

Infosys Cryptarithmic Questions and Answers PDF



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Infosys Latest Cryptarithmic Questions

On this page you will learn all the tricks to solve Cryptarithmic Problems for Infosys Questions. We will discuss about –

1. All Rules to solve Cryptarithmic
2. Tricks and Shortcuts
3. Most asked Questions from latest Drive
4. YouTube Solutions for Cryptarithmic



CRYPTARITHMETIC
QUESTIONS

Rules to Solve Infosys Cryptarithmic Questions

1. Every Character/letter must have a unique and distinct value
2. The values of a character/letter can not be changed, and should remain same throughout
3. Starting character of number can not be zero example – 0341 should be simply 341.
4. The problem will have only and only one solution
5. Addition of two numbers is always even
6. In case of addition of two numbers, if there is carry then, the carry can only be 1
7. Once all the characters/letters are replaced with numbers, arithmetic operations must be correct

Now let us, learn all these rules with the help of an example –

Infosys Cryptarithmic Questions 1

Question – $TO + GO = OUT$. Find the value of $T + G + O + U$?



1. 15
2. 11
3. 7
4. 18

Step 1

- The value of O is clearly 1. (**Rule 6**)
- Since, $T + G$ is generating O is carry so value of O is 1.

Now, after substituting the values –

$$\begin{array}{r} T \quad O \\ + \quad G \quad O \\ \hline O \quad U \quad T \end{array}$$

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Step 2

- Value of $T = 1 + 1$
- Thus, value of $T = 2$

$$\begin{array}{r} T \ 1 \\ + \ G \ 1 \\ \hline 1 \ U \ T \end{array}$$

Step 3

- Now, $2 + G > 10$ (as its resulting a carry 1 on next)
- Now, possible values of G to get 1 carry at next step is – $\{G = 8 \text{ or } 9\}$

If G is 9 then –

- $U = 2 + 9 = 11$
- So value of U becomes 1 and 1 goes to carry
- Now, value of O is already 1 so U value can not be 1 also. **(Rule – 1)**

Now, obv the value of G has to be 8, lets verify this also

- $U = 2 + 8 = 10$
- So value of U becomes 0, there is no conflict.

So final values are –

 $T = 2, O = 1, G = 8, U = 0$

$$\begin{array}{r} 2 \ 1 \\ + \ G \ 1 \\ \hline 1 \ U \ 2 \end{array}$$

Final Step

Replace values in all steps and solution looks like –

$$\begin{array}{r} 1 \ 1 \\ + \ 9 \ 9 \\ + \ 8 \ 8 \\ \hline 1 \ 9 \ 8 \end{array}$$

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Question – HERE = COMES – SHE, (assume S = 8). Find values of R + H + O

1. 15
2. 18
3. 14
4. 12

We can make this addition problem by re-writing it as – **HERE + SHE = COMES**

[Link for this Question](#)

Step 1

- C = 1 (Rule 1, as carry is there)

Now, since –

```

  H
+ _
-----
C O

```

```

  H E R E
+   S H E
-----
C O M E S

```

- $H + _$ (nothing), can be written as $H + 0$ now the result of $H + 0$ should also be H right?
- But, the answer is coming as O, which means there must be a carry from previous step
- So, $H + 1$ generates a number >10 as result is C O

So, H value is 9, and O value will be $H + 1 = 9 + 1 = 0$ (1 carry to next step)

rewriting the problem again

Step 2

- Now, they have already given S value as 8
- Now, $E + E = 8$, thus, $E = 4$

Lets find value R

- $R + 9 = E$
- after substituting E value $R + 9 = 4$
- Thus, $R = 5$ and (1 carry to next step)

Lets, find the value of M

- $E + S + 1$ (Carry) = M
- after substituting the value $4 + 8 + 1 = 3$ (1 carry to next step)

The final values are –

$H = 9, E = 4, R = 5, S = 8, C = 1, O = 0, M = 3$

```

  9 E R E
+   S 9 E
-----
1 0 M E S

```

Infosys Cryptarithmic Questions 3





Question – THIS + IS = HERE. Find all the values?

