

TCS 2013

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1. Alok and Bhanu play the following min-max game. Given the expression $N = 19 + X * (Y - Z)$, where X, Y and Z are variables representing single digits (0 to 9), Alok would like to maximize N while Bhanu would like to minimize it. Towards this end, Alok chooses a single digit number and Bhanu substitutes this for a variable of her choice (X, Y or Z). Alok then chooses the next value and Bhanu, the variable to substitute the value. Finally Alok proposes the value for the remaining variable. Assuming both play to their optimal strategies, the value of N at the end of the game would be

- 100
- 019
- 62
- 37

2. The number of bacteria in a colony was growing exponentially. At 4 pm yesterday the number of bacteria was 400 and at 6 pm yesterday it was 3600. How many bacteria were there in the colony at 7 pm yesterday?

- 3600
- 10800
- 32400
- 14400

3. A multiple choice question has 4 options. Choosing the correct option earns the student 3 marks. However choosing the wrong option incurs negative marks so that if a student chooses an option randomly, his expected score is 0. Suppose a student has successfully eliminated 2 incorrect options. His expected score if he chooses randomly among the remaining options is.

- 1.00
- 1.50
- 00
- 3

4. On the planet Oz, there are 8 days in a week - Sunday to

Saturday and another day called Oz day. There are 36 hours in a day and each hour has 90 minutes while each minute has 60 seconds. As on earth, the hour hand covers the dial twice every day. Find the approximate angle between the hands of a clock on Oz when the time is 12:40 am.

111 degrees 251 degrees

71 degrees 89 degrees

5. You're going to get grounded for a week if you don't get at least 80% in your science class. So far you have 237 of the total 300 points. The final test is worth 100 points. What is the minimum score you need to get on the final test? Assume the teacher rounds properly.

93

80

83

100

6. Middle-earth is a fictional land inhabited by Hobbits, Elves, dwarves and men. The Hobbits and the Elves are peaceful creatures who prefer slow, silent lives and appreciate nature and art. The dwarves and the men engage in physical games. The game is as follows. A tournoi is one, where out of the two teams that play a match, the one that loses get eliminated. The matches are played in different rounds where in every round; half of the teams get eliminated from the tournament. If there are 8 rounds played in a knock-out tournoi how many matches were played?

257

72

255

256

7. Alice and Bob play the following coins-on-a-stack game. 100 coins are stacked one above the other. One of them is a special (gold) coin and the rest are ordinary coins. The goal is to bring the gold coin to the top by repeatedly moving the topmost coin to another position in the stack. Alice starts and the players take turns. A turn consists of moving the coin on the top to a position i below the top coin (for some i between 0 and 100). We will call this an i -move (thus a 0-move implies doing nothing). The proviso is that an i -move cannot be repeated; for example once a player

makes a 2-move, on subsequent turns neither player can make a 2-move. If the gold coin happens to be on top when it's a player's turn then the player wins the game. Initially, the gold coin is the third coin from the top. Then

- In order to win, Alice's first move can be a 0-move or a 1-move.
- In order to win, Alice's first move should be a 1-move.
- In order to win, Alice's first move should be a 0-move.
- Alice has no winning strategy.

8. The IT giant Tirnop has recently crossed a head count of 150000 and earnings of \$7 billion. As one of the forerunners in the technology front, Tirnop continues to lead the way in products and services in India. At Tirnop: all programmers are equal in every respect. They receive identical salaries and also write code at the same rate. Suppose 20 such programmers take 20 minutes to write 20 lines of code in total. How long will it take 5 programmers to write 5 lines of code in total?

- 25
- 20
- 100
- 5

9. Achilles was the son of the nymph Thetis and Peleus, the king of the Myrmidons. Zeus and Poseidon had been rivals for the hand of Thetis until Prometheus, the fire-bringer, warned Zeus of a prophecy that Thetis would bear a son greater than his father. For this reason, the two gods withdrew their pursuit, and had her wed Peleus. The following statement is another interesting prophecy about the ages of two children of Zeus that would hold true at some time during the lifetime of the children. 4 years ago, Athena's age was twice Helen's age. 4 years hence, Athena's age will be $\frac{4}{3}$ times the age of Helen. Find Athena's present age in binary numbers during the time that the statement holds true.

