FACE

TCS NQT UPDATES

All TCS NQT 2020 Exam Related Updates/Questions shared by students will be updated in this document.

Last updated on: 4th Aug 2019, 10.20 AM

Pattern update:

Here is the confirmed pattern of the TCS NQT, as per information from test-takers.

English - 15 Qs in 10 minutes - Cloze passage, vocabulary-based questions on passages, inferential based questions on passages
Quantitative Aptitude - 15 Qs in 30 minutes
Advanced Programming Logic - 10 Qs in 20 minutes – Questions from C, C++, Java
Coding - 1 Q in 30 minutes – Choice of languages are C, C++, Java, Python and PERL

1. No advanced sub-sections
2. On-screen calculator available
3. Negative marking applicable for MCQ questions
4. FUB (Fill up the blank) questions were also present

English

DAY 2, SLOT 1 –

1. Cloze passage source -
TCS business leader Ashok Pai recently wrote on his blog:

Foster ownership, experimentation, and collaboration: An ownership-driven culture with focus on experimentation is needed. It requires leadership buy-in for cross-stakeholder alignment and to overcome resistance and inertia; achieve collaborative innovation across silos; and iterative improvements.
The Right Transformation Approach
Enterprises can become digital natives through an enterprise-level or a function-level transformation. The right or right mix of approach depends on factors such as business health, industry disruption, and availability of digital talent.
Whether your business model is at risk of disruption or you would like to elevate your enterprise to the next level, the prescription is the same: digital transformation. And Business 4.0 technologies are what would get you there. But you have to reengineer your business processes to extract the maximum technological benefit.
What has been your experience? Which changes have got you the best results? What has been the biggest learning in your transformation journey?

2. Systems supporting a _____ operation provide alerts that predict problems before they occur and give executives insights to perform tasks that machines cannot.

a. Cognate
b. Cognitive
c. Cognition
d. Cogitate

Answer: Cognitive

3. Fill up with the right prepositions:

Like the rest of Chennai, our apartment has a water crisis. When the Secretary suggested installing another bore well, the President did not agree **with** him. Last week the executive committee failed to agree **on** a common plan of action. The contractor needed the approval of the executive committee **before** he could start installing another bore well. As he had misappropriated the funds on an earlier occasion, the President did not approve **of** his proposal.

DAY 1, SLOT 4 –

1. Cloze passage source:

Managing digital transformation to realize successful outcomes is not easy. The secret to success lies in carefully treading the tight rope between technology upgrade and changes in the operating model. Too much focus on technology and too little on the operating model will, after initial success, land the enterprise in the middle of a digital dip. Such a digital dip is typically caused by siloed approach, confusion over KPIs, conflicting stakeholder views, and poor user adoption. Operating model changes without adequate technology upgrade will constrain the efficiency of the enterprise.

Remember that digital success across the breadth and depth of the enterprise is the real objective. It is much easier to succeed with smaller projects. For lasting results, technology transformation must be driven by a comprehensive IT and operations framework that leverages agility, analytics, automation, and cloud.

2. Fill up the blanks:

Last week I went to Mumbai. The Airport security officer wanted me to take **out** every single object from my suitcase. I was in a hurry my connecting flight was scheduled to take **off** in 15 minutes. I was visiting Mr. Kapadia. He had been living in Mumbai **since** 1985 and I had been living in Chennai **for** thirty years. It was my practice to visit him every year on his birthday.

3. To create _____ operation, TCS Machine First^™ delivery model is _____.

a. intelligensia/essentially
b. intelligently/inessential
c. intelligent/essential
d. negligent/eventual

Answer: intelligent/ essential

DAY 1, SLOT 3 –

1. Fill up with the right prepositions:

On the last day of the financial year, he directed his company bankrupt. Now, the company was taken over by the government. His father also did the same with a sister concern, He takes after his father. The government is looking to appoint a CEO for the company. The best candidate should be appointed for the government is looking to appoint a CEO for the company. The best candidate should be appointed with the post. Mr. Ram has an appointment with the finance master. He has good chances of being selected.

2. Cloze passage source:

TCS leader Ashok Pal wrote in his blog: "Most enterprises that try digital transformation achieve only partial success. Why? Because digital business transformation is far more than a technology upgrade. For an enterprise to scale digitally, it must transform its operating model with the help of technology. Changing an enterprise's operating model is challenging but the rewards are commensurate. How to Succeed Digitally? Managing digital transformation to realize successful outcomes is not easy. The secret to success lies in carefully treading the tight rope between technology upgrade and changes in the operating model."

3. One way to enable intelligent operations is by using automation to take over _____ manual tasks and processes.

A. routine
B. creative

C. dangerous
D. Difficult

Answer: Routine

DAY 1, SLOT 2 –

1. Fill in the blanks with the appropriate prepositions – (Answers in bold)
After I met with an accident, I was looked **after** my uncle. I gave a complaint to the police and they said they will look **into** it. While convalescing I read Oliver Twist. This book runs **upto** two hundred pages. I also attended a program on yoga. The program ran **for** three hours.

2. Cloze passage –
TCS' Journal of Innovation and Transformation (JIT) is our **flagship** Thought Leadership **artifact** where in **seasoned** industry practioners from TCS bring powerful insights and open up the windows for a wave of creative ideas in the new world of manufacturing. In the previous editions of JIT, we have focused on key themes such as customer experience, digital disruptions, digital forces in automotive industry etc.

The theme of the latest edition is "New Product Innovation in the Digital World" through which we explore how digitization has **revolutionized** new product development process, from product design and development to product improvement. A key highlight for this edition is a special article titled **'Weaving** the future with Digital thread' – a TCS collaboration with our esteemed partner - CIMdata.

3. Fill in the blank with the right option.
One way to enable intelligent operations is to extract _____ insights from data generated by automated processes.
a. Assignable
b. Achievable
c. Actable
d. Actionable

Answer: Actionable

DAY 1, SLOT 1 –

PASSAGE: In the game of cricket, any side with a pair of bowlers of complementing superior qualities prove invincible. The current generation would know Bhuvi,

Bumrah or Starc-Cummins pairs better than their own parents. So, let me dissect a pair that ruled the cricketing world during the fifties and early sixties. Brian Statham and Fred Trueman of England proved to be a lethal combination that every batsman wanted to avoid playing. Stantham was a bowler of immaculate accuracy, nagging length and lyrical run-up. Oxymoronically, his virtues were the basis for his misfortunes. Knowing that he would bowl in a manner that's unplayable, batsmen were more smug in defending his balls than when playing an erratic bowler.

Trueman nicknamed as Fiery had a long delivery stride and made no bones about his intentions to test batsman's physical and mental strength. The ball would flash past the bat in moments of incredibility with the batsman thanking his Maker, if the ball missed his limbs and occasionally the stumps.

1. Which one of the following sentences has an appropriate bold part that can be replaced with lethal?

a. The series of never-ending bubbles rejoiced the children to any end
b. The never-say-die team won the tournament for the tenth time.
c. "Mount vesuvius" eruption proved to be completely ruinous to pompeii
d. The life-saving drug administered to the patient brought him back to his elements

Answer: C

2. Any team with two bowlers sharing the required traits is:

a. Arrogant to its opponents
b. vulnerable to choke
c. hard to defeat
d. insignificant in its contribution.