Step 1

- $T + (\text{nothing}) = H$
- Thus, 1 carry must be coming from previous step

Step 2

- Similarly, $H + (\text{nothing}) = E$
- Thus, 1 carry must be coming from previous step
- Now, $H + 1$ must be > 10 , as its generating carry on next step too (T)
- Thus, $H = 9$
- And since, $H + 1 = E \Rightarrow E = 0$ (carry to next step)

Now, the problem would look this –

```

  1 1
  T 9 I S
+   I S
-----
  9 0 R 0

```

```

  T H I S
+   I S
-----
  H E R E

```

Step 3

- $T + 1 (\text{carry}) = 9$
- Thus, $T = 8$

Step 4

- $S + S = 0$
- Now, two possible values for S can be 0 or 5
- Now, 0 is not possible as its already taken by E
- So, S value is 5, as $5 + 5 = 0$ (1 carry to next step)

Step 6

- $I + I$ will always generate even number
- But, there is 1 carry from previous step, so $I + I + 1$ will generate odd number
- Also, this is generating 1 carry at next step
- So, Sum of $I + I + 1$
 - $I > 10$
 - I is odd
 - $I + I + 1 > 10$
- Possible values for I to generate this are 6, 7, 8, 9
- Since, 8 and 9 are already taken so 6, 7 are the only options

Step 7

Lets take 6 first

```

  1 1
  T 9 I S
+   I S
-----
  9 0 R 0

```



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- $6 + 6 + 1 = 13 = 3$ (1 carry to next step)
- R value is 3.

There are no conflicts anywhere so question is solved.

Lets take $I = 7$, this should generate conflict.

- $I + I + 1 = R$ (1 carry to next step)
- $7 + 7 + 1 = 15 = 5$ (1 carry to next step)
- R value can not be 5 as S value is already taken as 5.

So our assumption of $I = 6$ was correct

Final Answer – $H = 9, E = 0, T = 8, S = 5, I = 6, R = 3$

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Infosys Cryptarithmic Questions 4

Question – If $POINT + ZERO = ENERGY$, then $E + N + E + R + G + Y = ?$

1. 17
2. 13
3. 19
4. 18

[Link to this question](#)

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Step 1

- E is 1 as max carry possible is 1
- $P + (\text{nothing}) = N$, it should have had been P
- This means that there is a carry from previous step
- $P + 1 (\text{carry}) > 10$ as it gives Carry at next step to result E
- Thus, $P = 9$
- $E = P + 1 = 0$ (1 carry)

So, $E = 1, P = 9, N = 0$

Since, the problem contains both 0 and O we will replace O by X to avoid confusion

```

  P O I N
+   Z E R
-----
E N E R G
Y

```

Step 2

- In, column 2, $R + 0 = G$, this means there must be 1 carry from previous step
- Thus, $G = R + 1$ that means they are consecutive and $G > R$
- Similarly, in column 3, $R = I + 1$. This means I and R as consecutive, with $R > G$
- Since, $G = R + 1$ and $R = I + 1 \Rightarrow G = (I + 1) + 1 \Rightarrow G = I + 2$
- Thus, G, R and I are consecutive, with $G > R > I$.

```

  1 1
  9 O I 0
+   Z 1 R
-----
1 0 1 R G
Y

```

Step 3

- $T + O = Y$

Step 3

- $T + O > 10$, as its generating carry on next step.
- It will also not be 10 or 11 as $T + O = Y$ and Y cant be 0 or 1 as those values are already taken.
- So lets assume $T + O$ to be 12. Thus, $Y = 2$
- Possible values can be –
 - T, O = (3, 9) not possible as 9 already taken
 - T, O = (4, 8) possible as unoccupied, let's try this.

```

  1 1     1
  9 O I 0
+   Z 1 R
-----
1 0 1 R G
Y

```



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Step 4

- Till now the values are –
- $N = 0, E = 1, Y = 2, T = 4, O = 8, P = 9$
- Remaining values are 3, 5, 6, 7
- Now, $Z + 8 = 11$
- Thus, Z has to be 3

And since, we already know G, R, I are consecutive, thus, they are 5, 6, 7

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

```

1 1   1
  9 8 I 0
4
+   Z 1 R
8
-----
--
1 0 1 R G
2

```



Infosys Cryptarithmic Questions 5

Question – If $AA + BB + CC = ABC$, then what is the value of $A+B+C=$?

1. 15
2. 18
3. 21
4. 12

Step 1

What could be max possible value of ABC?

- If $AA = 99$
- If $BB = 88$
- If $CC = 77$

Thus, $ABC = 99 + 88 + 77 = 264$, from this fact we are 100% sure that max value of A can be 2

So A can be (1 or 2)

```

  A A
+  B B
+  C C
-----
--
A B C

```

Step 2

Now, lets look at the Unit's place position. We have –

- $A + B + C = C$
- This can be possible if
 - $A + B = 0$ or
 - $A + B = 10$
- We already know A is either 1 or 2
 - $A + B = 1 + 9 = 0$ or – (1)
 - $A + B = 2 + 8 = 0$ – (2)

Step 3

Now, lets try equation (1)

- At tens place we have $A + B + C = B$. Let's replace the values
- $1 + 9 + C = 9$ (1 carry obv)

X



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B is already 9 so there must be one carry from previous step

- If carry is 1 then $9 - 1 = 8$

So, $A = 1$, $B = 9$, $C = 8$

Note - Carry of 2 can't be generated as 0s 1 and B is 9 max possible value for C is 8 thus sum is 18

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Final Step

Replace values in all steps and solution looks like -

	1	1	
+	9	9	
+	8	8	

--			
	1	9	8


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Infosys Cryptarithmic Questions 6

Question – If $YOUR + YOU = HEART$ (Given $O = 4$) Value of $Y + U + R + E$ is ?

