound interest on Rs. 4000 for 2 years at 10% per annum. The sum placed on simple interest is:

A. Rs. 1550 B. Rs. 1650 C. Rs. 1750 D. Rs. 2000

Soln:

A = P(1+R/ 100)^N = 4000(1+ $\frac{10}{100}$)^2 = 4000 x ($\frac{11}{10}$) ^{2} = 4000 x $\frac{11}{10}$ x $\frac{11}{10}$ = Rs. 4840

OR

$$4000 \xrightarrow[1^{st}\text{ yr}]{10\%} 4400 \xrightarrow[2^{nd}\text{ yr}]{10\%} 4840$$

CI =A – P

CI = 4840 – 4000 = Rs. 840

Ans: C

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

$\frac{PNR}{100}$ = $\frac{1}{2}$ x 840

$\frac{P \text{ x } 3 \text{ x } 8}{100}$ = 420

P(sum) = $\frac{420 \text{ x } 100}{3x8}$

= Rs. 1750

Interest

Q. P =Rs. 4000, R =20% per annum, N =6months.Find CI computed quarterly for given period.

Soln:

N =6months(2 quarterly)

rate(R) = 20 % per annum = 5 % quarterly

After every 3 months CI will be calculated.

by 5%=200 → by 5%=210 →

4000 4200 4410

I = 4410 -4000

= Rs. 410

Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the Principal

- A.20000 B. 24000 C. 26000 D. 15000
- **Soln**:
- Let the principal be P = Rs. 100.
- time N = 2 years, rate of interest R = 8% per annum
- simple interest = PNR/100=$\frac{100*8*2}{100}$ =Rs. 16
- CI (for 2 years)
- 8% 8%
- 100 → 108 → 116.64
- 16.64

P	SI	CI	Diff
100	16	16.64	0.64

- 0.64 - > 100
- 128 -> ?
- $\frac{12800}{0.64}$ = Rs. 20000

Interest

Q. Difference between Compound interest & simple interest on a sum placed at 8% p.a. compounded annually for 2 years is Rs 128. Find the principal

- A.20000 B. 24000 C. 26000 D. 15000
- **Soln**:
- Let the principal be P = Rs. 100.
- time N = 2 years, rate of interest R = 8% per annum
- simple interest = PNR/100=$\frac{100*8*2}{100}$ =Rs. 16
- compound amount= P(1+R/ 100)^N
- = 100*(1+$\frac{8}{100}$) ^2 = 100 * ($\frac{108}{100}$)^2 = 100($\frac{11664}{10000}$)=$\frac{11664}{100}$ = 116.64
- compound interest = compound amount – principal
- C.I = A - P
  =116.64-100=Rs. 16.64
- the difference between the compound interest and simple interest = 16.64-16.00 = Rs. 0.64
- 0.64 - > 100
- 128 -> ?
- = $\frac{128*100}{0.64}$ = 20000
- Thus, the principal is Rs. 20000.
- **Ans : A**

Interest

- If the difference between compound and simple interest is of **two years** than,
  Difference = $P(R)^2/(100)^2$
  Where P = principal amount, R = rate of interest

- If the difference between compound and simple interest is of **three years** than,
  Difference = $3 \times P(R)^2/(100)^2 + P\,(R/100)^3$.
  Here also, P = principal amount, R = rate of interest

Interest(Assignment)

Q. A sum of money placed at compound interest doubles in 7 years. In how many years the principal becomes-

a. 4 times of itself

b. 8 times of itself

Soln:

Let initial value be 100

$$100 \xrightarrow[\text{doubles}]{7\text{yrs}} 200 \xrightarrow[14\text{ yrs}]{7\text{yrs}} 400 \xrightarrow[21\text{yrs}]{7\text{yrs}} 800$$

a. In 14yrs

b. In 21 yrs

OR

100-------->200 in 7 years
200-------->400 in again 7 years then,
400-------->800 in 7 years again, thus
the time becomes= 7+7+7= 21 years.

Interest(Assignment)

Q. When annual compounding is done, a sum amounts to Rs 5000 in 6 years and 7200 in 8 years. What is the int rate?

A. 10% B. 15% C. 20% D. 25%

Soln

Let P be the principal & R the int rate

→ 5000 = P(1+R/100)^6……(1)

→ 7200 = P(1+R/100)^8……(2)

→ 36/25 = (1+R/100)^2

→ Taking square roots of both sides

→ 1+R/100 = 6/5

→ R/100 =1/5

→ R = 20%

Ans: C

Interest(Assignment)

Q. A sum fetched a total simple interest of Rs.7056 at the rate of 8 percent per year in 7 years. What is the sum?

A. Rs 12600 B) Rs 15120 C) Rs 10080 D) Rs 7560

Ans : A

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Interest(Assignment)

Q. Find the compound interest on Rs. 15,625 for 9 months at 16% per annum compounded quarterly.

A. Rs. 1851 B. Rs. 1941 C. Rs. 1951 D. Rs. 1961

Ans: C

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Interest(Assignment)

Q. What is the difference between the simple interest on a principal of Rs. 500 being calculated at 5% per annum for 3 years and 4% per annum for 4 years?

A.Rs. 5 B.Rs. 10 C.Rs. 20 D.Rs. 40 E. None of these

$SI_1 = P\ N_1 R_1/100$

$= \frac{500 \text{x } 3 \text{ x } 5}{100} =$ Rs. 75

$SI_2 = P\ N_2 R_2/100$

$= \frac{500 \text{x } 4 \text{ x } 4}{100} =$ Rs. 80

Difference = 80 – 75 = Rs. 5

OR

500 == 15% ↑ ⇒ 575 (1st case)
500 == 16% ↑ ⇒ 580 (2nd case)
difference = 580 -575 = Rs. 5

Ans : A

Interest(Assignment)

Q. A sum of money placed at compound interest doubles itself in 4 years. In how many years will it amount to 8 times?

A. 9 years B. 8 years C. 27 years D. 12 years

Ans: D

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Interest(Assignment)

Q. Difference between Compound interest & simple interest on a sum placed at 20% per annum compounded annually for 2 years is Rs. 72. Find the sum.

A. Rs. 2400 B.Rs. 8400 C. Rs.1800 D.Rs. 900

Ans : C

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Interest(Assignment)

Q. What is the simple interest on a sum of Rs. 700 if the rate of interest for the first 3 years is 8% per annum and for the last 2 years is 7.5% per annum?

A.Rs. 269.5 B.Rs. 283 C.Rs. 273 D.Rs. 280 E. None of these

Ans: C

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Interest(Assignment)

Q. Rs.2100 is lent at compound interest of 5% per annum for 2 years. Find the amount after two years.

- A.Rs. 2300 B.Rs. 2315.25 C.Rs. 2310 D.Rs. 2320 E. None of these
- **Soln:**
- $A = P (1+ R/100)^T$
- $A = 2100(1+5/100)^2$
- $A=2100\times[105/100]2$
- $A= \frac{2100 \text{ x } 11025}{10000}$
- Amount, A=Rs.2315.25
- **Ans : B**

Interest(Assignment)

Q. A man borrowed total Rs 2500 at Simple interest from two money lenders. He paid interest at 12% p.a. to one and 14% p.a. to the other. The total interest paid for the year was Rs.326. How much did he borrow at 14%?

A. Rs 1000 B. Rs 1200 C. Rs 1300 D. Rs 1500

Soln:

Let, x = Principal at 12% & 2500-x = Principal at 14%

SI at Rs.x = $\frac{x \times 1 \times 12}{100} = \frac{12x}{100} = \frac{3x}{25}$

SI at Rs.2500 -x = $\frac{2500-x \times 1 \times 14}{100} = \frac{(2500-x) \times 7}{50} = \frac{17500x - 7x}{50}$

SI at x + SI at 2500-x = 326

Substitute and solving the equation gives x =Rs. 1200

We need Principal at 2500-x = 2500 – 1200 =Rs. 1300

Ans: C

Interest(Assignment)

Q.A certain sum of money amounts to Rs. 704 in two years and Rs 800 in 5 years. Find the Principal.

A. Rs. 640 B. Rs. 600 C. Rs. 550 D. Rs. 450

Ans: A

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Interest(Assignment)

Q. What should be the simple interest obtained on an amount of Rs 5,760 at the rate of 6% p.a. after 3 years?

A. Rs 1036.80

B. Rs 1666.80

C. Rs 1336.80

D. Rs 1063.80

E. None of these

Ans : A

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Interest(Assignment)

Q. The simple interest on Rs.1820 from March 9, 2012 to May 21, 2012 at 7.5% rate will be

A. Rs. 22.50

B. Rs. 27.30

C. Rs. 28.80

D. Rs. 29

Ans: B

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IMPORTANT FORMULAE

- **I**.1.Area of a rectangle=(length x breadth)
- Therefore length = (area/breadth) and breadth=(area/length)
- 2.Perimeter of a rectangle = 2 x (length + breadth)

- **II**.Area of a square = (side)^2 =1/2(diagonal)^2
- **III** Area of four walls of a room = 2*(length + breadth)*(height)

- **IV** 1.Area of the triangle=1/2(base*height)
- 2. Area of a triangle = (s*(s-a)(s-b)(s-c))^(1/2), where a,b,c are the sides of a triangle & s= ½(a+b+c)
- 3.Area of the equilateral triangle =((3^1/2)/4)*(side)^2

IMPORTANT FORMULAE

- **V.**1.Area of the parellogram =(base *height)
- 2.Area of the rhombus=1/2(product of the diagonals)
- 3.Area of the trapezium=1/2(size of parallel sides)*distance between them.

- **VI** 1.Area of a circle =pi*r^2,where r is the radius
- 2. Circumference of a circle = 2ΠR.
- 3. Length of an arc = 2ΠRθ/(360) where θ is the central angle
- 4. Area of a sector = (1/2) (arc x R) = pi*R^2*θ/360.

- **VII**. 1. Area of a semi-circle = (pi)*R^2.
- 2. Circumference of a semi-circle = (pi)*R.
- where, **pi** = 3.142

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VOLUME AND SURFACE AREA – IMPORTANT FORMULAE

- **I. CUBOID**
- Let length = l, breadth = b and height = h units. Then,
- **1**. Volume = (l x b x h) cubic.units.
- **2. Surface area=** 2(lb + bh + lh) sq.units.
- **3. Diagonal**.=$\sqrt{l^2 + b^2 + h^2}$ units

- **II. CUBE**
- Let each edge of a cube be of length a. Then,
- **1. Volume** = a^3 cubic units.
- **2. Surface area** = $6a^2$ sq. units.
- **3. Diagonal** =$\sqrt{3}$ a units.

- **III. CYLINDER**
- Let radius of base = r and Height (or length) = h. Then,
- **1. Volume** = (∏ r2h) cubic units.
- **2. Curved surface area** = (2∏ rh). units.
- **3. Total surface area** =2 ∏ r (h+r) sq. units

VOLUME AND SURFACE AREA – IMPORTANT FORMULAE

- **IV. CONE**
- Let radius of base = r and Height = h. Then,
- **1. Slant height, l =**$\sqrt{h2+r2}$
- **2. Volume** = (1/3) ∏ r^2h cubic units.
- **3. Curved surface area** = (∏ rl) sq. units.
- **4. Total surface area** = (∏ rl + ∏ r^2) sq. units.