- 100
- 1001
- 101
- 1100

10. 36 people (a_1, a_2, \dots, a_{36}) meet and shake hands in a circular fashion. In other words, there are totally 36 handshakes involving the pairs, $(a_1, a_2), (a_2, a_3), \dots, (a_{35}, a_{36}), (a_{36}, a_1)$. Then the size of the smallest set of people such that the rest

have shaken hands with at least one person in the set is

- O 11
- O 18
- O 12
- O 13

11. Let $\exp(m,n) = m$ to the power n . If $\exp(10, m) = n \exp(2, 2)$ where m and n are integers then $n =$

- O 25 O 10
- O 2 O 5

12. There are two boxes, one containing 32 red balls and the other containing 31 green balls. You are allowed to move the balls between the boxes so that when you choose a box at random and a ball at random from the chosen box, the probability of getting a red ball is maximized. This maximum probability is

- O .25
- O .51
- O .75
- O .50

13. A man has some socks in his drawer - 18 identical blue, 24 identical red, and 22 identical black. The lights are out and it is totally dark. How many socks must he take out to make sure he has a pair of each colour?

- O 32
- O 48
- O 42
- O 34

14. A cyclist buys a cycle for 29 pounds paying with a 50 pound cheque. The seller changes the cheque next door and gives the cyclist change. The cheque bounces so the seller paid his neighbour back. The cycle cost the seller 12 pounds. How much did the seller lose?

- O 33 pounds
- O 12 pounds
- O 50 pounds
- O 41 pounds

15. The original price of a car was \$23600. Because the car owner thought he could get more money for the car, he increased the price of the car to 160% of its original price. After a week, the car had not sold, so the owner then discounted the price by 20%, the car

was finally sold. What price was the car sold for?

- 30208 \$
- 37760 \$
- 23600 \$
- 7552 \$

16. The chairman of Tata Motors, Ratan Tata, had 300 engineers work for 5 years designing the world's lowest-cost car, convinced that cost-conscious Indian drivers could live without air-conditioning and cup holders. However, after the booking started they found that only 23 percent of initial 253850 orders for the car - the Nano - were for the no frills \$2600 model. How much time (in days) would it have taken if there were 500 employees working for double the time?

- 547.50
- 3041.67
- 1095.00
- 450.00

17. Earl can stuff advertising circulars into envelopes at the rate of 36 envelopes per minute and Ellen requires a minute and a half to stuff the same number of envelopes. Working together, how long will it take Earl and Ellen to stuff 360 envelopes?

- 6 minutes
- 5 minutes
- 7 minutes
- 3 minutes

18. In 1911, a French physicist Paul Langevin, devised a thought experiment based on Einstein's Special Relativity. In the experiment, a person makes a journey into space at nearly the speed of light and comes back to earth. He finds that he has aged five times less than his twin who stayed back on earth for 40 years. This is popularly known as the Twin Paradox. Now, consider the case of Hansel and Gretel, who are not twins. 9 years ago, Hansel was twice as old as Gretel. If they journey into space, an atomic clock assists in logging the start time of their journey accurately. If they do not journey into space, 9 years hence, Hansel's age will be 413 times the age of Gretel's. Find Hansel's age today in binary numbers.

- 11000
- 11011

O 1010

O 1001

19. Recent reports have suggested that sportsmen with decreased metabolic rates perform better in certain sports. After reading one such report, Jordan, a sportsperson from Arlington decides to undergo a rigorous physical training program for 3 months, where he performs Yoga for 3 hours, walks for 2 hours and swims for 1 hour each day. He says: I began my training on a Wednesday in a prime number month of 2008. I lost 1% of my original weight within the first 30 days. In the next two months combined, I lost 1 Kg. If he walks at 6 mph over a certain journey and walks back over the same route at 8 mph at an altitude of 200 meters, what is his average speed for the journey?

