

## PUZZLE RACE (JUNIOR)-2020

1. Find the value of Q in the following:

$$\begin{array}{r} 4 \quad Q \quad 1 \\ + \quad 3 \quad 8 \quad Q \\ \hline 8 \quad 0 \quad 3 \end{array}$$

⇒  $Q=2$

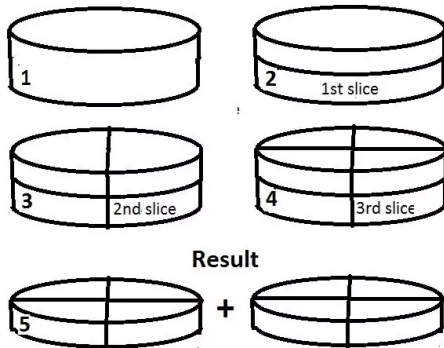
⇒  $Q + 1 = 3$

⇒  $Q = 2$

And,  $Q + 8$  gives a number such that it has 0 at its units place. So  $Q = 2$ .

2. How can you divide a circular cake into 8 equal pieces using a knife, making just 3 cuts?

⇒



3. How many numbers are there from 0 and 100 (including 0 and 100) such that they appear the same when rotated by 180 degrees? In other words, after rotating numbers upside down, the face value does not change. Write the numbers also.

Note:-101, 181, 619, and 1961 are all examples of such numbers.

⇒ 7 (0, 1, 8, 11, 69, 88, 96)

4. Akhil's mother has 4 children. Three of them are April, May and June. What is the name of the 4th child?

⇒ Akhil

5. Divide 30 by  $\frac{1}{2}$  and then add ten to it, the answer is

⇒  $[(30 / (\frac{1}{2})) + 10]$

⇒  $[(30 * 2) + 10]$

⇒  $[60 + 10]$

⇒ 70

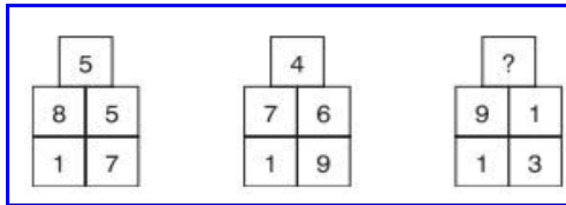
6. Which letter of the alphabet has the most water?

⇒ C (pronounced similarly as 'SEA')

7. You bury me when I'm alive; you dig me up when I die. What am I?

⇒ Plant

8. What number should replace the question mark?



$$\Rightarrow (85/17)=5, \quad (76/19), \quad (91/13) =7$$

9. **Replace the question mark with suitable answer.**

What number comes inside the circle?



$\Rightarrow$  **6**

$$\Rightarrow [(4+2)/2] =3$$

$$\Rightarrow [(5+3+1+1)/2] =5$$

$$\Rightarrow [(6+1+2+3+3+1)/2] =8$$

$$\Rightarrow [(7+2+4+3)/2] =8$$

$$\Rightarrow \text{Similarly, } [(9+3)/2] =6$$

10. **Find the median of these numbers? 4, 26, 13, 2, 15, 9, 11, 23**

$\Rightarrow$  Total number of terms=8

So, median will be average of middle two terms.

$\Rightarrow$  First, arrange in ascending order: 2, 4, 9, 11, 13, 15, 23, and 26

$\Rightarrow$  Middle terms=11 and 13

$\Rightarrow$  Average of 11 and 13 is  $[(11+13)/2] =12$

$\Rightarrow$  **12** is median of given numbers.

11. **Find the maximum runs that can be scored by a batsman in a 5 over match.**

**NOTE: Here we assume normal scenarios like the batsman cannot run more than 3 runs on a ball. There are no extras, no 'no balls', no wides, no leg byes, etc. There is no overthrow.**

$\Rightarrow$  **168 runs**

$\Rightarrow$  In 1<sup>st</sup> four overs (1-4) he will score (6, 6, 6, 6, 6, and 3) =33runs in each over.

{3 runs on the last ball to keep himself on the strike}

$\Rightarrow$  And in last over he will hit all 6 balls for 6 i.e. (6, 6, 6, 6, 6, and 6) =36 runs

$\Rightarrow$  So,  $(33*4) + (36) =168$  runs maximum he can score in 5 overs.

12. **You have just one matchstick in the matchbox and you are entering a dark room where you have a kerosene lamp, a stove, an oil heater. Which one among those would you light first?**

$\Rightarrow$  Obviously, he will light the **matchstick** first.

13. **There is a mute person who wanted to buy a toothbrush. He went to the shop, imitated actions by brushing his teeth and somehow made the shopkeeper understand that he wanted a toothbrush and purchased it. The question is that when a blind man goes to a shop how would he express himself to buy a pair of glasses?**

⇒ The blind person just needs to open his mouth and ask that he needs a pair of glasses.

**14. Assuming that I have an infinite supply of coins. What is the fewest number of coins that would be required in order to make sure each and every coin touched exactly three other coins?**

⇒ 4

⇒ Place three coins in a triangle (touching each other) and put the fourth one on top of them in the middle.