- **V. SPHERE**
- Let the radius of the sphere be r. Then,
- **1. Volume** = (4/3) ∏ r^3 cubic units.
- **2. Surface area** = (4 ∏ r^2) sq. units.

- **VI. HEMISPHERE**
- Let the radius of a hemisphere be r. Then,
- **1. Volume** = (2/3) ∏ r^3 cubic units.
- **2. Curved surface area** = (2 ∏ r^2) sq. units.
- **3. Total surface area** = (3 ∏ r^2) units.

Surds and Indices

Rules of Indices: -

i. $a^n * a^m = a^{m+n}$

ii. $\frac{a^m}{a^n} = a^{m-n}$

iii. $(a^n)^m = a^{mn}$

iv. $(ab)^n = a^n * b^n$

v. $(\frac{a}{b})^n = \frac{a^n}{b^n}$

vi. $a^0 = 1$ (where a $\neq 0$)

vii. $a^{-n} = \frac{1}{a^n}$

Rules of Surds: -

i. $\sqrt[n]{a} = a^{\frac{1}{n}}$

ii. $\sqrt[n]{ab} = a^{\frac{1}{n}} * b^{\frac{1}{n}}$

iii. $\sqrt[n]{\frac{a}{b}} = \frac{a^{\frac{1}{n}}}{b^{\frac{1}{n}}}$

iv. $(\sqrt[n]{a})^n = a$

v. $(\sqrt[n]{a})^m = a^{\frac{m}{n}}$

Races

Races

- A contest of speed in running, riding, driving, sailing or rowing is called a race.
- If in a race Ram is at starting point & Shyam starts from 20 mts ahead, then it is said that Ram has given Shyam a start of 20 mts or Ram gives Shyam 20 mts.
- This means that if they start from same point Ram would beat Shyam by 20 mts.

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Races

Q. In a 100 mt race A gives B a start of 25 mt & still wins by 9 sec. Find the speed of A if speed of B is 6 kmph.

A.8 kmph B. 9 kmph C. 10 kmph D. 12 kmph

Soln

!----------100 m----------!

A<---25--->B<----------75m----------> A=t-9, B=t

Sb = 6 kmph = 6 x 5/18 = 5/3 m/s

Tb = Db/Sb = 75/(5/3) = 45 sec

Ta = Tb-9 = 36 sec

Sa = Da/Ta = 100/36 m/s

= 100/36 x 18/5

= 10 kmph

Ans C

Races(Assignment)

Q. In a 100 m race, A can beat B by 25 m and B can beat C by 4 m. In the same race, A can beat C by:

A. 21 m B. 26 m C. 28 m D. 29 m

- **Soln**:-

A : B = 100 : 75
B : C = 100 : 96

$A:C=(\frac{A}{B}\times\frac{B}{C})=(\frac{100}{75}\times\frac{100}{96})=100:72$

A beats C by (100−72)=28 m.

Ans: C

Circular Motion

- **Use of both relative speed & LCM**
- Let Sa, Sb = speeds of two persons.

  Sr = Their relative speed

  Distance traveled in 1 round = circumference

Case A : Both running in Same direction

Both meet again first time when → **Time = dist/Sr = Circumference/Sa-Sb**

Case B : Both running in opposite directions**(DistA+ DistB =Circumference)**

Both meet first time when → **Time = Circumference/Sa+Sb**

Case C : Both running in same/opposite directions

Both meet again at starting point at LCM of their Lap times.

Circular Motion(Races)

Q. Two friends P & Q start from same point at the same time on a circular track 336 meters long in opposite directions at 6 m/s & 8 m/s respectively. After how much time will they meet again at the starting point for the first time?

A. 56 sec B. 112 sec C. 168 sec D. 214 sec

Ans : C

Step1 – find the time taken by each member /player to complete 1 round

Step2 – Calculate LCM(Lap time)

LapTm(P) = $\frac{\text{Circumference}}{\text{Sp}} = \frac{336}{6}$ = 56 sec

LapTm(Q) = $\frac{\text{Circumference}}{\text{SQ}} = \frac{336}{8}$ = 42 sec

LCM(42,56) = 168 sec

Circular Motion(Assignment)

Q. A, B & C start together running along a circular track of 500 m at 8 km/hr, 5 km/hr & 3 km/hr respectively. After how much time will all three meet again at the starting point for the first time?

A. 20 min B. 24 min C. 30 min D. 36 min

Ans: C

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THANK YOU!

GENERAL APTITUDE

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ENGLISH

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Idioms & Phrases

Q. To add fuel to the fire

A. In disorder

B. To be confuse

C. Pure water

D. To aggravate some matter

Ans : D

(to make a problem worse; to say or do something that makes a bad situation worse)

SUNBEAM

Idioms & Phrases

Q. Under the weather

A. Walking in the rain

B. Controlled by the element

C. Browbeaten by the heat

D. Unwell

Ans: D

SUNBEAM

Idioms & Phrases

Q. a bird in the hand is worth two in the bush

A. Being upset for something that happened in the past

B. Having something that is certain is much better than taking a risk for more, because the chances are you might lose everything.

C. Anything that is common and easy to get

D. Something good that isn't recognized at first

Ans: B

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Idioms & Phrases

Q. Through thick and thin

A. In genuine friendship

B. Through the best of everything

C. Among people both fat and slim

D. Through difficult times

Ans: D

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Idioms & Phrases

Q. Talking twenty to the dozen

A. Talking hurriedly or rapidly

B. Talking too much

C. Talking without making sense

D. Talking out of turn

Ans: A

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Idioms & Phrases(Assignment)

Q. Identify the meaning of the idiom/phrase from the given options-

We planned for the dinner at the eleventh hour, so we decided to have a ‘**pot-luck dinner’.**

a. dinner where every-body brings something to eat

b. dinner where everybody pays for his food

c. dinner where only soup is served

d. dinner where people eat and play games at the same time

Ans: a

(**Potluck dinners** are events where the attendees bring a dish to a **meal**.)

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Idioms & Phrases(Assignment)

Q. Identify the meaning of **the idiom/phrase** from the given options-

To be successful in today's world, we require the **'gift of the gab'.**

A. Ability to speak well

B. Good interpersonal skills

C. Divine help and guidance

D. A fierce competitive spirit

Ans : A

(the ability to speak easily and confidently in a way that makes people want to listen to you and believe you)

Idioms & Phrases(Assignment)

Q. Identify the meaning of **the idiom/phrase** from the given options-

His arguments **‘cut no ice with me’.**

A. had no influence on me

B. did not hurt me

C. did not benefit me

D. did not make me proud

Ans : A

(to have no influence on someone/ to fail to convince someone / I don't care who you are)

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Idioms & Phrases(Assignment)

Q. Identify the meaning of the idiom/phrase from the given options-

There was a job for me to '**cut my teeth on**'.

a. to gain experience

b. to try

c. to sharpen my wits

d. to earn a decent salary

Ans: a

(acquire initial practice or experience of a particular sphere of activity)

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Idioms & Phrases(Assignment)

Q. Identify the meaning of the idiom/phrase from the given options-

"A black sheep"

A. An unlucky person B. A lucky person C. An ugly person

D. A partner who takes no share of the profits E. None of these

- **Ans: E**

- In the English language, 'Black sheep' is an idiom used to describe an odd or disreputable member of a group, especially within a family

Idioms & Phrases(Assignment)

Q. Identify the meaning of the idiom/phrase from the given options-

"To end in smoke"

A. To make completely understand

B. To ruin oneself

C. To excite great applause

D. To overcome someone

E. None of these

Ans: B

- To end in smoke means <u>to be destroyed or ruined.</u>

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Subject and Predicate

- Every complete sentence contains two parts: a **subject** and a **predicate**. The **subject** is what (or whom) the sentence is about, while the **predicate** tells us something about the **subject**.
- Example –
- The **subject** of the **sentence** is what (or whom) the **sentence** is about. In the **sentence** "The cat is sleeping in the sun," the word cat is the **subject**. A **predicate** is the part of a **sentence**, or a clause, that tells what the **subject** is doing or what the **subject** is.
- OR
- **Subject**
  That part of a sentence which names the person or thing we are talking about is known as a subject.
- **Predicate**
  That part of the sentence which tells something about the subject is known as the predicate.

Eg : Akbar was a great emperor.

Akbar is the subject of the sentence and was a great emperor is its predicate.

Articles

- For vowels prefix it with AN article
- For consonants prefix it with A
- The **U** in **university** is pronounced with a long ‘u’ sound which sounds like ‘yew’, So, although the letter is a vowel, it is not pronounced like one in 'university' because it does not have a vowel sound. We therefore say **‘a university’.**
- The **U** in **umbrella** is pronounced as a vowel and so we use ‘an’. We therefore say **‘an umbrella’**.
- This rule also applies to the use of consonants.
- The word hour has a soft ‘h’ which is weakly pronounced and therefore we say ‘an hour’.
- If the word has a hard ‘h’, like house, we use ‘a’ (a house).

Articles

- **CASE 1**
- The article *A* is used before singular, countable nouns which begin with consonant sounds.
- Examples:
- He is **a** teacher.
- She doesn't own **a** car.
- I saw **a** bear at the zoo.
- **CASE 2**
- The article *AN* is used before singular, countable nouns which begin with vowel sounds.
- Examples:
- He is **an** actor.
- She didn't get **an** invitation.
- I saw **an** eagle at the zoo.
- **CASE 3**
- Remember that *A(AN)* means "one" or "a single". You cannot use *A(AN)* with plural nouns.
- Examples:
- I saw **a** bears in Yellowstone National Park. *Not Correct*
- I saw bears in Yellowstone National Park. *Correct*

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Articles

- **CASE 4**
- ***The*** is used to refer to specific or particular nouns;
- **a/an** is used to modify non-specific or non-particular nouns.
- We call ***the*** the definite article and a/an the indefinite article.
- For example, if I say, "Let's read the **green** book," I mean a specific book.

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Articles

Q. Choose the alternative which has correct sequence of articles-

Rama entered ____ shop. He looked at _____ things in the shop. Finally he purchased _____ umbrella.

a. a /a /an

b. a /the /an

c. an /the /an

d. a /an /the

Ans: b

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Articles

Q. _____ island is a piece of land surrounded by water on all sides.

A. a

B. the

C. an

D. none

Ans: C

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Articles

Q. Christmas falls on ….. 25th of the December every year.

A. a

B. the

C. an

D. none

Ans: B

SUNBEAM

Articles(Assignment)

The prime Minister dedicated _____INS Vikramaditya to the nation.

A. a

B. the

C. an

D. none

Ans: B

SUNBEAM

Articles(Assignment)

Q. _____ Mettur dam is _____ old multipurpose project of _____ South Indian state of Tamil Nadu across _____ Cauvery river.

a. a /an /no article/the

b. the /an /the /the

c. an /a /the /no article

d. no article /a /the /an

Ans: b

SUNBEAM

Articles(Assignment)

Q. Choose the alternative which has correct sequence of **articles-**

In the evening _____ stranger walked towards _____ sea. _____ roaring sea was with big waves and _____ old man was seen there.