O 48.00

O 6.86

O 3.43

O 7.00

20. Given a collection of points P in the plane, a 1-set is a point in P that can be separated from the rest by a line; i.e. the point lies on one side of the line while the others lie on the other side. The number of 1-sets of P is denoted by $n_1(P)$. The maximum value of $n_1(P)$ over all configurations P of 11 points in the plane is

O 11

O 5

O 12

O 10

21. Given 3 lines in the plane such that the points of intersection form a triangle with sides of length 20, 20 and 31, the number of points equidistant from all the 3 lines is

O 3

O 4

O 0

O 1

22. For the FIFA world cup, Paul the octopus has been predicting the winner of each match with amazing success. It is rumored that in a match between 2 teams A and B, Paul picks A with the same probability as A's chances of winning. Let's assume such rumors to be true and that in a match between Ghana and Bolivia, Ghana the stronger team has a probability of $\frac{11}{12}$ of winning the game. What

is the probability that Paul will correctly pick the winner of the Ghana-Bolivia game?

.01 .85

.15 .92

23. A result of global warming is that the ice of some glaciers is melting. 12 years after the ice disappears, tiny plants, called lichens, start to grow on the rocks. Each lichen grows approximately in the shape of a circle. The relationship between the diameter of this circle and the age of the lichen can be approximated with the formula: $d = 5 * (t - 12)$ for $t > 12$, where d represents the diameter of the lichen in millimeters, and t represents the number of years after the ice has disappeared. Using the above formula, calculate the diameter of the lichen, 49 years after the ice has disappeared.

185

12

245

233

24. Alok is attending a workshop 'How to do more with less and today's theme is Working with fewer digits. The speakers discuss how a lot of miraculous mathematics can be achieved if mankind (as well as womankind) had only worked with fewer digits. The problem posed at the end of the workshop is 'How many 5 digit numbers can be formed using the digits 1, 2, 3, 4, 5 (but with repetition) that are divisible by 4?' Can you help Alok find the answer?

625

250

781

782

25. Elephant competitions are of great entertainment value in south India. In one such competition held in Cochin, 200 elephants participated. Each elephant was given equal amount of milk to drink for a certain time period. Whichever elephant could drink the maximum would be the winner. One of the elephants named Garru could drink $\frac{1}{3}$ of the amount of milk offered. Another elephant named Marta could drink only $\frac{1}{20}$ of the amount of milk offered, but it was better than Thorny which could drink $\frac{2}{45}$ of the amount of milk offered. Amazingly Darru could drink 6 litres more than $\frac{1}{4}$ of the amount of milk offered, where as Malar could drink $\frac{2}{15}$ of the amount of milk offered. If the amount of milk left over by the

elephants Garru and Darru were same, then calculate the total amount of milk offered to each elephant.

O 73.00 litres

O 71.00 litres

O 12.00 litres

O 72.00 litres

26. Planet Fourfe resides in 4-dimensional space and thus the currency used by its residents are 3-dimensional objects. The rupee notes are cubical in shape while their coins are spherical. However the coin minting machinery lays out some stipulations on the size of the coins. A. The diameter of the coins should be at least 4mm and not exceed 8mm. B. Given a coin, the diameter of the next larger coin is at least 50% greater. C. The diameter of the coin must always be an integer. You are asked to design a set of coins of different diameters with these requirements and your goal is to design as many coins as possible. How many coins can you design?

O 3

O 0

O 1

O 2

27. The citizens of planet Oz are 4 fingered and thus have developed a number system in base 4. A certain street in Oz contains 100 buildings numbered from 1 to 100. How many 1's are used in numbering these buildings? Express your answer in base 10.

O 5

O 8

O 4

O 12

28. The IT giant Tirnop has recently crossed a head count of 150000 and earnings of \$7 billion. As one of the forerunners in the technology front, Tirnop continues to lead the way in products and services in India. At Tirnop, all programmers are equal in every respect. They receive identical salaries and also write code at the same rate. Suppose 13 such programmers take 13 minutes to write 13 lines of code in total. How many programmers would it take to write 91 lines of code in 91 minutes?

O 13

O 7

91

20

29. A sheet of paper has statements numbered from 1 to 16. For all values of n from 1 to 16, statement n says 'At least n of the statements on this sheet are false.' Which statements are true and which are false?

The even numbered statements are true and the odd numbered are false.

The odd numbered statements are true and the even numbered are false.

The first half of the statements are true and the last half statements are false.

The first half of the statements are false and the last half statements are true.