**15. Suppose that you're participating in a race, you overtake the second position. What position are you in?**

⇒ You will be on the **2<sup>nd</sup> position**.

⇒ As you overtake the person who was on 2<sup>nd</sup>, you replace him making yourself on 2<sup>nd</sup> position and making that person on 3<sup>rd</sup> position.

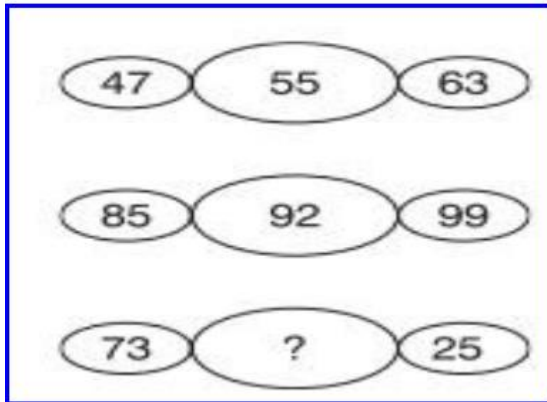
**16. Imagine you're in a room that is filling with water. There are no windows or doors. How do you get out?**

⇒ Just stop imagining.

**17. I am a three-digit number. My second digit is 4 times bigger than my third digit. My first digit is 3 less than my second digit. Who am I?**

⇒ 141 OR 582

**18. What number should replace the question mark?**



$$\Rightarrow [(47+63)/2] = 55$$

$$\Rightarrow [(85+99)/2] = 92$$

$$\Rightarrow \text{Similarly, } [(73+25)/2] = 49$$

**19. How to get a number 100 using four 7's and one 1? Write the equation.**

$$\Rightarrow 177 - 77 = 100 \text{ OR } (7+7) * (7 + (1/7)) = 100$$

**20. Which single digit can replace B in the following picture:**

$$\begin{array}{r} B \quad 8 \\ \times B \quad 3 \\ \hline 6 \quad 4 \quad 4 \end{array}$$

⇒ B=2

=> Let the numbers be  $10B + 8$  and  $10B + 3$ . The product of these numbers will be 644.

$$\Rightarrow (10B + 8)(10B + 3) = 644$$

$$\Rightarrow 100B^2 + 110B + 24 = 644$$

$$\Rightarrow 100B^2 + 110B - 620 = 0$$

$$\Rightarrow 10B^2 + 11B - 62 = 0$$

$$\Rightarrow 10B^2 - 20B + 31B - 62 = 0$$

$$\Rightarrow 10B(B - 2) + 31(B - 2) = 0$$

$$\Rightarrow (B - 2)(10B + 31) = 0$$

$$\Rightarrow B = 2 \quad \text{or} \quad B = -(13/10) \quad (\text{this value is discarded as } B \text{ is an integer})$$

**21. There are 4 coins placed in front of you on the table. You are allowed to touch the coins but you can't tell which way up they are head or tail as you are blind. But you are told that there are 2 coins head up, and 2 coins tails up but not which ones are which. Can you make two piles (set) of coins each with the same number of heads up? How? (Hint: You can flip the coins any number of times.)**

=> Make 2 piles of coins each pile having 2 coins.

So, two cases are possible:— CASE1: {HT or TH}, CASE2: {HH or TT}

Now, flip all the coins in one of the pile.

Case 1. Already the same number of heads, after flipping any of the two piles, will be the same.

Case 2. We need to flip TT to HH, thus having the same number of heads.

**22. Suppose you have a genie like "jinn of Aladdin" who grants only three wishes. But you want to make a total 10 wishes from him, how can you fulfil all your wishes by calling the genie only once?"**

⇒ Here, you can't ask to grant your all 10 wishes in just 1 wish as on 1 wish you can be granted only 1 wish; not more than 1. So, using all 3 wishes you have to make fulfil your 10 wishes. And there can be many such combinations; just you have to look out for summation of 10 wishes out of 3 wishes.

**Eg.1:** => As I have 3 wishes, I will use 1<sup>st</sup> wish and ask the genie to give me 8 wishes.

=> So, now I have 8 wishes + 2 wishes (before) = 10 wishes.

**Eg.:2:** => As I have 3 wishes, I will use 1<sup>st</sup> wish and ask the genie to give me 5 wishes. On my 2<sup>nd</sup> wish I will ask 4 wishes.

=> So, now I have 5 wishes + 4 wishes + 1 wish (before) = 10 wishes.

There are many such examples.

Just anyhow you have to make combinations such that using all your 3 wishes you have to make total 10 wishes.

**23. You have two buckets - one holds exactly 5 gallons and the other 3 gallons. How can you measure 4 gallons of water using these two buckets?**

**NOTE: Assume you have an unlimited supply of water and that there are no measurement markings of any kind on the buckets."**

**Method 1:**

=>Step1: Fill the 3 gallon bucket with water. Pour the water from 3 gallon bucket into 5 gallon bucket. Now there is room for two gallons in the 5 gallon bucket.

=> Step2: Fill again the 3 gallon bucket with water. Pour the water from 3 gallon bucket into 5 gallon bucket. This fills the two gallons room in the 5 gallon bucket and leaves 1 gallon water in the 3 gallon bucket.