A. the, a, the, a

B. the, a, the, an

C. a, the, the, an

D. a, a, a, an

Ans : C

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Articles(Assignment)

Q. Choose the alternative which has correct sequence of articles-

We saw ___ lions in ___ Safari

A. The, the

B. The, A

C. The, no article

D. No article, the

Answer: D

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Correct Sequence of Sentences

It is the responsibility of parents to teach the young moral values in life.

P. Many children take advantage of their parents' busy schedule.

Q. This results in children's ignorance of social values.

R. The reason behind it is that parents are quite busy nowadays.

S. Nowadays parents spend very meagre time with children

Which one of the following is the correct sequence?

A. SRPQ

B. PQRS

C. SQRP

D. SPQR

Ans:A

Correct Sequence of Sentences(Assignment)

I am sure

P: and will be happy

Q: sooner or later

R: a day will come

S: when all will be equal

The correct sequence should be

A. QPRS B. QSRP C. RQSP D. RSQP

Ans : C

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Correct Sequence of Sentences(Assignment)

1. Maya fills the form to the dance show.
2. A talent hunt show is looking for Classical dancers like Maya.
3. Maya is called for auditions.
4. Maya is a trained Bharatnatyam dancer.
5. Maya gets selected.

A. 12543

B. 42135

C. 34521

D. 32145

Answer: B

SUNBEAM

Preposition

- A preposition is a word (usually a short word) that shows the relationship between two other nearby words.(Prepositions indicate relationships between other words in a sentence)
- It is used to show a relationship between the noun and pronoun in a sentence.
- The word *preposition* means *positioned before*. A preposition will sit before a word (a noun or a pronoun) to show that word's relationship to another nearby word.

Preposition Examples

- **Types of Prepositions**
- Prepositions indicate direction, time, location, and abstract types of relationships.
- **Direction:** Look ***to*** the left and you'll see our destination.
- **Time:** We've been working ***since*** this morning.
- **Location:** We saw a movie ***at*** the theater.
- **Space:** The dog hid ***under*** the table.

- I should rewrite the introduction **of** my essay.
- Sam left his jacket **in** the car.
- Did you send that letter **to** your mother?
- We're cooking **for** ten guests tonight.
- Dan ate lunch **with** his boss.

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Preposition

- **List of Common Prepositions -**

above, about, across, against, along, among, around, at, before, behind, below, beneath, beside, between, beyond, by, down, during, except, for, from, in, inside, into, like, near, of, off, on, since, to, toward, through, under, until, up, upon, with, within

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Preposition

Q. Complete the sentence with appropriate word (preposition)-

We should arrive _____ their place _____ time _____ lunch.

A. at, in, for

B. at, for, in

C. in, to, at

D. at, by, for

Ans: A

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Preposition

Q. Complete the sentence with appropriate word (preposition)-

They live _____ a small one bedroom flat _____ the third floor.

A. in, on

B. on, on

C. in, in

D. on, in

Ans: A

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Preposition(Assignment)

Q. Complete the sentence with appropriate word (preposition)-

The most popular therapy _____ getting rid _____ hiccups is to have someone to scare you when you least expect it.

a. to, away

b. of , of

c. for, of

d. on, to

Ans: c

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Prepositions(Assignment)

Q. Complete the sentence with appropriate word (preposition)-

Manu distributed the sweets ……. Ram and Shyam.

a. of

b. no preposition

c. to

d. between

Ans: d

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Prepositions(Assignment)

Q. Complete the sentence with appropriate word (preposition)-

Granny is arriving _____ the 3.30 train.

A. on

B. in

C. by

D. upon

Ans: C

Last year, there were a large number of mangoes _____ the tree.

A. on

B. in

C. for

D. upon

Ans: A

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Prepositions(Assignment)

Q. Complete the sentence with appropriate word (preposition)-

His house is _____ the way from Mumbai to Thane.

A. on

B. in

C. for

D. upon

Ans: A

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Preposition(Assignment)

Q. Complete the sentence with appropriate word (preposition)-

_____ a friend's house _____ a village suddenly I was awakened _____a rumbling and thumping _____the roof.

A. in , by , on , at

B. on , in , at , by

C. at , in , by , on

D. by , at , on , in

Ans: C

SUNBEAM

Spotting Errors

Q. Identify the part of the sentence with error-

A. The journalist along with

B. the camera crew were

C. kidnapped by the

D. militants last night.

E. No error

Ans: B

SUNBEAM

Spotting Errors

Q. Identify the part of the sentence with error-

A. A snake

B. leaved

C. in the hole

D. of a giant

E. tree.

F. No error

Ans: B

SUNBEAM

Spotting Errors

Q. Identify the part of the sentence with error-

A. He thought of a cruel

B. plan to taste

C. his skill

D. in archery.

E. No error

Ans: B

SUNBEAM

Active & Passive Voice

Q. Select the one which best expresses the given sentence in Passive/Active voice-

Before festivals the shops are thronged with men, women and children making various purchases.

A. During festivals people throng the shops.

B. Men, women and children throng the shops before festivals making various purchases.

C. Men, women and children make purchases during festivals.

D. The shops are thronged by people making purchases.

Ans: B

Passive/Active voice(Assignment)

Q. Select the one which best expresses the given sentence in Passive/Active voice-

Who gave you permission to enter?

a. By whom were you given permission to enter?

b. By whom was you given permission to enter?

c. By whom you were given permission to enter?

d. By whom given you permission to enter?

Answer: a

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Passive/Active voice(Assignment)

Q. Select the one which best expresses the given sentence in Passive/Active voice-

The Principal has granted him a scholarship.

A. A scholarship has granted to him by the Principal

B. He has been granted a scholarship by the Principal

C. He has granted a scholarship by the Principal

D. A scholarship was granted to him by the Principal

Answer: B

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Passive/Active voice(Assignment)

Q. Select the one which best expresses the given sentence in Passive/Active voice-

I have to do it.

A. It is be done by me.

B. It should to be done by me.

C. It has to be done by me.

D. It would to be done by me.

Ans: C

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Passive/Active voice(Assignment)

Q. Select the one which best expresses the given sentence in Passive/Active voice-

Who stole your bike?

A. Your bike was stolen by him?

B. By whom was your bike stolen?

C. Your bike was stolen by whom?

D. By whom your bike stolen?

Ans: B

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Nouns

- A noun is a word for a person, place, or thing. Everything we can see or talk about is represented by a word that names it. That "naming" word is called a *noun*.

  Often a noun will be the name for something we can touch (e.g., *lion*, *cake*, *computer*), but sometimes a noun will be the name for something we cannot touch (e.g., *bravery*, *mile*, *joy*).

  Everything is represented by a word that lets us talk about it. This includes people (e.g., *man*, *scientist*), animals (e.g., *dog*, *lizard*), places (e.g., *town*, *street*), objects (e.g., *vase*, *pencil*), substances (e.g., *copper*, *glass*), qualities (e.g., *heroism*, *sorrow*), actions (e.g., *swimming*, *dancing*), and measures (e.g., *inch*, *ounce*).
- **Examples of Nouns-**
- **People**: soldier, Alan, cousin, lawyer
- **Animals**: aardvark, rat, shark, Mickey
- **Places**: house, London, factory, shelter
- **Things**: table, London Bridge, chisel, nitrogen, month, inch, cooking
- **Ideas**: confusion, kindness, faith, Theory of Relativity, joy

Pronouns

- Pronouns replace nouns. If we didn't have pronouns, we'd have to keep repeating our nouns and that would make our sentences cumbersome and repetitive. Pronouns are usually short words.

Verb

- A **verb** is a word for an action or a state of being.
  Explanation:
- VERB
  Examples of action verbs are: walk, talk, think, see, eat, find, believe, sit.
  Examples of verbs that relate a state of being are: am, are, is, will, was, were.
  Verbs can work together, this function is called an *auxiliary* or *helping* verb, for example:
  -- I *am* walking.
  -- We *were* talking.
  -- I *will* see.

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Adverb

- An **adverb** is a word used to modify a verb, an adjective, or another adverb.
- **Explanation:**
- ADVERB
  An adverb is used to show degree, manner, place, or time of the verb, adjective, or another adverb that it modifies.
  Examples of adverbs are: very, slowly, nearly, often, never, strangely, not.
  Example use of adverbs:
  -- We were *not* talking. (modifies the verb 'were talking')
  -- Today is *very* hot. (modifies the adjective 'hot')
  -- I was walking *very* slowly. (modifies the adverb 'slowly')

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Adjective

- An **adjective** is a word used to describe a noun.
- **Explanation:**
- ADJECTIVE
  Most adjectives used to describe nouns have degrees:
  -- Positive degree = hot, small, strange, heavy, pretty.
  -- Comparative degree = hotter, smaller, stranger, heavier, prettier.
  -- Superlative degree = hottest, smallest, strangest, heaviest, prettiest.
  Example use of adjectives.
  -- She wore a *pretty* dress. (describes the noun 'dress')
  -- The *smaller* children ride a school bus. (describes the noun 'children')
  -- We saw the *strangest* sight. (describes the noun 'sight')

Tenses

- Verbs come in three tenses:
- 1) past tense
  - The past is used to describe things that have already happened (e.g., *earlier in the day, yesterday, last week, three years ago*)
- 2) present tense
  - The present tense is used to describe things that are happening right now, or things that are continuous.
- 3) future tense.
  - The future tense describes things that have yet to happen (e.g., *later, tomorrow, next week, next year, three years from now*).

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Tenses

The following table illustrates the proper use of verb tenses:

Simple Present

I *read* nearly every day.

Present Continuous

I *am reading* Shakespeare at the moment.

Present Perfect

I *have read* so many books I can't keep count.

Present Perfect Continuous

I *have been reading* since I was four years old.

Simple Past

Last night, I *read* an entire novel.

Past Continuous

I *was reading* Edgar Allan Poe last night.

Past Perfect

I *had read* at least 100 books by the time I was twelve.

Past Perfect Continuous

I *had been reading* for at least a year before my sister learned to read.

Simple Future

I *will read* as much as I can this year.

Future Continuous

I *will be reading* Nathaniel Hawthorne soon.

Future Perfect

I *will have read* at least 500 books by the end of the year.

Future Perfect Continuous

I *will have been reading* for at least two hours before dinner tonight.

Summary

Summary

NOUN

Name of a person, place, thing or idea.

Examples: Daniel, London, table, hope
- ***Mary*** uses a blue ***pen*** for her ***notes***.

PRONOUN

A pronoun is used in place of a noun or noun phrase to avoid repetition.

Examples: I, you, it, we, us, them, those
- ***I*** want ***her*** to dance with ***me***.

ADJECTIVE

Describes, modifies or gives more information about a noun or pronoun.

Examples: cold, happy, young, two, fun
- The ***little*** girl has a ***pink*** hat.