30. For the King's revelry 254 barrels of beer have been ordered. However, it was found that one of them is poisoned. The poison takes effect even if consumed in the tiniest amount after 14 hours. You need to find, within 24 hours, the poisoned barrel and have at your disposal some beer guzzling mice. The smallest number of mice required to find the poisoned barrel is

9

8

254

7

31. Dollar stores, the stores which sell all of their merchandise for \$1, have long had a reputation for being down-at-the-heels places to buy cheap, generic goods. While keeping their low prices, they are revamping their image and climbing the respectability ladder, in some cases to the Fortune 500. One such dollar store which recently made an entry in the Fortune list which has 3800 stores all over the United States, said that they had a 4 percent increase in the number of transactions in 2008 compared with the previous year to 32 million. The company made a profit of \$22 million this year.

What is the average profit per store?

5.79 thousand \$

.58 thousand \$

17.37 thousand \$

8.42 thousand \$

32. Mr. Bean visited a magic shop and bought some magical

marbles of different colours along with other magical items. While returning home whenever he saw a coloured light, he took out marbles of similar colours and counted them. So he counted the pink coloured marbles and found that he has bought 25 of them. Then he counted 18 green marbles and then 46 yellow marbles. He later counted 30 purple coloured marbles with him. But when he reached a crossing, he looked at a red light and started counting red marbles and found that he had bought 45 Red marbles. As soon as he finished counting, it started raining heavily and by the time he reached home he was drenched. After reaching home he found that the red, green and yellow marbles had magically changed colours and became white, while other marbles were unchanged. It will take 1 day to regain its colours, but he needs to give at least one pair of marbles to his wife now. So how many white marbles must he choose and give to his wife so as to ensure that there is at least one pair of red, yellow and green marbles?

- 54
- 95
- 93
- 64

33. A police car starts chasing a fugitive in a BMW 3 hours after the BMW escapes from the scene of crime at 10 AM. The BMW drives for 10 Km through the crowded roads of Shanghai and then drives into a highway, where the traffic allows vehicles to move twice as fast. After a while, the police car finally catches up with the BMW after a chase that lasted 4 hours. By this time the moon was up in the sky for 4 hours. If the average speed of the police car is 83 kmph, then the average speed of the BMW is _____ kmph.

- 35.57
- 47.43
- 48.43
- 11.86

34. 19 people (a_1, a_2, \dots, a_{19}) are invited to a party. The host and the hostess shake hands with each invitee and also with each other. The invitees shake hands in a circular fashion, i.e. the pairs $(a_1, a_2), (a_2, a_3), \dots, (a_{18}, a_{19}), (a_{19}, a_1)$ shake hands. So, in all there are 58 handshakes. Let S be a set of people such that every pair in S shake hands. The size of S is at most

- 2
- 3

1

4

35. A hollow cube of size 5 cm is taken, with a thickness of 1 cm. It is made of smaller cubes of size 1 cm. If 4 faces of the outer surface of the cube are painted, totally how many faces of the smaller cubes remain unpainted?

500

488

900

800

36. Anoop managed to draw 5 circles of equal radii with their centres on the diagonal of a square such that the two extreme circles touch two sides of the square and each middle circle touches two circles on either side. Find the ratio of the side of the square to radius of the circles. You may assume that square root of 2 is 1.4

12.50 :1

07.60 :1

10.50 :1

09.00 :1

37. Subha Patel is an olfactory scientist working for International Flavors and Fragrances. She specializes in finding new scents recorded and reconstituted from nature thanks to Living Flower Technology. She has extracted fragrance ingredients from different flowering plants into bottles labeled floral, sweet, honey, minty and cedar. She has learned that a formula for a perfume is acceptable if and only if it does not violate any of the rules listed: If the perfume contains floral, it must also contain honey and there must be twice as much honey as floral. If the perfume contains sweet, it must also contain minty, and the amount of minty must equal the amount of sweet, honey cannot be used in combination with minty. minty cannot be used in combination with cedar. If the perfume contains cedar, the amount of cedar must be greater than the total amount of the other essence or essences used. Which of the following could be added to an unacceptable perfume consisting of two parts honey and one part cedar to make it acceptable?

One part sweet

One part floral

Two parts honey

O Two parts cedar

38. A hare and a tortoise have a race along a circle of 100 yards diameter. The tortoise goes in one direction and the hare in the other. The hare starts after the tortoise has covered $\frac{1}{4}$ of its distance and that too leisurely. The hare and tortoise meet when the hare has covered only $\frac{1}{5}$ of the distance. By what factor should the hare increase its speed so as to tie the race?