=> Step3: Now drain (empty) the water of 5 gallon bucket. Pour the 1 gallon water from 3 gallon bucket into 5 gallon bucket. Now there is one gallon of water in 5 gallons bucket.

=> Step4: Fill the 3 gallon bucket and pour into 5 gallon bucket. Now the water adds up to four gallons in the 5 gallon bucket.

**Method2:**

1. First fill 5 gallon bucket completely and pour 3 gallon into 3 gallon bucket.
2. Empty 3 gallon bucket.
3. Pour remaining 2 gallon of 5 gallon bucket into 3 gallon bucket.
4. Again fill 5 gallon bucket completely and pour 1 gallon into 3 gallon bucket until it becomes full.
5. Now you have 4 gallon in 5 gallon bucket. That's it.

**24. I purchased perfume from a store and gave him a thousand rupee note. The perfume cost Rs.300. Since the store person has no change, he gets the change from the next shop and returns me 800 rupees. After a while, the next shopkeeper comes and tells the 1st shopkeeper that the note is a fraud and takes his money back. How much loss does the 1st shopkeeper have to bear?**

⇒ **1<sup>st</sup> shopkeeper has to bear Rs. 1100**

=> As you have a fake currency so its value is 0. You bought a perfume of Rs. 300 and in return you got Rs. 800. So, you get a profit of total Rs. 1100.

=> Similarly, same amount of money someone should incur as loss.

=> As 1<sup>st</sup> shopkeeper takes 1000 from next shopkeeper, after that next shopkeeper takes back his 1000. So, here no profit loss. So, 1<sup>st</sup> shopkeeper lost  $300 + 800 = \text{Rs}1100$

**25. Bob spends three days in a hospital, and when he is released he has to be carried out. However, he is neither injured nor sick. In fact, he is in perfectly good health. Why does he need to be carried out?**

⇒ Bob is a new-born baby.

**26. Four people need to cross a dark river at night. They have only one torch and the river is too risky to cross without the torch. If all people cross simultaneously then torch light won't be sufficient. So, 2 people together at a time will cross the river. Speed of each person crossing the river is different. Crossing time for 1st person is 1 min, 2nd person is 2 minutes, 3rd person is 7 minutes and 4th person is 10 minutes. What is the shortest time needed for all four of them to cross the river?**

⇒ First, 1 and 2 together cross the river; [2 mins taken here]

Then, 2 comes back with torch; [2 mins taken here]

Then, 7 and 10 together cross the river; [10 mins taken here]

Then, 1 comes back with torch; [1 min taken here]

Then, 1 and 2 together cross together; [2 mins taken here]

Everybody crossed the river.

**Total time =  $2 + 2 + 10 + 1 + 2 = 17$  minutes**

**27. Find the maximum money you can rob if you are free to steal from these houses, only the condition is that you cannot steal from adjacent houses.**

**NOTE: Numbers marked on each house denotes total money in those houses.**



- ⇒ The robber will steal from 1<sup>st</sup> house (2), then from 4<sup>th</sup> house (3) and lastly from 6<sup>th</sup>/last house (2)
- ⇒ **Total money= 2+3+2 = 7**

**28. A man is climbing up a mountain which is inclined. He has to travel 100 km to reach the top of the mountain. Every day, he climbs up 2 km forward in day time. Exhausted, he then takes rest there at night time. At night, while he is asleep, he slips down 1 km backward because the mountain is inclined. Then how many days does it take him to reach the mountain top?**

- ⇒ Each day, Total progress = 2 km – 1 km = 1 km  
So, 98 days = 98 Kms.  
On 99th day he can reach mountain top by travelling 2 km in day time.  
So, answer is **99 days**

**29. For Rs.1 You get 40 Bananas. For Rs.3 you get 1 Mango. For RS.5 you get 1 Apple. Now you want to get 100 fruits for Rs.100. So, How many Bananas, Mangoes and Apples will you buy?**

- ⇒ Rs.95 – 19 Apples  
Rs.3 – 1 Mango  
Rs.2 – 80 Bananas  
**Total 100 Fruits for Rs.100**

**30. A small number of cards has been lost from a complete deck. If I deal among four people, three cards remain. If I deal among three people, zero remain and if I deal among five people, one card remains. How many cards are lost?**

- ⇒ There are 52 cards in a deck. But some cards are lost.
- ⇒ Let available number of cards be **n**.
- ⇒ Let **p** number of cards were dealt among 4 people, 3 cards remain;  $4p+3=n$  -----(i)
- ⇒ Let **q** number of cards were dealt among 3 people; 0 cards remain;  $3p+0=n$  -----(ii)
- ⇒ Let **r** number of cards were dealt among 5 people; 1 cards remain;  $5r+1=n$  -----(iii)

Taking values of  $p=1, 2, \dots$  in eqn (i)

We get:  $n=7, 11, 15, 19, 23, 27, 31, 35, 39, 43, 47, 51$  [MAX 52 cards]

Taking values of  $q=1, 2, \dots$  in eqn (i)

We get:  $n=3, 6, 9, 12, 15, 18, 21, 24, 27, 30, 33, 36, 39, 42, 45, 48, 51$  [MAX 52 cards]

Taking values of  $r=1, 2, \dots$  in eqn (i)

We get:  $n=6, 11, 16, 21, 26, 31, 36, 41, 46, 51$  [MAX 52 cards]

Now, look for the common value of **n** in all 3 above possibilities.

