TATA CONSULTANCY SERVICES

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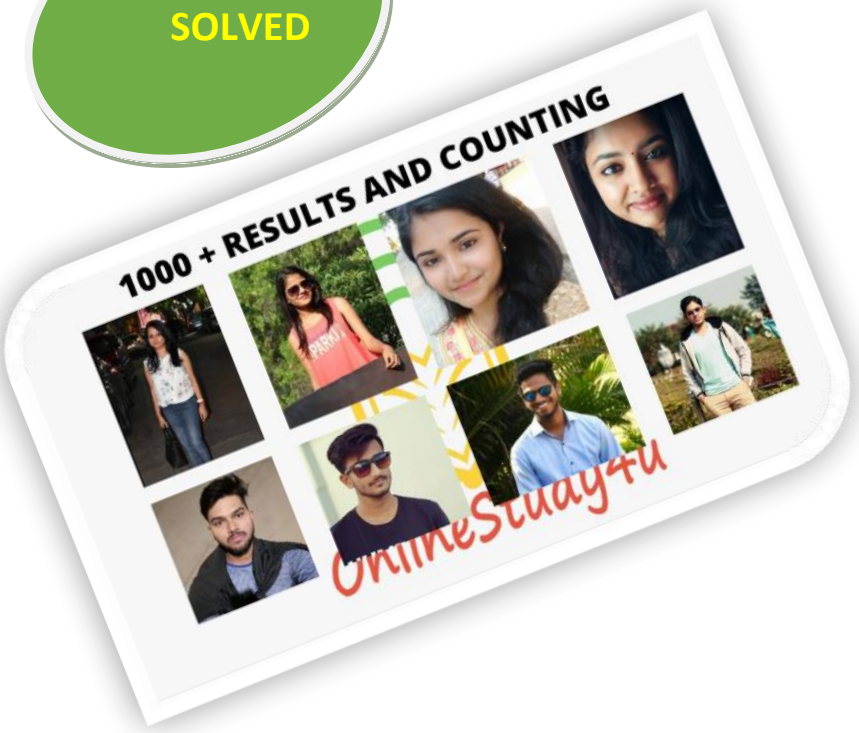
Comprehensive Aptitude,Reasoning & Coding Material for TCS

FULLY SOLVED



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(10 years IT exp.)

About the Material:

This material consists of **Fully solved** TCS Previous year questions and solutions, practice questions are the questions from different placement exams.

It has 400+ Previous year and practice questions.

This material is prepared by "Pratik Shrivastava" Sir an Ex. TATA Employee who has been teaching Aptitude and Reasoning for placement Exams from last 10years. He is having 10 years of IT industry experience.

The Programming/coding questions has been prepared by Mr. Shridhar Sir and He is having vast experience in this field and has been a part of many placement recruitments across the colleges in Bangalore and has delivered his lectures in top IIMS.

Coding Questions contains MCQ's and 30minutes Coding challenges for TCS exams.

This material will give you an idea of the current trend of the problems asked in the TCS, and accordingly you can plan your preparation. We have tried to keep the at most accuracy while making this pdf file, any suggestion and feedback please write a mail to onlinestudyu@gmail.com or connect us on whatsapp at +91 8088452760.

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Important concept in Averages

1.Average = $\frac{Sum}{Number}$

Average of 1,2,3,4,5

Average = $\frac{1+2+3+4+5}{5} = \frac{15}{5} = 3$

2. Average of continuous number = $\frac{First\ no + Last\ no}{2}$

Eg: Average of 1,2,3,4,5

Average = $\frac{1+5}{2} = \frac{6}{2} = 3$

3. Average of a number with common difference same = $\frac{First\ no + Last\ no}{2}$

Eg: 3,5,7,9,11

Average = $\frac{3+11}{2} = \frac{14}{2} = 7$

Average will be always between Minimum and Maximum value excluding minimum and maximum value(and it will be equal when all values are equal)

Minimum < Average < Maximum

Before finding the Average arrange the numbers in Ascending order.

Concept based on Profit and Loss !

Cost Price-The price at which an article is purchased is called its cost price (C.P.)

Selling Price-The price at which the article is sold is called its selling price (S.P.)

Marked Price- The price which is marked for the article.

If the cost price (C.P.) of the article is equal to the selling price (S.P.), Then there is no loss or gain.

If the selling price (S.P.) > cost price (C.P.), then the seller is said to have a

profit or gain, Gain or Profit = S.P. - C.P.

If the cost price (C.P.) > selling price (S.P.), then the seller is said to have a loss, Loss = C.P. - S.P.

1. % profit = profit/CP * 100
2. % profit= (SP – CP) /CP * 100
3. % profit = profit /CP * 100
4. %loss= loss/CP*100
5. SP = CP * (100+ %profit) /100
6. SP = CP * (100- %loss) /100

Concept on Problems on Trains and Time,Speed and Distance:

Concept1 :

Distance = Speed * Time

D = S*T

-> Conversion of km/hr into m/s:

Km/hr --- 1 km =1000m and 1hr=3600sec

1000/3600 = 5/18

a) So km/hr can be converted into m/s multiplying by 5/18.

b) m/s can be converted to km/hr multiplying by 18/5.

Concept2 :

Relative Speed:

If two train moving in same direction with a speed of S1 and S2 respectively.

Then the Relative speed will be = S1 – S2

Note : S for same and S for Subtraction.

If two train moving in opposite direction with a speed of S1 and S2 respectively.

Then the Relative speed will be = S1 + S2

Concept3 :

Distance:

If a train of length l1 crosses another train of length l2/ a bridge of length l2/ platform of length l2 then the total distance = l1 + l2.

If a train of length l crosses a person or a lamp post then total distance = l (because the length of the person or lamp post will be treated as 0 w.r.to train length)

Concepts on Ages:

1). If the present age of a person is "x" years old.

Then the age 5years hence/after will be= "x+5".

Then the age 5years before/ago= "x-5".

2). If A ages after 2 years will be twice the age of B.

(A+2) = 2 (B+2)

3). If ratio of ages of A:B is 2:3, then in terms of value we can write.

A=2x years

B=3x years

Concept on Boats and Streams:

Suppose speed of boat/mans rate in still water = u km/hr

And speed of stream/current/river= v km/hr

Downstream speed(if boat and stream are moving in the same direction)

,a = u+v

Upstream Speed(if boat and stream are moving in the opposite direction) ,

b = u-v

Given that downstream speed= a km/hr and upstream speed=b km/hr Then speed of boat = ½(a+b) km/hr

Speed of stream= ½(a-b) km/hr

Concept Based on Simple and Compound Interest:

Suppose you deposit 100rs to the Bank on SI at rate of 10% for 3 years.

100 -----10%----- => 10

100- -----10%----- => 10

100------10%----- => 10

==========

Total 30rs interest bank will give you after 3years.

Simple interest is always calculated on principal.

Suppose you deposit 100rs to the Bank on CI at rate of 10% for 3 years.

100 ------10%-----=> 10 ----→ Now Amount= 100+10 = 110

110------10%------=> 11 ---→ Now Amount= 110+11= 121

121------10%------=> 12.1 → Now Amount = 121 +12.1 =133.1

==========

Total 33.1rs Interest bank will give you after 3years.

Compound interest is always calculated on Amount.

Simple Interest Formula:

SI = (P * R * T) /100

Compound Interest Formula:

CI = $P (1+ r/100)^n - P$

A = CI +P

CI = A – P =➔ $A = (1+ r/100)^n$

Now , In the Questions it might have told , Mr X invested an amount/Sum/money

Any kind of Investment --→ That means Principal

Now What is Amount : Suppose u invest 1000rs and you get a interest of 100rs ,

then at the end of 1 year you get : P(1000) + I(100) = A(1100)

So Amount will be always

Amount = Principal + SI/CI

Binomial Theorem Formula:

Compound Interest for 2years: 2a+ b

Where a = p * r /100

b = a * r/100

Compound Interest for 3years : 3a + 3b + c

Where a = p * r /100

b = a * r/100

c = b * r/100

(CI) – (SI) for 2years = $\frac{p*r^2}{100^2}$

(CI) – (SI) for 3years = $\frac{p*r^2(300+r)}{100^3}$

Concept on Number Systems:

A two digit number can be expressed as xy or 10x+y, and when we interchange the digits it becomes 10y+x.

A three digit number can be represented as 100x+10y+z and when we interchange the digits it becomes 100z+10y+x

Concept on Ratio and Proportion:

1.If ratio of salary of A:B is 2:3, then in terms of value we can write.

A=2x rs

B=3x rs

2.**FOURTH PROPORTIONAL:**

If a : b = c : d, then d is called the fourth proportional to a, b, c.

Example: Find the fourth proportional of the numbers 12, 48, 16.

Sol: Let fourth proportional is x. Now as per the concept above the product of extremes should be equal to the product of the means → 12/48 = 16/x → x = 64.

3.**THIRD PROPORTIONAL:** a : b = c : d, then c is called the third proportion to a and b.

Example; If 2, 5, x, 30 are in proportion, find the third proportional "x".

Sol: Here x is third proportional. According to the concept 2/5 = x/30 → x = 12.

Concept on Mixture and Alligation:

Mixture: Mixing of two or more than two type of quantities gives us a mixture. Quantities of these elements can be expressed as percentage or ratio.

(1) Percentage:- (20% of sugar in water)
(2) Fraction:- A solution of sugar and water such that (sugar : water = 1:4)

1. **Alligation:**

It is the rule that enables us to find the ratio in which two or more ingredients at the given price must be mixed to produce a mixture of desired price.

2. **Mean Price:**

The cost of a unit quantity of the mixture is called the mean price.

2.Suppose a container contains *x* of liquid from which *y* units are taken out and replaced by water.

After *n* operations, the quantity of pure liquid = $\left[x\left(1-\frac{y}{x}\right)^n\right]$ units.

Concepts on Clocks and Calendars:

Code for Month:

January - 0

February - 3

March -3

April -6

May - 1

June - 4

July - 6

August- 2

September - 5

October – 0

November – 3

December – 5

Example: What was the day on 15th august 1947 ?

{Date +Month + Year + Leap Year } / 7

Normal Year = 365 days and Leap year= 366 (Leap year should be divided by 4)

Step1: divide 47/4 = 11(quotient) that means 11 leap year.

Step2: date (15) + month(2) + year -last two digit(47) +11 = 75/7 = 5

5 means Friday.

1.Minute hand / Second hand / Hour hand

In 60 min minute hand will cover 360 degree. So in 1 min 360/60 = 6 degree

2.In 1 hr Minute hand and hour hand will coincide for 1 time.

In 12hr Minute hand and hour hand will coincide for 11 time.

In 24hr Minute hand and hour hand will coincide for 22 time.

3.Right Angle (90 degree) in an hour = 2times

Right Angle (90 degree) in 12 hour = 22times

Right Angle (90 degree) in 24 hour = 44times

Formula to calculate Angle

11/2 M = 30h ± θ ... where M=minute and θ= angle

Permutation and Combination:

Permutation is an arrangement of a group of objects where the order does matter.

Let's Understand this by few Examples.

- Let's say, I have to choose an alphabet. In how many ways can I chose?

The ans is 26 ways, because there are 26 alphabets.

- Okay. In how many ways can I chose a vowel?

The ans is 5 ways, because there are 5 vowels only.

- Okay. In how many ways can I chose a consonant?

The ans is 21 ways, because there are 21 consonants only.

The formula of permutations of 'n'

different things taken 'r' at a time is

nPr = n! / (n-r)!

Means to say, if we have 3 letters

(A, B, C) and we take 2 letters

(like AB, AC, etc.) at a time ==>

ways = 3P2 = 3!/(3-2)! = 3!/1! = 6 ways

- We can make AB, AC, BA, BC, CA, CB = 6 ways.

This is called permutation

Know About Factorials:

n! = n * (n-1) * (n-2) * (n-3) ……..* 1

5! = 5 x 4 x 3 x 2 x 1 =120

Below factorials need to keep in mind:

0! = 1 7!=5040

1! = 1 8! =40320

2!= 2

3! = 6

4! = 24

5! =120

6! =720

Probability:

Probability formulas:

P(E)= n(E)/n(S)

Where n(S) = total outcome

And n(E) = favorable outcome

nPr = n! / r! * (n-r)!

Concept on percentage:

1/2= 50%

1/3= 33.33%

1/4=25%

1/5=20%

1/6=16.67%

1/7=14.28%

1/8=12.5%

1/9=11.11%

Eg: 64.28% of 140

(50% + 14.28%) of 140

1/2 * 140 + 1/7 * 140

70 + 20 = 90

Concept on Time and Work & Pipe and Cisterns:

Days * efficiency = work

If there are total 120 work and A can finish the work in 15 days and B can finish the work in 10days.

Then Efficiency of A will be 120/15= 8(i.e A can finish 8 unit of work in a day)

Then Efficiency of **B** will be 120/10= 12(i.e B can finish 10 unit of work in a day)

Note: The wages can be distributed always in terms of efficiencies.

Suppose 2400 rs has to be divided among A and B and Efficiency of A:B=12:8

Then A will get 2400 * 12/20 = 1440rs

And B will get 2400 * 8/20 = 960rs

Note: Pipe and Cisterns problems are similar to time and work, except Pipe does negative work when it removes the water from tank.

Concept on Arithmetic Progression:

- An arithmetic progression is a sequence of numbers in which each term is derived from the preceding term by adding or subtracting a fixed number called the common difference "d"
  For example, the sequence 9, 6, 3, 0,-3, ... is an arithmetic progression with -3 as the common difference. The progression -3, 0, 3, 6, 9 is an Arithmetic Progression (AP) with 3 as the common difference.
- The general form of an Arithmetic Progression is a, a + d, a + 2d, a + 3d and so on. Thus nth term of an AP series is Tn = a + (n - 1) d, where Tn = nth term and a = first term. Here d = common difference = Tn - Tn-1.
- Sum of first n terms of an AP: S =(n/2)[2a + (n- 1)d]

- The sum of n terms is also equal to the formula where l is the last term.
- Tn = Sn - Sn-1 , where Tn = nth term
- When three quantities are in AP, the middle one is called as the arithmetic mean of the other two. If a, b and c are three terms in AP then b = (a+c)/2

Concept on Ranking Test:

1.How many number are there between n and m.