VERB

Shows an action or a state of being.

Examples: go, speak, eat, live, are, is
- I ***listen*** to the word and then ***repeat*** it.

ADVERB

Modifies a verb, an adjective or another adverb. It tells how (often), where, when.

Examples: slowly, very, always, well, too
- ***Yesterday***, I ate my lunch ***quickly***.

PREPOSITION

Shows the relationship of a noun or pronoun to another word.

Examples: at, on, in, from, with, about
- I left my keys ***on*** the table ***for*** you.

Reading Comprehension

There are various forms in which the questions can be asked. These include:

A. A suitable title to the passage

B. Giving antonyms or synonyms for a word from the passage

C. Determining the tone of the passage

D. Assumptions or conclusions based on the passage

E. Fill in the blanks with respect to the passage

F. Vocabulary-based questions

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Reading Comprehension

- **1. Main Idea Question:**
- This relates to the central idea/theme of the passage. Eg.
- Which of the following most accurately states the main idea of the passage?
- Which of the following best states the central idea of the passage?
- The gist(general meaning of a text) of the passage is:
- Which of the following is the principal topic of the passage?
- Summarize the passage in one line.
- **2. Primary Purpose Question:**
- This refers to the most important and emphasised point of the passage. Eg.
- The primary purpose of this passage is to:
- The primary focus of this passage is on which of the following?
- The main concern of the passage is to:
- In the passage, the author is primarily interested in:
- The passage is mainly concerned with:

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Reading Comprehension

- **3. Title Question:**
- By title, we mean the heading that would be most suitable for the passage. The title should be built around the central idea of the passage. Eg.
- The most apt title for the passage is:
- Select the most suitable title for the passage from the following:
- 4. **Structure & Organization**
- Structure/Organization is the pattern that the author follows to convey his notions about the given subject. Eg.
- Which of the following best describes the organization of the passage?
- The structure of the passage can be outlined as:
- The questions may also refer to a particular paragraph of the passage:
- Which of the following best describes the organization of the first paragraph of the passage?
- One function of the third paragraph is to:

Reading Comprehension

- **Specific Questions:**
- **5. Fact-based/Specific Detail/Target Question:**
- These questions intend to ask you to identify the correct/incorrect facts. Eg.
- According to the passage,....
- The passage states that:
- Which, out of the following, is true/false?
- Which _____ has not been cited as _____?
- According to the author, what is _____?
- By a _____, the author means.....
- "According to the passage, _____?
- Which factor has not been cited _____?

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Reading Comprehension

- **6. Inference Question:**
- Inferences are the indirect conclusions of the passage. They are not directly stated in the passage. Eg.
- It can be inferred from the passage:
- It cannot be inferred from the passage:
- The passage uses _____ to imply that _____"
- What can be inferred when the author states_____?"
- The sentence, '_____', implies that

- **7. 'Must be true' Question:**
- These refer to the direct and logical conclusions that follow from the passage. Eg.
- According to the passage, which one of the must be true?
- According to the passage, which one of the must be false?
- According to the passage, which one of the following would the author agree with?
- According to the passage, which one of the following would the author disagree with?

Reading Comprehension

- **8. Paraphrase Question:**
- These questions essentially ask you to explain the meaning of a particular statement in other words or in different words than that given in the passage. Eg.
- The following extract , "....." , can be paraphrased as:
- "....." can be rewritten as:
- Paraphrase refers to 'Express the same message in different words/ Rewording for the purpose of clarification'.
- **9. Vocabulary Question:**
- These questions test your vocabulary- ask you the meaning of a word/phrase/synonym or the opposite of the word/antonym. The contextual meaning of the word holds more importance here. Eg.
- Identify the meaning of the word, ".....", in the given context.
- In the passage, the phrase _____ refers to
- In the sentence, _____, what is the meaning of '_____'?

Reading Comprehension

Many present-day boards now recognize the need for careful succession planning. The Chief Executive Officer's succession plans are commonly part of his annual performance review, and most boards now devote several meetings a year to the subject. One crucial decision that boards face is whether to select one of their own or an outsider.

Unsurprisingly, firms in trouble are much more likely to look for fresh blood. When the business is running smoothly, directors are more than happy to pick an experienced insider, who will continue along the present path.

Whereas promising senior executives will often abandon a struggling company, successful firm stand to have a large pool of talented managers to choose from. Occasionally, even a successful company appoints an outsider who can introduce some particular expertise.

Many utility companies seek outside Chief Executive Officers to shepherd them through the complexities of deregulation. Many boards do consider outsiders even when the existing Chief Executive Officer is planning a normal retirement.

Reading Comprehension

Q1. The passage conveys that an ailing firm can be revived by the appointment of a Chief Executive Officer who is an

A. outside expert

B. experienced insider

C. expert in deregulation

D. experienced shepherd

Ans: A

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Reading Comprehension

Q2. Successful companies prefer to promote an inside executive as Chief Executive Officer for reasons of -

A. stability of operations

B. higher profits

C. market compulsions

D. Diversification

Ans: A

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Reading Comprehension

Q3. Successful companies sometimes appoint Chief Executive Officers from outside because

A. their existing executives are complacent

B. distance lends enchantment

C. they wish to utilize their expertise

D. they wish to be better placed then their competitors

Ans: C

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Reading Comprehension

Q4. What is the main issue in this passage?

A. Leadership traits of Chief Executive Officers

B. Compensation package of Chief Executive Officers

C. Discipline to be inculcated by Chief Executive Officers

D. Planning the succession of Chief Executive Officers

Ans: D

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Reading Comprehension

Q5. “shepherd” means -

A. displace

B. guide or direct in a particular direction

C. Chase someone

D. Dissolve a group

Ans: B

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Reading Comprehension(Assignment)

“The beauty of the Japanese landscape is that it conveys philosophical messages through each feature. The use of curving pathways rather than straight lines, for instance.

This feature springs from the belief that only evil travels in straight lines, good forces tend to wander. Then, odd numbers of plants or trees are used in these gardens because these numbers are considered auspicious.

Even the plants used are symbolic. For example, the Cyprus represents “longevity and the bamboo symbolizes abundance.” says Sadhana Roy Choudhary.

In Japan, nature is said to be so closely intertwined with human life that parents actually plant a sapling in their garden when a child is born in the family, letting the growth of the child coincide with the growth of the plant.

Reading Comprehension

Q1. They prefer curving pathways because

A. They are inauspicious

B. They can walk easily

C. They stumble over straight ones

D. Good spirits walk on them

Ans: D

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Reading Comprehension

Q3. The Japanese parents plant a sapling at the time of birth of a child because

A. It is auspicious to plant a sapling

B. It is closely associated with the growth of the child

C. It gives longevity to the child

D. It gives happiness to the child

Ans: B

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Reading Comprehension

Q4. According to the passage the Japanese are

A. Manipulative

B. Possessive

C. Lovers of nature

D. Lovers of numerology

Ans: C

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Reading Comprehension

Q5. The Japanese pathways tend to be

A. Symbolic

B. Beautiful

C. Curved

D. Straight

Ans: C

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Reading Comprehension

Q6. Intertwined means

A. Round

B. Absurd

C. Twisted together

D. Happy

Ans: C

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Reading Comprehension(Assignment)

Q. The passage below is accompanied by a set of questions. Choose the best answer to each question.

Punctually at midday he opened his bag and spread out his professional equipment, which consisted of a dozen cowrie shells, a square piece of cloth with obscure mystic charts on it, a note book, and a bundle of Palmyra writing.

His forehead was resplendent with sacred ash and vermilion, and his eyes sparkled with a sharp abnormal gleam which was really an outcome of a continual searching look for customers, but which his simple clients took to be a prophetic light and felt comforted.

The power of his eyes was considerably enhanced by their position placed as they were between the painted forehead and the dark whiskers which streamed down his cheeks: even a half-wit's eyes would sparkle in such a setting.

To crown the effect, he wound a saffron-coloured turban around his head.

This colour scheme never failed. People were attracted to him as bees are attracted to cosmos or dahlia stalks.

Reading Comprehension

Q. From the description of this passage one can make out the person to be a

a. snake charmer

b. footpath vendor

c. astrologer

d. priest

Answer: c

Q. The eyes of the person described sparkled because

a. he was sitting under midday sun

b. he was always looking for possible clients

c. his forehead was bright with ash and vermilion

d. he was full of joy

Answer: b

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Reading Comprehension

Q. The person opened his bag

a. to search for something he needed

b. to indicate the start of his work

c. to take out things for display

d. both (b) and (c)

Answer: d

Q. The tone of the description is

a. sad

b. neutral

c. ironic

d. sympathetic

Answer: b

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Reading Comprehension

Q. What does the word ‘whisker’ mean in context of the passage?

a. A faint noise

b. A very small distance or space

c. A long projecting hair or bristle growing from the face/snout of many mammals.

d. None of the above

Answer: c

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Reading Comprehension(Assignment)

Opera refers to a dramatic art form, originating in Europe, in which the emotional content is conveyed to the audience as much through music, both vocal and instrumental, as it is through the lyrics.

By contrast, in musical theater an actor's dramatic performance is primary, and the music plays a lesser role.

The drama in opera is presented using the primary elements of theater such as scenery, costumes, and acting.

However, the words of the opera, or libretto, are sung rather than spoken.

The singers are accompanied by a musical ensemble ranging from a small instrumental ensemble to a full symphonic orchestra.

Reading Comprehension

1. It is pointed out in the passage that opera -
A) has developed under the influence of musical theater
B) is a drama sung with the accompaniment of an orchestra
C) is not a high-budget production
D) is often performed in Europe
E) is the most complex of all the performing arts
Ans: B

2. We can understand from the passage that -
A) people are captivated more by opera than musical theater
B) drama in opera is more important than the music
C) orchestras in operas can vary considerably in size
D) musical theater relies above all on music
E) there is argument over whether the music is important or the words in opera
Ans: C

3. It is stated in the passage that -
A) acting and costumes are secondary to music in musical theater
B) many people find musical theater more captivating than opera
C) music in musical theater is not as important as it is in opera
D) an opera requires a huge orchestra as well as a large choir
E) opera doesn't have any properties in common with musical theater
Ans: C

Reading Comprehension(Assignment)

- Dolphins are regarded as the friendliest creatures in the sea and stories of them helping drowning sailors have been common since Roman times.
- The more we learn about dolphins, the more we realize that their society is more complex than people previously imagined.
- They look after other dolphins when they are ill, care for pregnant mothers and protect the weakest in the community, as we do.
- Some scientists have suggested that dolphins have a language but it is much more probable that they communicate with each other without needing words. Could any of these mammals be more intelligent than man?
- Certainly the most common argument in favor of man's superiority over them that we can kill them more easily than they can kill us is the least satisfactory.
- On the contrary, the more we discover about these remarkable creatures, the less we appear superior when we destroy them.