Common value of **n** is 51.

So, 51 cards were available.

- ⇒ **ANSWER:** Lost cards=  $52-51=1$

**31. You are given 2 wires each of which burn non - uniformly and takes 1 hour to burn completely. How do you measure 45 minutes using these two wires only?**

- ⇒ Step1: Burn 1st wire on both sides and other wire on 1 side initially.

Step2: Now wire 1 will burn completely in 30 minutes, now burn the second side of wire2

Step3: The moment when wire 2 will burn completely marks 45 minutes.

**32. There are 3 devils and 3 priests on a bank of a river. Initially they are all on one side of the river. They all have to cross the river to reach on the other side of the river. There is a boat but the boat can only carry two people at a time. As long as there are an equal number of devils and priests on each side of the bank the devils will not eat the priests. If the number of devils are greater than the number of priests on the same side of the river then devils will eat the priests. So how can we make everyone arrive on the other side safely?**

- =>
- 1) Firstly one devil and one priest will go to the other side. Devil will stay to the other side while priest will come back with the boat.
  - 2) Remaining two devils will go to the other side. One devil will stay to the other side while one devil will come again with the boat. So total two devils are on the other side of river and 3 priests and 1 devil is on the one side of the river.
  - 3) Now two priests will go. One priest will stay while 1 priest and 1 devil come back with the boat.
  - 4) Now remaining two priests will go to the other side of the river. Total 3 priests and 1 devil is on the one side while 2 devils is on the another side of the river. 1 devil will come back with the boat.
  - 5) 2 devils will go to the other side of the river. 1 devil will stay and 1 devil will again go back with the boat.
  - 6) Now the remaining 2 devils will come to the other side of the river.
- All the 3 priests and 3 devils arrive safely.







**33. There is a room with the door closed and three identical light bulbs inside the room. Outside the room there are three switches, connected to the bulbs. Each bulb is switched off at present. You are outside the room and you don't know which switch is joined with which bulb. You have to identify each switch with its bulb without opening the door. Once you've opened the door, you may no longer touch any switch. How will you do it?**

- ⇒ Let the switches be X, Y and Z.
- ⇒ Turn on switch X. After 5-10 minutes, turn off switch X and turn on switch Y. Now, open the door and touch all the light bulbs.
1. if the bulb is on, it is Y
  2. if the light is off and hot, it is X
  3. if the light is off and cold, it is Z

**34. Who will win? (O or X)**

**HINT: First figure out whose turn is this. Assume both players are intelligent enough.**

**NOTE: There is only one winner.**

 1	 2	3
 4	5	6
 7	 8	 9

- ⇒ Winner is **O**

⇒ *Explanation:*

The 7th mark must be placed in square 5 which is the win situation for both X and O. Hence, the 6th mark must be placed in a line already containing two of the opponent's marks. There are two such possibilities – the 6th mark would have been either O in square 7 or X in square 9.

As we know both the players are intelligent enough, the 6th mark could not be O in square 7. Instead, he would have placed O in square 5 and would have won.

**35. A clever robber breaks into a closed bank where he finds a clerk. He asks the password of the safe (a strong box with a complex lock where money, golds are kept) from the clerk while pointing a gun on his forehead. Out of fear, the clerk manages to blurt out, "Every day, the password of the safe is changed. I can help you but please point away the gun as if you kill me, you will never be able to crack the password." The robber ties the clerk on a chair and inserts cloth in his mouth. He then easily opens the safe after inserting the code and takes all the money before he flees. How did he know the password?"**

⇒ The clerk said that every day the password is CHANGED. 'Changed' is the password.

**36. I had initially Rs 50. When I spent Rs 20, my balance was Rs 30. Then, I spent Rs 15 and I was left with Rs 15. After that I spent Rs 9, my balance was Rs 6. Finally, I spent Rs 6 and I was left with no money. But when I added my expenses and my balance, they were Rs 50 and Rs 51: respectively. So, from where did an extra rupee come?**

Spend	Balance
20	30
15	15
9	6
6	0
<b>50</b>	<b>51</b>

⇒ There is no problems with number. It is just a trick.