O 5

O 4

O 20

O 11.00

39. 45 suspects are rounded by the police and questioned about a bank robbery. Only one of them is guilty. The suspects are made to stand in a line and each person declares that the person next to him on his right is guilty. The rightmost person is not questioned. Which of the following possibilities are true? A. All the suspects are lying. B. The leftmost suspect is guilty. C. The rightmost suspect is guilty.

O B only

O A only

O A and B

O A and C

40. A circular dashboard of radius 2.0 foot is at a distance of 20 feet from you. You throw a dart at it and it hits the dashboard at some point Q in the circle. What is the probability that Q is closer to the center of the circle than the periphery?

O .25

O .75

O 1.00

O .50

41. After the typist writes 40 letters and addresses 40 envelopes, she inserts the letters randomly into the envelopes (1 letter per envelope). What is the probability that exactly 1 letter is inserted in an improper envelope?

O $\frac{1}{40}$

O $\frac{1}{40!}$

O $1 - \frac{1}{40}$

O 0

42. The pacer length P is the distance between the rear of two consecutive footprints. For men, the formula, $n/P = 125$ gives an

approximate relationship between n and P where, n = number of steps per minute and P = pacelength in meters. Bernard knows his pacelength is 161cm. The formula applies to Bernard's walking. Calculate Bernard's walking speed in kmph.

- 19.44
- 12.88
- 7.76
- 201.25

43. There are two water tanks A and B, A is much smaller than B. While water fills at the rate of one litre every hour in A, it gets filled up like 10, 20, 40, 80, 160 .. in tank B. (At the end of first hour, B has 10 litres, second hour it has 20, and so on). If tank B is $\frac{1}{16}$ filled after 11 hours, what is the total duration required to fill it completely?

- 4 hours
- 15 hours
- 14 hours
- 16 hours

44. 9 people meet and shake hands. The maximum number of handshakes possible if there is to be no 'cycle' of handshakes is (A cycle of handshakes is a sequence of people $a_1, a_2, \dots, a_k, k > 2$ such that the pairs $\{a_1, a_2\}, \{a_2, a_3\}, \dots, \{a_{k-1}, a_k\}, \{a_k, a_1\}$ shake hands).

- 6
- 5
- 8
- ?

45. The teacher is testing a student's proficiency in arithmetic and poses the following question: $\frac{1}{2}$ of a number is 5 more than $\frac{1}{6}$ of the same number. What is the number? Can you help the student find the answer?

- 14
- 16
- 3
- 15

46. Ferrari S.p.A. is an Italian sports car manufacturer based in Maranello, Italy. Founded by Enzo Ferrari in 1928 as Scuderia Ferrari, the company sponsored drivers and manufactured race cars before moving into production of street-legal vehicles in 1947 as

Ferrari S.p.A.. Throughout its history, the company has been noted for its continued participation in racing, especially in Formula One, where it has enjoyed great success. Rohit once bought a Ferrari. It could go 4 times as fast as Mohit's old Mercedes. If the speed of Mohit's Mercedes is 30 Km/hr and the distance travelled by the Ferrari is 946 Km, find the total time taken for Rohit to drive that distance.

31 Hours 236 Hours

8 Hours 7.88 Hours

47. Alok and Bhanu play the following mm-max game. Given the expression $N = 16 + X + Y - Z$, where X, Y and Z are variables representing single digits (0 to 9), Alok would like to maximize N while Bhanu would like to minimize it. Towards this end, Alok chooses a single digit number and Bhanu substitutes this for a variable of her choice (X, Y or Z). Alok then chooses the next value and Bhanu, the variable to substitute the value. Finally Alok proposes the value for the remaining variable. Assuming both play to their optimal strategies, the value of N at the end of the game would be

27

7

34

25

48. A sheet of paper has statements numbered from 1 to 16. For all values of n from 1 to 16. statement n says: 'Exactly n of the statements on this sheet are false. Which statements are true and which are false?

All the statements are false

The even numbered statements are true and the odd numbered statements are false

The odd numbered statements are true and the even numbered statements are false

The second last statement is true and the rest are false.

