

Infosys Previous questions

1. What is the 8th term in the series 1, 4, 9, 18, 35, 68, . . .

Sol:

1, 4, 9, 18, 35, 68, . . .

The pattern is

$$1 = 2^1 - 1$$

$$4 = 2^2 - 0$$

$$9 = 2^3 + 1$$

$$18 = 2^4 + 2$$

$$35 = 2^5 + 3$$

$$68 = 2^6 + 4$$

So 8th term is $2^8 + 6 = 262$

2. USA + USSR = PEACE ; P + E + A + C + E = ?

Sol:

3 Digit number + 4 digit number = 5 digit number. So P is 1 and U is 9, E is 0.

Now S repeated three times, A repeated 2 times. Just give values for S. We can easily get the following table.

	U	U	S	A
P	E	S	S	R
		A	C	E
		9	S	A
	9	S	S	R
1	0	A	C	E
		9	3	2
	9	3	3	8
1	0	2	6	0

$$USA = 932$$

$$USSR = 9338$$

$$PEACE = 10270$$

$$P + E + A + C + E = 1 + 0 + 2 + 7 + 0 = 10$$

3. In a cycle race there are 5 persons named as J, K, L, M, N participated for 5 positions so that in how many

number of ways can M make always before N?

Sol:

Say M came first. The remaining 4 positions can be filled in $4! = 24$ ways.

Now M came in second. N can finish the race in 3rd, 4th or 5th position. So total ways are $3 \times 3! = 18$.

M came in third. N can finish the race in 2 positions. $2 \times 3! = 12$.

M came in second. N can finish in only one way. $1 \times 3! = 6$

Total ways are $24 + 18 + 12 + 6 = 60$.

Shortcut:

Total ways of finishing the race = $5! = 120$. Of which, M comes before N in half of the races, N comes before M in half of the races. So $120 / 2 = 60$.

4. If $\text{POINT} + \text{ZERO} = \text{ENERGY}$, then $E + N + E + R + G + Y = ?$

Sol:

4 digit number + 5 digit number = 6 digit number. So $E = 1, P = 9, N = 0$

Observe $R + 0 = G$. But $R = G$ not possible. $1 + R = G$ possible. So R and G are consecutive. $G > R$.

$1 + I = R$, So I and R are consecutive. $R > I$. i.e., $G > R > I$. and G, R, I are consecutive. Now $O + T$ should give carry over and $O + Z$ also give carry over. So O is bigger number. Now take values for G, R, I as 8, 7, 6 or 7, 6, 5 etc. and do trial and error.

	P	Z	E	R	O
E	N	O	I	N	T
		Z	1	R	O
	9	O	I	0	T
1	0	1	R	G	Y
		3	1	6	8
	9	8	5	0	4
1	0	1	6	7	2

$\text{POINT} = 98504$, $\text{ZERO} = 3168$ and $\text{ENERGY} = 101672$.

So $E + N + E + R + G + Y = 1 + 0 + 1 + 6 + 7 + 2 = 17$

5. There are 1000 junior and 800 senior students in a class. And there are 60 sibling pairs where each pair has 1 junior and 1 senior. 1 student is chosen from senior and 1 from junior randomly. What is the probability that the two selected students are from a sibling pair?

Sol:

Junior student = 1000

Senior student = 800

60 sibling pair = $2 \times 60 = 120$ student

Probability that 1 student chosen from senior = 800

Probability that 1 student chosen from junior = 1000

Therefore, 1 student chosen from senior and 1 student chosen from junior

$$n(s) = 800 \times 1000 = 800000$$

Two selected student are from a sibling pair

$$n(E) = {}^{120}C_2 = 7140$$

Therefore

$$P(E) = n(E)/n(S) = 7140/800000$$

6. SEND + MORE = MONEY. Then what is the value of M + O + N + E + Y ?

Sol:

Observe the diagram. M = 1. S + 1 = a two digit number. So S = 1 and O cannot be 1 but 0. Also E and N are consecutive. Do trial and error.

	S	E	N	D
	M	O	R	E
M	O	N	E	Y

	S	E	N	D
	1	O	R	E
1	O	N	E	Y

	9	5	6	7
	1	0	8	5
1	0	6	5	2

$$\text{SEND} = 9567, \text{MORE} = 1085, \text{MONEY} = 10652$$

$$\text{SO } M + O + N + E + Y = 1 + 0 + 6 + 5 + 2 = 14$$

7. A person went to shop and asked for change for 1.15 paise. But he said that he could not only give change for one rupee but also for 50p, 25p, 10p and 5p. What were the coins he had ?

Sol:

50 p : 1 coin, 25 p : 2 coins, 10 p : 1 coin, 5 p : 1 coin, Total: 1.15 p

8. 1, 1, 2, 3, 6, 7, 10, 11, ?

Sol:

The given pattern is (Prime number - consecutive numbers starting with 1).

$$1 = 2 - 1$$

$$1 = 3 - 2$$

$$2 = 5 - 3$$

$$3 = 7 - 4$$

$$6 = 11 - 5$$

$$7 = 13 - 6$$

$$10 = 17 - 7$$

$$11 = 19 - 8$$

$$14 = 23 - 9$$

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