1. 15
2. 16
3. 17
4. 18

Step 1

- Obv $H = 1$
- $Y + \text{nothing} = E$ (not Y)
- Thus there is 1 carry from previous step
- $Y + (1 \text{ carry})$ is generating 1 carry resulting H
- Thus, $Y + 1 > 10 \Rightarrow Y = 9$
- So, $E = 0$

$H = 1, Y = 9, E = 0$

$$\begin{array}{r} Y O U \\ R \\ + \quad Y O \\ U \\ \hline H E A R \\ T \end{array}$$

Step 2

Possibilities for A

1. A can be $A = 4 + 9 = 3$
2. or $A = 4 + 9 + 1$ (carry) $= 4$
3. O is already 4 thus, $A = 3$

Step, $4 + 9 = A$ also, doesn't get any carry from previous step $U + 4 = R$

$$\begin{array}{r} 9 4 U \\ R \\ + \quad 9 4 \\ U \\ \hline 1 0 A R \\ T \end{array}$$

Step 3

$U + 4 = R$ results in no carry.

- Thus, $U + 4 < 10$
- $U < 6$
- 4, 5, 1, 0 are already taken by O, A, H and E respectively
- So, U is either 5 or 2

Let's take $U = 5$ (no carry)

- $U + 4 = R$
- $5 + 4 = R = 9$
- 9 is already taken by Y

Let's take $U = 5$ (1 carry)

- $U + 4 + 1 = R$
- $5 + 4 + 1 = R = 0$
- 0 is already taken by E
- Thus, $U = 2$

Step 4



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Guessing that there is no carry, $T = R + U = 6 + 2 = 8$

Final Step

If we put all these values they generate no conflicts, thus we have reached the solution

```

  9 4 2
+   9 4
  2
-----
 1 0 3 6
 8

```



Infosys Cryptarithmic Questions 7

Question – If $TOM + NAG = GOAT$ Value of $G + O + A + T$ is ?

1. 15
2. 12
3. 14
4. Can not be determined

Step 1

Clearly, $G = 1$ (Max carry is 1)

- $O + A = 0$
- This is only possible in two ways
 - If O is zero
 - Or O is 9 and there is 1 carry from $M + G = T$ step
- However, $T + N = 0$ it generates 1 carry to result G
- Thus, clearly $T + N$ results 10 and O is zero and 1 carry to result G

```

  T O M
+ N A G
-----
  G O A T

```

Step 2

- $T + N$ should be 10
- T and N can be (8,2), (7,3), (6,4), (3,7), (2,8)
- Lets take (8,2)
- In this case A can take any values 3, 4, 5, 6, 7
- There are too many possibilities
- In this case unfortunately, the answer can not be determined.

```

  T O M
+ N A G
-----
 1 0 A T

```



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Infosys Cryptarithmic Questions 8

Question – If $NO + NO + GUN = HUNT$, what is the value of $HUNT$?

1. 1082
2. 1802
3. 1208
4. 1280

Step 1

- $H = 1$ (Max carry)
- $G + (\text{nothing}) = U$
- Thus, G has a carry $\Rightarrow G + 1 > 10$
- $G = 9$
- So, $U = 0$
- Since, we have 0 (zero) and O and both look similar, we will replace O with X to avoid confusion between O and 0 and also replace all other values

$$\begin{array}{r} NO \\ + NO \\ + GUN \\ \hline HUNT \end{array}$$

Step 2

- From Tens digit, $N + N + 0 = N$
- Now, from the previous steps carry can be 0 or 1 or 2 since instead of 2 digit its 3 digit addition
- If carry is 0 from previous step then only possible scenario to satisfy $N + N + 0 = N$ is when $N = 0$ itself. This is not possible as U value is already found out to be 0

$$\begin{array}{r} 1 \\ NX \\ + NX \\ + 90N \\ \hline 10NT \end{array}$$

Step 3

Now, let's assume carry to be 2 from previous step (Hit and trial)

- The step $N + N + 0 = N$ is generating 1 carry to next step so.
- $N + N + 0 > 10$
- We can also write this as
 - $N + N + 0 = 10 + N$
 - Solving this we get $N = 8$

Step 4

- From units place we have
- $X + X + 8 = T$
 - This step is generating a carry of 2 in next step as assumed
- So, $X + X + 8 = 20 + T$
- $2X - T = 12$

$$\begin{array}{r} 1 \\ 8X \\ + 8X \\ + 908 \\ \hline 108T \end{array}$$

Values already taken are 0, 1, 8. If, we look at the options the possible values for T from options are 0 or 8 as options say

HINT?