Answer: C

3. Oxymoron is a special language device, where

a. A tough idea is simplified by bringing a simple parallel to it
b. Two contrasting elements are placed side by side reinforcing an idea
c. A brilliant object issued in place of a dull entrance
d. An abstract entity is compared to an exact entity emphasising similarity/difference

Answer: B

Cloze passage:

Digital twin in automotive industry presents an opportunity to pair virtual and physical worlds leveraging different technologies such as IoT, big data analytics, and simulation techniques to re-engineer critical processes as below.

Vehicle development: Integrates data across the product lifecycle to enable data-driven vehicle concept, informed design through rapid assessment of change impacts and early detection of issues, and accurate and accelerated design verification.

Vehicle manufacturing: Factory's digital twin in manufacturing enables real time data gathering from machine sensors, facilitating flexible cell manufacturing, IoT-driven maintenance strategies, and leveraging beacon data to ensure workers' safety.

Vehicle sales and service: Captures real-time field insights on driver preferences, product features' uptake, vehicle performance, and service history to create an interactive user experience on the sales floor and enable proactive and predictive after-sales service.

Quantitative Aptitude –

DAY 2, SLOT 1 –

1. The total income of Santhanam in the years 2011, 2012 and 2013 was Rs.36,400. His income increased by 20% each year. What was his income in 2013?

a. Rs.10,000
b. Rs.8,800
c. Rs.12,000
d. Rs.14,400

Answer: Rs.14,400

2. A geometric box and a pencil box together cost Rs. 150. The cost of the geometric box is 100 rupees more than the pencil box. What is the cost of the pencil box in rupees?

Answer: 25

3. A cyclist buys a cycle for 30 pounds paying with a 60 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 23 pounds. How much did the seller lose?

a. 53
b. 20
c. 23

d. 60
Answer: 53

4. You have three tuples: (1,2), (2,4), (3,6). What is the shape of the function that describes these?

a. S-shaped
b. Parabolic
c. Straight line
d. Quadrilateral
Answer: Straight line

5. The probability that there are 53 Mondays in a leap year is _____
(Express answer as a ratio p/q)
Answer: 2/7

6. Arun wrapped a gift for his friend in a big box, which contains 4 small boxes. Each of these small boxes again contain 3 boxes. Each of these boxes contain 3 boxes. The gift is randomly kept in one of the smallest boxes. If you can open one of the smallest boxes, what is the probability that the gift is in it?
a. 1/36
b. 1/53
c. 1/52
d. 1/11
Answer: 1/36

7. Velan and Karan together can build a bridge in 5 hours. Karan works twice as long as Velan does if he has to do the job alone. How long will it take Velan to complete the job alone?
a. 2.5
b. 7.5
c. 10
d. 15
Answer: 7.5

8. Udvama Pradipa Udarka is a tall, lean with 24 floors. Its security chief Lokabahya is very popular (or notorious depending on one's math knowledge or lack thereof) among the visitors. Once a visitor asked him the ratio of people in 24th floor to those in ground floor. Lokabahya said that it four persons are added to both the floors, the ratio of fraction becomes 9/11. Instead, if five move out of each of the floors, then

the result is ¾. What is the fraction? Write your answer like 10/11 without any blank space anywhere.
Answer: 23/29

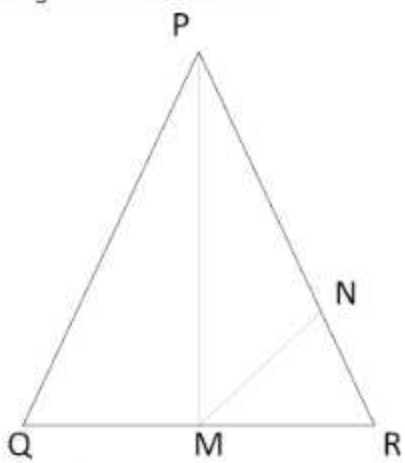
9. Whenever a force acts on a body obliquely, it's split into vertical and horizontal components for further analysis. If the force acting on a stone has the same horizontal and vertical components of value $2500/\sqrt{2}$ newtons, what's the value of oblique force? Write your answer as a numeral without any other characters.
Answer: 2500

10. I,j,k,l and m are positive integers in ascending order such that (8-i)(8+j)(8-k)(8-l)(8+m) = 3927. What is the value of i+j+k+l+m?

a. 19
b. 25
c. 35
d. 14

Answer: 25

11. Triangle PQR is isosceles with PQ = PR = 20cm. A perpendicular MN is drawn from M, the midpoint of QR to the side PR dividing it in the ratio 4:1. What is the length of the altitude PM?

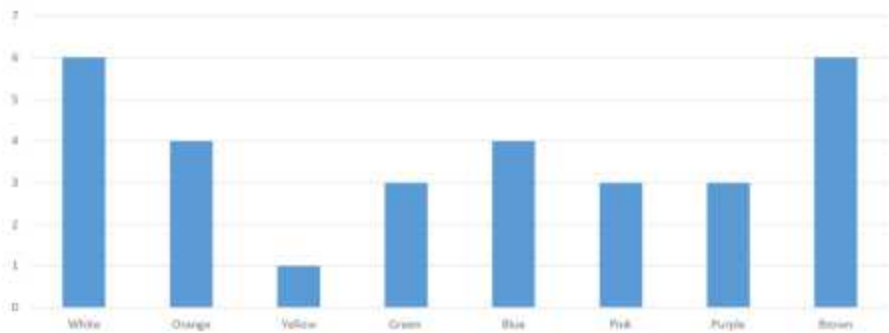


a. 8
b. 16
c. $8\sqrt{5}$
d. $16\sqrt{5}$

Answer: $8\sqrt{5}$

DAY 1, SLOT 4 –

1. Anmol picks sweets from a bag without looking. The distribution of sweets of each colour in the bag is shown below. What is the probability that anmol will pick a white sweet?



Answer: 0.2

2. Using principle of moments, one can weigh any item using a single weighing stone. In one such experiment, a food packet was kept hanging at a distance of 15 cm to the left of a rod's center. It was countered by a 50 gm weighing stone, kept at a distance of 45cm to the right of the center. What's the weight of food packet? Write your answer as a numeral without any unit, space or any other character anywhere.
Answer: 150 gm

3. Some scientists interpret satellite data to mean that glaciers are melting faster than in earlier centuries. In each decade since the industrial revolution, the amount of glacier melt has doubled and some scientists predict that all the glaciers will have melted away by the year 2037. If indeed this were true, in which year, would we have lost 50% of all the glaciers?

Answer: 2027

4. A very crowded street in T.Nagar contains 100 buildings. The buildings are numbered from 1 to 100. How many 9's are used by the Chennai Corporation in numbering these buildings?