Formula : m - n -1

2.Total Number=m , position from left=n

Then position from right= (m+1)-n

Eg: How many numbers are there between 10 and 90.

90 -10-1 = 79

Eg: A B C D E F G H I J K L M N O P Q R S T U V W X Y Z.

Position of y from Right=2

Then position of y from left = (26+1) – 2 =25

Alphabetical Series:

There are 26 alphabets in English. A, B, C, D, E, F, G, H, I, J, K, L, M, N, O, P, Q, R, S, T, U, V, W, X, Y, Z. E= 5(position) J = 10 O = 15 T = 20 Y =25 N = 14 (14th November) T = 20 (T -20 match)

Directions:

Clockwise: Right

Anticlockwise: left

Blood Relations:

Relations of Paternal side:

Father's father → paternal Grandfather

Father's mother → Maternal Grandmother

Father's brother → paternal Uncle

Father's sister →paternal Aunt

Children of uncle → Cousin

Wife of uncle → Aunt

Children of aunt → Cousin

Husband of aunt → Uncle

Relations of Maternal side:

Mother's father → Maternal grandfather

Mother's mother → Maternal grandmother

Mother's brother -> Maternal uncle

Mother's sister → Aunt

Children of maternal uncle → Cousin

Wife of maternal uncle → Maternal aunt

Niece: Daughter of Brother or Sister

Nephew: Son of Brother or Sister

Q1. The difference between the ages of two of my three grandchildren is 3. My eldest grandchild's age is three times 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.15 b.12 c.13 d.10 [TCS NQT 2020]
Solution:
Let age of the youngest grandchild =x
age of the second grandchild =z
age of the eldest grandchild =3x

eldest grandchild's age is two years more than the ages of two youngest grandchildren added together
=> 3x=2+x+z
=> z=2x−2
Therefore, the ages are x, 2x−2, 3x respectively

difference between the ages of two of the three grandchildren is 3. It can be the difference of ages of any two
Assume (2x−2)−x=3
=>x=5
Ages are 5,8,15 respectively
Therefore answer can be 15.

Q2. 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 **[TCS NQT 2020]**
b) 4 days
c) 6 days
d) 2 and 6/17 days

Solution:
Ravi= 5 (increased by 20% , now it is 6days)
Sanjay= 8 (increased by 25%, now it is 10days)
Mukund=10(increased by 50%, now it is 15days)

Ravi= 6days
Sanjay= 10days
Mukund=15days

1/6 + 1/10 + 1/15 = (5+3+2)/30 = 10/30 =1/3
So they together will complete the work in 3days.

Q3. 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 dice 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? [TCS NQT 2020]
A)7/16 B)9/16 C)3/8 D)1/2
Solution:
When we roll the dice twice then the total outcome will be $4^2 = 16 = n(s)$
{ (1,1),(1,2),(1,3),(1,4),
(2,1),(2,2),(2,3),(2,4),
(3,1),(3,2),(3,3),(3,4),
(4,1),(4,2),(4,3),(4,4) }

P(E)= n(E)/n(S)
n(E)= favorable event,
first roll is greater than second roll.
So below are the possibilities:
{(2,1),(3,1),(3,2),(4,1),(4,2),(4,3)}
P(E)= n(E)/n(S) = 6/16 = 3/8 (c)

Q4. Twin brothers, Lava and Kusha, wrote the TCS TNQT 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?
[TCS NQT 2020]

a)50 b)60 c)70 d)80
Solution:
Let say maximun marks =100m
Luva got 45m
Kusha got 60m
Let say cut off mark =x
Then 45m =x-4
&60m = x+8
15m =12
5m = 4
100m = 80
Max marks =80

Q5. 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 [TCS NQT 2020]
Solution:
Volume= l *b *h
12lt = 50cm * 30cm * h
12 * 1000cm^3 = 50cm * 30cm *h
h =8cm
1lt= 1000cm^3

Q6. If it takes 10 3D printers 10minutes to print 10 models, how long will it takes 100 printers to print 100models? [TCS NQT 2020]
Fill the correct answers in minutes.
Solution:
Use the formula
M1 * D1/W1 = M2 * D2/ W2
10 * 10 /10 = 100 * D2 /100
D2= 10min

Q7. 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? [TCS NQT 2020]
Solution:

Convert 1910 hexa decimal into decimal.
$16^0 * 0 = 0$
$16^1 * 1 = 16$
$16^2 * 9 = 2304$
$16^3 * 1 = 4096$
(4096 + 2304 +16) = 6416 --→ decimal

Convert 3177 Octal into decimal now.
$8^0 * 7 = 7$
$8^1 * 7 = 56$
$8^2 * 1 = 64$
$8^3 * 3 = 1536$
(7 + 56 +64+1536)= 1663 --→ decimal
Now combine both decimal:
641663 is the pincode.

Q8. Marry Meeker in her annual Internet Trends report said that Americans are spending even more time in digital media "6.3 hours a day in 2018 up 5% from the year before. "How much time did Americans spend with digital media in 2017?
[TCS NQT 2020]
a.5 hours and 53 minutes
b.6 hours
c.6 hours and 10min
d.5hours
Solution:

2017		2018
x	-------5% more	(6.3hrs)

We can use option and solve it . If we consider option b 6hrs.
That means 6hrs was spent on digital media by Americans in 2017.
Then 5% of 6hrs will be 0.3, so in 2018 Americans spent 6+.3=6.3hrs.

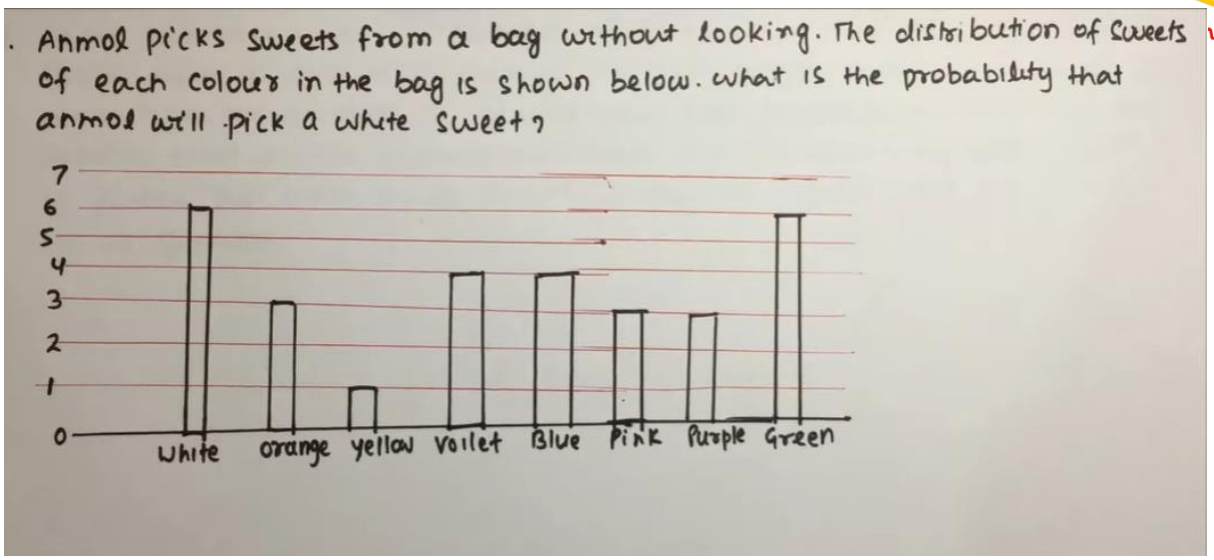
Q9. A very crowded street in t nagar contains 100 buildings . The buildings are numbered from 1 to 100. How many 9s are used by the Chennai corporation in numbering the buildings. [TCS NQT 2020]
a.21 b.19 c.20 d.9
Solution:
Number of 9s between 1 to100.
1-10 ---→ 1(9)

11-20 ----→ 1(19)
21-30 ------→ 1(29)
31-40-------→1(39)
41-50 ------→1(49)
51-60-------→1(59)
61-70------→1(69)
71-80------→1(79)
81-90------→2(89,90)
90-100----→ 10(91,92,93,94,95,96,97,98,99)
Total number of 9 = 1+1+1+1+1+1+1+1+2+10=20

Q10. I have a two-digit number. The unit 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 tailing space.
[TCS NQT 2020]

Solution:
Two-digit number is xy.
Y=2x (tens digit is twice the unit digit)
Two-digit number in the form of unit digit and tens digit 10x+y.
After reversing the number , 10y+x
A/c to Questions.
10y+x – 36 = 10x+y (initial number)
9y-9x =36
y-x=4
2x-x=4
X=4
Now, y=2x => 2*4=8
Answer is 48.

Q11. Data Interpretation Questions:

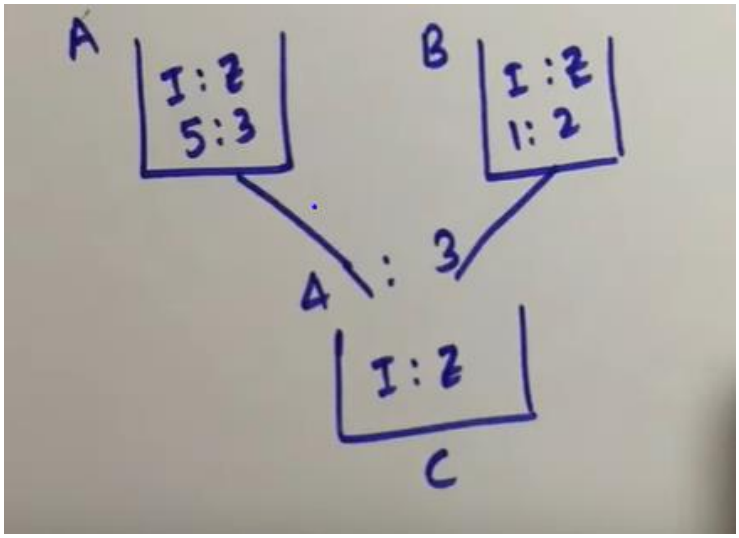


Solution:
P(E)= n(E)/ n(S)
n(E)= favourable outcome
n(S)= total outcome
Total outcome= total no of sweets= 6+3+1+4+4+3+3+6= 30sweets
Favourable outcome= white sweet = 6

P(E)= 6/30 = 1/5 =0.2

Q12. 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? [TCS NQT 2020]
Solutions:
1deacde = 10years
2037- all glaciers will be melted (100% will be melted out)
After every decade it melts doubled.
i.e in 2027 it would have melted by 50% then only after a decade it will melt by 100%.

Q13. 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 [TCS NQT 2020]
Solution:



A and B are combined in the ratio 4:3 respectively and hence C is formed.
A=4xkg and B=3xkg taken out.

	I	Z
A	4x * 5/8= 5x/2	4x*3/8= 3x/2
B	3x * 1/3 =x	3x * 2/3=2
C	5x/2+ x = 7x/2	3x/2 + 2 = 7x/2

I: Z in c = 7x/2 : 7x/2 = 1:1

Q14. From the given table, the function f(n) is: [TCS NQT 2020]

(a) $n \log_2(n)$ (b) $\log_2 n$ (c) $\exp(n)$ (d) $2n$

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

Solution:
As we can analyze
$2^3 = 8$
$2^5 = 32$
$2^7 = 128$
$2^9 = 512$
f(n) = logn base 2 option c will be giving the output.

Q15. 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?
Solutions: **[TCS NQT 2020]**
Probability that Ram Speaks Truth= P(E)= 40/100 = 2/5
Probability that Ram does not Speaks Truth= $P(\overline{E})$= 60/100 = 3/5

Probability that Laxman Speaks Truth= P(E)= 60/100 = 3/5
Probability that Laxman does not Speaks Truth= $P(\overline{E})$= 40/100 = 2/5

Contradict means when (Ram tells Truth and Laxman will lie + Ram tells lie and Laxman tells truth)
2/5 * 2/5 + 3/5 * 3/5 = 13/25
In terms of percentage= 13/25 * 100 =52%

Q16. A clock is started at noon, By 10minutes past 5, the hour hand has turned through. a)155 degree b)145 degree c)160 degree d)150degree [TCS NQT 2020]
Solution:
Basically we need to calculate hours hand will traverse how much angle in 5hours and 10min.

Hour hand in 12hrs will traverse 360 degree
So in 1hrs hour hand will traverse 360/12= 30 degree

So in 5hrs , hour hand will traverse 5*30 =150 degree..
Now ,
In 60 min hour hand will travel 30 degree
So in 1 min …….30/60
So in 10min ……..30/60 * 10 = 5degre

So the total angle = 150 +5 =155 degree

Q17. 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 ball at random and then randomly draw a Ball from it,the probability of the ball being red in maximized. After this distribution, there will a total of _____ balls in the bowl with a larger number of balls. [TCS NQT 2020]

Solution:

The probability of getting Red is maximized and none of the bowls should be empty.

In 1st bowl---> Put 1 red ball

In 2nd bowl---> Put the remaining 50 blue+49 red balls.

So total of 99 balls in the bowl with larger number of balls.

If asked probability in Question then:

In this way

P(Red ball)= 1/2*1 + 1/2*49/99

= 0.5 + 0.24747

Q18.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?