Reading Comprehension

1. The fact that the writer of the passage thinks that we can kill dolphins more easily than they can kill us----.

A) means that they are better adapted to their environment than we are
B) shows that dolphins have a very sophisticated form of communication
C) proves that dolphins are not the most intelligent species at sea
D) does not mean that we are superior to them
E) proves that Dolphins have linguistic skills far beyond then what we previously thought

Ans: D

2. It is clear from the passage that dolphins ----.

A) don't want to be with us as much as we want to be with them
B) are proven to be less intelligent than once thought
C) have a reputation for being friendly to humans
D) are the most powerful creatures that live in the oceans
E) are capable of learning a language and communicating with humans

Ans: C

3. One can infer from the reading that ----.

A) dolphins are quite abundant in some areas of the world
B) communication is the most fascinating aspect of the dolphins
C) dolphins have skills that no other living creatures have such as the ability to think
D) it is not usual for dolphins to communicate with each other
E) dolphins have some social traits that are similar to those of humans

Ans: E

Reading Comprehension(Assignment)

- Naval architects never claim that a ship is unsinkable, but the sinking of the passenger-and-car ferry Estonia in the Baltic surely should have never have happened.
- It was well designed and carefully maintained. It carried the proper number of lifeboats. It had been thoroughly inspected the day of its fatal voyage. Yet hours later, the Estonia rolled over and sank in a cold, stormy night.
- It went down so quickly that most of those on board, caught in their dark, flooding cabins, had no chance to save themselves: Of those who managed to scramble overboard, only 139 survived.
- The rest died of hypothermia before the rescuers could pluck them from the cold sea. The final death toll amounted to 912 souls.
- However, there were an unpleasant number of questions about why the Estonia sank and why so many survivors were men in the prime of life, while most of the dead were women, children and the elderly.

Reading Comprehension

1. One can understand from the reading that ----.

A) the lifesaving equipment did not work well and lifeboats could not be lowered

B) design faults and incompetent crew contributed to the sinking of the Estonia ferry

C) 139 people managed to leave the vessel but died in freezing water

D) naval architects claimed that the Estonia was unsinkable

E) most victims were trapped inside the boat as they were in their cabins

Ans: E

2. It is clear from the passage that the survivors of the accident ----.

A) helped one another to overcome the tragedy that had affected them all

B) were mostly young men but women, children and the elderly stood little chance

C) helped save hundreds of lives

D) are still suffering from severe post-traumatic stress disorder

E) told the investigators nothing about the accident

Ans: B

3. According to the passage, when the Estonia sank-

A) there were only 139 passengers on board

B) few of the passengers were asleep

C) there were enough lifeboats for the number of people on board

D) faster reaction by the crew could have increased the Estonia's chances of survival

E) all the passengers had already moved out into the open decks

Ans: C

Reading Comprehension(Assignment)

- Erosion of America's farmland by wind and water has been a problem since settlers first put the prairies and grasslands under the plow in the nineteenth century.
- By the 1930s, more than 282 million acres of farmland were damaged by erosion.
- After 40 years of conservation efforts, soil erosion has accelerated due to new demands placed on the land by heavy crop production.
- In the years ahead, soil erosion and the pollution problems it causes are likely to replace petroleum scarcity as the nation's most critical natural resource problem.

Reading Comprehension

1. As we understand from the reading, today, soil erosion in America -

A) causes humans to place new demands on the land
B) is worse than it was in the nineteenth century
C) happens so slowly that it is hardly noticed
D) is the most critical problem that the nation faces
E) is worse in areas which have a lot of petroleum production

Ans: B

2. The author points out in the passage that erosion in America -

A) has damaged 282 million acres ever since settlers first put the prairies and grasslands under the plow
B) has been so severe that it has forced people to abandon their settlements
C) occurs only in areas with no vegetation
D) can become a more serious problem in the future
E) was on the decline before 1930s

Ans: D

3. It is pointed out in the reading that in America ----.

A) petroleum is causing heavy soil erosion and pollution problems
B) heavy crop production is necessary to meet the demands and to prevent a disaster
C) soil erosion has been hastened due to the overuse of farming lands
D) water is undoubtedly the largest cause of erosion
E) there are many ways to reduce erosion

Ans: C

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Fill in the blanks with suitable words

1. The Union Budget is likely to be presented on February 26, two days ahead of the _____ date.

A. Critical B. conventional C. suitable D. convenient

Ans: B

2. I am sorry ___ the mistake.

A. From B. with C. for D. at

Ans: C

3. He _____ her that she would pass.

A. Insured B. ensured C. assumed D. assured

Ans: D

SUNBEAM

Fill in the blanks with suitable words

4. Your father _____ worry. I'm a very careful driver.

A. needn't B. none C. can't D. doesn't

Ans : A

5. The _____ chosen for construction of the building is in the heart of the city.

A. Cite B. slight C. sight D. site

Ans: D

6. _____ pollution control measures are expensive, many industries hesitate to adopt them.

A. Although B. However C. Because D. Despite

Ans: C

SUNBEAM

Fill in the blanks with suitable words

7. It is not _____ for a man to be confined to the pursuit of wealth.

A. Healthy B. easy C. possible D. common

Ans: A

8. _____ his being innocent of the crime, the judge sentenced him to one year imprisonment.

A. In spite of B. In case of C. On account of D. In the event of

Ans: A

9. It is a story of two men and a batch of _____ armored cars.

A. Deceased B. diseased C. decrepit D. defeated

Ans: C

10. Although there is _____ gunfire, there is no stiff resistance to the revolutionary army.

Bitter meagre continuous sporadic

Ans: D

(sporadic = occurring at irregular intervals or only in a few places; scattered or isolated.)

THANK YOU!

GENERAL APTITUDE

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REASONING

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Analogy

Q. Planet : Orbit :: Projectile : ?

A. Track B. Path C. Milky Way D. Trajectory

Ans D

Q. Pigeon : Peace :: White Flag : ?

A. Friendship B. Victory C. Surrender D. War

Ans C. (negotiations)

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Analogy

Q. Complete analogous pair

Elephant : Howdah :: Horse:?

A. Lounge B. Hoof C. Saddle D. Hump

Ans : C

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Analogy

Complete analogous pair

sphere :circle :: cuboid : ?

A. Square B. Parallelogram C. Rhombus

D. Rectangle E. Pentagon

Ans: D

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Analogy(Assignment)

Q. 5 : 35 :: ?

A. 7 : 77 B. 9 : 45 C. 11 : 55 D. 3 : 24

Ans : A

Q. 9 : 8 :: 16 : ?

A. 27 B. 17 C. 14 D. 18

Ans: A

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Analogy(Assignment)

Q. 25 : 37 :: 49 : ?

A. 41 B. 56 C. 60 D. 65

Ans : D

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Analogy(Assignment)

Q1. 8 : 256 :: ?

A. 7 : 343 B. 9 : 243 C. 10 : 500 D. 5 : 75

Ans C

Q2. 8 : 28 :: 27 : ?

A. 8 B. 28 C. 64 D. 65

Ans D

Q3. 3 : 11 :: 7 : ?

A. 22 B. 29 C. 18 D. 51

Ans D

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Analogy(Assignment)

Q1. Newspaper : Press :: Cloth : ?

A. Tailor B. Textile C. Factory D. Mill

Ans D

Q2. Train : Track ::

A. Idea : Brain B. Bullet : Barrel

C. Water : Boat D. Fame : Television

Ans B

Q3. Fear : Threat :: Anger : ?

A. Compulsion B. Panic C. Provocation D. Force

Ans C

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Odd One out

Q. Find the odd one out -

A. Newspaper-Editor B. Film – Director

C. Car – Driver D. Book - Author

Ans : C

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Find the Odd one out

Choose or find odd out

A. Food : Hunger

B. Water : Thirst

C. Air : Suffocation

D. Talent : Education

E. Leg : Lame

Ans: D

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Find the Odd one out

Q. Choose or find odd word:

Beans, Gourd, Brinjal, Cucumber, Potato

A. Beans B. Gourd C. Brinjal D. Cucumber E. Potato

Ans: E

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Find the Odd one out

Choose or find odd out

A. Chair B. sheep C. bench D. table

Ans: B

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Odd One out(Assignment)

Q1. Find the odd one out –

A. Sprinkle - Pour B. Happiness - Merriment C. Mist – Fog D. Sad – Unhappy

Ans : D

Q2. A. Petrol B. Taxi C. Cart D. Driver

Ans : C

Q3. A. Court B. Radium C. King D. Palace

Ans: B

Q4. A. Donkey B. Camel C. Cow D. Mule

Ans: C

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Odd One out(Assignment)

Q1. Find the odd one out –

A. Paint B. touch C. color D. whitewash

Ans : B

Q2. A. ball B. catch C. take D. hold

Ans : A

Q3. A. garment B. cotton C. sugar D. shirt

Ans: C

Q4. A. canteen B. stage C. dancer D. makeup

Ans: A

Q5. A. blackboard B. Duster C. chalk D. computer

Ans: D

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Odd One out(Assignment)

Q1. Find the odd one out –

A. Petrol B. Taxi C. Cart D. Driver

Ans : C

Q2. A. court B. radium C. king D. palace

Ans : B

Q3. A. judge B. chamber C. tennis D. lawyer

Ans: C

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Odd One out(Assignment)

Q1. A. Curd B. Butter C. Oil D. Cheese

Ans C

Q2. A. POCG B. KLIZ C. BUDX D. FMQV

Ans D

Q3. A. 751 B. 734 C. 981 D. 862

Ans A

Q4. A. 12 B. 25 C. 37 D. 64

Ans C

Q5. A. Arrow B. Axe C. Dagger D. Sword E. Knife

Ans : A

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Coding Decoding(A-Z)

Q. In a certain code, COMPATIBLE is written as BQNPDDKAHS. How is STABILISED written in that code?

A. TUBCJCDRHK

B. JCBUTEDTHM

C. JCBUTCDRHK

D. JCBUTEFTJM

E. None of these

Ans: C

(The letters in the first half and second half of the word are written in the reverse order and in the group of letters so obtained, each letter in the first half is moved one step forward while that in the second half is moved one step backward.

STABILISED => STABI/LISED => IBATS/DESIL => JCBUT/CDRHK)

Coding Decoding(A-Z)

Q. If EARTH is written as FCUXM in a certain code. How is MOON written in that code?

E	A	R	T	H		M	O	O	N
+1	+2	+3	+4	+5		+1	+2	+3	+4
F	C	U	X	M		N	Q	R	R

Q. If DELHI is written as EDMGJ in a certain code. How is NEPAL written in that code?

A. ODQZM B. FENHK C. OFQBM D. EFMIJ

Ans: A

Coding Decoding(A-Z)(Assignment)

Q. In a coded language “SHOWER” is coded as “RHWOES”. What is the code for “FATHER”?

A. RHAEFT B. RAHTEF C. RTHAEF D. THAREF

Ans : B

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Coding Decoding(A-Z)(Assignment)

Q. If “PATHOLOGY” is coded as “HTAPOYGOL”, then what is the code for “PROGRAMME”?

A. GORPREMMA B. GOREPRMMA

C. GORREPMMA D. ROGEPRMMA

Ans : A

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Coding Decoding(Assignment)

Q1. BANK : CBOL :: GROVE : _____

A. SPOMP B. HSPWF C. EVORG D. PSWFH

Ans : B

Q2. LARGE : NCTIG :: QUIET : _____

A. SWKGV B. GKVWS C. RPQMN D. TEIUG

Ans : A

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Coding Decoding(Assignment)

Q. RATES : ENGRF :: DWELT : _____

A. PRSTA B. RYJYM C. QJRYG D. RJMKN

Ans: C

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Coding Decoding(Assignment)

Q. In a certain language, CHENNAI is coded as DGFMOZJ. How is MUMBAI coded in the same language ?

A. NTNABH **B.** LVLCZJ **C.** LTLCBH **D.** NVNCBJ

Ans: A

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Coding Decoding(Assignment)

- If SYMBOL is written as NZTMPC is a certain code. How is NUMBER written in that code?