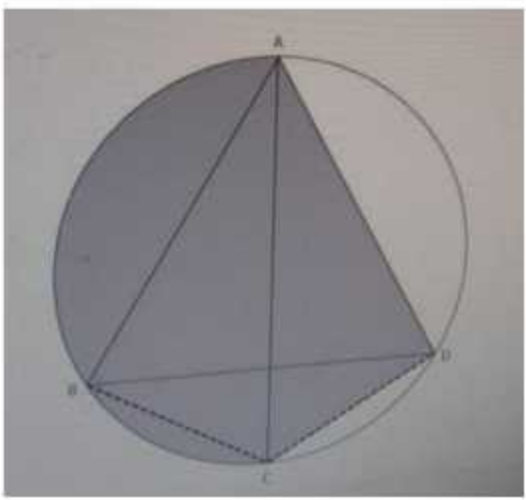
A. 21
B. 19

C. 20
D. 9
Answer: 20

5. An equilateral triangle ABD is inscribed in a circle as shown in the figure. AC is a diameter of the circle. If the radius of the circle is 10 cm, what is the area of the shaded portion?
(diag.)

a. 243.7 sq.cm
b. 192.4 sq.cm
c. 221.4 sq.cm
d. 273.1 sq.cm

6. I have a two-digit number. The unit's digit is twice as ten's digit. If I reverse the number and subtract 36 from it, I get the initial number. What's the number started with?
Please write your answer as a numeral, without any leading or trailing space.
Answer: 48

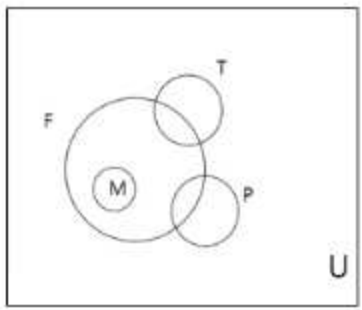


Answer: 243.7 sq.cm

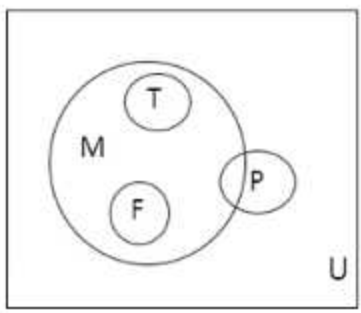
7. The statement:
"All fathers are men some are teachers or politicians but no teacher is a politician"

Can be represented in Venn diagram as (M - Men, F - Father, T = Teacher, P - Politician) which of the following options?

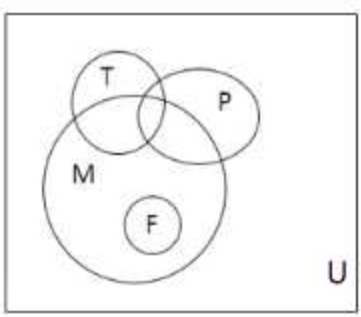
a.

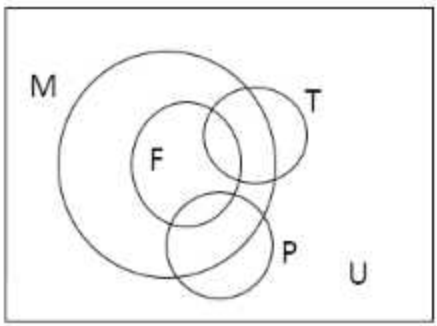


b.



c.



d. 

Answer: D

8.

n	f(n)
8	3
32	5
128	7
512	9

From the above table, the function f(n) is:

a. n log2(n)
b. log2(n)
c. exp(n)
d. 2n

Answer: log2(n)

9. Mary Meeker in her annual internet Trends Report said that Americans are spending even more time digital media. "6.3 hours a day in 2018, up 5 percent from the year before." How much time did Americans spend with digital media in 2017?

a. 5 hours and 53 minutes
b. 6 hours
c. 6 hours and 10 minutes
d. 5 hours

Answer: 6 hours

10. Two alloys A and B are both made of iron and zinc. The ratios of iron to zinc in the two alloys are 5:3 and 1:2 respectively. A and B are combined in the ratio 4:3 to yield a new alloy C. What is the ratio of iron and zinc in C?

a. 4:3
b. 2:3
c. 1:1
d. 5:2

Answer: 1:1

11. Your friend places 100 cards in a row, one of which contains the Jack of Clubs that you need to guess. You pick the card at position 12. The host removes all the cards except the card chosen by you at position 12 and another card at position 61. He now says, "One of these two cards is the Jack of Clubs". What is the probability that the card is at position 61?

a. 99%
b. 50%
c. 98%
d. 1%

Answer: 99%

DAY 1, SLOT 3 –

1. If f(x) = x^2, what is the shape of f(x)?

a. Quadrilateral
b. S-shaped
c. Parabolic
d. Circular

Answer: Parabolic

2. A race horse starts chasing a wild pony 2 hours after the pony bolts the stable. The race horse finally catches up with the pony after 3 hours. If the average speed of the race horse is 49 kmph, then the average speed of the wild pony is _____ kmph.

a. 29.4
b. 30.4
c. 19.6
d. 32.67

Answer: 29.4

3. Twin brothers Lava and Kusha wrote the TCS NQT test. While Lava scored 45% and got 4 marks below the cut off, Kusha scored 60% and got 8 marks above

cut-off and got selected for interview. What was the maximum marks in the test?
Answer: 80

4. We live and work in a time of rapidly advancing technology. A social media start up is doubling the number of users each weeks. It took just 47 weeks to acquire a million users. How long did it take to acquire half a-million users?
Answer: 46

5. The kids Phalaa and Adhiphalaa (don't confuse with Balaa and Adhibalaa, the abracadabra that sage Vishwamitra taught to Raama and Lakshmana to successfully stay the demoness Taadaka) carry some fruits. Being tender and small, each could carry only a single digit number of fruits. Adhiphalaa has three times the fruits that Phalaa has. If the digits corresponding to Phalaa's and Adhiphalaa's fruits are written in that order, the resulting two digit number is a multiple of three. How many fruits does Adhiphalaa have?
Answer: 39

6. Rajesh has Rs. 850 in his purse made up entirely of notes of Rs. 50 denomination. His wife Latha, on the other hand, has only notes of Rs. 20 denomination in her purse and they amount to Rs. 460. Rajesh and Latha redistribute the notes between the two purses so that if one were to choose one of the two purses at random and then randomly draw a note from it, the probability of the note being of Rs. 50 denomination is maximized.
After this redistribution, there will be a total of Rs. _____ in the purse with the larger amount of money.
Answer: 700

7. Sura, a strongly distilled alcoholic drink was used in ancient India as an anaesthetic by surgeons. A 15 litres cask initially contains pure Sura up to the brim. The Sura is diluted by removing 5 litres and replacing that quantity with water. If Sura is diluted twice, what is the ration of Sura to water in the cask?
   a. 2:1
   b. 1:1
   c. 1:2
   d. 4:5

Answer: 4:5

8. The speed of a common snail is about 1 mm per second. It secretes a bit of mucus that coats the ground beneath and helps it to move along. This snail we are interested in now has a problem with this secretion and so it moves one mm in the first second and in the subsequent seconds it moves only half the distance

covered in the prev second. Algae, the good it cherishes, is at 3 mm distance from this snail. In how much time it will reach its food.

a. It will never reach its food
b. 2.5 seconds
c. 2.7685 seconds
d. 3 seconds

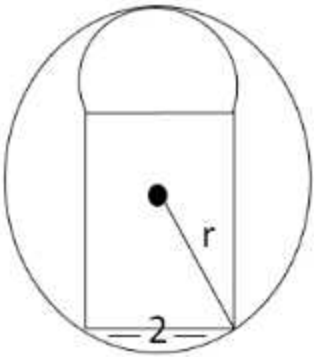
Answer: It will never reach it food

9. The muzzle velocity of a bullet in 5.56 INSAS rifle (Indian version of AK47) is 882 meters/sec. A sergeant holds this rifle facing the sky and shoots a bullet. What's the bullet's maximum reachable altitude? Assume g = 9.8 m/sec/sec. Write your answer as numeral without any other character.
   Hint: v^2 = u^2 + 2gs
   Answer: 39690

10. Ahilyanagari Express running at a speed of 60 kmph and Cholan Express at 120 kmph take 10 seconds to cross each other, when they are running in opposite directions (these two trains operate in the same route only as a mathematical fantasy and not in reality). If Cholan express is 120 metres longer than Ahilyanagari Express, what's the length in meters of the latter?
    Answer: 190

11. A police car starts chasing a fugitive in a BMW 4 hours after the BMW escapes from the scene of crime at 10 AM. The BMW drives for 10 Km through 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 5 hours. By this time the moon was up in the sky for 4 hours. If the average speed of the police car is 50 kmph, then the average speed of the BMW is _____ kmph.
    Answer: 27.79

12. A semicircle is drawn on one of the sides of the square with the side of the square as the diameter of the circle. If the length of the side of the square is 2 cm. What is the radius of the smallest circle that can contain this figure?