49. 48 people $\{a_1, a_2, \dots, a_{48}\}$ meet and shake hands in a circular fashion. In other words, there are totally 48 handshakes involving the pairs, $\{a_1, a_2\}, \{a_2, a_3\}, \dots, \{a_{47}, a_{48}\}, \{a_{48}, a_1\}$. Then the size of the smallest set of people such that the rest have shaken hands with at least one person in the set is

16

O 24

O 17

O 15

50.9 years ago I was five times as old as my eldest son Today I am 3 times his age. HOW old am I now? Express my age in binary numbers.

O 10100

O 10010

O 110110

O 110111

51. A lady has some fine gloves and hats in her closet- 19 blue, 20 red, and 29 yellow. The lights are out and it is totally dark. In spite of the darkness, she can make out the difference between a hat and a glove. She takes out an item out of the closet only if she is sure that it is a glove. How many gloves must she take out to make sure she has a pair of each colour?

O 39.00

O 28.00

O 51.00

O 30.00

52. A group of friends Tom, Tina, Dick, Diana, Harry, and Harriet go out to a fair three hundred meters from the McDonalds which is five KMs away. They see a weighing machine and decide to have some fun. However the girls refuse to step on the weighing machine. So Tom, Dick and Harry, weigh themselves in a particular order. First Tom, Dick, and Harry weigh themselves individually and then Tom and Dick, Dick and Harry, Tom and Harry and then Tom, Dick and Harry together respectively. The recorded weight for the last measure is 161 kgs. The average of all the 7 measures is:

O 92.00

O 115.00

O 207.00

O 53.67

53. When a man weighing 50 Kg runs at an average speed of 10 Km/hr, his rate of energy dissipation is four times higher than when he runs at an average speed of 3 Km/hr. However, when a 60 Kg man runs at 12 Km/hr: his rate of energy dissipation is only three times higher than when he runs at an average speed of 6 km/hr. If a man walks at 4 mph over a certain journey and jogs back over the

same route at 6 mph at an altitude of 200 meters. What is his average speed for the journey in mph?

- 6.00
- 2.40
- 120.00
- 4.80

54. The Thousand Pillar Temple of Hyderabad was built by the Kakatiyans of Chalukyan dynasty in the 12th century. Each pillar has carvings made of black monolithic rocks of basalt which are polished to give it a brilliant look. One sunny morning, three tourists visit the temple. Sandeep is taller than Richie and taller than two of the thousand pillars, and Jithesh is shorter than Sandeep and three pillars. Which of the following statements would be most accurate?

- Richie is taller than Sithesh
- Richie is shorter than Sithesh
- Sithesh is as tall as Richie
- It's impossible to tell

55. A greengrocer was selling orange at a penny each, olives at 2 for a penny and pears at 3 for a penny. A father spent 7p and got the same amount of each type of fruit for each of his three children: Jane, Joe, and Jill. Jane is three years older than Jill and Joe is exactly half the age of Jane and Jill together. What did each child get?

- 1 orange : 2 olives : 1 pear
- 1 orange : 2 olives : 2 pears
- 1 orange : 3 olives : 2 pears
- 1 orange : 1 olive, 1 pear

56. Susan made a block with small cubes of 6 cubic cm volume to make a block 6 small cubes long, 8 small cubes wide and 10 small cubes deep. She realises that she has used more small cubes than she really needed. She realised that she could have glued a fewer number of cubes together to look like a block, with same dimensions: if it were made hollow. What is the minimum number of cubes that she needs to make the block?

- 288.00
- 480.00
- 192.00
- 165.00

57. A race horse starts chasing a wild pony 2 hours after the pony

bolts the stable. The pony runs through the entire county of Alberton: Texas jumping over three streams and crossing four 10 meter roads. The race horse finally catches up with the pony after 5 hours by which time the sun had set and the moon was up in the sky for 4 hours. If the average speed of the race horse is 84 kmph: then the average speed of the wild pony is

?

O 61.00

O 60.00

O 33.60

O 24.00

58. Two blocks of Copper with density of 100Kg/m^3 are twisted into wires of length 100Km and thickness 0.1 mm. Copper is a very ductile material. Its ductility is measured in terms of percentage elongation upon application of tensile forces. The conductivity of the copper wire is extremely high rendering it useful in the construction of many electronic circuits. If the voltage through one such circuit is 14 V and the current flowing in the circuit is 215 mA. What is the resistance of the wire?