[TCS NQT 2020]

Solutions:

As at last stop there is 2 people left in bus.... means 2 are left the bus (as half of the people left the bus [given])... Now see the steps for explanation:

Step-by-step explanation:

Stop 5: 2 remains means 2 left [total 4]

Stop 4: 4 remains means 4 left [total 8]

Stop 3: 8 remains means 8 left [total 16]

Stop 2: 16 remains means 16 left [total 32]

Stop 1: 32 remains means 32 left [total 64]

Initially: 64 people

Q19. 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?

[TCS NQT 2020]

A.0.49 B. 0.42 C. 0.48 D. 0.54

Solution:

Suppose number of male =50 and female=50(you are free to assume any value as they are asking the fraction so answer remains same)

Eligible male= 50 * 60% =30

Eligible female= 50 * 70%= 35

Male who were eligible and voted= 70% of 30 =21

And female who were eligible and voted= 60% of 35 = 21

Now, fraction of citizens who voted.

(21 + 21) / 100 = 42/100 = .42

Q20. A lady had some socks and hats in her closet -17blue, 47 red, and 24 yellow. the light is out and it is totally dark in split 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 color? [TCS NQT 2020]

Solution:

Ans :- 47+24+2=73

Explanation :- Since she need pair of each color . Now taking the worst case ;suppose she have taken all the 47 of red , then 24 of yellow color . But now she still need glove of blue color . So she need to have 2 more so that she has pair of blue too.

Q21. In function P(x,y) = 85x - (50y + 150000). What value indicates the increase in P that corresponds to increase in x, when y is kept a constant?

a.85 b.135 c.35 d.50 [TCS NQT 2020]

solution:

The term 85 is indicates the increase in P corresponding to increase in the x

Since we are given that

P(x,y) = 85x - (50y + 150000)

Here 150000 is constant and if y is also constant then the term 50y will also constant since 50 is constant so

If y is constant then

The term 50y + 150000 is constant.

Therefor the term 85 is indicates the increase in P corresponding to increase in the x and other all values are constant.

Q22. 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? [TCS NQT 2020]

Solutions:

Torque1 = Torque2

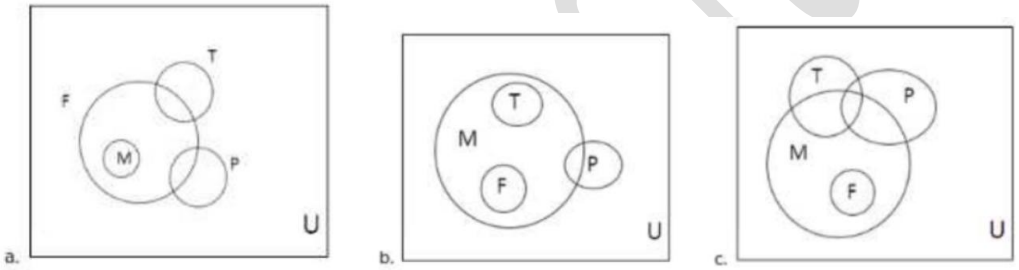
mg * 15 = 50g * 45

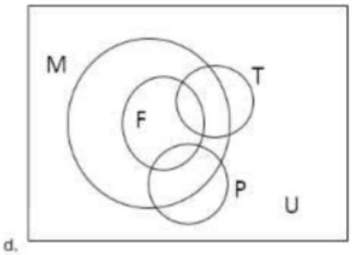
m =150gm

Q23. Ques: The statement:

"All fathers are men some are teachers or politicians but no teacher ¡s a politician" Can be represented in Venn diagram as (M- Men, F - Father. T = Teacher. P -Politician) which of the following options? [TCS NQT 2020]

Ans: Option D





Q24. If t(x) — x^2 what is the shape of f(x)? TCS NQT 2020

a. Quadrilateral

b. S-shaped

c. Parabolic

d. Circular
Solutions: its parabola.

Q25. In a village, every weekend, three-eigth of the men and one-third of the women participate in a social activity. If the total number of participants is 54, and out of them 18 are men then the total number of men and women in the village is:

a. 156 b. 228 c. 180 d. 204

Solution:
3/8 of the men participate
So 3/8 of Total men= 18
So total men=48
And number of women= 54- 18 = 36
Now 1/3 of Total women= 36
So total women= 36*3 =108

So total number of men and women= 108+48 = 156

Q26. Ques. Find the number of perfect squares in the given series 2013, 2020, 2027,....., 2300 (Hint 44^2=1936)

a. 1 b. 2 c. 3 d. Can't be determined

Solution: we need to learn the tricks for calculating squares.

$(54)^2$ = ?

Step1 : get 5^2 and 4^2 and write it together
25 16
Step2: 5 * 4 * 2 = 40 add 40 to the step 1 from left side leaving the first space.
2516
40X

2916

The series are in AP with a common difference of 7.
As we know 44^2 will be 1936 and 48^2 will be 2304. So there is only possibility that 45^2, 46^2,47^2 square may lie in the series.
We can easily calculate and find 47^2 will be 2209.

Q27. . Which of the following numbers must be added to 5678 to give a remainder of 35 when divided by 460?

a. 955 b. 980 c. 797 d. 618

Solutions:

Use option attack to solve this question:

If we subtract 35 from 5678 and add one of the option it should be divisible by 460.

Lets take option C.

Then 5678 -35 +797= 6440, now check if it is divisible by 46. Yes it is divisible by 46. We could have checked by 23 also , because 23 is a factor of 46.

Why we are subtracting 35, so that there will not be any remainder.

Q28. Find the probability that a leap year chosen at random will have 53 Sundays.

a. 1/7 b. 2/7 c. 1/49 d. 3/7

Solution:

A normal year will have 365 days and 52weeks+ 1 odd day

A leap year will have 366 days and 52 weeks+2 odd days.

So the 2 odd days may be {(M,T), (T,W),(W,T),(T,F),(F,S),(S,S)(S,M)}

So the total possible outcomes=7 = be {(M,T), (T,W),(W,T),(T,F),(F,S),(S,S)(S,M)}

And the favorable outcome= {(S,S)(S,M)}

Then Probability= P(E)= n(E)/ n(S) = 2/7

Q29. Two consecutive pages are removed from the progression 1, 2, 3, ...n. The arithmetic mean of the remaining pages is 26 1/4. The value of n is

a. 60 b. 81

c. 50 d. Cannot be determined

Solution:

As the final average is 105/4. So Sum = Avg * No

This question can be easily solved using option.

This is a Arithmetic progression, As we know sum of n numbers in AP

= n(n+1) / 2

Lets consider option C i.e n=50

Now 50 (50+1) /2 = 1275

But two pages are removed so now there are 48 pages.

So Sum will be Avg * No = 105/4 * 48 = 1260

I.e means 1275 -1260 = 15(sum of pages 15)

i.e means the consecutive pages are 7 and 8.

Note : why other option should not be taken here, because (60-2) * 105/4 …. 58 will not be divisible by 4 and it will give you fraction value. Same with 81.

Q30. In how many ways can the letters of the english alphabet be arranged so that there are seven letter between the letters A and B, and no letter is repeated

a. 24P7 * 2 * 18! b. 36 * 28!

c. 24P7 * 2 * 20! d. 18 * 24!

Solution:

We can fix A and B in two ways with 7 letters in between them. Now 7 letters can be selected and arranged in between A and B in $^{24}P_7$ ways. Now Consider these 9 letters as a string. So now we have 26 – 9(letters) + 1(string) = 18 letters. These 18 letters are arranged in 18! ways. So Answer is 2 x **24P7** x 18!.

Q31. When Usha was thrice as old as Nisha, her sister Asha was 25, When Nisha was half as old as Asha, then sister Usha was 34. their ages add to 100. How old is Usha?

a. 37 b. 44 c. 45 d. 40

Solution:

Asha=25 Nisha =n Usha =3n

Asha=2a Nisha =a Usha =34

The difference of all ages must be same

25-2a=n-a=3n-34

We will get two equation

2n+a=34

n+a=25

From the equation we will get n=9 and a=16

The ages are Asha=2a=32 Nisha =16 and Usha =34

Sum of the ages =100

(32+x)+(16+x)+(34+x)=100

82+3x=100

3x=18

x=6

Age of Usha =34+6=40

Q32. Given the following information, who is youngest?

C is younger than A; A is taller than B

C is older than B; C is younger than D

B is taller than C; A is older than D

A. D B. B C. C D. A

Solution:

1. C < A , A> B(ignore , it is in terms of tall)
2. C > B , C < D
3. A > D , B > C(ignore , it is in terms of tall)

Combine 1,2 and 3 interms of ages.

B < C < D < A. so B is youngest.

Q33. An old man and a young man are working together in an office and staying together in a near by apartment. The old man takes 30 minutes and the young 20 minutes to walk from appartment to office. If one day the old man started at 10.00 AM and the young man at 10:05AM from the apartment to office, when will they meet?

a. 10:15 b. 10:30 c. 10.45 d. 10:00

Solution:

Let the distance be 6 km.(you can assume any value)

Distance = Speed * time

Convert minute into hour first, 30min/60min = 1/2hr and 20min/60min=1/3hr

So the old man speed = 6/(1/2hr) = 12km/hr

The young man speed = 6/(20/60hr)= 18km/hr

As the old man started 5minute earlier, he covers 12 * (5/60hr)= 1km in 5min

Use the concept of relative speed ,

Now the time taken to the young man to meet him= 1 / (18-12) * 60 =10min

So the time at which the young man will meet the old man= 10.05+10= 10.15min

Q34. How many 2's are there between the terms 112 to 375?

a. 313

b. 159

c. 156

d. 315

Solution:

Let us calculate total 2's in the units place. (122, 132, 142 ... 192), (201, 212, 222, ... 292), (302, 312, ... 372) = 8 + 10 + 8 = 26

Total 2's in tenth's place, (120, 121, 122, ..., 129) + (220, 221, ..., 229) + (320, 321, ..., 329) = 30

Total 2's in hundred's place = (200, 201, ... 299) = 100.

Total 2's between 112 and 375 = 26 + 30 + 100 = 156

Q35. A series of book was published at seven year intervals. When the seventh book was published the total sum of publication year was 13, 524. First book was published in?

a. 1911 b. 1910 c. 2002 d. 1932

Solution:
Let the years be x, x+7, x+14, x+21, x+28, x+36, x+42.
Use the formula: tn =a +(n-1)d to calculate the nth term.

Sum(in AP)= n/2(2a+(n-1)d)
13,524= 7/2(2x+(7-1)7)
7x + 147= 13,524
X =1911

Q36. Crusoe hatched from a mysterious egg discovered by Angus, was growing at a fast pace that Angus had to move it from home to the lake. Given the weights of Crusoe in its first weeks of birth as 5, 15, 30,135, 405, 1215, 3645. Find the odd weight out.
a) 3645 b) 135 c) 30 d) 15
Solution:
5×3 = 15
15×3 = 45
⇒Given as 30
45×3 = 135
135×3 = 405
405×3 = 1215
1215×3 = 3645

Q37. A can complete a piece of work in 8 hours, B can complete in 10 hours and C in 12 hours. If A,B, C start the work together but A laves after 2 hours. Find the time taken by B and C to complete the remaining work. 1) 2 (1/11) hours
2) 4 (1/11) hours
3) 2 (6/11) hours
4) 2 hours
Solution:
A,B,C's 1 hour work is = 1/8 + 1/10 +1/12 = (15+12+10)/120 =37/120
A,B,C worked together for 2 hours, Therefore, 2 hours work is =
37/120 * 2=37/60
Remaining work = 1 – 37/60 = 23/60
(23/60 work is done by B and C together)
B, C's 1 hour work = 1/10 + 1/12 = (6+5)/ 60 = 11/60
$(23/60)^{th}$ part of the work done by , B, C in = (23/60) / (11/60)= 2 1/11hours.

Q38. The perimeter of a equilateral triangle and regular hexagon are equal. Find out the ratio of their areas?

a. 3:2 b. 2:3 c. 1:6 d. 6:1

Solution:

Let the side of the equilateral triangle = x units

and side of the regular hexagon is = y units.

Given that, 3x = 6y , x/y =2/1

Now,

Ratio of Area of Equilateral triangle and hexagon.

$\sqrt{3}/4\ x^2 : 3\sqrt{3}/2\ y^2$

$\sqrt{3}/4\ 2^2 : 3\sqrt{3}/2\ 1^2 = 2:3$

Q39. If a number is divided by 357 the remainder is 5, what will be the remainder if the number is divided by 17?

a. 9 b. 3 c. 5 d. 7

Solution:

Lets understand by a basic example:

When u divide 7 by 2 ,

2*3 +1 = 7

Similarly,

N =357* k + 5 ,

If this number is divided by 17 remainder is 5 as 357k is exactly divided by 17.

Trick: Divide the remainder(5) by 17 , so 5 will be your answer.

Q40. A owes B Rs 50. He agrees to pay B over a number of consecutive day starting on a Monday, paying single note of Rs 10 or Rs 20 on each day. In how many different ways can A repay B. (Two ways are said to be different if at least one day, a note of a different denomination is given)

A. 8 B. 7 C. 6 D. 5

Solution:

He can pay 1 10rs notes and 2 20rs notes: 10,20,20=3!/2!==3 ways

He can pay 3 10rs notes and 1 20rs notes: 10,10,10,20=4!/3!==4 ways

He can pay by all 10 rupee notes in 5 days : 10,10,10,10,10=5!/5!==1 way

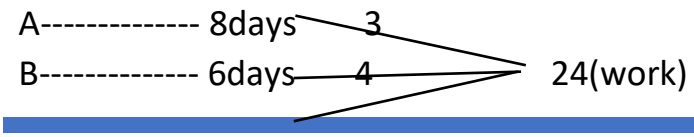
so.total=3+4+1==8 ways.