Write your answer in fractions.
Answer: 17/8

13. Bhaskar and Shakuntala challenge each other in math and are at loggerheads always. At the end of a milestone in their project, the team had a dinner and were seated in a circular table. If there were 16 people for dinner, what are the odds against the event that Bhaskar and Shakuntala will sit together(Give the answer as a:b)
Answer: 13:2

DAY 1, SLOT 2 –

1. The expression 3(x^2)-mx+10 leaves a remainder of -2 when divided by x-3. What's the value of m?

Answer: 13

2. 12 litres of water is poured into an aquarium of dimensions 50 cm length, 30 cm breadth and 40 cm height. By what height (in cm) will the water rise?

a. 10
b. 8
c. 20
d. 6

Answer: 8

3. Two finals are scheduled - The Wimbledon match and the World Cup Cricket at the same time. Anu wants to watch the Wimbledon finals and her brother Vinu wants to watch WCC final. They decide to roll a tetrahedral die twice. The tetrahedral is numbered 1,2,3,4 on its four sides and all numbers are equally likely to appear. Anu rolls first and then Vinu rolls. If the number on the first roll is strictly

greater than the number on the second roll. Anu wins and gets to watch Wimbledon. What is the probability that Anu will get to watch Wimbledon?

a. 7/16
b. 9/16
c. ⅜
d. ½

Answer: ⅜

4. An electrical circuit has:

- A power source
- A resistor R and;
- Three parallelly connected resistors each of value 3R.

All these connected in series. If the current flowing through the circuit is five amperes, what will be its value, if R is doubled and each of 3R is halved?
Answer: 4 amps

5. Twin brothers Lava and Kusha wrote the TCS NQT test. While Lava scored 45% and got 4 marks below the cut off, Kusha scored 60% and got 8 marks above cut-off and got selected for interview. What was the maximum marks in the test?
Answer: 80

6. Ms Trikonapriya wants to decorate her abode's frontage with a triangular lawn. The two sides of this lawn are of five and six meters, subtending an angle of 30 degrees. If the lawn maintainer charges Rs.10 per square meter, how much would Trikonapriya pay to him for the entire lawn? You answer should contain only the numeric value.
Answer: 75

7. Bhaskar wanted to send some documents to Shakuntala. He had her address without the 6-digit pin code. He didn't want to risk sending documents without pin code. So, he called Shakuntala. She did not give the pin code directly, she said, "The first four digits are 1910 in hexadecimal and the last four digits are 3177 in octal". Bhaskar could courier the documents now. What is her pin code?
Answer: 641663

8. If it takes 10 3D printers 10 minutes to print 10 models, how long will it take 100 printers to print 100 models?
Fill the correct answer in minutes. ___

Answer: 10minutes

9. Eighty cricket balls have been packed equally into two bags A and B. 20 of these balls have been signed by Kapil Dev - some of the signed balls are in bag A and the rest in bag B. One bag is selected and a ball is randomly picked from that. Given that the ball is signed, the probability that it is from Bag B is computed to be ⅖. If bag A is twice more likely to be selected than Bag B, how many of the signed balls are in Bag B?
Answer: 16

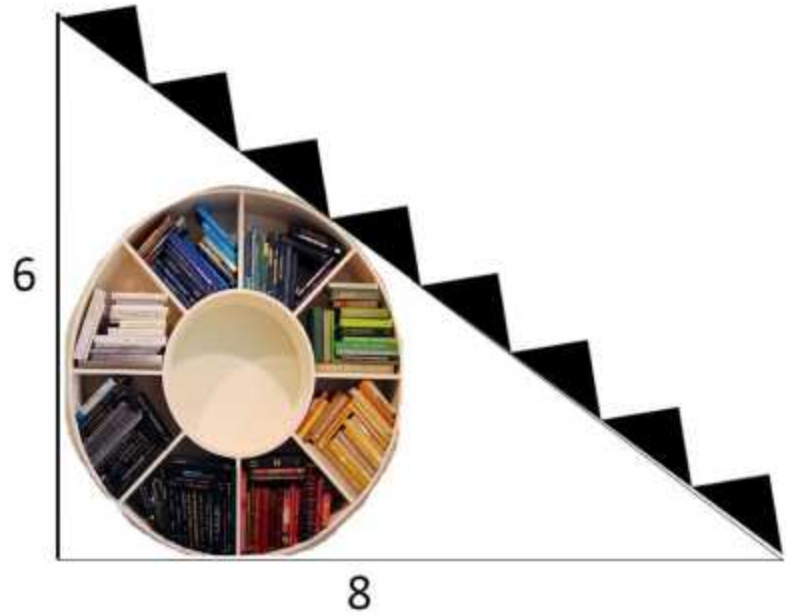
10. In the normal course, Ravi, Sanjay and Mukund can each individually build a wall in 5, 8 and 10 days respectively. Due to difficult terrain and slushy conditions at the site, the individual time required for each to complete the work has increased by 20%, 25% and 50% respectively. How long will they take to build the wall if they work together?
a. 3 days
b. 4 days
c. 6 days
d. 2 and 6/17 days
Answer: 3 days

11. The difference between the ages of two of my three grandchildren is 3. My elder 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?
a. 10
b. 12
c. 15
d. 13
Answer: 15

12. If company A sells a service for Rs. 50 per hour then which of the following could be a revenue function for company A?
a. R(t) = 50*t
b. R(50) = 50+t
c. R(t) = 50 +t*t
d. R(t) = 50 + t

Answer: 50*t

13. There is a circular bookshelf under a stair in a Govt. library. The wall is 6 ft. height, the distance of the base of the stairs from the corner of the room is 8ft. What is the radius of the circular bookshelf in feet?



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

14. Your friend places 100 cards in a row, one of which contains the Jack of Clubs that you need to guess. You pick the card at position 15. The host removes all the cards except the card chosen by you at position 15 and another card at position 87. He now says, "One of these two cards is the Jack of Clubs". What is the probability that the card is at position 87?

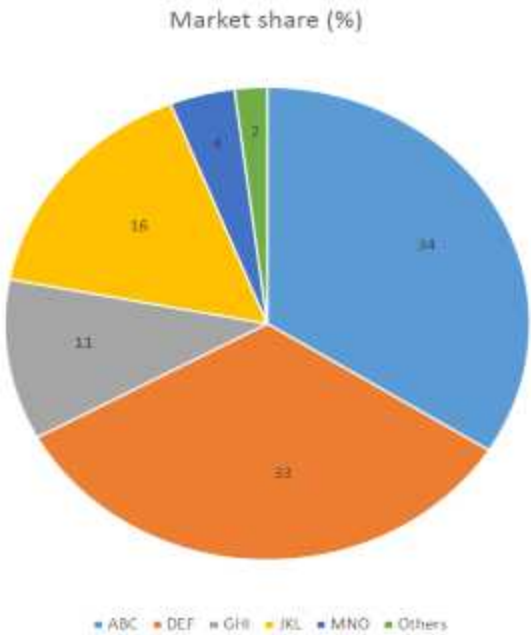
a. 0.01
b. 0.5
c. 0.98
d. 0.99
Answer: 0.99

15. 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?

a. 10
b. 12

c. 15
d. 13
Answer: 15

16.