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X

2. 1802
3. 1208
4. 1280

8 is already taken so $T = 2$. Thus, $X = 7$

Verify the question again. We have found all the values the answer is
1082



Infosys Cryptarithmic Questions 9

Question – IF $EAT + THAT = APPLE$, What is $A + P + P + L + E$?

1. 13
2. 14
3. 12
4. 15

Step 1

- Clearly $A = 1$, $T = 9$, $P = 0$ (Think why?)
- After replacing the values here

```
E A T
+ T H A T
-----
--
A P P L E
```

Step 2

- From Units place we know $T + T = E$
- We found $T = 9$ Thus $E = 9 + 9 = 8$ (1 carry to next step)
- $L = A + A + 1$ (carry from previous step)
- $L = 1 + 1 + 1 = 3$
- Finally $E + H = 0$ we already know $E = 8$
- Thus, $H = 2$

```
E 1 9
+ 9 H 1 9
-----
--
1 0 0 L E
```



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Infosys Cryptarithmic Questions 10

Question – $USSR + USA = PEACE$, what is the value of $P + E + A + C + E$?

1. 9
2. 10
3. 11
4. 12

[Link to this question](#)

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Step 1

- Clearly, $P = 1, U = 9, E = 0$
- Let's replace the values here

$$\begin{array}{r} \text{U S A} \\ + \text{U S S R} \\ \hline \text{--} \\ \text{P E A C E} \end{array}$$

Step 2

- $A + R = 0$
- This is possible if, $A = 5, R = 5$, but, both can't take same values
- So its possible with $(8,2), (7,3), (6,4), (4,6), (3,7), (2,8)$
- Let's do hit and trial and take $(2,8)$ and replace the new values.

$$\begin{array}{r} \text{0 S A} \\ + 9 \text{ S S R} \\ \hline \text{--} \\ \text{1 0 A C 0} \end{array}$$

Step 3

- Now, assuming S value to be 3
- We have $S + S + 1$ (carry) = C
- $3 + 3 + 1 \Rightarrow C = 7$ (unoccupied)
- All the values are found out we just need to verify

$$\begin{array}{r} \text{1} \\ \text{0 S 2} \\ + 9 \text{ S S 8} \\ \hline \text{--} \\ \text{1 0 2 C 0} \end{array}$$

Step 3

- Values, are replaced and all the operations work just fine

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

$$\begin{array}{r} \text{1} \\ \text{0 3 2} \\ + 9 \text{ 3 3 8} \\ \hline \text{--} \\ \text{1 0 2 7 0} \end{array}$$



Infosys Cryptarithmic Questions 11



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1. 31
2. 36
3. 33
4. 38

Step 1

- Here obviously $J = 1$ as max carry allowed it
- (nothing) + $M = 0$, i.e. $0 + M = 0$ this should have had been M only
- It means that there is 1 carry coming from previous step
- Also this $M + 1$ (carry) = 0, is generating 1 carry to next step
- This means $M + 1 > 10$, this is only possible when $M = 9$
- $\Rightarrow 0 = M + 1 = 9 + 0 = 0$ (1 carry)

$$\begin{array}{r} M A C \\ + M A A R \\ \hline J O C K O \end{array}$$

Step 2

$$C + R = 0$$

Since, this is at units place there can be no carry from previous step

Possible values of (C, R) can be $(2, 8), (3, 7), (4, 6), (6, 4), (7, 3), (8, 2)$

Lets assume, first case $C = 2$ and $R = 8$ in that case $C + R$, will generate 1 carry to next step $A + A = K$. The new problem looks like this –

$$\begin{array}{r} 1 1 \\ 9 A C \\ + 9 A A R \\ \hline 1 0 C K O \end{array}$$

Step 3

- Thus, $A + A + 1$ (Carry) = K
- Also, $9 + A = 2$, this is possible in two ways
- If, $A = 3$ (no carry from previous step) $9 + 3 = 2$ (1 carry to next step)
- If, $A = 2$ (1 carry from previous step) but C value is already assumed to be 2, so this is not possible thus, A has to be 3
- Thus $K = 3 + 3 + 1 = 7$

$$\begin{array}{r} 1 1 1 \\ 9 A 2 \\ + 9 A A 8 \\ \hline 1 0 2 K O \end{array}$$

All values are fetched and there is no conflict.

Step 4

- Thus, $3A + 2M + 2C = 3(3) + 2(9) + 2(2) = 9 + 18 + 4 = 31$

$$\begin{array}{r} 1 1 1 \\ 9 3 2 \\ + 9 3 3 8 \\ \hline 1 0 2 7 0 \end{array}$$