Ans: NVOSFC

Coding Decoding(Assignment)

Q1: If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?

A. CPNCBX B. CPNCBZ C. CPOCBZ D. CQOCBZ E. None of these

Ans: B

Q2: In a certain code, TRIPPLE is written as SQHOOKD. How is DISPOSE written in that code?

A. CHRONRD B. DSOESPI C. ESJTPTF D. ESOPSID E. None of these

Ans: A

Q3: If in a code language. COULD is written as BNTKC and MARGIN is written as LZQFHM, how will MOULDING be written in that code?

A. CHMFINTK B. LNKTCHMF C. LNTKCHMF D. NITKHCMF E. None of these

Ans: C

Coding Decoding(Assignment)

Q4: In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code?

A. QDFHS B. SDFHS C. SHFDQ D. UJHFS E. None of these

Ans: A

Q5: If FRAGRANCE is written as SBHSBODFG, how can IMPOSING be written?

A. NQPTJHOJ B. NQPTJOHI C. NQTPJOHJ D.NQPTJOHJ E. None of these

Ans: D

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Coding Decoding(Assignment)

In a certain code, POETRY is written as QONDSQX and OVER is written as PNUDQ. How is MORE written in that code language?

A. LNNQD

B. NNNQD

C. NLNQD

D. NLPQD

E. None of these

Ans: C

(The first letter of the word is replaced by a set of two letters - one following it and the other preceding it - in the code. The remaining letters of the word are each moved one step backward)

Series-Numerical

- **Series** : In case of a series there may not be a particular formula but the terms have definite relationship which has to be recognized.
- **Difference or Sum Type Series**

1, 4, 10, 19, 31, ?

Difference between 2 terms increases in multiples of 3

- **Cumulative Series**

1, 3, 4, 7, 11, 18….

Each term is the addition of the previous terms.

- **Power Series**

0, 6, 24, 60, 120, ….

Here each term is defined as $n^3 – n$

- **Alternate Series**

1, 5, 9, 10, 25, 15, 49,….

Consists of two series of alternate terms having relationship.

Puzzle Test(Coding-Decoding)

Q. If pen is called table, table is called fan, fan is called chair and chair is called roof, on which of the following will a person sit ?

A. Fan B. Chair C. Roof D. Table E. Pen

Ans: C

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Coding-Decoding

If ‘football’ is called ‘cricket’, ‘cricket’ is called ‘basketball’, ‘basketball’ Is called ‘badminton’, ‘badminton’ is called ‘volleyball’, ‘volleyball’ is called ‘hockey’ and ‘hockey is called ‘golf, which of the following games is not played using a ball ?

A. Volleyball B. Basketball C. Hockey

D. Cricket E. None of these

Ans: A

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Puzzle Test(Assignment)

- If white is called blue, blue is called red, red is called yellow, yellow is called green, green is called black, black is called violet and violet is called orange, what would be the colour of human blood ?
- A. Red B. Green C. Yellow D. Voilet E. Orange
- **Ans: C**

- If sky is called sea, sea is called water, water is called air and air is called cloud, then what do we drink when thirsty?

A. Sky B. Air C. Water D. Sea

Ans: B

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Puzzle Test(Assignment)

- If pen is called butter, butter is called soap, soap is called ink, ink is called honey. Which of the following is used for washing clothes?

A. Honey B. Butter C. Red D. Ink

Ans: D

- If air is called green, green is called blue, blue is called sky, sky is called yellow, then what is the colour of clear sky?

A. Yellow B. Pink C. Sky D. Water

Ans: C

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Puzzle Test(Assignment)

- If train is called bus, bus is called tractor, tractor is called car, car is called scooter. Which is used to plough a field?

A. Train B. Bus C. Tractor D. Car

Ans: D

- If room is called bed, bed is called window, window is called flower and flower is called cooler. On what would a man sleep?

A. Window B. Bed C. Flower D. Cooler

Ans: A

Puzzle Test(Assignment)

- If book is called watch, watch is called bag, bag is called bottle and bottle is called window. Which is used to carry the books?

A. Bottle B. Bag C. Book D. Watch

Ans: A

- If fork is called glass, glass is called tray, tray is called bucket, then what is used to drink water?

A. Fork B. Glass C. Tray D. Bucket

Ans: C

Q. If 'paper' is called 'wood', 'wood' is called 'straw', 'straw' is called 'grass', 'grass' is called 'rubber' and 'rubber' is called 'cloth', what is furniture made up of -

A. grass B. straw C. wood D. paper

Ans: B

Coding Decoding

Q. If in a certain language "sing and play" is coded as "ra pa le", "I play football" is coded as "pa se fa" and "she can sing" is coded as "te ra ba" then what is the code for the word "and" in the code language?

A. le B. se C. fa D. te

Ans : A

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Coding-Decoding

In a certain code language, 'col tip mot' means 'singing is appreciable' ; 'mot baj min' means 'dancing is good' and 'tip nop baj' means 'singing and dancing' , which of the following means 'good' in that code language ?

A. not B. min C. baj D. Can`t be determined E. None of these

Ans: B

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Coding Decoding(Assignment)

Q. Study the given information and select the most appropriate term for 'save more money'
'time and money' is coded as 'tis nim jes'
'manage money judiciously' is coded as 'lop xer nim'
'save more time' is coded as 'jes kib dob'
'save enough judiciously' is coded as 'xer kib hix'.

A. nim hix kib
B. jes nim dob
C. kib nim dob
D. none of these

Ans: C

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Coding Decoding(Assignment)

- In a secret code,
- 762= shoes are old
- 248 = grandpa is old
- 573 = buy good shoes.
- What stands for 'are' in this code?
- A. 2 B. 4 C. 6 D. 8
- **Ans: C**

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Directions

The key to solving these problems is **getting your directions right.**

It is the person's right or left not yours. The key is to think that you are walking as per the directions given in place of the man.

Visualize.

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Directions

North
West
East
South
North-West
North
North-East
West
East
South-West
South
South-East

Directions

Q. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and the destination is:

A. 12km B. 15km C. 16km D. 18km

Ans : B

"**In a right-angled triangle, the square of the hypotenuse side is equal to the sum of squares of the other two sides**", **hypotenuse** is the longest side, as it is opposite to the angle 90°

Hypotenuse^2 = Perpendicular^2 + Base^2

By Pythagoras Theorem –

Min dist $=\sqrt{(12^2+9^2)}$

$= \sqrt{144+81}$

$= \sqrt{225}$

$= 15$

Directions

A and B start walking from a point, in opposite directions. A covers 3km and B covers 4km. Then turns right and walks 4km while B turns left and walks 3km. How far is each from the starting point?

A. 5 kms B. 4 kms C. 10kms D. 8 kms

Ans: A

"**In a right-angled triangle, the square of the hypotenuse side is equal to the sum of squares of the other two sides**", **hypotenuse** is the longest side, as it is opposite to the angle 90°

Hypotenuse^2 = Perpendicular^2 + Base^2

By Pythagoras Theorem –

Directions

Q. Raj walked 30 meters towards East, took a right turn and walked 40 meters. Then he took a left turn and walked 30 meters. In which direction is he now from the starting point?

A. North - East

B. East

C. South - East

D. South

E. None of these

Ans: C

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Directions(Assignment)

Q. Starting from a point x Ramu walked 25 meters towards the west he turned to his left and walked 30 meters he then turned to his left and walked 25 meters he then further turned to his right and walked 12 meters how far is Ramu from the point x and in which direction?

A. 42 m south B. 47 m east C. 42 m north D. 27 m south

Ans : A

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Directions(Assignment)

Q. I start walking towards east and after 35 metres turn right and walk another 15 metres and again turn right and walk further 15 metres and stop. What is the minimum distance I have to walk to get to my starting point?

A. 25 metres B. 30 metres C. 35 metres D. 20 metres

Ans: A

"**In a right-angled triangle, the square of the hypotenuse side is equal to the sum of squares of the other two sides**", **hypotenuse** is the longest side, as it is opposite to the angle 90°

Hypotenuse^2 = Perpendicular^2 + Base^2

By Pythagoras Theorem –

Min dist $=\sqrt{(20^2+15^2)}$

$= \sqrt{400+225}$

$= \sqrt{625}$

$= 25$

Directions(Assignment)

Q. A walks southwards then turns right, then right again and then left and again left. In which direction is he from his starting point if he walked the same distance in before each turn?

A. North-west B. South-east C. South-west D. South

Ans: C

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Directions(Assignment)

Q. A walks 10m in front and 10m to the right. Then every time turning to his left, he walks 5, 15 and 15m respectively. How far is he now from his starting point and facing in which direction?

A. 5m south B. 15m north

C. 5m north D. 15m south

Ans : A

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Directions(Assignment)

Q. I am facing East. Turning to the right I go 20 m, then turning to the left I go 20 m and turning to the right I go 20 m, then again turning to the right I go 40 m and then again I go 40 m to the right. In which direction am I from my original position?

A. North B. West C. South D. East

Ans : B

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Blood Relation

List of different types of relations to solve questions based on Blood Relationships.	
Relationship	Terms
Father's son or mother's son	Brother
Father's daughter or mother's daughter	Sister
Mother's brother (younger or elder)	Maternal Uncle
Father's brother (younger or elder)	Uncle (Paternal)
Father's sister (younger or elder)	Aunt
Mother's sister (younger or elder)	Aunt
Son's wife	Daughter-in-law
Daughter's husband	Son-in-law
Sister's husband	Brother-in-law
Husband's brother or wife's brother	Brother-in-law
Brother's wife	Sister-in-law
Husband's sister or wife's sister	Sister-in-law
Husband's father or wife's father	Father-in-law
Husband's mother or wife's mother	Mother-in-law
Brother's son or sister's son	Nephew

Blood Relation

Type of Relationship	Terminology in Use
Mother’s or Father’s son	Myself/Brother
Mother’s or Father’s daughter	Myself/Sister
Mother’s or Father’s brother	Uncle
Mother’s or Father’s sister	Aunt
Mother’s or Father’s father	Grandfather
Mother’s or Father’s mother	Grandmother
Son’s wife	Daughter-in-law
Daughter’s husband	Son-in-law
Husband’s or wife’s sister	Sister-in-law
Husband’s or wife’s brother	Brother-in-law
Brother’s son	Nephew
Brother’s daughter	Niece
Uncle or aunt’s son or daughter	Cousin
Sister’s husband	Brother-in-law
Brother’s wife	Sister-in-law
Grandson’s or Granddaughter’s daughter	Great-granddaughter

Blood Relation

Q. Pointing to a man in a photograph, Veena said, "His mother's only daughter is my mother.“ How is Veena related to that man?