⇒ Sum of Balance != Sum of Spent; correct equation is Balance + Spent = Total amount you had

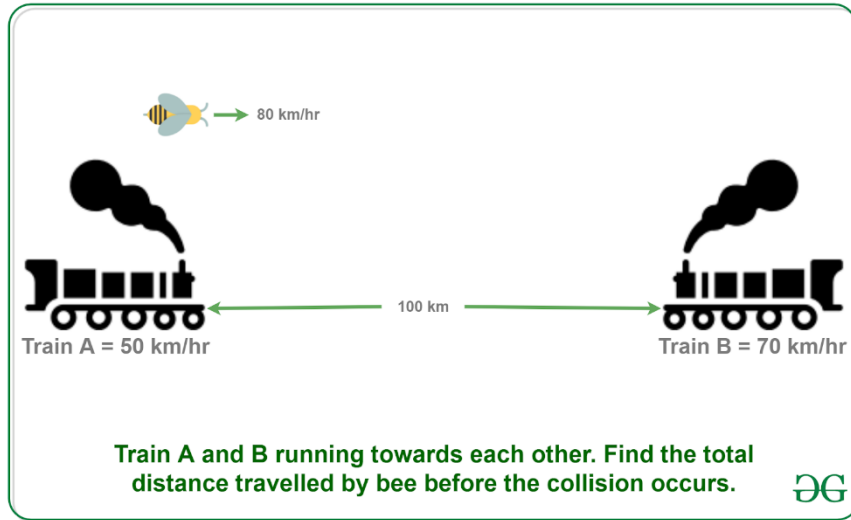
⇒ You will get this when I show you another way to spend \$50.

<u>Spent</u>	<u>Balance</u>
5	45
5	40
5	35
5	30
5	25
5	20
5	15
5	10
5	05
5	00
=====	
50	225

⇒ The numbers I chose smartly to confuse readers.



37. There are two trains on the same track and a bee as shown in the figure. The bee first flies from first train to second train. Once it reaches the second train, it immediately flies back to the first train and keep flying like this until both the trains collide. Calculate the total distance travelled by the bee if the speed of bee is 80 km/hr, speed of 1st train is 50 km/hr, speed of 2nd train is 70km/hr and distance between both trains initially is 100 km.



⇒

- Let the first train A move at  $u$  km/h.
- Let the second train B move at  $v$  km/h.
- Let the distance between two trains be  $d$  km
- Let the speed of bee be  $b$  km/h
- Therefore, the time taken by trains to collide =  $d/(u+v)$

Now putting all the known values into the above equation, we get,

$$\begin{aligned} u &= 50 \text{ km/hr} \\ v &= 70 \text{ km/hr} \\ d &= 100 \text{ km} \\ b &= 80 \text{ km/hr} \end{aligned}$$

$$\begin{aligned} \text{Therefore, the total distance travelled by bee} \\ &= b \cdot d / (u+v) \\ &= 80 \cdot 100 / (50+70) \\ &= \mathbf{66.67 \text{ km (approx.) ANSWER}} \end{aligned}$$

38. There are a hundred statements.

1st person says: At least one of the statements is incorrect.

2nd person says: At least two of the statements is incorrect.

3rd person says: At least three of the statements are incorrect.

4th person says: At least four of the statements are incorrect.

..

..

..

100th person says: At least a hundred of the statements are incorrect.

Now analyse all the statements and find out how many of them are incorrect and how many are true?

⇒ The 100th statement for sure is incorrect because it says that at least 100 of the statements are incorrect.

Suppose if that is correct, then 100 statements cannot be true.

This suggests that the 100th statement is incorrect and that the first statement is

true.

Similarly 99 statements cannot be true because if they were true, then two statements would become correct i.e. the 1st and the 99th.

But the 99th statement says that at least 99 are incorrect.

This suggests that the 99th statement is incorrect and that 2ndone is true.

If we keep analysing is the same way till the end, we will find out that only the **first fifty statements are true and all the remaining ones are incorrect.**

**39. Determine how many times do the minute and hour hands of a clock overlap in a day and write all the timings also?**

**NOTE: For eg. the first time it overlaps at 12.00 so write 12:00 and so on..**

⇒ Assume that it takes T hours for the minute hand to complete T laps. The hour hand will complete T/12 Laps in the same time.

Consider the situation when the hour hand and the minute hand will overlap for the first time; the minute hand would have completed one lap extra than the hour hands.

Thus,  $T = T/12 + 1$

Considering the above expression we know that the first overlap will take place after  $t = 12/11$  hours i.e. 1:05 am.

Similarly, the second overlap will take place when the minute hand would have completed two more laps than the hour hand.

Considering there are X laps,

$$T = T/12 + X$$

Everyone knows that a day comprises of 24 hours. Putting that in the equation we get

$$24 = 24/12 + X$$

Solve it and you will get

$$X = 22$$

Hence both of the hands will overlap **22 times** in 24 hours.

⇒ Exact timings are: 12:00, 1:05, 2:10, 3:15, 4:20, 5:25, 6:30, 7:35, 8:40, 9:45, and 10:50 These timing are in 12 hours so for 24 hours all the timings happen twice in a day.

**40. There are 33 laddoos placed on a table forming a semicircle. Each laddoo is made up of many small boondis. The largest and most dense (having the most number of boondis) laddoo is in the middle. Starting from one end of the semicircle, each successive laddoo is made up of 100 boondis more than the one before (up to the middle one), but starting from the other end each laddoo is made up of 150 boondis more than the one before, up to the biggest laddoo. If the total number of boondis is 65000, what is the number of boondis in the middle laddoo?**

⇒ Left and right side of middle (biggest) laddoo has 16 laddoos each. [ $16+1+16=33$ ]

⇒ Let x be the number of boondis of 1st laddoo of left end.