Here is a pi-chart showing the market share of a set of banks.
If the value of the market share of DEF is 6600 Cr, what is the market share of ABC and JKL together?
a. 15000 Cr
b. 8000 Cr
c. 10000 Cr

Answer: 10000 Cr

DAY 1, SLOT 1 –

1. In a country, 60% of the male citizen and 70% of the female citizen are eligible to vote. 70% of the male citizens eligible to vote voted, and 60% of female citizens eligible to vote voted. What fraction of the citizens voted during the election?
   a. 0.49
   b. 0.42

c. 0.48
d. 0.54

Answer: 0.42

2. A lady had some socks and hats in her closet - 17 blue, 47 red, and 24 yellow. The light are out and it is totally dark. In spite of the darkness, she can make out the difference between a hat and sock. She takes out an items out of the closet only if she is sure that it is a sock.How many socks must she take out to make sure she has two socks of each colour?

a. 73
b. 64
c. 57
d. 55

Answer: 73

3. In function P(x,y) = 85x - (50y + 150000). What value indicates the increase in P that corresponds to increase in x, when y is kep a constant?

a. 85
b. 135
c. 35
d. 50

Answer: 85

4. A clock is started at noon. By 10 minutes past 5, the hour hand has turned through.

a. 155 degree
b. 145 degree
c. 160 degree
d. 150 degree

Answer: 155 degree

5. Ram Speaks truth 40% of the time and Laxman speaks truth 60% of the time. Percentage of cases Ram and Laxman are likely to contradict each other in stating the same fact is_____:
Answer: 52%

6. Dimensional analysis plays an important and useful role in physics. Mass is denoted by M, length by L and time by T. So, momentum of a particle, which is a product of its mass and velocity has a dimension of MLT(velocity is distance/time

which is length/time). In a given physical education, the left hand side and right hand side must have the same dimensions.

Kinematic viscosity (k) of a fluid is a measure of its resistive flow under gravity's influence. It's given by the equation.

k=n/d where

n is dynamic viscosity; its dimension is Force Time / Area

d is density (mass/volume)

What's the dimension of kinematic viscosity?

a. L^-2T^-2

b. L^-2T

c. LT^-2

d. L^2T^-1

Answer: L^2T^-1

7. In function P(x,y) - 85x-(50y+150000).What value indicates the increase in P that corresponds to an increase in x, when y is kept constant?

a. 85

b. 135

c. 24

d. 50

Answer: 85

8. Uma has 50 red and 50 blue balls. She has two bowls with her. She has to distribute the balls in these two bowls in such a way that none of the bowls are left empty. If one were to choose one of the two bowls at random and them randomly draw a ball from it, the probability of the ball being red is maximized. After this distribution, there will be a total of _____ balls in the bowl with a larger number of balls.

Answer: 99

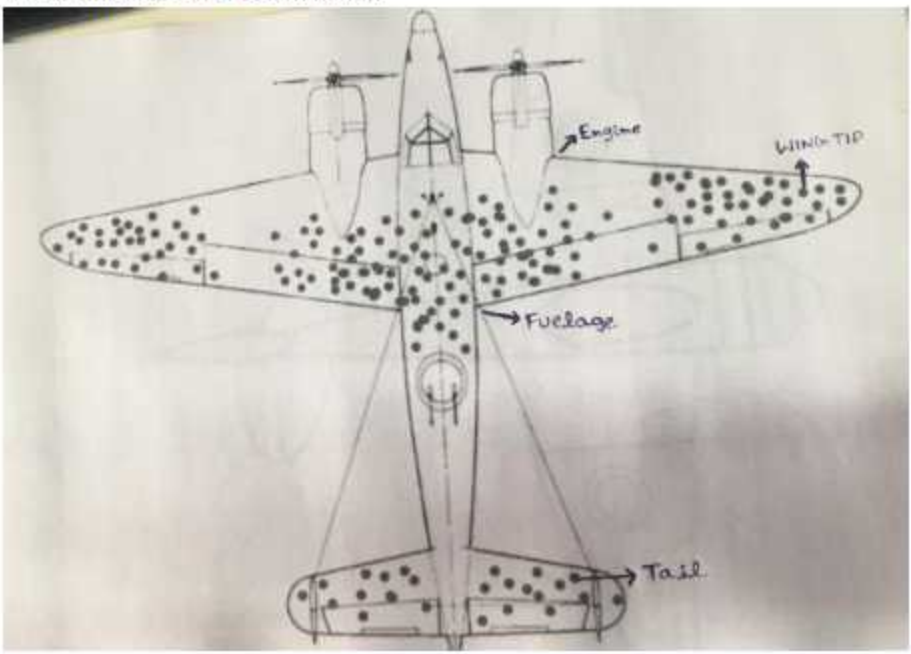
9. Bhaskar called his friend Shakuntala to celebrate his wedding anniversary. Shakuntala reached the street where he was living but forgot the door number. She called baskar for his door number. Being a geek in Maths he didn't give the door number directly. But told this " It is the middle number of the three numbers where the difference between first and second numbers is same as that between second and third. The product of first and last is 273 and sum of all three is 51." Shakuntala reached his house on time. His door number is?

Answer: 17

10. A Volvo bus from Chennai to Bangalore has 5 stops in between. At each stop half of the people will get down. After reaching Bangalore there are only 2 people left out. How many people are there in the bus at starting?

Answer: 64

11. The figure below depicts the damage done to aircrafts that had returned their base from missions in World war 2. The bullet holes per square foot in the Tail, Wingtips, Fuselage, and Engine are 1.1, 1.5, 1.8, and 0.2 respectively. Where does the airforce need to primarily reinforce the aircraft to minimize losses to enemy fire and to maximize their return home?



Answer: Engine

12. There is a horse and a saddle. The sum of their cost is Rs.1100 the cost of the horse is Rs.1000 greater than saddle. What is the cost of saddle?
Answer: Rs. 50

Programming Logic –

DAY 2, SLOT 1 –

1. What is the output of the following Java program?

```
Class Super
{
Static String greeting() {return "Goodnight";}
String name() {return "Ram";}
}
Class Sub extends Super
{
Static String greeting () {return "Hello";}
String name() {return "Bheem";}
}
Public class Test
{
Public static void main {String[]args)
{
Super s=new Sub();
System.outprintln(s.greeting()+","+s.name();
}
}
```

Answer: Good night Bheem

2. Consider the following recursive function that returns the LCM of two given number.

```
int Findlcm(int a, int b) { //line 1
int x =1; //line 2
        if(x%b == 0 && x %a == 0 ) ?? line 3
        return x; //line 4
        x++; //line 5
        Findlcm(a,b); //line6
        return x; //line7
} //line 8
```

If there is no error in the above code enter 0 else enter the line number which is wrong.
Answer: line 2

3. In the class declaration given below, which keyword attached to variables foo, boo and coo will ensure that compiler will NOT optimize their storage and access?

```
class A {
int foo, boo, coo;
// Other declaration
```

};

a. static
b. volatile
c. strict
d. register

Answer: volatile

4. The function pallap() defined below takes a string as an argument and returns a boolean value.

```
bool pallap(string pinput)
{
        ispal = true
        i = 0
        j = length(pinput) - 1
        While (i < j)
{
        If (pinput(i) != pinput(j))
        {
                ispal = false
        }
        i = i + 1
        j = j - 1
}
return ispal
}
```

In the above function != indicates "is not equal to".
If spacecaps = pallap("spacecaps"), lived = pallap("lived") and we_sew = pallap("we_sew") then

A. spacecaps is true, lived is false and we_sew is true
B. spacecaps is false, lived is true and we_sew is true
C. spacecaps is true, lived is false and we_sew is false
D. spacecaps, lived and we_sew are all true

Answer: spacecaps is true, lived is false and we_sew is false

5. Multiplication is repeated addition. Exponentiation, represented by a single up-arrow is repeated multiplication. So the next operation is repeated exponentiation. Donald Knuth thereby developed an ingenious system that allows this process of

compounding the better-known arithmetic operations defining infinitely many more levels of arithmetic operations.