A. Nephew

B. Sister

C. Wife

D. Niece

Ans: D

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Blood Relation

Q. Pointing towards a girl in the picture, Seema said, "She is the mother of Neeta whose father is my son." How is Seema related to the girl in the picture?

A. Mother-in-law

B. Aunt

C. Cousin

D. Daughter-in-law

E. None of these

Ans: A

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Blood Relations(Assignment)

Q. Pointing to a boy in the photograph, Monika said, “His sister is the only daughter of my father”. How is the boy related to Monika’s father?

A. Nephew

B. Father

C. Son

D. Brother

E. None of these

Ans: C

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Blood Relations(Assignment)

Pointing to a photograph ,Nitin said " She is the grandmother of my father's sister's son". How is the woman in the photograph related to Nitin?

A. Mother B. Aunt C. Cousin D. Grandmother

Ans: D

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Blood Relations(Assignment)

Q. Introducing a man, a woman said, "He is the only son of my mother's mother." How is the woman related to the man ?

A. Mother

B. Aunt

C. Sister

D. Niece

E. None of these

Ans: D

(Mother's mother---Maternal grand mother; Maternal grand mother's only son----Maternal uncle. So, the man is woman's maternal uncle i.e., the woman is man's niece.)

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Blood Relations(Assignment)

Q. A woman introduces a man as the son of the brother of her mother. How is the man related to the woman?

A. Nephew

B. Son

C. Cousin

D. Uncle

E. Grandson

Ans: C

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Blood Relations(Assignment)

Q. P and Q are sisters and R and S are brothers. P's daughter is S's sister. How is Q related to R?

A. Aunt

B. Niece

C. Nephew

D. Grandmother

Ans: A

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Blood Relations(Assignment)

Q. Pointing to a girl, Kirti Said, “She is the daughter of my brother’s wife”. How is the girl related to Kirti?

A. Nephew

B. Niece

C. Sister-in-law

D. Mother

E. None of these

Ans: B

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Blood Relations(Assignment)

Q. A is the son of C; C and Q are sisters; Z is the mother of Q and P is the son of Z. Which of the following statements is true?

A. P and A are cousins

B. P is the maternal uncle of A

C. Q is the maternal grandfather of A

D. C and P are sisters

Ans: B

- C and Q are sisters and A is the son of C.
- C is the mother of A and Z is the mother Q.
  Hence, Z is the maternal grandmother of A.
- P is the son of Z.
- Hence, P is the maternal uncle of A.

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Blood Relations(Assignment)

Q. Sherlock said to a lady sitting in a car, "The only daughter of the brother of my wife is the sister-in-law of the brother of your sister." How the husband of the lady is related to Sherlock ?

A. Maternal uncle B. Uncle C. Father D. Son-in-law

Ans: D

- Sherlock’s son-in-law is the brother of the lady who was sitting in the car.
- Hence, the husband is also the son-in-law of Sherlock .

Data Sufficiency

The last Sunday of March, 2006 fell on which date ?

Statements :

I. The first Sunday of that month fell on 5th.

II. The last day of that month was Friday.

A. I alone is sufficient while II alone is not sufficient

B. II alone is sufficient while I alone is not sufficient

C. Either I or II is sufficient

D. Neither I nor II is sufficient

E. Both I and II are sufficient

Ans: C

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Data Sufficiency

Q. How many speeches were delivered in the two days' programme ?
Statements:

I. 18 speakers were invited to give at least one speech (maximum of two speech), out of which one-sixth of the speakers could not come.
II. One-third of the speakers gave two speeches each.

A. I alone is sufficient while II alone is not sufficient

B. II alone is sufficient while I alone is not sufficient

C. Either I or II is sufficient

D. Neither I nor II is sufficient

E. Both I and II are sufficient

Ans: E

Data Sufficiency(Assignment)

Q. What day is the fourteenth of a given month?

I. The last day of the month is a Wednesday.

II. The third Saturday of the month was seventeenth.

A. I alone is sufficient while II alone is not sufficient

B. II alone is sufficient while I alone is not sufficient

C. Either I or II is sufficient

D. Neither I nor II is sufficient

E. Both I and II are sufficient

Ans : B

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Data Sufficiency(Assignment)

Q. You must submit your application within 10 days from, the date of release of this advertisement." What is the exact date before which the application must be submitted?

I. The advertisement was released on 18th February.

II. It was a leap year.

- a. If the data in statement I alone are sufficient.
- b. If the data in statement II alone are sufficient.
- c. If the data either in statement I alone or in statement II alone are sufficient.
- d. If the data given in both the statements I and II together are not sufficient.
- Answer: a

Syllogisms

- The syllogisms are just argument sentences that require deductive reasoning to arrive at some conclusions.
- **Steps to solve the Syllogism questions:-**
- Read the question thoroughly
- Start drawing the Venn diagram to make the explanation more clear and simplified.
- Follow the sequence of the question while drawing
- Analyse the conclusion from the Venn diagram
- Check for other alternative solutions at the end
- Always pay attention to words like ‘some’, ‘a few’, ‘all’, ‘atleast’, etc. These words form the base to solve the syllogism questions.
- Never assume anything while solving the syllogism questions. The only data that has to be followed while solving the question is the data mentioned in the question. No extra assumption must be made while solving questions.

Types of Syllogism

- **1. All A are B**
- A is contained in B but not necessarily vice versa.
- This means A is a subset of B, but B may not be a subset of A.

- It is visible that circle A is inside the circle B, which means that B contains the entire A, i.e. All A are B.

Example

- **1) All A are B**
- Conclusions -
- Some B are A.
- Some A are B.

- **Example: All cats are animals.**
- Conclusions -
- Some animals are cats..
- Some cats are animals.

Types of Syllogism

- **2. A = B**
- In this case, the conclusion is similar to the first type, i.e. “All A are B”. Here not only “All A are B”, but also “All B are A”.
- This means A is a subset of B and B is also a subset of A.

- Here A is contained in B and so is B contained in A. So, here A contains all B and again B also contains all A.

Types of Syllogism

- **3. No A are B**
- B does not contain any of A and so A is not contained in B.
- This means that A and B are disjoint sets.

- Here no part of A is present inside of B and similarly, no part of A is present in A. So neither A nor B contain any part of B or A respectively.

Examples

- **Example: No cats are animals.**
- Conclusions we get from the above pattern:
- No animals are cats.

Types of Syllogism

- **4. Some A are B**
- This is the case when some of A is in B that is A and B are intersecting, and thus some B are A will also be true.

- Here, the shaded portion indicates that some portion of A is contained in B while the unshaded portion is uncertain portion and does not indicate anything whether A is contained in B or not.

Types of Syllogism

- **5. Some A are not B**
- This means that some portion of A is not included in B for sure while the other part of A is uncertain whether it is included in B or not.

- Some portion of A is surely not included in B while there is no surety whether the shaded region is included in B or not.

Syllogisms

- Some rules that should be followed while solving the syllogism questions:
- Any “All” and “All” sentence will always imply an “All” conclusion.
- Any “All’ and “No” sentence will always imply a “No” conclusion.
- Any ‘All” and “Some” sentence will always imply a “No” conclusion.
- Any “Some” and “All” sentence will always imply a “Some” conclusion.
- Any “Some” and “No” sentence will always imply a “Some not’ conclusion.
- Any “Some” and “Some” sentence will always imply a “No” conclusion.

Syllogisms

- **Statements:**
- Some pencils are dogs
- All dogs are pens
- All pens are cats

- **Conclusions:**
- All dogs are cats
- Some pens are pencils
- Some pencils are cats

Some pencils are dogs

All dogs are pens

All pens are cats

OR

Syllogisms

- **Statement I: Some plums are peaches**
- **Statement II: All peaches are apples**
- **Statement III: Some apples are mangoes**
- **Conclusion I:** Some mangoes are peaches
- **Conclusion II:** Some apples are peaches
- A. If only conclusion I follow
- B. If only conclusion II follows
- C. If conclusion I and II both follow
- D. If neither conclusion I nor conclusion II follows
- E. If either conclusion I or conclusion II follows
- **Ans: B**

Syllogisms

Q. Statements: All men are vertebrates. Some mammals are vertebrates.

Conclusions:

1. All men are mammals.

2. All mammals are men.

3. Some vertebrates are mammals.

4. All vertebrates are men.

A. Only (4)

B. Only (2)

C. Only (3)

D. Only (1)

E. Only (1) and (3)

Ans: C

Syllogisms

- **Statement I: Some spiders are pigeons**
- **Statement II: All pigeons are apples**
- **Conclusion I:** All apples are pigeons
- **Conclusion II:** Some spiders are apples
- A. If only conclusion I follow
- B. If only conclusion II follows
- C. If conclusion I and II both follow
- D. If neither conclusion I nor conclusion II follows
- E. If either conclusion I or conclusion II follows
- **Ans: B**

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Syllogism

Statements:

Some actors are singers.

All the singers are dancers.

Conclusions:

1. Some actors are dancers.

2. No singer is actor.

A. Only (1) conclusion follows

B. Only (2) conclusion follows

C. Either (1) or (2) follows

D. Neither (1) nor (2) follows

E. Both (1) and (2) follow

Ans: A

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Miscellaneous

If you write down all the numbers from 1 to 100, then how many times do you write 3 ?

A. 11 B. 18 C. 20 D. 21

Ans: C

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Miscellaneous

Q. What will be the difference between the sum of all the odd digits and sum of the even digits in the number 857423?

A. 0 B. 1 C. 2 D. 4

Ans: B

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Miscellaneous

Q. How many 7s immediately preceded by 6 but not immediately followed by 4 are there in the following series?

7 4 2 7 6 4 3 6 7 5 3 5 7 8 4 3 7 6 7 2 4 0 6 7 4 3

A. 1 B. 2 C. 4 D. 6

Ans: B

Soln:

- 7 4 2 7 6 4 3 **6 7 5** 3 5 7 8 4 3 7 **6 7 2** 4 0 6 7 4 3
  There are 2 such 7s in the series that are immediately preceded by 6 and not immediately followed by 4.

Miscellaneous

Q. Arrange the given words in the sequence in which they occur in the dictionary.

1. Terrible 2. Thaw 3. Thank less 4. Testify 5. Terrain

A. 3, 4, 5, 1, 2

B. 2, 1, 5, 4, 3

C. 5, 1, 4, 3, 2

D. 2, 1, 3, 4, 5

Ans: C

- The dictionary sequence is:
- T**erra**in → T**erri**ble → T**es**tify → T**han**k less → T**haw**.