Q41. Of a set of 30 numbers, average of first 10 numbers is equal to average of last 20 numbers. Then the sum of the last 20 numbers is?

a. Cannot be determined.
b. 2 x sum of last ten numbers
c. 2 x sum of first ten numbers
d. sum of first ten numbers
Answer: c
Explanation:
We know that sum = average x number of observations.
Let the common average = x
Now sum of first 10 numbers = 10x
Sum of the last 20 numbers = 20x.
So sum of the last 20 numbers = 2 × sum of the first ten numbers.

Q42. A play school has chocolates which can supply 50 students for 30 days. For the first ten days only 20 students were present. How many more students can be accommodated into the earlier group such that the entire chocolates get consumed in 30 days. Assume each student takes the same number of chocolates.
a. 45 b. 60 c. 55 d. 70
Solution:
Let each students gets 1 chocolate. Now total chocolates = 50 x 30 = 1500
If first 10 days only 20 students were present, then total chocolates consumed = 10 × 20 = 200
Now we are left with 1500 - 200 = 1300 chololates. These were to be consumed in 20 days.
So each day 1300/20 = 65 chocolates were to be distributed.
So we can add 65 - 20 = 45 students.

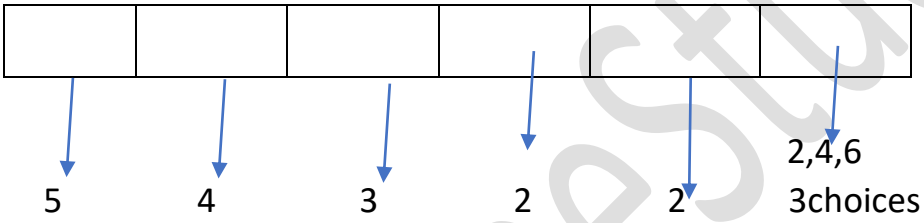
Q43. A alone can do 1/4th of the work in 2 days. B alone can do 2/3th of the work in 4 days. If all the three work together, they can complete it in 3 days so what part of the work will be completed by C in 2 days?
a. 1/12 b. 1/8 c. 1/16 d. 1/20
Solution:
A can do $1/4^{th}$ work in 2 days.
So A can complete 1 work in 8days.
Now, B alone can do 2/3th of the work in 4 day.
So B can complete one work in 3*4/2 = 6days



A+B+C -------3days 8

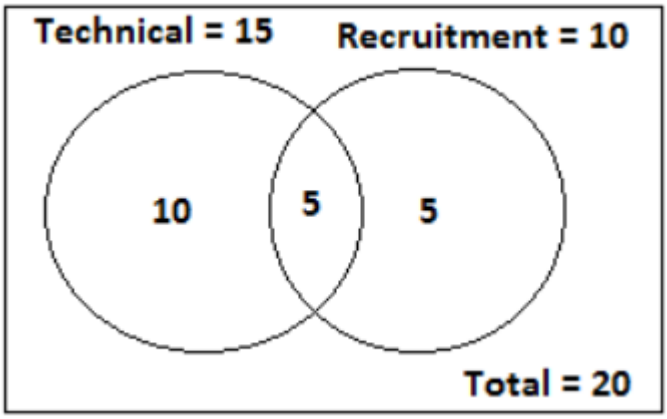
Take LCM of 8,6 and 3 ….. it will become 24 and 24 will become the work.
If u divide 24/8 =3, that means A can complete 3 work in a day.
Similarly, B can complete the same work in 4 days.
Similarly, A+B+C can complete the same work in 8 days.
Now,
A+B+C – A-B =C
8 – 3- 4 =1
i.e C can complete 1 work in a day.
In 2 days , C can complete 2*1 =2 work
The part of work completed out of 24 is , 2/24= 1/12th part.

Q43. How many 6 digit even numbers can be formed from digits 1, 2, 3, 4, 5, 6, and 7 so that the digit should not repeat and the second last digit is even?
a. 6480 b. 320 c. 2160 d. 720
Solution:



If we have to form even numbers, units digit must be 2, 4, 6. i.e., 3 ways. Also 5th digit should be even. So it can be filled in 2 ways. Now remaining 5 digits can be filled in 5! ways.
So total 5! × 3 × 2 = 720 ways.
Or 5 * 4 * 3* 2 * 2 * 3 = 720.

Q44. According to the stock policy of a company, each employee in the technical division is given 15 shares of the company and each employee in the recruitment division is given 10 shares. Employees belonging to both committees get 25 shares each. There are 20 employees in the company, and each one belongs to at least one division. The cost of each share is ₹10. If the technical division has 15 employees and the recruitment division has 10 employees, then what is the total cost of the shares given by the company?
a. 2650 b. 3180 c. 3250 d. 3120
Solutions:



There are total 20 employees In the company but in technical 15 and in Recruitment 10. That means there are some employee which works in both Technical and Recruitment.

$P(A \cup B) = P(A)+P(B)-P(A \cap B)$

$20 = 15 + 10 - X$

X =5 (so 5 employee works in both , 5 is the common value)

So total shares given to only technical = 10 × 15 = 150

Shares given to only Recruitment = 5 × 10 = 50

Share given to Technical as well as recruitment people = 5 × 25 = 125

Total shares = 150 + 50 + 125 = 325.

Total value = 325 × 10 = 3250

Q45. The average marks of 3 students A, B and C is 60. When another student D joins the group, the new average becomes 56 marks. If another student E, who has 3 marks more than D, joins the group, the average of the 4 students B, C, D and E becomes 55 marks. How many marks did A get in the exam?

a. 50 b. 54 c. 51 d. 53

Solution:

Average = sum of marks /number

60 =A+B+C /3

A+B+C = 180

When D joins, then Sum of marks= Average * Number

A+B+C+D = 56 * 4 = 224

180 +D =224

D = 44

A/C to questions:

E = D+3

E = 44+3 = 47
Again from Questions,
B+C+D+E= 55 *4 = 220
B+C+44+47= 220
B+C = 220- 91 =129
So A+ B+C = 180
Now , A + 129 =180
A = 180 -129 =51

Q46. 4 men can check exam papers in 8 days working 5 hours regularly. What is the total hours when 2 men will check the double of the papers in 20 days?
a.6days b.8days c.10days d.12days
Solution:
Use the formula,
M1 * D1 * H1 /W1 = M2 * D2 * H2/W2
Where M1= no of men
D1 = number of days
H1= no of hours
4 * 8 * 5 / W = 2 * 20 * D /2W
D=8days

Q47. In 4 years, Raj's father age twice as raj, Two years ago, Raj's mother's age twice as raj. If Raj is 32yrs old in eight years from now, what is the age of Raj's mother and father?
Sol. Raj present age = 32 - 8 = 24.
After 4 years Raj's age is 28.
So Raj's fathers age is= 2 * Raj age= 2 x 28 = 56, and his present age is 52.
Two years ago, Raj's age is 22. and his mother's age is 22 x 2 = 44. His mother's present age = 46
So Raj's father and Mother age is 52 and 46 respectively.

Q48. The sum of two numbers is 45. Sum of their quotient and reciprocal is 2.05, Find the product of the numbers.
Solution:
Let the two number is x and y.
x + y =45
quotient = x/y and reciprocal=y/x
Now, x/y + y/x= 2.05

$(x^2 + y^2)/ xy = 2.05$
$x^2 + y^2$ can be also written like
$x^2 + y^2 – 2xy + 2xy = (x+y)^2 – 2xy$
Now,
$(x+y)^2 – 2xy/xy = 2.05$
$(x+y)^2 = 2.05xy + 2xy = 4.05xy$
$Xy = 45^2 /4.05 = 500$

Q49. Mr. Bean chooses a number and he keep on doubling the number followed by subtracting one from it, if he chooses 3 as initial number and he repeats the operation for 30 times then what is the final result?
a. (2^30) – 1 b. (2^30) – 2 c. (2^31) – 1 d. (2^31) – 2 e.None
Solution:
Step 1: (3 x 2) - 1 = 5 (2^2 + 1)
Step 2: (5 x 2) - 1 = 9 (2^3 + 1)
Step 3: (9 x 2) - 1 = 17 (2^4 + 1)
Step 4: (17 x 2) - 1 = 33 (2^5 + 1)
So After 30 steps we have 2^31 + 1

Q50. Given that 0 < a < b < c < d, which of the following the largest ?
a.(c+d) / (a+b)
b.(a+d) / (b+c)
c.(b+c) / (a+d)
d.(b+d) / (a+c)
Solution:
Assume a = 1, b = 2, c = 3, d = 4. option A is clearly true.

Q51. 2ab5 is a four digit number divisible by 25. If a number formed from the two digits ab is a multiple of 13, then ab is
a. 52 b. 45 c.10 d.25
Solution:
For a number to be divisible by 25, last two digits of that number should be divisible by 25.
So b must be either 2 or 7
it is given that ab must be divisible by 13 and in the options only 52 is divisible by 13.

Q52. The average temperature of Tuesday Wednesday and Thursday was 37 C. The average temperature of Wednesday and Thursday and Friday was 38 C. if the temperature on Friday was 39 C.
Find the temperature on Tuesday.
a. 37.33 b. 38.33 c. 36 d. None of the above
Solution:
We know that, Average = Sum /No
(Tues + Wed + Thurs)/3=37
Tues + Wed + Thurs=111...(1)
(Wed + Thurs + Fri)/3=38
(Wed + Thurs + Fri) =114...(2)
Given Friday temperature is 39.
Then, (2) - (1) Fri - Tues = 3
So, 39 - Tues = 3
Tuesday =36

Q53. There are 5 boxes in a cargo. The weight of the 1st box is 200 KG, the weight of the 2nd box is 20% higher than the third box, whose weight is 25% higher than the 1st box weight. The 4th box which weighs 350 KG is 30% lighter than the 5th box. Find the difference in average weight of the 4 heaviest boxes and the four lightest boxes.
Solution:
weight of 1st box=200
weight of 3rd box=(125/100)*200=250
weight of 2nd box=(120/100)*250=300
weight of 4th box =350
weight of 5th box = X * 70/100 = 350 = 500
average of 4 highest weighted boxes=(500+350+300+250)/4=350
average of 4 lightest boxes=(350+300+250+200)/4=275
therefore difference=350-275=75
Note : if there is any kind of higher/increment in terms of % is given in question then add it to 100 and divide by hundred (100+25)/100
if there is any kind of lower/decrement in terms of % is given in question then subtract it to 100 and divide by hundred (100-25)/100

Q54. The length, breadth and height of a room are in the ratio 3:2:1. If the breadth and height are halved, while the length is doubled. Then the total area of the 4 walls of the room will be decreased by?

a. 30% b. 18.75% c. 15% d. 13.6%

Solution:

Given l:b:h=3:2:1

let h=10, b = 20, and l = 30

Area= 2(l+b)*h

Area= 2(30+20) * 10 = 1000

Now after the adjustments in the measurements

L=60 , b=10, h=5

Area= 2(l+b) * h

2(60+10)*5 = 700

Percentage decrease = 1000 -700/1000 = 30%

Q55. Cara, a blue whale participated in a weight loss program at the biggest office. At the end of every month, the decrease in weight from original weight was measured and noted as 1, 2, 6, 21, 86, 445, 2676. While Cara made a steadfast effort, the weighing machine showed an erroneous weight once. What was that.

a) 2676 b) 2 c) 445 d) 86

Solution:

This is a number series problem nothing to do with the data given.

1x 1+1=2

2 x 2+2=6

6 x 3+3=21

21 x 4+4=88 and not 86

88 x 5+5 = 445

445*6+6 = 2676

Q56. There are 6 red balls,8 blue balls and 7 green balls in a bag. If 5 are drawn with replacement, what is the probability at least three are red?

Sol: At least 3 reds means we get either : 3 red and 2 other ball or 4 red and 1 other ball or 5 red. And this is a case of replacement.

case 1 : 3 red balls and 2other ball : 6/21 x 6/21 x 6/21 x 15/21 x 15/21

case 2 : 4 red balls and 1 other ball: 6/21 x 6/21 x 6/21 x 6/21 x 15/21

case 3 : All 5 red balls : 6/21 x 6/21 x 6/21 x 6/21 x 6/21

Total probability = = (6/21 x 6/21 x 6/21 x 15/21 x 15/21)+(6/21 x 6/21 x 6/21 x 6/21 x (15)/21)+ (6/21 x 6/21 x 6/21 x 6/21 x 6/21)

= 312/16807

Q57. Total number of 4 digit number do not having the digit 3 or 6.
Solution:

1st place can be filled by 1,2,4,5,7,8,9 (3 and 6 we don't have to fill and 0 can not be filled at first place, because it will become a 3 digit number)
So there are 7 choices.
2nd place can be filled by 0,1,2,4,5,7,8,9 => So there are 8 choices.
3rd place can be filled by 0,1,2,4,5,7,8,9 => So there are 8 choices.
4th place can be filled by 0,1,2,4,5,7,8,9 => So there are 8 choices.
Therefore total 4 digit number without 3 or 6 is
7 * 8 * 8 * 8 = 3584

Q58. A man is known to speak truth 3 out of 4 times. He throws dice and reports that it is a 6. The probability that it is actually a 6 is ??
Solution: If 6 actually appeared, he can report it with the probability of 3/4. If 6 has not appeared, still he can report it wrongly with the probability of 1/4

So the probability that it is actually a 6 = (Probability to appear 6 x His truthfulness to report + Probability to appear any other number x His lieing probability) = 1/6 * 3/4 + 5/6 * 1/4 = 1/3

The probability that it is actually 6=
probability that he reports 6 /Total probability to appear 6
(3/4 * 1/6) / (3/4 * 1/6 + 1/4 * 5/6) = 3/8

Q59. Two cars starts from A & B and travel towards each other at speeds of 50 kmph and 60 kmph respectively at the time of their meeting the second car has travelled 120 km more than the first. The distance between A & B in kms is? (1) 720 (2) 1230 (3) 1320 (4) 600
Solution:
Meeting time is same.
D= S * T
tA = tB
d1/s1 = d2/s2

Suppose car A travelled xkm then car B would have travelled x+120.
x/50 = x+120/60
6x= 5x+600
X=600
Car A travelled 600km and Car B travelled 600+120=720km
So total distance between A and B is 600+720= 1320kms.