⇒ Then,  $x+100$  for the next laddoo and so on till the 16th laddoo of left end.

$$\Rightarrow 16x + \left\{ \frac{n(n+1)}{2} \right\} * 100$$

$$\Rightarrow 16x + \left\{ \frac{15(15+1)}{2} \right\} * 100$$

$$\Rightarrow 16x + 12000 \text{ ----- (i)}$$

Similarly, Let  $y$  be the number of boondis of 1st laddoo of right end. Then,  $x+150$  for the next laddoo and so on till the 16th laddoo of right end.

$$\begin{aligned} \Rightarrow 16y + \left\{ \frac{n(n+1)}{2} \right\} * 150 \\ \Rightarrow 16y + \left\{ \frac{15(15+1)}{2} \right\} * 150 \\ \Rightarrow \mathbf{16y + 18000} \text{ ----(ii)} \end{aligned}$$

And middle laddoo will be  $x + (16\text{th} * 100) \Rightarrow \mathbf{x + 1600}$  - (iii) from left end,

OR  $y + (16\text{th} * 150) \Rightarrow \mathbf{y + 2400}$  - (iv) from right end.

Equating (iii) = (iv) as both are same laddoo, we get  $\Rightarrow \mathbf{y = x - 800}$  (v)

Now adding (i) + (ii) + (iii) = 65000 (total boondis)

$$\Rightarrow 16x + 12000 + 16y + 18000 + x + 1600 = 65000$$

$$\Rightarrow 16x + 12000 + 16(x - 800) + 18000 + x + 1600 = 65000, \text{ Using eqn (v)}$$

$$\Rightarrow x = 1400$$

Put value of  $x$  in eqn (iii) and we get,

$$\Rightarrow \mathbf{ANSWER: Middle Laddoo has } 1400 + 1600 = \mathbf{3000 \text{ boondis}}$$

**41. Reeta liked to collect money in a piggy bank. She bought a pink colored piggy bank when she was 10 years old. She put \$250 in the box on each of her birthdays. Her younger brother, Rohan took \$50 out of her piggy bank on his own birthday. The girl died when she was 50 years old due to an incurable disease. When the piggy bank was opened, it had just \$500. How can that be possible?**

$\Rightarrow$  The girl was born on 29 February. Thus her birthday came once in four years only while her brother was born on a normal day and celebrated his birthday every year. Thus the girl had a chance of depositing money only 10 times in 4 years through which she collected \$2500 while her brother took \$50 from the piggy bank every year making the total amount to be \$2000. Thus when the piggy bank was opened, it had just \$500.

**42. If a hen and a half lays an egg and a half in a day and a half, how many and a half that lay better by half will lay half a score and a half in a week and a half?**

$\Rightarrow$  Laying rate of eggs per hen-day:

1.5 eggs

----- = (2/3) eggs/hen-day

1.5 hens \* 1.5 days

$\Rightarrow$  A hen that is "better by half" will lay 1.5 times i.e.  $(2/3) * (1.5) = 1$  egg per hen-day. Half a score and a half =  $(20/2) + 1/2 = 10.5$  eggs [1 score = 20 items]

A week and a half =  $7 + (7 * (1/2)) = 10.5$  days

$$\Rightarrow \text{Hens} = \frac{\text{Eggs}}{\text{Rate} * \text{days}} = \frac{10.5 \text{ eggs}}{1 \text{ egg/hen-day} * 10.5 \text{ days}} = \frac{10.5}{10.5} \text{ hens} = 1 \text{ hen}$$

$\Rightarrow$  "how many and half" means  $\mathbf{X + 1/2}$

$\Rightarrow \mathbf{X + 1/2 = 1}$

**ANSEWR:  $\mathbf{X = 1/2}$  or Half a hen**

"Half a hen and a half (one hen) that lay better by half (one egg per hen day) will lay half a score and a half (10.5 eggs) in a week and a half (10.5 days)."

**43. Shinchan and Doraemon play 'rock-paper-scissors' games 10 times. You know that: Shinchan uses rock three times, scissors six times, and paper once. Doraemon uses rock twice, scissors four times, and paper four times. There are no ties in all 10 games. The order of games is unknown. Who wins and by how much difference?**

⇒ We know that Shinchan played scissors six times. Because there were no ties, that means Doraemon didn't play scissors in any of those six games. So, Doraemon would have used either rock or paper. Therefore, six of the games (not necessarily in order) are as follows:

- Shinchan: scissors vs. Doraemon: rock [Winner: Doraemon]
- Shinchan: scissors vs. Doraemon: rock [Winner: Doraemon]
- Shinchan: scissors vs. Doraemon: paper [Winner: Shinchan]
- Shinchan: scissors vs. Doraemon: paper [Winner: Shinchan]
- Shinchan: scissors vs. Doraemon: paper [Winner: Shinchan]
- Shinchan: scissors vs. Doraemon: paper [Winner: Shinchan]

⇒ Now, we see that Doraemon has only scissors left. Therefore, the other four games are:

- Shinchan: rock vs. Doraemon: scissors [Winner: Shinchan]
- Shinchan: rock vs. Doraemon: scissors [Winner: Shinchan]
- Shinchan: rock vs. Doraemon: scissors [Winner: Shinchan]

⇒ Shinchan: paper vs. Doraemon: scissors [Winner: Doraemon] Shinchan won 7 games and Doraemon won only 3 games.