If a single arrow(^) represents iterated multiplication(exponentiation)
2^4 = 2*(2*(2*2)) = 16,
Double arrow represents iterated exponentiation (tetration)
2^^4 = 2^(2^(2^2)) = 65536,
Triple arrow represents iterated tetration (pentatoin)
2^^^4 = 2^^(2^^(2^^2)),
What is 5^^2?

a. 3125
b. 9765625
c. 25
d. 625
Answer: 9765625

6. Find the output.

```
#include<stdio.h>

#include<string.h>
int how_are_you(const char *s, const char *t) {
        const char *s1 = s;
        while(*s)
        {
                if(strncmp(s,t,strlen(t))==0) return s-s1;
                s++;
        }
        return -1;
}

int main() {
        char *s         = "How many apples?";
        printf("%d", how_are_you(s,"many"));
}
```

Answer: 4

7. What's the total number of non-zero elements in **combined**, if the following program runs to completion? Write your answer as a **numeral without any leading or trailing blank spaces.**

```
#include<vector>
#include<algorithm>
#include<iostream>
using namespace std;
int main() {
        int a[] = {5,7,8,10,12,14,16};
        int b[] = {8,10,12,14,20,24,26};
        vector<int> combined(15);
        set_union(a, a+7, b,b+7,begin(combined));
}
```

Answer: 10

8. How many elements would be present in **my_elements,** after the following program runs to completion? Write your answer as a numeral without any **leading or trailing blank spaces**

```
#include<deque>
#include<iostream>
using namespace std;
int main ()
{
        deque<int> my_elements = {10, 20, 30};
        deque<int>::iterator it = my_elements.emplace(begin(my_elements)+1.100);
my_elements emplace (end(my_elements), 300);
}
```

Answer: 6

DAY 1, SLOT 4 –

1. What's the total number of integers that are duplicates in the array results? Write your answer as a numeric value.

```
int i,j, results[20];
for(i=1,j=0; i<=20; i++) {
        if((i%3) == 0) results[j++] = i;
        if((i%6) == 0) results[j++} = i;
}
```

Answer: 3

2. What must be the output of the following program?

```
#include<vector>
#include<iterator>
#include<algorithm>
#include<iostream>

using namespace std;
int main() {
vector<string> list1 = {"five", "four", "one","three", "two"};
vector<string> list1 = {"Five", "One", "four", "three", "two"};
set_intersection(list1.begin(), list1.end(), list2.end(), ostream_iterator<string>(cout
""))
}
```

Answer: four three two

3. In the class hierarchy given below, which keyword attached to variables foo, boo and coo will make them inaccessible in class B?

```
class A {
        int foo, boo, coo;
        // Other declarations
};
class B: public A{
// Declarations
};
```

a. Volatile
b. Private
c. Static
d.

Answer: Private

4. Given the following function definition

```
int mystery1(int x, int y) {
        if(x<=y) return x;
        else
        return mystery1(x-y, y);
}
```

What would be the return value of this function call mystery1(15,5)?

a. 10
b. 5

c. 15
d. 0

Answer: 5

DAY 1, SLOT 3 –

1. What is the output of the following program?

```
#include<iostream>
using namespace std;
class PM{
public: void designation() {cout << "PM";}
};
class CEO{
public:
        CEO() {pmPtr = new PM; }
        PM *operator -> () {return pmPtr;}
        void designation() {cout << "CEO";}
        private: PM *pmPtr;
        void designation() {cout << "CEO";}
        private : PM *pmPtr;
};
int main() {
        CEO*ceoPtr;
        ceoPtr = new CEO;
        ceoPtr ->designation();
        delete ceoPtr;
}
```

Answer: CEO

3. The output when the following code is executed is

```
#include<stdio.h>

int main(){
int x=2;
if(x--, --x, x)
printf("TCS TNQT exam");
else
printf("TCS Ninja exam");
return 0;
}
```

a. Compilation error - invalid if statement
b. TCS Ninja exam
c. Run time error
d. TCS TNQT exam

Answer: TCS Ninja exam

4. What is the equivalent while loop for the for loop given below?

```
for(int i =0, j=5; k=10; i<10; i++,j+=5)
        {
                printf(j);
        }
```

a.
```
i=0;
j=5;,k=10;
while(i<k)
{
        j=j+5;
        i=i+1;
        printf(j);
}
```

b.
```
i=0;
j=5;,k=10;
while(i<j+5)
{
        printf(j);
        j=j+5;
        i=i+1;
}
```

c.
```
i=0;
j=5;,k=10;
while(i<10)
{
        printf(j);
        j=j+5;
        i=i+1;
}
```

d.
```
i=0;
j=5;,k=10;
while(i<10){
        j=j+5;
        i=i+1;
```

```
        printf(j);
    }
```

Answer:

```
    i=0;
    j=5;,k=10;
    while(i<10)
    {
        printf(j);
        j=j+5;
        i=i+1;
    }
```

5. In C, there are functions like putchar(int c), fputc(int FILE*), write (int, const void*, size_t),.... In an object oriented programming language like C++, all these functions can have the same name like write(int c), write(int, const void*, size_t). This feature is called:
   a. Function prototyping
   b. Function modularizing
   c. Function overloading
   d. Function grouping

Answer: Function overloading

6. The following program is supposed to find the number of terms in the array **num array.** What should be written in the missing last __ before the while loop's ckosing brace? Write your answer **without any leading, trailing, interspersed blank spaces or semicolons.**

```
int num_array[ ] = {17, 20, 23, 26, 29, 32, 35};
int count = 0;
while {count < sizeof(num_array/ num_array[0])) {
    printf("%d", num_array[count]);
    //Replace this commented line with the required C statement. No semicolon.
}
printf("There are %d elements in the array \n", count);
```

Answer: count++

7. If the user input to the following program is "a b c -99" (without quotes), what's the output?

```
#include<queue>
#include<string>
```

```
#include<iostream>
using namespace std;
int main()

{
priority_queue<string>q;
string word,end = "-99";
while(cin>>word) { // a b c -99
    if(word == end) break;
    q.push(word);
}
    while(q.size[]) {
    cout<<q.top();
    q.pop();
    }
}
```

Answer: cba

DAY 1, SLOT 2 –

1. What is the output of the following Java program?

```
public class MyThread extends Thread
{
        public void run()
        {
                System.out.println("Before");
                this.stop();
                System.out.println("After");
        }
public static void main (String[]args)
        {
                MyThread a=new MyThread();
                a.start();
        }
}
```