Q60. A fast train takes 3 hours less than a slow train for a journey of 900 km, If the speed of the slow train is 15 km/hr less than that of the fast train, the speeds of the slow train is (1)50 km/hr (2) 75 km/hr (3) 60 km/hr (4) 45 km/hr
Solutions:
Let speed of slower train is x
thus, speed of faster train is (x+15)
time taken by slower train is =900/x
time taken by faster train is =900/x+15
time taken by slower train-time taken by faster train=3
900/x- 900/x+15=3
X^2 +15x -4500=0
X^2 + 75x – 60x -4500=0
(x+75)(x-60)=0
X=60
So speed of slower train is 60km/hr.

Q61. 3/5th of the balls in a bag are red, the rest are green. If 3/4th of the red balls and 5/7th of the green balls are defective, find the total number of balls in the bag given that the number of non-defective balls is 111.
1)516 (2) 432 (3) 420 (4) 504
Solution:
let x balls present initially...
3/5x balls red, 2/5x balls green
3/4(3/5x)+5/7(2/5x)--defective
x-(9/20x+10/35x)=111
x-(63/140x+40/140x)=111
x-103/140x=111
37/140x=111
1/140x=3
x=420

Q62. In a cricket tournament, 16 school teams participated. A sum of Rs.8000 is to be awarded among them as prize money. If the team placed last is award Rs.275 as prize money and the award increases by the same amount for successive finishing places, how much will the team place first receive?

Solution:

This Questions can be easily solved using Arithmetic Progression.

Last team got 275, and then each team prize is increasing by the same amount eg: 275, 275+x, 275+2x ….. so its in AP.

Use the formula for the last term.

tn = a + (n-1)d

275 = a + (16-1)d

275= a + 15d ---- (1)

Now,

The S16 terms is given as 8000.

Sn= n/2 (2a +(n-1)d)

8000 = 16/2 (2a+15d)

1000= a + a+ 15d

a+15d =275

1000 = a+275

a=725

Q63. A man sold 12 candies in $10 had loss of b% then again sold 12 candies at $12 had profit of b% find the value of b.

Solutions:

Loss% = CP – SP /CP * 100

Here SP= 10 and loss%=b%

CP-10 /CP * 100 =b

CP – 10/ CP = b /100

In the second case he got a profit of b%

So profit%= SP-CP/CP * 100

So Here SP=12 and profit%= b%

12-CP/CP * 100 = b => 12 -CP /CP =b/100

Solving 1 and 2 we get b=1/11 =9.09%

Q64. If x^y denotes x raised to the power y, Find last two digits of (1141^3843) + (1961^4181)

a) 02 b) 82 c) 42 d) 22

Solution:

To find the tens digit form (1141^3843) and (1961^4181).

We need to multiply tens digit to the unit digit of power.

Step1: (1141^3843) unit digit will be 1 only , 1^3 =1

Step2: tens digit is , 4(tens digit) * 3(unit digit of power) =2(last digit)

Now (1141^3843) = 21

Similarly, (1961^4181) = 61

The last digit is 61 + 21= 82

Q65. 3 mangoes and 4 apples costs Rs.85. 5 apples and 6 peaches costs 122. 6 mangoes and 2 peaches costs Rs.144. What is the combined price of 1 apple, 1 peach, and 1 mango.

a) 37 b) 39 c) 35 d) 36

Solution:

3m + 4a = 85 ..(1)

5a + 6p = 122 ..(2)

6m + 2p = 114 ..(3)

(1) x 2 => 6m + 8a = 170

(3) => 6m + 2p = 114

Solving we get 8a - 2p = 56 ..(4)

(2) => 5a + 6p = 122

3 x (4) = 24a - 6p = 168

Solving we get a = 10, p = 12, m = 15

So a + p + m = 37

Q66. At the end of 1994, R was half as old as his grandmother. The sum of the years in which they were born is 3844. How old R was at the end of 1999

a) 48 b) 55 c) 49 d) 53

Solution:

In 1994 Assume the age of Grandmother is 2x and R is x.

Ex: suppose u are 6years In 2006 i.e u were born in 2006-6=2000

Then Grandmother was born in 1994-2x, and R born in 1994-x.

But given that sum of these years is 3844.

So 1994 – 2x + 1994 - x = 3844

x = 48

In 1999, the age of R is 48 + 5 = 53

Q67. If 75 % of a class answered the first question on a certain test correctly, 55 percent answered the second question on the test correctly, and 20 percent answered neither of the questions correctly, what percentage answered both correctly?

It is a problem belongs to sets. We use the following formula

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$

Here $n(A \cup B)$ is the people who answered atleast one of the questions.

It was given that 20% answered neither question

then the students who answered atleast one question is 100% - 20% = 80%

so $n(A \cup B = 80\%$

Now substituting in the formula we get $80\% = 75\% + 55\% - n(A \cap B)$

$\Rightarrow n(A \cap B) = 50\%$

Q68. If the area of a square region having sides of length 6 cms is equal to the area of a rectangular region having width 2.5 cms, then the length of the rectangle, in cms, is

Solutions:

We know the Area of square = side * side

Area= 6*6 =36

Given that Area of square = Area of Rectangle

36 = l * b

36= l* 2.5

L= 36/2.5

$L=14.4cm^2$

Q69. A closed cylindrical tank contains 36π cubic feet of water and its filled to half its capacity. When the tank is placed upright on its circular base on level ground, the height of water in the tank is 4 feet. When the tank is placed on its side on level ground, what is the height, in feet, of the surface of the water above the ground?

Solutions:

As we know the volume of Cylinder is $\pi r^2 h$.

Given tank hight = 4ft.

$\pi r^2 4 = 36\pi$

r = 3

so the radius is 3 which means the diameter is 6.

As the cylinder is filled to initially exactly half of the capacity, When this cylinder is placed on its side, Water comes upto the height of the radius.

So water comes upto 3 ft.

Q70. Jose is a student of horticulture in the University of Hose. In a horticultural experiment in his final year, 200 seeds were planted in plot I and 300 were planted in plot II. If 57% of the seeds in plot I germinated and 42% of the seeds in plot II germinated, what percent of the total number of planted seeds germinated?

Solutions:

Total seeds germinated in Plot I = 57% of 200 = 114

Total seeds germinated in Plot II = 42% of 300 = 126

Total germinated seeds = 114 + 126 = 240

The percentage of germinated seeds out of the total seeds.

240/500 * 100 = 48%

Q71. A tank contains 10,000 gallons of a solution that is 5 percent sodium chloride by volume. If 2500 gallons of water evaporate from the tank, the remaining solution will be approximately what percentage of sodium chloride?

Solutions:

Sodium chloride in the original solution = 5% of 10,000 = 500

Water in the original solution = 10,000 - 500 = 9,500

f 2,500 Liters of the water is evaporated then the remaining water = 9,500 - 2,500 = 7,000

Sodium chloride concentration = 500/(500+7000) * 100 = 6.67%

(concentration should be calculated always on the total volume)

Q72. A and B run a 1 km race. If A gives B a start of 50m, A wins by 14 seconds and if A gives B a start of 22 seconds, B wins by 20 meters. Find the time taken by A to run 1 km.

Solutions:

To solve these type of questions, always keep in your mind that, the ratio of the speeds of two contestents never change.

A gives B a start of 50 m means, A runs 1000 m and B runs only 950m.

A wins by 14m.

Tb(time taken by A) – Tb(time taken by B) = 14sec

Let speed of B is b m/s and A is a m/s.

950/b – 1000/a= 14 ----(1)

Now, A gives B a start of 22seconds… means By the time A reaches the target, B has to take 22 seconds to reach the target.

980/a + 22 = 1000/b -----(2)

Let 1/a=x , 1/b=y

then,
950y-1000x=14
980x+22=1000y--->1000y-22=980x
solving we get..
a=10m/s
time taken by A to run 1000km=1000/10=100s

Q73. How many 4-digit numbers contain no.2 ?
Solutions:
Total number of four digit numbers =9000 (i.e 1000 to 9999)
We try to find the number of numbers not having digit 2 in them.
Now consider the units place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Tens place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Hundreds place it can be selected in 9 ways (i.e 0,1,3,4,5,6,7,8,9)
Thousands place can be selected in 8 ways (i.e 1,3,4,5,6,7,8,9) here '0' cannot be taken
Total number of numbers not having digit 2 in it =9 x 9 x 9 x 8 =5832
Total number of numbers having digit 2 in it = 9000-5832 =3168

Q74. The value of diamond varies directly as the square of its weight. If a diamond falls and breaks into two pieces with weights in the ratio 2:3. what is the loss percentage in the value?
Solutions:
Let weight be "x"
the cost of diamond in the original state is proportional to x^2
when it is fallen it breaks into two pieces 2y and the 3y
After diamond falls , the weight is x = 2y+3y =5y

Original value of diamond= $(5y)^2 = 25y^2$
Value of diamond after breakage = $(2y)^2 + (3y)^2 = 13y^2$
so the percentage loss will be = $25y^2 - 13y^2 / 25y^2 * 100 = 48\%$

Q75. George and Mark can paint 720 boxes in 20 days. Mark and Harry in 24 days and Harry and George in 15 days. George works for 4 days, Mark for 8 days and Harry for 8 days. The total number of boxes painted by them is ?
Solutions:
Capacity of G + M = 720 / 20 = 36
M + H = 720 / 24 = 30

H + G = 720 / 15 = 48
Combined capacity = 2 (G + H + M) = 114
G + H + M = 114 / 2 = 57
Now capacity of G = (G+H+M) - (H + M) = 57 - 30 = 27
M = (G+H+M) - (H + G) = 57 - 48 = 9
H = (G+H+M) - (G + M) = 57 - 36 = 21
Given that G worked for 4 days, and mark for 8 and harry for 8 days
So total work by them = 4 x 27 + 8 x 9 + 8 x 21 = 348

Q76. How many odd and even numbers are there between 42 and 400?? Find the sum of odd numbers and the sum of even numbers ?
Solution:
Odd numbers are from 43 to 399.
Number of odd numbers = (l -a)/d + 1
(Last no – first no)/common difference + 1
(399 – 43)/ 2 + 1 = 179
Their sum is = n/2 (a + l) = 179/2(43+399) = 39559

Even numbers are from 44 to 398.
Number of sum numbers = (l -a)/d + 1
(Last no – first no)/common difference + 1
(398 – 44)/ 2 + 1 = 178
Their sum is = n/2 (a + l) = 178/2(42+398) = 39338

Q77. Suresh Raina and Gautam Gambhir after a scintillating IPL match decide to travel by cycle to their respective villages. Both of them start their journey travelling in opposite directions. Each of their speeds is 6 miles per hour. When they are at a distance of 50 miles, a housefly starts flying from Suresh Raina's cycle towards Gautam Gambhir at a relative speed of 17 miles per hour with respect to Raina's speed. What will be the time taken by housefly to reach Gambhir?
a. 10 hrs b. 15 hrs c. 20 hrs d. 25 hrs
Solution:

Relative speed=17mph = Suresh + fly
17 = 6 + fly
Fly =11mph
Fly speed is 17 kmph w.r.t to suresh as fly is moving in opposite direction to suresh, its actual speed is 17 - 6 = 11.
Now Fly and Gmabhir are in same direction.
Now relative speed of fly and gambhir = 11 - 6 = 5 kmph
So the time taken by fly to reach Gambhir.
T = D/S
t= 50/ 5 = 10hours .

Q78. One day, Eesha started 30 minutes late from home and reached her office 50 minutes late, while driving 25% slower than her usual speed. How much time in minutes does Eesha usually take to reach her office from home?
a. 20 b. 40 c. 60 d. 80
Solutions:
She got late to the office 20 minutes late as she drove at 3/4 th of the speed.
time (when the speed is 75% of usual speed) - Ususal time = 20min
d / (3/4S) - d/s = 20
d/s(4/3 -1) =20
d/s = 60
Time = d/s =60min

Q79. For which of the following "n" is the number $2^{74}+2^{2058}+2^{2n}$ is a perfect square?
a) 2012 b) 2100 c) 2011 d) 2020
Solution:
If $2^{74}+2^{2058}+2^{2n}$ is a perfect square then it will be
$2^{74}+2^{2058}+2^{2n} = k^2$
Now let us try to write the equation in the below form
$(a+b)^2 = a^2 + 2ab + b^2$

$\mathbf{(2^{37})^2 + 2 * 2^{37} * 2^n + (2^n)^2}$
Now let us see the middle term
$\mathbf{2 * 2^{37} * 2^n = 2^{2058}}$
$\mathbf{2^n = 2^{2020}}$
$\mathbf{b = 2^n = 2^{2020}}$
so the value of n is 2020.

Q80. A beaker contains 180 liters of alcohol. On 1st day, 60 l of alcohol is taken out and replaced by water. 2nd day, 60l of mixture is taken out and replaced by water and the process continues day after day. What will be the quantity of alcohol in beaker after 3 days.

Solutions:

Final Quantity of Alcohol =

initial Quantity * (1 – Replaced quantity/final quantity)^n

final quantity of Alcohol= 180(1- 60/180) 3 = 180 * (2/3)3 =53.5

Q81. A conical tent is to accommodate 10 persons. Each person must have 6 sq.meter space to sit and 30 cubic meter of air to breathe. What will be the height of the cone?

a. 150m b. 37.5 m c. 15 m d. 75 m

Solution:

Area of base of cone = πr^2 (because the base of cone is nothing but circle)

Area required by one person = 6 sq.m.