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Miscellaneous

Q. Arrange the given words in the sequence in which they occur in the dictionary and then choose the correct sequence.

1. Select 2. Seldom 3. Send 4. Selfish 5. Seller

A. 1,2,4,5,3

B. 2,1,5,4,3

C. 2,1,4,5,3

D. 2,5,4,1,3

Ans: C

- The dictionary sequence is:
- Seldom → Select → Selfish → Seller → Send

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Miscellaneous

Q. If $ means +, # means - , @ means x and * means ÷, then what is the value of 16 $ 4 @ 5 # 72 * 8 ?

A. 27 B. 25 C. 29 D. 36

Ans: A

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Miscellaneous

Q. If '+' stands for division,' ÷' stands for multiplication , 'x' stands for subtraction and '-' stands for addition. Which one of the following equation is correct?

A. 18 ÷6-7+5x2 = 20

B. 18+6 ÷7x5-2 = 18

C. 18x6+7 ÷5-2 = 16

D. 18 ÷6x7+5-2 = 22

Ans: B

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Miscellaneous

Q. How many such digits are there in the number 9346715 each of which is as far away from the beginning of the number as when the digits are rearranged in ascending order within the number?

A. 2 digits B. 3 digits C. 4 digits D.1 digit

Ans: A

- 9346715
- 9 - 1 places away from start
- **3 - 2 away**
- **4 - 3 away**
- 6 4 away
- 7 5 away
- 1 6 away
- 5 7 away
- 9**34**6715
- 1**34**5679
- There are **two** such digits 3 and 4 in the number 9346715 each of which is as far away from the beginning of the number as when the digits are rearranged in ascending order within the number

9346715 arranged in ascending order

1345679

1 - 1 places away from start

3 - 2 away

4 - 3 away

5 4 away

6 5 away

7 6 away

9 7 away

Miscellaneous(Assignment)

In the following list of numerals, how many 2's are followed by 1's but not preceded by 4 ?

4 2 1 2 1 4 2 1 1 2 4 4 4 1 2 2 1 2 1 4 4 2 1 4 2 1 2 1 2 4 1 4 2 1 2 4 1 4 6

A. Two B. Three C. Four D. Five

Ans: C

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Miscellaneous(Assignment)

Q. Arrange the given words in the sequence in which they occur in the dictionary.

1. Spruce 2. Spume 3. Spree 4. Spurt 5. Sprawl

A. 5,3,1,2,4

B. 1,2,3,4,5

C. 3,5,1,4,2

D. 5,4,3,2,1

Ans: A

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Miscellaneous(Assignment)

Q. Arrange the given words in the sequence in which they occur in the dictionary.

1.Wrinkle 2. Wriggle 3. Writhe 4. Wretch 5. Wrath

A. 4,5,1,2,3

B. 5,4,2,1,3

C. 4,2,5,1,3

D. 5,2,1,3,4

Ans: B

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Miscellaneous(Assignment)

Q. Arrange the given words in the sequence in which they occur in the dictionary.

1. property 2. proverb 3. project 4. problem 5. protein

A. 4,5,1,2,3

B. 5,4,2,1,3

C. 4,3,1,5,2

D. 5,2,1,3,4

Ans: C

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Miscellaneous(Assignment)

Q. BOOK coded as 32, FLOWER coded as 128 then KEYBOARD is coded as ?

A. 512 B. 256 C. 1024 D. 64

Ans: A

Soln:

Output = $2^{(\text{no.of letters}+1)}$

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Ranking & Ordering

Type 1 - Total persons in a queue-

Total number of persons = [Position of person from upward/right + Position of person from downward/left] – 1

Q. Arush ranks seventh from the top and twenty-sixth from the bottom in a class. How many students are there in the class?

A. 31 students B. 32 students C. 33 students D. 34 students

Ans: B

- The whole class consists of:

- |----------| Arush |----------|

  6 students 25 students

So, total students = (6 + 1 + 25) = 32 students.

Total students = [Position of person from upward/right + Position of person from downward/left] – 1

Total students = [7 + 26] – 1
= 33 – 1
= 32 students

Ranking & Ordering

Q. Arush ranks seventh from the top and twenty-sixth from the bottom in a class. How many students are there in the class?

A. 31 students B. 32 students C. 33 students D. 34 students

Ans: B

- The whole class consists of:

- |----------| Arush |----------|

6 students 25 students

So, total students = (6 + 1 + 25) = 32 students.

Total students = [Position of person from upward/right + Position of person from downward/left] – 1

Total students = [7 + 26] – 1
= 33 – 1
= 32 students

Ranking & Ordering(Assignment)

Q. Rahim ranks 7th from the top and 28th from bottom in a class. How many students are there in the class ?

A. 34 students B. 35 students C. 36 students D. 37 students

Ans: A

Total number of students = [7 + 28] – 1 = 35 – 1 = 34 students

Type 1 - Total persons in a queue-

Total number of persons = [Position of person from upward/right + Position of person from downward/left] – 1

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Ranking & Ordering

Type 2 - Rank of person in a queue-

Position of person from upward = [total number of persons – position of person from down] + 1

Position of person from downward= [total number of persons – position of person from up] + 1

Position of person from right= [total number of persons – position of person from left] + 1

Position of person from left= [total number of persons – position of person from right] + 1

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Ranking & Ordering

Q. Ravi is 7 ranks ahead of Sumit in a class of 39. If Sumit's rank is seventeenth from the last, what is Ravi's rank from the start?

A. 14th B. 15th C. 16th D. 17th

Ans: C

- Sol.
- So, Ravi is 24th from the last.
- |----------| Ravi |----------| Sumit |----------|
- ? 6 16
- Ravi's rank from start = [39 – 17+7)] +1 = 15 +1 = 16th
- So, Ravi is 16th from the start.

Position of person from upward = [total number of persons – position of person from down] + 1
Rank of Ravi from last(bottom) = 17+7 = 24th
Ravi's rank from start = [39 – 24)] +1 = 15 +1 =16th

Type 2 - Rank of person in a queue-

Position of person from upward = [total number of persons – position of person from down] + 1
Position of person from downward= [total number of persons – position of person from up] + 1
Position of person from right= [total number of persons – position of person from left] + 1
Position of person from left= [total number of persons – position of person from right] + 1

Ranking & Ordering(Assignment)

Q. In class of 40 students rank of A from end is 20. Find rank of B from start if she is 5 ranks ahead of A?

A. 14th B. 15th C. 16th D. 17th

Soln:

- |----------| B |----------| A |----------|
- ? 4 20 19
- Rank of B from last = 20 + 5 = 25th
- Position of person from upward = [total number of persons – position of person from down] + 1
- Rank of A from start = (40 – 25) + 1 = 15 + 1 = 16th
- So, B is 16th from the start.

Ans : C

Ranking & Ordering(Assignment)

Q. Anita ranks twelfth in a class of forty six. What will be her rank from the last?

A. 31th B. 35th C. 36th D. 37th

Ans: B

Rank of Anita from last = [total students – her rank from first] + 1

= (46 -12) + 1

= 35th

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Ranking & Ordering

Q. Tanuj is on the 9th position from upwards and on 38th position from downwards in a class. How many students are in the class?

A. 47 B. 45 C. 46 D. 48

Ans: C

Type 1 - Total persons in a queue-

Total number of persons = [Position of person from upward/right + Position of person from downward/left] – 1

Linear Arrangement

Five friends are sitting on a bench.

Sunil is sitting next to Sunita & Sanjay is next to Bindu.

Bindu is not sitting with Sumit. Sumit is on the left end of the bench & Sanjay is on the second position from the right.

Sunil is on the right of Sunita & Sunita on the right side of Sumit. Sunil & Sanjay are sitting together.

Based on the above data, answer the following:

1	2	3	4	5
Sumit	Sunita	Sunil	Sanjay	Bindu

Q1. Who occupies the centre position?

A. Sumit B. Sunil C. Sanjay D. Bindu

Ans: B

Q2 Sunil is sitting between

A. Sunita & Bindu B. Sumit & Bindu C. Sunita & Sanjay D. Sanjay & Sumit

Ans: C

Q3. Sumit is sitting on the

A. second place from right B. extreme left C. second place from left D. extreme right

Ans: B

Q4. Sunita is sitting how many places away from Bindu?

A. 1 B. 4 C. 2 D. 5

Ans: C

Linear Arrangement(Assignment)

Q. A, B, C, D, E, F & G are sitting on a wall all facing east. C is immediate to the right of D. B is at an extreme end and has E as his neighbor. G is between E and F. D is sitting third from the south end. Who are D's neighbors?

A. C,E B. A,C C. C,F D. A,F

Ans: C

Circular Seating Arrangement

Q. A group of 8 members sit in a circle facing towards the centre. D is between A & F & D is opposite to G. E is to the right of A but E is on the left of C, C whose right hand neighbour is G. B has H to his left & F to his right.

Who is diagonally opposite to A?

A. B B. F C. G D. H

Ans: D

Who is to the right of D?

A. B B. G C. A D. H

Ans: C

Circular Seating Arrangement

Q. Eight friends J,K,L,M,N,O,P and Q are sitting around a circular table playing cards. J is second to the right of P who is third to the right of K. M is second to the left of O who sits between P and J. L is not a neighbour of K or N.

1. Who is to the immediate left of K?

A. N B. J C. Q D. Cannot be determined E. None of these

Ans: C

2. Which of the following is the correct position of N?

A. Second to the right of K B. To the immediate left of K

C. To the immediate right of M D. To the immediate right of K

E. None of these

Ans: D

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Circular Seating Arrangement(Assignment)

Q. Six friends are playing a card game on a round table. Subodh is to the right of Prabodh. There is one person between Sudha and Uma. Prabir is between Subodh & Uma & second to the left of Alok.

Who is to the right of Sudha?

A. Prabodh B. Uma C. Alok D. Prabir

Ans : A

Who is diagonally opposite of Prabir?

A. Prabodh B. Uma C. Sudha D. Prabir

Ans : C

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Matrix Arrangement

Q. There are 6 friends A,B,C,D,E & F. Each one is proficient in one of the games, namely, Badminton, Volleyball, Cricket, Hockey, Tennis & Polo. Each owns a different colored car, namely, yellow, green, black, white, blue & red. D plays Polo & owns a yellow car. C does not play either Tennis or Hockey & owns neither Blue nor Yellow car. E owns a White car & plays Badminton. B does not play Tennis, he owns a Red car. A plays Cricket & owns a Black car.

Q1. Who plays Volleyball?

A. B B. C C. F D. Data Inadequate

Ans : B

Q2. What is the color of F's car?

A. Green B. Blue C. Red D. Either Green or Blue.

Ans : B

Matrix Arrangement(Assignment)

There are 5 people each of whom wear only one of five different brands of shirts.

Five people --- A, B, C, D & E

Five brands --- Parx, Allen Solly, Newport, Arrow & Excalibur

1] A does not wear Allen Solly or Excalibur.

2] D wears Newport or Allen Solly.

3] C wears Parx.

4] B does not wear Arrow, Newport or Excalibur.

Q1. Who wears Excalibur?

A. A B. E C. B D. D

Ans: B

Q2 What does D wear?

A. Arrow B. Allen Solly C. Newport D. Excalibur

Ans: C

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THANK YOU!