Answer: Before

8. What is the value of **result** in the following C program?

```
int a = -10, b = -5, flag = 1, result = 0, i;
int x = abs(a); int y = abs(b);
for(i=1; i<=x; i++)
        result + =y;
```

```
if((a>=0 && b<0) || (a<0 && b>=0))
        Flag = -1;
result *= flag;
```

Answer: 50

9. In a class diagram, there is an arrow that starts at A and points at B. It means:

a. A is the parent class of B
b. B is the parent class of A
c. A and B are loosely coupled
d. A and B are tightly coupled

Answer: B is the parent class of A

10. What is the length of the string displayed by the following program?

```
#include <iostream>
using namespace std;
string do_something(string s)
{
        char char_array[]=";.;";
        size_t p1=s.find_first_not_of(char.array);
        size_t p2=s.find_first_of(char_array,p1);
        return s.substr(p1,p2-p1-1);
}
```

Answer: 13

11. What is the value of **maximum**, if the following segment runs to completion?

```
#include<limits.h>
int main()
{
int i=0, maximum = INT_MAX;
        Int numbers[] = {923, 948, 988, 981, 167, 899, 200, 910, 999};
        while(i<sizeof(numbers)/sizeof(numbers[0]))
        {
if (maximum<numbers[i]) maximum=numbers[i]; i++;
}
}
```

Answer: 2147483647

12. The **for** loop below computes **97+94+91+...+4**.
Replace the question mark (???) appropriately to complete the code snippet.

```
int i = 97, sum;
for (sum = 0; i > = 4; i = ???) sum += i;
```

Your answer should not contain any blank space.

Answer: i-3

13. What's the output of the following program?

```
#include<cctype>
#include<iostream>
#include<algorithm>
using namespace std;
bool which (char c) {return isspace(c);}

int main()
{
char s[] = "How far is Chennai?";
char *p1 = s;
char *p2 = s + sizeof(s)/sizeof(char);
p2 = remove_if(p1,p2,which);
for(char *p = p1; p! = p2; p++)
cout << *p;

}
```

Answer: Howfarischennai?

14.

DAY 1, SLOT 1 –

1. What is the output of the following Java program?

```
Class Super
{
Static String greeting() {return "Goodnight";}
String name() {return "Ram";}
}
Class Sub extends Super
{
Static String greeting () {return "Hello";}
String name() {return "Bheem";}
}
Public class Test
```

```
{
Public static void main {String[]args)
{
Super s=new Sub();
System.outprintln(s.greeting()+","+s.name();
}
}
```

Answer: Good night Bheem

2. What is the value of result in the following C Program?

```
Int a-17, b=5, flag=1, result;
int x=abs(a),int y=abs(b);
for(result=0lx>y;result++)
x=y;
if((a>=0&&b<0)||(a<0&&b>=0))
flag=1;
result*=flag;
```

Answer: 3

3. The function pallap() defined below takes a string as an argument and returns a boolean value.

```
bool pallap(string pinput)
{
        ispal = true
        i = 0
        j = length(pinput) - 1
        While (i < j>
{
        If (pinput(i) != pinput(j))
        {
                ispal = false
        }
        i = i + 1
        j = j + 1
}
return ispal
}
```

In the above function != indicates "is not equal to".

If redder = pallap("redder), stressed = pallap("stressed = pallap("stressed") and party_trap = pallap("party_trap") then

Answer: Redder is true stressed is false party_trap is false

4.
```
#include<algorithm>
using namespace std;
class SubFunction
{
public:
        bool operator()(const string & a, const string & b) {return a>b;}
};
int main ()
{
        vector <string> v={"abc","def","ghi","jkl","mno","pqr","stu",vwx","yz"};
        sort{begin(v),end(v),SubFunction()};
        copy(begin(v),end(v),ostream_iterator<string>(cout,"\n"));
}
```

Answer:
yz
vwx
stu
pqr
mno
jkl
ghi
def
abc

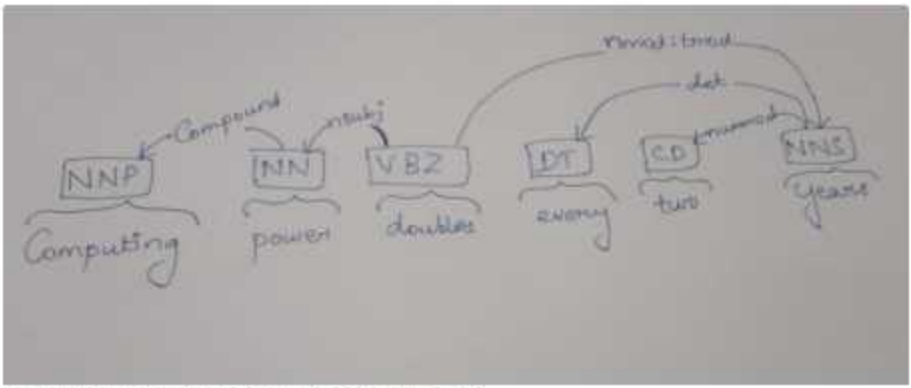
5. What is the value of minimum, if the following segment runs to completion?

```
#include<limits.h>
int main()
{
        int i =0, minimum = INT_MIN;
        int number[] = {23, 48, 98, 1, 6, 8, 200, 10},
        while (i < sizeof(numbers)/sizeof(numbers[0])) {
                if(minimum > numbers[i]) minimum = numbers[i]; i++;
        }
```

}

Answer: Minimum value is INT_MIN = -2147483647

6. The picture represents a parse free generated according to a specified grammar for the following sentence.
"Computing power doubles every two years"



How many leaf nodes are there for this tree?

a. 4
b. 3
c. 2
d. 5

Answer is 4.

7. What is the fourth line of output in the following C++ programme?

```
#include<vector>
#include<iterator>
#include<iostream>
#include<algorithm>
using namespace std;
Class SubFunction
{
public:
        bool operator()(const string &a, const string &b) {return a>b;}
};
int main()
{
        vector<string> v = {"abc", "def", "ghi", "jkl", "mno", "pqr", "stu", "vwx", "yz"};
```

```
        sort(begin(v), end(v), SubFunction());
        copy(begin(v), end(v), ostream_iterator<string>(cout, "\n"));
}
```

Answer: fourth line of the output is pqr

8.

```
{
        // In the following initialization sequence, English character 'O' is not used
        String s[] = {"1234", "56789", "234a", "189b1", "089*3" };
        for (int i = 0; i < sizeof(s)/sizeof(s[0])); i++{
                auto pos = s[i]. find_first_not_of("0123456789"); // 0 is numerical zero
                If (s[i]. length() == 4 && pos == string::npos) continue;
                else cout << "Invalid guess!\n";
        }
}
```

Answer:
Invalid Guess!
Invalid Guess!
Invalid Guess!
Invalid Guess!

Coding

DAY 2, SLOT 1 –

NOTE: Once you have selected your programming language, click on the checkbox beside it to start coding.