**ANSWER: Shinchan is the winner with a difference of 4.**

**44. A magician has one-side printed currencies (notes) of 10, 20, 50 and 100. He is sitting opposite you holding (but not in the above mentioned order) all the currencies in his hand facing printed side him. He wants them placed in ascending order from his left to his right. To do this, he takes the leftmost currency (from your perspective) and puts it last. He then takes the third currency from the right (your right) and puts it in last place. What was the previous order of the currency (from his perspective left to right)?**

⇒ Initially, from our perspective left to right currencies call them as a, b, c, d.  
 After putting leftmost currency i.e. a to last: b, c, d, a  
 After putting third from right i.e. c to last: b, d, a, c. So, now it is in ascending order for him but descending order for us i.e.  $b=100, d=50, a=20, c=10$ .

**ANSWER:** So, initial order was from his perspective (left to right): d, c, b, a = 50, 10, 100, 20

**45. There is a special type of Solo Badminton tournament where the two players are allowed to play against each other only and only if the difference between games played between them is not more than one. So, you have to find the maximum number of matches which can be played by the winner if the tournament consists of a total of 17 players.**

- ⇒ For e.g.,  $N=4$ , Maximum games winner can play = 2
- ⇒ Explanation: Assume that player are P1, P2, P3 and P4

1<sup>st</sup> match for each player: (P1, P2) and (P3, P4)

Now winner of these, suppose P1 and P3 will play against each other, i.e. 2<sup>nd</sup> match for P1 and P3 both. Now anyone could be winner doesn't matter as winner has played two matches.

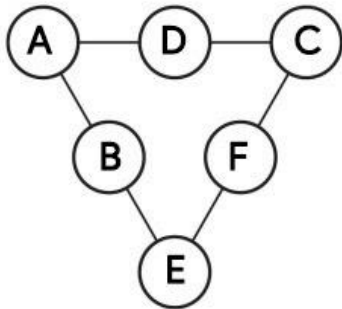
⇒ Similarly, for N=17, **ANSWER is 5 matches.**

**46. A lady (L) bought an item of Rs. 100 from the shopkeeper (C). She paid him through a Rs. 500 note. Realizing that he did not have change, the shopkeeper (C) got change for that note from another shopkeeper (S) and paid Rs. 400 to the lady. After a few days, S realized that the note is fake, and this railed at C and took Rs. 500 back from him. So in this whole process how much money did C lose?**

- ⇒ Consider a transaction box, the lady came with a counterfeit 500 Rs note which can be considered of 0 value.
- ⇒ Now the lady took the item (cost of the item 100 Rs) and 400 Rs (the change given by shopkeeper(C) to the lady) from the transaction box, total of 500 Rs.
- ⇒ Now the equivalent amount should be lost by someone, thus shopkeeper(C) lost 500 Rs. Another shopkeeper(S) gave 500 Rs and took back the same amount hence no loss for him.

**ANSWER: Rs 500**

**47. You have six numbers: 3, 5, 7, 9, 11 and 13. You must replace the alphabets in the triangle in such a way that the three numbers on each side add up to 25.**



⇒ A=13, B=3, C=5, D=7, E=9, F=11

**48. On a Chessboard, you can choose 2 squares at random. According to you, what is the probability that they have a common side?**

- ⇒ In 64 squares, there are:
  - i) 4 at-corner squares, each has ONLY 2 squares each having a side in common with...
  - ii)  $6*4 = 24$  side squares, each has ONLY 3 squares such that each has a side in common with...
  - iii)  $6*6 = 36$  inner squares, each has 4 squares such that each has a side in common with...

So we have the calculation:

$$P = (4/64)*(2/63) + (24/64)*(3/63) + (36/64)*(4/63)$$

⇒ **P = 1/18 ANSWER**

**49. Tell which number marked person in the given picture is left handed and provide a logical explanation for your answer.**



- ⇒ It is irregular and uneasy to serve drinks with left hand for a right-handed person.
- ⇒ **ANSWER: 5<sup>th</sup> person**

**50. A computer game consists of 100 players where the last surviving player becomes the winner. All players stand in a circle in an order 1 to 100. The player numbered 1 has a sword and he kills the next player (i.e. number 2) and gives the sword to the next player standing (i.e. number 3). All players do the same until only 1 player survives. Which number player survives at the last?**

⇒

No.1 has a sword. He kills No.2 and gives sword to No.3. So, we'll remove no. 2. Now No.3 will kill the next person i.e. No.4 and this continues. (All the even numbers will be removed in 1<sup>st</sup> round.)

Survivors of each round are as follows:

**Round 1:** 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21, 23, 25, 27, 29, 31, 33, 35, 37, 39, 41, 43, 45, 47, 49, 51, 53, 55, 57, 59, 61, 63, 65, 67, 69, 71, 73, 75, 77, 79, 81, 83, 85, 87, 89, 91, 93, 95, 97, 99 (No.99 after killing No.100 gives the sword to No.1.)