Area required by 10 persons = 6 * 10 =60 = πr^2

Air required by 1 person = 30 cubic m

Air required by 10 person = 30 * 10 = 300 cubic meter

volume of cone = 1/3 $\pi r^2 \mathbf{h}$

1/3* 60 * h = 300

h =15m

Q82. Four people each roll a four dice once. Find the probability that at least two people will roll the same number ?

a. 5/18

b. 13/18

c. None of the given choices

d. 1295/1296

Solutions:

Lets us calculate the probability that no one rolls the same number

probability when dice rolled 1st time=6C1 i.e. (1,2,3,4,5,6)

suppose 1 comes, then 2nd time it should not be,so 2nd time probability=5C1 i.e. (2,3,4,5,6)

same way 3rd and 4th time probability=4C1 and 3C1 respectively.

The number of ways of rolling a dice where no one rolls the same number = 6*5*4*3

Now total possibilities of rolling a dice = 6^4

The probability that a no one gets the same number =
$6 \times 5 \times 4 \times 3 / 6^4 = 5/18$

Q83. Rajiv can do a piece of work in 10 days , Venky in 12 days and Ravi in 15 days. They all start the work together, but Rajiv leaves after 2 days and Venky leaves 3 days before the work is completed. In how many days is the work completed ?
a. 5 b. 6 c. 9 d. 7
Solutions: Let the work be 60 units. (you can assume any value)
Rajiv leaves after 2 days and venky leave 3 days before the work, Last 3 days must be worked by Ravi.

Now lets calculate the efficiency.
Total work=60
Rajiv efficiency = 60(work)/10(days) =6
Venky efficiency = 60/12=5
Ravi efficiency= 60/15= 4
Note: efficiency means 1 day work.
Rajiv, venki and Ravi worked for 2 days + Ravi and venki till 3 days before + Ravi worked for 3 days.
(6+5+4) * 2 + (5+4) * (x-3) + 4*3 =60
30 + 9x -27 + 12 = 60
9x =45
X=5
So total days to complete the work.
2+ x-3 + 3
2+5-3 + 3
7 days .

Q84. On a 26 question test, five points were deducted for each wrong answer and eight points were added for each correct answer. If all the questions were answered, how many were correct, if the score was zero ?
a. 10 b. 12 c. 11 d. 13
Solutions:
Use option attack to solve the question, easy way.
Consider option a. 10 correct and 16 wrong.
10 * 8 = 80 positive points

and 16 * 5 =80 negative points
And 80-80=0 So final score is zero.

Q85. The sum of three digits of a number is 17. The sum of square of the digits is 109. If we subtract 495 from the number, the number is reversed. Find the number.
Solutions:
Let the number is xyz.
X + Y + Z =17
$X^2 + y^2 + z^2 = 109$
100x + 10y + z -495 = 100z+10y+x
99x – 99z = 495
x – z = 5
So the possibilities for (x, z, y) are (6,1,10), (7,2,8), (8,3,6), (9,4,4)
Lets check $X^2 + y^2 + z^2 = 109$ condition.
$6^2 + 1^2 + 10^2 = 137$ XXX
$7^2 + 2^2 + 8^2 = 117$ XXX
$8^2 + 3^2 + 6^2 = 109$ this combination is correct.

Q86. How many two digit numbers are there which when subtracted from the number formed by reversing it's digits as well as when added to the number formed by reversing its digits, result in a perfect square.
Let the number xy = 10x + y
Given that, 10x+y - (10y - x) = 9(x-y) is a perfect square
So x-y can be 1, 4, 9. -------- (1)
So given that 10x+y +(10y +x) = 11(x+y) is a perfect square.
So x+y be 11. Possible options are (9,2), (8,3),(7,4),(6,5) ---------(2)
From the above two conditions only (6,5) satisfies the condition
Only 1 number 65 satisfies.

Q87. Weight of M, D and I is 74. Sum of D and I is 46 greater than M. I is 60% less than D. What is D's weight.
Solution:
M + D + I = 74 - - - (1)
(D + I) = 46 + M - - - (2)
I = D – D * 60/100
I = 4D/10
I = 2D/5

Adding 1 and 2 we get ,
2D + 2I =120
Substituting the value of I in the above equation,
2D + 2(2D/5) =120
14D = 600
D = 300/7 = 42.8

Q88. Father is 5 times faster than son. Father completes a work in 40 days before son. If both of them work together, when will the work get complete?
a. 8 days b. 8 1/3 days c. 10 days d. 20 days
Solutions:
Days * efficiency = work (Mountain dew tech)
Equation in terms of efficiency:
F = 5 S
Suppose son efficiency is 1 then father efficiency is 5. (you are free to assume any value, lower value makes the calculation easy)

Efficiency	Days	work
S =1	X	Days * eff
F= 5	X - 40	Days * eff
S+F = 6	D	Days * eff

Work done by son , father and sfather will be same.
Work done by son = Work done by father
1 * x= 5 * (x-40)
X = 5x – 200
4x =200
X = 50
Now , Again Work done by son = Work done by son+father
1 * 50 = 6 * D
D = 50/6 = 8 1/3 days

Q89. A man has 1044 candles.after burning,he can makes a new candle from 9 stubs left behind.Find the maximum number of candles that can be made:
(A)116 (B)120 (C)130 (D)140 (E)144

Solutions:

after burning 1044 candles he can make 1044/9= 116 candles
again by burning 116 candles he can make 116/9= 12 + 0.88 candles
again by burning 12 candles he can make 12/9 = 1 + 0.33 candles
thus total candles made = 116 + 12 + 1 + 0.88 + 0.33= 130 candles

Q90. Mr.Govind was a building contractor. He was doing reasonably well in his business but was always on an expansion mode. Mr.Govind won a contract with the Corporation and his business began to boom. So he decided todeploy more people in his projects. If he were to increase his labour force
by 33.33%, what will be percentage reduction in the work load of each employee?
a)75 b)50 c)25 d)33.33

Solutions:
Let us consider 100 workers and 1000 units of work.
Work load on each worker will be 1000/100 =10.
Workers increased by 33.33 per.
So total workers be 133.33.
New Work load on each worker will be 1000/133.33= 7.5
Percentage of work load decreased is 10-7.5= 2.5
So answer is 25 percent

Q91. what will be the remainder if 1!+2!+3!+..+100! is divided by 7?
a.5 b.10 c.12 d.15
Solutions:

7! onwards all terms are divisible by 7 as 7 is one of the factor. So there is no remainder left for those terms i.e. remainder left after dividing 7! + 8! + 9! + ... +100! is 0.(7! = 7 * 6 * 5 *4 *3 *2 *1)
The only part to be consider is
= 1! + 2! + 3! + 4! + 5! + 6!
= 1 + 2 + 6 + 24 + 120 + 720
= 873
The remainder left after dividing 873 by 7 is 5
Hence, the remainder is 5.

Q92. From 7:00 AM to 11:00 AM it rained 2.25 inches. At 11:00 AM the rain increased to fall at a rate of 1.25 in. every two hours. How many inches of rain landed on the ground by 5:00 PM?

a) 7 b) 9.75 c) 6 d) 3.25 e) 7.125

Solutions:

7am to 11am =2.25 inch

11am to 1pm increase is 1.25=3.50 inch

1pm to 3pm increase is 1.25=4.75 inch

3pm to 5pm increase is 1.25=6 inch

Q93. Raj and Ali invest in a business in the ratio 3:2. They give away 20% of their profit to charity and share the remaining profit in the same ratio as their invetsment. If Raj gets Rs. 2400, what is the total profit?

a)Rs. 5000 b)Rs. 4000 c)Rs. 4800 d)Rs. 6000 e)Rs. 6200

Solutions:

Let total profit be 100.

20% went for charity.

Remaining 80.

Raj and Ali invest in ratio 3:2 and even the profit sharing ratio is also 3:2.

Raj share in 80 is =(80*3/5)=48

48 ------- 2400

1 -------- 2400/48 = 50

100 ------ 50* 100 = 5000 is the total profit.

Q94. The average of 10 numbers is 40.2. Later it is found that 2 number have been wrongly added. the first is 18 greater than the actual number and the second number added is 13 instead of 31. find the correct average:

(A)40.2 (B)40.4 (c)40.6 (D)40.8 (E)41

Solutions:

Average= Sum/Number

Sum of the 10 numbers=40.2*10=402.

According to the problem, the first number is 18 greater than the actual number.

so, sum=402-18

And the second number added is 13 instead of 31.

So, sum=402-18-13+31=402.

Therefore average=402/10=40.2(a)

Q95. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

Solutions:

lcm(20,30,60)=60.
Let total work have to be done is 60 units.
Efficiency of A = 60/20= 3 , Efficiency of B = 60/30= 2
Efficiency of C = 60/60= 1
Note : Efficiency means 1 days work.
Now the work done by A in 2 days are 3 * 2=6 units
and with the help of B and C (3+2+1) he can do 6 unit of work in a single day.
A A A+B+C A A A+B+C …….
3 3 6

Total work is 60.
In 3days ---------- 12 work
|*5 |*5
15days 60
So the Answer is 15days.

Q96. A mother her little daughter and her just born infant boy together stood on a weighing machine which shows 74kgs.how much does the daughter weigh if the mother weighs 46kg more than the combined weight of daughter and the infant and the infant weighs 60% less than the daughter.
a)9 b)11 c)cannot be determined d)10
Solutions:
Suppose the daughter age is x years.
Infant age = 60% less than daughter age= x – x* 60/100 = 40x/100 = 0.4x
Mother age= 46 + x + 0.4x
Total weight = Mother wt + daughter wt + infant wt
Total weight= (x+0.4x+46) + x + 0.4x = 74
2.8x = 74 – 46 = 28
X =10
Daughter is 10years old.

Q97. The marked price of a coat was 40% less than the suggested retail price. Eesha purchased the coat for half the marked price at a fiftieth anniversary sale.what percent less than the suggested retail price did Eesha pay?
a)60%,b)20%,c)70% d)30%
Solutions:
As the option is given in terms of percentage, you are free to assume any value.

Let the Retails price is 100rs.
MP = 60rs
Easha bought the coat at rs. 60/2=30rs
Retails price = 100 Eeash bought at 30.
So 70% discount.

Q98. What is the largest number that will divide 90207, 232585 and 127986 without leaving a remainder?
a. 257 b. 905 c. 351 d. 498
Solutions:
Given numbers are 90207,127986 and 232585.We want greatest number which divides given numbers.Thus we need HCF of given numbers.
90207=3*3*3*13*257
127986=2*3*83*257
232585=5*181*257
Hence 257 is required number.
Or,
Best way to solve this problem is using the option. Check which option divides all.

Q99. A rectangular field is 300 feet wide and 400 feet long. Random sampling indicates that there are, on the average, three ants per square inch throughout the field. [12 inches = 1 foot.]Of the following, the number that most closely approximates the number of ants in the filed is ?
A. 500000 B. 50 Million C. 500 Million D. 5 Million
Solutions:
Area of Rectangular filed is : Length X Breadth
Length=400 , Breadth=300
So, area in sq.feet is 400 x 300 = 120000
Ants per inch = 3
we have to convert area into sq.inches..
Area in sq.inches is 120000 x 12 x 12= 17280000
No. of ants in the field is 17280000 x 3 = 51840000 (approx. 50 million)

Q100. In this question, A^B means A raised to the power B. In which one of the following choices must P be greater than Q.
a) 0.9^P=0.9^Q
b) 0.9^P=0.92^Q

c) 0.9^P>0.9^Q
d) 9*P>9*Q
Solutions:
Option A is wrong as P = Q
Option B is wrong as P/Q = Log0.92/Log0.9 = 0.79139
Option C is also wrong as $a^P > a^Q$ then P > Q if a>1
So option D is wrong.

Q101. A Police car starts chasing a fugitive in a BMW 2 hours after the BMW escapes from the scene of crime at 10AM . The BMW drives for 10km 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 5 hours. By this time the moon was up in the sky for 4 hours . if the average speed of the police car is 94 kmph then the average speed of the BMW is_____ kmph.
Solutions:
The distance covered by Police car in 5hrs. (distance=speed *time)
94km/hr * 5 = 470km
The Fugitive covered the same distance in 5+2=7 hours.
Let the speed of BMW car is xkm/hr.
Distance covered by fugitive and the police car is same.
470 = 7 * x
X= 67.14km/hr.

Q102. 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 2/3 of winning the game. What is the probability that Paul will correctly pick the winner of the Ghana-Bolivia game?
a. 4/9 b.2/3 c.1/9 d.5/9
Solutions:
Paul picks A with the same probability as A's chances of winning
So probability of picking a winner = prob picking of ghana * ghana winning + prob picking of bolivia * bollivia winning
= 2/3 * 2/3 + 1/3 * 1/3
= 5/9

Q103. A result of global warming is that the ice of some glaciers is melting. 13 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 =18* (t -13) for t >13, 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, 39 years after the ice has disappeared.

a.702 b.468 c.13 d.689

Solutions:

d=18*(t-13)

where, t=39

d=18*(39-13)

d=18*26

d=468

Q104. 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?

a.625 b.725 c.750 d.125

Solutions:

Divisibility rule of 4: the last two digit should be divisible by 4.