To zero or not to zero

Problem statement

Given a pair of positive integers m and n **(m < n; 0 < m < 999; 1 < n < = 999)**, write a program to smarty affix zeroes, while printing the numbers from **m** to **n.**

Example-1
Input
5 10
Expected output
05 06 07 08 09 10

Example-2

Input
9 100
Expected output
009 010 011 012 013 014 015 016 017 018 019 020 021 022 023 024 025 026 027 028 029 030 031 032 033 034 035 036 037 038 039 040 041 042 043 044 045 046 047 048 049 050 051 052 053 054 055 056 057 058 059 060 061 062 063 064 065 067 068 069 070 071 072 073 074 075 076 077 078 079 080 081 082 083 084 085 086 087 088 089 090 091 092 093 094 095 096 097 098 099 100

Example-3
Input
1 9
Expected output
1 2 3 4 5 6 7 8 9

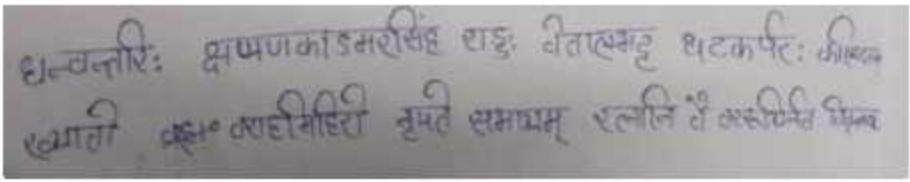
Correct code in C:

```
#include <stdio.h>
int main()
{
   int up,low;
   scanf("%d %d",&low,&up);
   for(int i=low; i<=up; i++)
   {
      if(up>=100)
         printf("%03d ",i);
      else if(up>=10)
         printf("%02d ",i);
      else
         printf("%d ",i);
   }
   return 0;
}
```

DAY 1, SLOT 4 –

A Sober walk

Problem statement
Our hoary culture had several great persons since time immemorial and king vikramaditya's nava ratnas (nine gems) belongs to this ilk. They are named in the following shloka:



Among these, Varahamihira was an astrologer of eminence and his book Brihat Jataka is reckoned as the ultimate authority in astrology. He was once talking with Amarasimha, another gem among the nava ratnas and the author of Sanskrit thesaurus, Amarakosha. Amarasimha wanted to know the final position of a person, who starts from the origin 0 0 and travels per following scheme.

He first turns right and travels 10 units of distance
His second turn is upward for 20 units
Third turn is to the left for 30 units
Fourth is downward for 40 units
Fifth turn is to the right (again) for 50 units
.... And thus he travels, every time increasing the travel distance by 10 units.

While Varahamitra could use his astrology skills to predict movement based on planetary positions, use your programming expertise to print the final position, given the nu,mber of turns (n); **2<=n<=1000**

Input-1
3
Expected output
-20 20

Input -2
4
Expected ouput
-20 -20

Correct code in C:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
   int n;
   scanf("%d", &n);
   char c = 'R';
   int x = 0, y = 0;
```

```
  while(n){
    switch(c){
      case 'R':
        x = abs(x) + 10;
        y = abs(y);
        c ='U';
        break;
      case 'U':
        y = y + 20;
        c = 'L';
        break;
      case 'L':
        x = -(x + 10);
        c = 'D';
        break;
      case 'D':
        y = -(y);
        c = 'R';
        break;
    }
    n--;
  }
  printf("%d %d", x, y);
}
```

DAY 1, SLOT 3 –

Sweet seventeen

Problem statement

Given a maximum of four digit to the base 17(10 -> A, 11 -> B, 12 -> C, 16 -> G) as input, output its decimal value.

Input - 1

1A

Expected Output

27

Input - 2

23GF

Expected Output

10980

Correct code in C:

```
#include <stdio.h>
#include <math.h>
#include <string.h>

int main()
{
   char hex[17];
   long long decimal, place;
   int i = 0, val, len;
   decimal = 0;
   place = 1;
   scanf("%s",hex);
   len = strlen(hex);
   len--;
   for(i=0; hex[i]!='\0'; i++)
   {
      if(hex[i]>='0' && hex[i]<='9')
      {
         val = hex[i] - 48;
      }
      else if(hex[i]>='a' && hex[i]<='g')
      {
         val = hex[i] - 97 + 10;
      }
      else if(hex[i]>='A' && hex[i]<='G')
      {
         val = hex[i] - 65 + 10;
      }

      decimal += val * pow(17, len);
      len--;
   }
   printf("%lld", decimal);

   return 0;
}
```

Correct code in Python:

```
def val(c):
```

```
        if c >= '0' and c <= '9':
                return ord(c) - ord('0')
        else:
                return ord(c) - ord('A') + 10;

def toDeci(str,base):
        llen = len(str)
        power = 1
        num = 0


        for i in range(llen - 1, -1, -1):

                if val(str[i]) >= base:
                        print('Invalid Number')
                        return -1
                num += val(str[i]) * power
                power = power * base
        return num


strr = input()
base = 17
print(toDeci(strr, base))
```

DAY 1, SLOT 2 –

Oddly even

Given a maximum of 100 digit numbers as input, find the difference between the sum of odd and even position digits.

Input #1:

4567

Expected output:

2

Explanation

Sum of odd position digits 4 and 6 is 10. Sum of even position digits 5 and 7 is 12. The difference is 12-10=2.

Input #2:
9834698765123
Expected output:
1

Input #3:
5476
Expected output:
2

Correct code using Java:

```
import java.util.Scanner;

public class Ex2 {
public static void main(String[] args) {
        Scanner s=new Scanner(System.in);
        long a=s.nextLong();
        long temp=a;
        int flag=0,even=0,odd=0;
        String aa=String.valueOf(temp);
        int len=aa.length();
        while(a>0)
        {
                long rem= a%10;
                a/=10;
                if(len%2==0)
                {
                        if(flag==0)
                        {
                                even+=rem;flag=1;
                        }
                        else if(flag==1)
                        {
                                odd+=rem;flag=0;
                        }

                }
                else
                {
                        if(flag==0)
                        {
```

```
                    odd+=rem;flag=1;
                }
                else if(flag==1)
                {
                    even+=rem;flag=0;
                }
            }

        }
        int sum=odd-even;
        if(sum<0)
        {
            sum=-sum;
        }
        System.out.println(sum);
}
}
```

DAY 1, SLOT 1 –

NOTE: Once you have selected your programming language, click on the checkbox beside it to start coding.

Word is key

Problem statement

One programming language has the following keywords that cannot be used as identifiers:

break, case, continue, default, defer else, for, func, goto, if, map, range, return, struct, type, var

Write a program to find if the given word is a keyword or not

Example-1

Input

defer

Expected Output

defer is a keyword

Example-2
Input
While
Expected Output
while is not a keyword

Correct code using C–

```
#include<stdio.h>

#include<string.h>

int main()

{

        char
str[16][10]={"break","case","continue","default","defer","else","for","func","goto","if"
,"map","range","return","struct","type","var"};

        char input[1][20];

        int flag = 0;

        scanf("%s",input);

        for(int i = 0;i<strlen(str);i++)

        {

                if(strcmp(input,str[i])==0)

                {

                        flag = 1;

                        break;

                }

        }

        if(flag == 1)

        {

                printf("%s is a keyword",input);

        }
```

```
        else
        {
                printf("%s is not a keyword",input);
        }
}
```

Correct code using Java –

```
import java.util.Scanner;

public class Ex1 {
public static void main(String[] args) {
        String[]
a={"break","case","continue","default","defer","else","for","func","goto","if","map","r
ange","return","struct","type","var"};
        String b;int flag=0;
        Scanner s=new Scanner(System.in);
        b=s.next();
        for(int i=0;i<10;i++)
        {
          if(a[i].equalsIgnoreCase(b))
          {
            flag=1;
          }
        }
        if(flag==1)
        {
          System.out.println(b+" is a keyword");
        }
        else{
          System.out.println(b+" is not a keyword");
        }
}
}
```

Correct code using Python –

```
keyword ={"if","else","break","case","goto","continue","return","range"}
inp = input()
```

```
if inp in keyword:
    print("Given string is keyword")
else:
    print("not a keyword")
```