O 3010.00

O 15.36

O 229.00

O .07

59. A toy train produces at least 10 different tunes when it moves around a circular toy track of radius 5 meters: at 10 meters per minute. However, the toy train is defective and it now produces only two different tunes at random. What are the odds that the toy train produces 5 consecutive music tunes of the same type (1 in

?) ?

O 25.00

O 5.00

O 32.00

O 16.00

60. The difference between the ages of two of my three grandchildren is 3. My eldest grandchild is three times older than the age of my youngest grandchild and my eldest grandchild's age is two years more than the ages of my two youngest grandchildren added together. How old is my eldest grandchild?

O 12

10

15

13

61.8 years ago, Andromeda's age was twice Achilles' age. 8 years hence, Andromeda's age will be $\frac{4}{3}$ times the age of Achilles'. Find Andromeda's present age in binary numbers.

10101

1001

1000

11000

62. A seamstress buys a certain amount of Gingham cloth which comes in rolls that are exactly 56 inches wide. She has also bought a certain length of Seersucker cloth which comes as individual pieces that are exactly a yard long and 35 inches wide. The seamstress first focuses on the Gingham roll and discovers that she has 139 yards of Gingham: and she wants to divide the Gingham into 139 lengths of 1 yard each. She wants to have twice as many pieces of Seersucker as she does of the Gingham. It takes her 5 seconds to cut each length of Gingham. Working non-stop: how long (in seconds) will it take her to cut all 139 pieces?

1104.00

1111.00

1112.00

1113.00

63. The New York Public Library is one of the world's greatest repositories of books and journals. It has a beautiful reading room facing Manhattan's famous Fifth Avenue. In the reading room are 10 reading spots. Each reading spot consists of a round table with 4 chairs placed around it. There are some readers such that in each occupied reading spot there are different numbers of readers. If in all there are 10 readers: how many reading spots are empty?

5

3

6

4

64. In China of the Tang dynasty unprecedented social chaos prevailed but yet there was a great mathematician and court astronomer who reveled in numerical riddles. In his compilation of such puzzles: the total number of puzzles is equal to the product of

the number of puzzles that are classified as easy and extremely difficult. Now: if $\frac{1}{3}$ of a number is 6 more than $\frac{1}{6}$ of the same number. What is the number in the binary system?

10101

110

100100

100101

65. A farm in Chennai has around 200 trees each separated by about 20m. These trees are home to many birds. There are 12 birds that weigh up to 15 g: 23 that weigh from 15 to 50 g: and 22 that weigh greater than 50 g. In the month of June, around 2 hours after sunset: after all birds have returned to their nests: a cunning fox finds its way into the farm. The fox takes a bird out of its nest at random. How many sparrows must the fox take out to make sure that it has two of each weight range?

47.00 31.00

35.00 33.00

66. One day Rapunzel meets Pal and Rat in the Disneyland. She knows that Pal lies on Mondays: Tuesdays and Wednesdays, and tells the truth on the other days of the week. Rat, on the other hand: lies on Thursdays, Fridays and Saturdays: but tells the truth on the other days of the week. Now they make the following statements to Rapunzel - Pal: Yesterday was one of those days when I lie. Rat: Yesterday was one of those days when I lie too.

What day is it?

Thursday

Sunday

Tuesday

Monday

67. A car manufacturer located 29 Km due west of Chennai produces 250 cars for export to Europe. However there is a problem in the paintshop and the lights have gone out. It seems that the cars can be painted only red and blue and nobody has noticed this except you as the cars come out of the testing area onto NH4: at random. What are the odds that 6 consecutive cars of the same colour will come through the test area at any one time (1 in ----- ---) ?

32.00

128.00

6.00

36.00

68. The great Indian mathematician Bhaskaracharya formulated this problem in the twelfth century for his teenaged prime number aged daughter Lilavati. He also authored the eponymous Lilavati, a compendium of mathematical puzzles, in which the number of problems that use this formula is the sum of two prime numbers. The product of the two prime numbers is smaller than the total number of problems in the Lilavati. Now if the difference of any two numbers is 6 and their product is 18. what is the sum of their squares?

72.00

54.00

42.00

44.00