As the number is divisible by 4, the last two digit can be { (1,2) (2,4) (3,2)(4,4-repetition is allowed),(5,2) }

The last two places can be filled with these any out of 5 choices.=5

The first place can be filled with 5 choices 1,2,3,4,5=5

The second place can be filled with 5 choices 1,2,3,4,5=5

The third place can be filled with 5 choices 1,2,3,4,5=5

So the total ways= 5*5*5*5 = 625

Q105. Elephant competitions are of great entertainment value in south India. In one such competition held in Cochin, 200 elephants participated. Each elephants 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 1/3 of the amount of milk offered. Another elephant named Marta could drink only 1/20 of the amount of milk offered, but it was better than Thorny which could drink 2/45 of the amount of milk offered. Amazingly Darru could drink 6 litres more than 1/4 of the amount of milk offered, where as Malar could drink 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.

a.72L b.73L c.71L d.70L

Solutions:

let each elephant was given 'x' litres of milk.

now according to ques.

garru drink = x/3L & darru drink = 6+(x/4)L = {(24+x)/4}

it means milk left by,

garru = [x-x/3] & darru = [x-{(24+x)/4}]

again acc to ques.

[x-x/3] = [x-{(24+x)/4}]

2x/3 = (3x-24)/4

8x =9x-72

X=72

on solving we get 'x' = 72L

Q106. 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 16 mm and not exceed 64mm.

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 their requirements and your goal is to design as many coins as possible. How many coins can you design?

a.6 b.2 c.4 d.3

Solutions:

Ans is 4 coins.

first coin would be of 16 diameter.

50%of 16 is 8, 8+16=24mm of diameter (second coin)
50%of 24 is 12, 24+12=36mm (third coin)
50%of 36 is 18, 36+18=54mm (fourth coin)
now, 50%of 54 is 27, 27+54=81 > 64mm. hence it will not be included.
therefore 16mm,24mm,36mm,54mm

Q107.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.
a.5 b.8 c.4 d.12
Solutions:
in the question they have mentioned it as "base 4", so we should take numbers from from 0 to 4, so take the number series as:
0,1,2,3,4,
11,12,13,14,
21,22,23,24,
31,32,33,34,
41,42,43,44, hence in abv series ter are 8 2s.
(since the base is 4 consider the number series only till 40's.
if base 8 then consider till 80's and so on.....)
Short tricks:
or the question can also be solved by using formula.... 2*n ==> 2*4=8

Q108. Mr. Beans 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 14 green marbles and then 21 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 23 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 atleast one pair of marbles to his wife now. So how many white marbles must be choose and give to his wife so as to ensure that there is atleast one pair of red, yellow and green marbles ?
Solutions:

The problem is solved assuming worst case situation(all consecutive marbels of same colour) and here the numbers must be initiated from majority,ie
23 for red
next 21 for yellow
remaining two for green
total 23+21+2=46

Q109. At the end of 1994, R was half as old as his grandmother. The sum of the years in which they were born is 3844. How old R was at the end of 1999

a) 48 b) 55 c) 49 d) 53

Solutions:

In 1994, Assume the ages of GM and R = 2k, k
then their birth years are 1994 - 2k, 1994 - k.
But given that sum of these years is 3844.
So 1994 - 2k + 1994 - k = 3844
K = 48
In 1999, the age of R is 48 + 5 = 53

Q110. 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 the side of the square to radius of the circles. You may assume that square root of 2 is 1.4

A.2.2 B.3 C.8.9 D.7.6

Solutions:

Let the radius of circle be r
let the side of square be a
then diagonal of square= a*sqrt(2)
This diagonal length = 8*r + 2r * sqrt(2)
(because the extreme circle's radius is perpendicular to side of square.)
Thus we get

8*r+2r*sqrt(2)=a*sqrt(2)

r(4*sqrt(2)+2)=a
so a/r=(4*sqrt(2)+2)/1
Thus ratio: a:r =(4*sqrt(2)+2)/1
= 7.6
Ans: 7.6

Q111.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 herbal, sweet, honey, anisic and rose. 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 herbal, it must also contain honey and there must be twice as much honey as herbal. If the perfume contains sweet, it must also contain anisic, and the amount of anisic must equal the amount of sweet. honey cannot be used in combination with anisic. anisic cannot be used in combination with rose. If the perfume contains rose, the amount of rose 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 rose to make it acceptable?

A.Two parts rose B. One part herbal C. Two parts honey D. One part sweet

Solutions:

If you want to make this perfume consisting of two parts honey and one part rose to make it acceptable, then we need to consider below scenarios.

When Rose is mixed, then the quantity of Rose has to be more than the quantity of other essence used.

Already we have two parts of honey, then we need rose part is more.

If we add two parts of Rose then the quantity of Rose will become more than the other essence used and hence it will become acceptable perfume.

Q112. A circular dartboard of radius 2.0 foot is at a distance of 20 feet from you. You throw a dart at it and it hits the dartboard at some point Q in the circle. What is the probability that Q is closer to the center of the circle than the periphery?

A .25 B. .75 C.1 D.1.5

Solutions:

for the point to be closer to the center it should lie within the area of 1ft radius of the board so probability= p(E) = n(E) /n(S)

Total outcome = Area of circle = pi * r *r = pi * 2 *2 = pi * 4

Now, within 1ft of radius, pi * 1 *1 = pi * 1

= p(E) = n(E) /n(S) = pi * 1 / pi * 4 = 1/4 =0.25 (option A)

Q113. 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

coverd 1/4 of its distance and that too leisurely. The hare and tortoise meet when the hare has covered only 1/8 of the distance.By what factor should the hare increse its speed so as to tie the race?

A.25 B.35 C.22 D.37

Solutions:

Total circumfrance = pie*diameter
tortoise has covered = 25pie
remaining distance = 75 pie
1/8th of total distance = 12.5 pie
let the velocity of tortoise = u and that of hare =v
on time comparison we get
62.5 pie/u = 12.5 pie/v
5v=u so v=u/5

now for remaining journey time taken by tortoise = 12.5 pie/u
so velocity of hare to make a tie = 7*12.5 pie u / 12.5 pie
=7u
so 7u/u/5 = 35 times answer

Q114. Doller 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 2500 stores all over the United States said that they had a 2 percent increase in the number of transaction in 2008 compared with the previous year to 37 million. The company made a profit of $20 million this year. What is the average profit per store?

A.8000 $ B. 9000 $ C. 10000 $ D. 7000 $

Solutions:

Total store= 2500
And total profit= 20
Average= Sum/ No
Average Profit Per store = 20/2500 million $ = 2/250 million $ = 0.008*1000000 $ = 8000 $
Solutions:
answer is c

Q115. 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

A. 9 B. 8 . 254 D. 7

Solutions:

If 1 is given in the option then the answer for these type of question will always be 1, because we can use 1 mouse to check whether the barrel is poisoned or not ---- u can solve it simply by naming barrels say A1,A2.....A254 now inject beer from A1 to that mice and note the timing at which u r performing ur experiment say at 10pm and with difference of 1 min....inject beer from all the barrels respectively as there are 254 barrels and now after 14 hours note the death timings of mice suppose if it dies at 12pm next day the poison is in first barrel that is A1....if it dies at 12.01 hrs then the poison is in barrel A2.....n likewise for others!!..

But here 1 is not given in the option so we will use the formula :--- 2^n > no. of barrels , where n will be the number of mice. Note n should be the number with which the value of 2^n becomes just greater than number of barrels, not far greater than no. of barrels, this is because we need an optimal solution.

Q116. 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 ans also write code at the same rate. Suppose 12 such programmers take 12 minutes to write 12 lines of code in total. How many lines of code can be written by 72 programmers in 72 minutes?

A. 72 B. 432 C. 14 D. 144

Solutions:

We know the time and work formula,

M1 * D1 / W1 = M2 * D2 /W2

M1 – no of men

D1- no of days/hours/min

W1 = work

12 * 12 /12 = 72 * 72 /W

W = 12 * 6 * 6 = 432

Q117. Ray writes a two digit number. He sees that the number exceeds 4 times the sum of its digits by 3. If the number is increased by 18, the result is the same as the number formed by reversing the digits. Find the number.

a) 35 b) 42 c) 49 d) 57

Solution: Let the two digit number be xy.

A two digit number can also be represented as 10x+y.

4(x + y) +3 = 10x + y .....(1)

10x + y + 18 = 10 y + x ....(2)

Solving 1st equation we get 2x - y = 1 .....(3)

Solving 2nd equation we get y - x = 2 .....(4)

Solving 3 and 4, we get x = 3 and y = 5

Option A is the correct Answer.

Notes: can be solved using option as well.

Q118. If the word 'ddosszm' is changed to 'central' then what will be the change for 'rtjbl' ?

A.manual B.quick C.jump D.life

Solutions:

Changes happening to letters in the pattern -1 +1 -1 ...

So rtjbl will become quick ….

Q119. The word unimpressive was given. They asked us to do change 1st & 2nd,3rd & 4th,so on. Then they asked what will be 10th letter from right?

A.L B.M C.N D.O

Solutions:

After changing 1st & 2nd,3rd & 4th,so on we have ,

Numirpseisev

Now the 10^{th} letter from right is .. M.

Q120. Complete the series : 5,6,7,8,10,11,14,..?

A.17 B.15 C.14 D.17

Solutions:

There are two series here

5, 7, 10, 14

& 6, 8, 11, … then 15.

Q121.If VXUPLVH is written as SURMISE, what is SHDVD ?

A.PEAFG B.PEASA C.CCASA D.NMASA

Solutions:B

in the first word, the alphabets of the jumbled one is three alphabets after the corresponding alphabet in the word SURMISE. S = V-3, similarly find the one for SHDVD

S-3 = P

H-3 =E

D-3= A

V-3=S

D-3=A

Q122. If DDMUQZM is coded as CENTRAL then RBDJK can be coded as ---------

A.QCEIO B.FCEIL C.QCEIL D.QCESF

Solutions: C

Write both the jumbled and the coded word as a table, find the relation between the corresponding words, i.e C= D-1, E=D+1, N=M+1, & so on

Now the code for RBDJK is .

R-1= Q

B+1=C

D+1=E

J-1= I

K+1=L

Q123. In the word ECONOMETRICS, if the first and second , third and forth ,fourth and fifth, fifth and sixth words are interchanged up to the last letter, what would be the tenth letter from right?

A.D B.S C.N D.J

Solutions:

Word is CENOMOTEIRSC tenth word is N

Q124. If f(0)=1 and f(n)= f(n-1)*n, find the value of f(4).

A.25 B.24 C.23 D.22

Solutions:

f(4)=f(3)*4

=f(2)*3*4

=f(1)*2*3*4

=f(0)*1*2*3*4

=1*1*2*3*4 (since f(0)=1)

=24

Q125. 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?

A.547.50 B.3041.67 C.1095.00 D.450.00

Solutions:

Note: Most of the data are irrelevant for this problem, this is a simple questions of Time and work.

We know the time and work formula,

M1 * D1 *H1 / W1 = M2 * D2 * H2 /W2

M1 – no of men

D1- no of days

H1 = no of hours

W1 = work

300 engineers -- x hours per day ---365 x 5 days

500 engineers – 2x hours per day -- ?

(300 * 5 *365* H) / W = (500 * D * 2H) /W

D = 300 * 5 * 365 / 1000

D = 547.5.

Q126. 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 ……kmph.

A.60 B.61 C.62 D.63

Solutions:

60 kmph

Distance travelled by horse in 5 hours is equal to distance traveled by pony in 7 hours.

If speed of pony is p. then

7*p= 5*84

p= 5*84/7= 60 kmph

Q127. 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.12 B.15 C.16 D.13

Solutions:

if u want to find out this solution using calculation it will be messed up.
rather doing so go for logical thinking.....
here eldest grandchild is thrice of youngest grandchild. E= 3Y
so,the age of the eldest child should be divisible by 3.
hence, 12 0r 15 (16 and 13 is ruled out, because it is not divisible by 3)
Now considering 12 is not possible as youngest will be 4 then
so middle may be 9 or 7(as difference is 3 so 12-9=3 or 7-4=3) but which does not satisfy the condition
eldest=2+(other's sum of age)
taking 15 is satisfying all the condition
Eldest=15 = 3* youngest
So youngest=5 years old
Now Eldest=15 = 2+ (5+8)
Why 8 because the difference is 3, 8-5=3
option (b) is correct.

Q128. When a man weighing 50 Kg runs at an average speed of 10 Km/hrr, 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?

a.4.1 b.4.8 c.5.8 d.7

Solutions:

Average speed= 2* s1 * s2 / (s1 +s2)
2 * 4 * 6 / (4+6)
48 /10 = 4.8 m/hr

Q129. 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:
A.45 B.88 C.92 D.63
Solutions:
let tom,dick and harry be a,b and c..
now there is totally 7 rounds of weight measure..
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.
sum of total 7 rounds written as,
a+b+c+(a+b)+(b+c)+(c+a)+(a+b+c) = 4(a+b+c)
4*161=644
average of 7 weighing is 644/7=92kg

Q130. A lady has fine gloves and hats in her closet- 18 blue, 32 red, and 25 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 if it is a glove. How many gloves must she take out to make sure she has a pair of each color?
A.44 B.59 C.76 D.60
Solutions:
Ans :- 32+25+2=59
Explanation :- Since she need pair of each color . Now taking the worst case ;suppose she have taken all the 32 of red , then 25 of yellow color . But now she still need glove of blue color . So she need to have 2 more so that she has pair of blue too.

Q131. 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
A.22 B.25 C.26 D.27
Solutions:
Lets understand the situation here ,

Alok has to maximize the value of N this means that he has to maximize the value of X and Y and minimize the value of Z, since N = X + Y - Z
Now, the values Alok can assign range from 0 to 9 but to which variable the value is assigned is decided by Bhanu only

1. If Alok selected 9 as the first number , and Bhanu put that number in Z
   Then Alok will consider the other two numbers as 9 and 9.
   So Sum = 16 + 9 +9 -9 = 25
2. If Alok selected 8 as the first number , and Bhanu put that number in Z
   Then Alok will consider the other two numbers as 9 and 9.
   So Sum = 16 + 9 +9 -9 = 26
3. If Alok selected 7 as the first number , and Bhanu put that number in Z
   Then Alok will consider the other two numbers as 9 and 9.
   So Sum = 16 + 9 +9 -7 = 27
   So 27 will be the final Value of N which is maximum.