**Round 2:** 1, 5, 9, 13, 17, 21, 25, 29, 33, 37, 41, 45, 49, 53, 57, 61, 65, 69, 73, 77, 81, 85, 89, 93, 97 (No.97 after killing No.99 gives the sword to No.1.)

**Round 3:** 1, 9, 17, 25, 33, 41, 49, 57, 65, 73, 81, 89, 97 (No.97 after killing No.1 gives the sword to No.9.)

**Round 4:** 9, 25, 41, 57, 73, 89 (No.89 after killing No.97 gives the sword to No.9.)

**Round 5:** 9, 41, 73 (No.73 after killing No.89 gives the sword to No.9.)

**Round 6:** 9, 73 (No.9 after killing No.41 gives the sword to No.73.)

**Round 7:** 73 (No.73 finally kill No.9 and becomes winner.)

- ⇒ **ANSWER:** Last survivor is **73**

**51. CEO of a company decides to divide his 15 shares of the company among his three sons before retiring. According to the CEO, 1st son has to get 1/2 of total shares, 2nd son gets 3/4th of remaining shares left after giving away to the 1st son, and 3rd son gets 1/2 of remaining shares left after giving away to the 2nd son. (No shares are left in the end; all get distributed). How many shares did 1st son, 2nd son and 3rd get respectively?**

**NOTE: All answers are in Integer form.**

- ⇒ Take one extra; an imaginary share, total making 16 shares (15+1),
- ⇒ Now the 1<sup>st</sup> son gets (1/2 of 16) = 8, 8 are remaining  
the 2<sup>nd</sup> son gets (3/4 of 8) = 6, 2 are remaining

the 3<sup>rd</sup> son gets  $(1/2 \text{ of } 2) = 1$ , 1 is left, which is your imaginary share.  
**ANSWER: is 8, 6 and 1 shares respectively.**

**52. There are 4 different brands of cars naming Ferrari, Honda, Bugatti and BMW. Each car has different prices of \$4.5, \$6, \$1.5 and \$3 Million (not necessary in the given order) and different mileages of 10 miles, 20 miles, 30 miles and 40 miles (not necessary in the given order).**

**Clues:**

- **BMW has 30 miles mileage.**
- **The car with 20 miles mileage is either Honda or has a price of \$1.5M.**
- **Bugatti has less mileage than Ferrari.**
- **The car pricing \$3M has 10 miles more mileage than Ferrari.**
- **The car pricing \$4.5M has 20 miles less mileage than BMW.**

**With the help of given clues you have to find the price (in Million dollars) of Honda.**

⇒

		Mileage				Cost			
		10K	20K	30K	40K	\$1.5	\$3.0	\$4.5	\$6.0
Brands	Bugatti	✓	✗	✗	✗	✗	✗	✓	✗
	BMW	✗	✗	✓	✗	✗	✓	✗	✗
	Ferrari	✗	✓	✗	✗	✓	✗	✗	✗
	Honda	✗	✗	✗	✓	✗	✗	✗	✓
Cost	\$1.5	✗	✓	✗	✗				
	\$3.0	✗	✗	✓	✗				
	\$4.5	✓	✗	✗	✗				
	\$6.0	✗	✗	✗	✓				

⇒ **ANSWER: \$6 Million**

**53. How many moves will it take to change the positions of 4 knights from Fig.1 to Fig.2?**



**Fig 1.**



**Fig 2.**

⇒ Impossible to change the positions.

**54. Alok has three daughters. His friend Shyam wants to know the ages of his daughters. Alok gives him 3 hints rather than giving an answer simply. The hints are:**

- **The product of their ages is 72.**

- *Each girl is under 10.*
- *The oldest of the girls likes strawberry ice-cream.*

*After listening to the third hint Shyam instantly tells the ages of all three girls. So, what are the ages of three girls?"*

⇒ Hint 1: Product of ages is 72

All possibilities to get 72 from product of three different ages:  $1 * 1 * 72 = 72$

$$1 * 2 * 36 = 72$$

$$1 * 3 * 24 = 72$$

$$1 * 4 * 18 = 72$$

$$1 * 6 * 12 = 72$$

$$1 * 8 * 9 = 72$$

$$2 * 2 * 18 = 72$$

$$2 * 3 * 12 = 72$$

$$2 * 4 * 9 = 72$$

$$2 * 6 * 6 = 72$$

$$3 * 3 * 8 = 72$$

$$3 * 4 * 6 = 72$$

⇒ Hint 2: All of them are under 10 age

Sum of the ages can be:

$$1 + 8 + 9 = 18$$

$$2 + 4 + 9 = 15$$

$$2 + 6 + 6 = 14$$

$$3 + 3 + 8 = 14$$

$$3 + 4 + 6 = 13$$

As there are many under 10 ages possibilities. All sums are unique except 14. So the age sum must have been 14.

⇒ Hint 3: Alok has an oldest girl (can't two greatest!!). After this only Shyam came to know.

**ANSWER: So the ages must be 3, 3 and 8.**