Q132. 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
A.25 B.51 C.75 D.50
Solutions:
keeping one red ball in a box and move rest to the box containing red balls.
So in 1 box we have 1 red ball and in other box we have 31red + 31 green=62balls
So now selecting a red ball from the two box is as :-
selecting black from first box =1/2*1C1=0.5
selecting black from 2nd box=1/2*(31C1)/(62C1)=0.25
therefore probability =0.5 +0.25=0.75

Q133. 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?
A.30208 $ B.37760 $ C.23600 $ D.7552 $
Solutions:
1st condition:-
160% increase:
original price + 60% of original price

23600 + 23600x60/100 = 37760
2nd condition:-
discount 20%:
37760 - 20% of 37760 = 30208
So Ans = $30208

Q134. Earl can stuff advertising circulars into envelops 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?
A.2 B.6 C.4 D.5
Solutions:
Earl takes 1 min. for 36 envelopes.
ellen takes 3/2 mins for the same. so ellen can stuff ((36)/(3/2)) in 1 min. i.e., 24 envlpes a min.
so both of them when work together can stuff 36+24=60 envelopes in 1 min.
for 360 envelopes they will take 360/60 mins. i.e., 6 mins

Q135. 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?
A.3600 B.10800 C.32400 D.14400
Solutions:
400*3=1200 at 5pm
1200*3=3600 at 6pm

so 3600*3=10800

Q136. 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.
A.90 B.85 C.83 D.67
Solutions:
I have to get 80%...
Total points=300+100=400
so, 80% of 400 is 320

I've already got 237..
So I've to get (320-237)=83

Q137. 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 childen 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 4/3 times the age of Helen. Find Athena's present age in binary numbers during the time that the statement holds true.
A.100 B.1001 C.101 D.1100
Solutions:
let,
age of athena be a.
and age of helen be h.
now,
a-4=2(h-4)----eq1.
a+4=4/3(h+4)----eq2.
eq1 - eq2:
a-4-a-4=2h-8-4/3h-16/3
=>h=8.
so, a=12.
convert 12 in binary nos then it will be 1100.
so,1100 is its ans.

Note :Conversion of Decimal to Binary:
12 / 2 = 6 with 0 remainder
6 / 2 = 3 with 0 remainder
3 / 2 = 1 with 1 remainder
1 / 2 = 0 with 1 remainder

Q138. a, b, c are non-negative integers such that 28a+30b+31c = 365.
a + b + c = ?
a) Greater than 14 b) less than or equal to 11
c) 13 d) 12

Solutions:

In a calendar,
Number of months having 28 days = 1
Number of months having 30 days = 4
Number of months having 31 days = 7
28 x 1 + 30 x 4 + 31 x 7 = 365
Here, a = 1, b = 4, c = 7.
a+b+c = 12

Q139. George can do a piece of work in 8 hours. Paul can do the same work in 10 hours, Hari can do the same work in 12 hours. George, paul and hari start the same work at 9 am, while George stops at 11 am, the remaining two complete the work. What time will the work complete?

a) 11.30 am b) 12 noon c) 12.30 pm d) 1 pm

Solutions:

Let the total work = 120 units.
As George completes this entire work in 8 hours, his capacity is 15 units /hour
Similarly, the capacity of paul is 12 units / hour
the capacity of Hari is 10 units / hour
All 3 started at 9 am and worked upto 11 am. So total work done upto 11 am = 2 x (15 + 12 + 10) = 74
Remaining work = 120 - 74 = 46
Now this work is to be done by paul and hari. 46 / (12 + 10) = 2 hours (approx)
So work gets completed at 1 pm

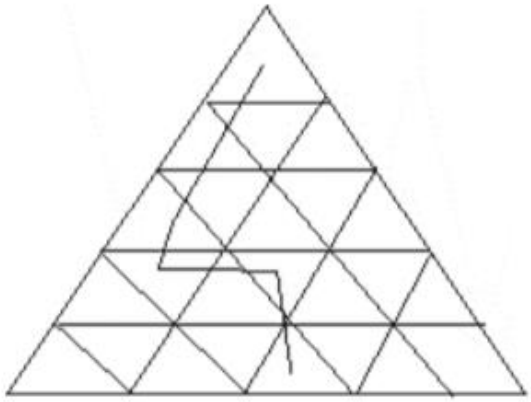
Q140. 3 mangoes and 4 apples costs Rs.85. 5 apples and 6 peaches costs 122. 6 mangoes and 2 peaches costs Rs.144. What is the combined price of 1 apple, 1 peach, and 1 mango.

a) 37 b) 39 c) 35 d) 36

Sol: Note: It is 114 not 144.
3m + 4a = 85 ..(1)
5a + 6p = 122 ..(2)
6m + 2p = 114 ..(3)
(1) x 2 => 6m + 8a = 170
(3) => 6m + 2p = 114
Solving we get 8a - 2p = 56 ..(4)
(2) => 5a + 6p = 122
3 x (4) = 24a - 6p = 168
Solving we get a = 10, p = 12, m = 15

So a + p + m = 37

Q141. Figure shows an equilateral triangle of side of length 5 which is divided into several unit triangles. A valid path is a path from the triangle in the top row to the middle triangle in the bottom row such that the adjacent triangles in our path share a common edge and the path never travels up (from a lower row to a higher row) or revisits a triangle. An example is given below.
How many such valid paths are there?
a) 120 b) 16 c) 23 d) 24
Solutions:



Solutions:
Number of valid paths = (n-1) ! = (5-1)! = 24

Q142. The marked price of a coat was 40% less than the suggested retail price. Eesha purchased the coat for half the marked price at the fiftieth anniversary sale. What percentage less than the suggested retail price did Eesha pay?
a) 60 b) 20 c) 70 d) 30
Solutions:
Let the retail price is Rs.100. then market price is (100-40) % of 100 = 60. Eesha purchased the coat for half of this price. ie., 30 only. which is 70 less than the retail price

Q143. A and B are standing in a queue. A is 18th from the front and B is 11th from the back. If there are 5 persons standing between A and B, then how many persons are standing in the queue?
a)34 b) 22 c) 28 d) Cannot be determined

Solutions:

----------→A(18^{th}) 1 2 3 4 5 B(11^{th})←----------

So behind A there are 17 person and Behind B there are 10 person and 5 in between them and one A and one B.

So total number of person = 17 + 1(A) + 5 + 1(B) + 10= 34

Q144. A, B, C and D are seated in four adjacent seats. They make the following statements.

A : I am not in the third position.

B : I am in the second or third position.

C : I am in the first position.

D : I am in the fourth position.

If three of them are speaking the truth and one of them is lying, who is in the fourth position?

Solutions:

Suppose D is in fourth position

A might be false

So C occupies 1st position

B occupies 2nd position

A occupies 3rd position(As A is false & says its not in 3rd so its in 3rd)

D occupies 4th position

Now all the conditions are satisfied

Q145. Ashok, Eesha, Farookh, and Gowri ran a race. Ashok said, "I did not finish 1st or 4th ". Eesha said, "I did not finish 4th ". Farookh said, "I finished 1st ". Gowri said, "I finished 4th ". There were no ties in the competition, and exactly three of the children told the truth. Who finished 4th? explain

A. Farookh B. Eesha

C. Gowri D. Ashok

Solutions:

Explanation:

According to the qsn :

exactly three of the children told the truth.

then 4conditions may arise i.e.

TTTF,TTFT,TFTT,FTTT

For 1st condition :

Let Gowri lies that means she nver be in 4th Place and other 3 tell the truth then nobody will occupy 4th place then
so from the above we conclude that Gowri finished at the 4th

Q146. What is the next number of the following sequence
3/7,5/21,7/43,9/73,11/111,.....
Solutions:
Numerator consequently odd no is coming
so next odd no is 13
in denominator, 21-7=14
43-21=22
73-43=30
111-73=38,here difference is always increases by 8
so next difference is 46
so next no. is 111+46=157
so ans is 13/157

Q147. Question 1: 3 × ($4^4 + 4^3 + 4^2 + 4 + 1$).
a)1024 b) 1025 c) 1023 d)1030
Solution: Answer is option (C) 1023
In this bracket there is a geometric progression having first term 1 and common ratio 4 having total terms 5

The formula for sum of terms in GP is $\frac{a(r^n - 1)}{(r-1)}$ ======> (1)

Where a = first term=1
And r= common ratio=4
And n= no terms in the series= 5
Substituting the values in the above equation (1) we get the following equation
S= $\frac{1(4^5 - 1)}{(4-1)} = \frac{1023}{3}$
The required answer is $3 \times \frac{1023}{3} = 1023$

Q148.Given that the interest is only earned on principal, if an investment of Rs. 1000.00/- amount to Rs. 1440.00/- in two years, then what is the rate of interest earned?
a) 20% b) 21% c)22% d) 23%
Solution: Answer is option (C) 22%

Now it is not directly mentioned in the question that whether the interest is simple or compound but now you have to read between lines that the interest is being calculated on principal only so the interest is simple interest

Amount = Rs 1440/-

Principal = Rs.1000/-

Time = 2 years

Rate = ?

Simple interest = Amount - Principal

Simple interest = 1440 – 1000

Simple interest = 440

$$SI = \frac{P \times R \times T}{100}$$

$$440 = \frac{1000 \times R \times 2}{100}$$

R= 22%

Q149. Parul is one fifth of the age of her mother was 15 years ago and Parul's brother is three-fifth the age his mother was 10 years ago. If the sum of Parul and her brother's age is 31. Then how old is Parul's mother?

58 years **b) 47 years** **(c)50 years** **d) None**

Solution: Answer is option © 50 years

Let the Mother's present age=M

Parul's present age = P

Parul's brother's present age = B

Then as per given conditions

P+B= 31 ========➔ equation (a)

$P=\frac{1}{5}(M-15)$ ========➔ equation (b)

$B=\frac{3}{5}(M-10)$ ========➔ equation (c)

Substitute (b) and (c) in (a)

$\frac{1}{5}(M-15) + \frac{3}{5}(M-10) = 31$

$\frac{1}{5}(4M-45) = 31$

4M-45 =155

4M = 200

M =50 years

Q150.Mayank is going on a holiday trip. He wants to pack 3 t-shirts from 5 t-shirts he has. In how many ways can he make his choice?

a)12 ways b) 8 ways c)14 ways d) 10 ways

Solution: Answer is option (d) 10 ways

There are total 5 t shirts and Mayank has to select 3 t shirts among them, so here the concept of combination will work so the solution will be

(as ${}^{n}_{r}C = \frac{n!}{r!(n-r)!}$)and ! denotes the factorial of the number.

${}^{5}_{3}C = \frac{5!}{3!2!}$

So ${}^{5}_{3}C = \frac{5\times4\times3!}{3!2!}$= 10 ways

Practice Problems:

Qns 1: 6 boys and 8 girls can do job in 10 days, 26 boys& 48 women do work in 2 days. Find the time taken by 15 boys and 20 girls to do the same work?

a)4days (b)3days c)5days (d)6days

Solution:

Consider b for boys and g for girls and w for women.

If a person completes a work in 't' days then he must be completing the 1/t th part of the work in one day.

Then the required equations as per given conditions are

6b+8g= 1/10 (1 day's work) ------>(I)

26b+48w= 1/2 (1 day's work) -------->(II)

we have to find for the no of days required by 15 boys and 20 girls

It means 15b+ 20g=?

Divide both sides of equation (I) by 2 then

3b+4g = 1/20 -------->(III)

Now multiply equation (III) by 5

15b+20g= 1/4 ; so this implies that the ¼ th part of work is completed in 1 day then so ans. is 4 days.

There is no use of (II) equation.

Qns 2: One man or two women or three boys can do a work in 44 days then in how many days one man, one woman and one boy together do the same work?

a)20days b)25days c)24days d)26days

Solution:

1 man or 2 women or 3 boys can do in 44 days.

As per given question 1 M = 2 W = 3 B = 44 days where M stands for man and W stands for woman and B for Boy.

1 M = 2 W = 3 B
LCM of 1,2&3 is=6, and divide the whole equation by 6 to get the individual efficiency
M/6 = W/3=B/2
Efficiency of each one or each one can do the units of work 6,3 and 2 units respectively so the total units performed by them in a single day is 6+3+2=11 units
1 man completes 6 units of work in a single day and he requires to work for 44 days so total units of work are 44×6 =264 units of work
if 1 man and 1 woman and 1 boy are employed to do the same work then no of units completed by them in a single day is 11 and 264 are supposed to be finished so the no days required are 264/11 = 24 days

Qns 3: In a normal 6-day work week, each of the 12 employees produces 260 items per day. Last week, 1/4 of the employees were absent from work for 3/6 of the days in the week. How many total items were produced last week?
a)16300items b)16542items c)16444 items d)16380items
Solution:
Suppose if all the employees work for the whole 6 days then Total items produced by 12 employees in 6 days.
= 12×6×260
=18720 items
but the 3 employees have remained absent for 3 days so the no of items produced by those absent employees
=3×3×260
=2340 items
so originally total items produced
=18720-2340
= 16380 items

Qns 4: Two printers are printing pages. The first printer prints 21 pages per minute. The second printer prints 40 pages per minute.
If the second printer printed for 4 ½ hours, how many minutes would it take by the first printer to print the same number of pages as the second printer?
(a)512.36 minutes (b)514.28 minutes (c)512.25 minutes (d)516.21 minutes
Solution:
let x minutes to print the pages for first printer
given first printer prints 21 pages per minutes so the no pages printed by it in x minutes are 21 × x pages

Given second printer prints 40 pages per minute and it is active for 4 hours and 30 minutes or we can say 270 minutes so the no pages printed by the second printer are
40×270=10800 pages as 4 hours and 30 minutes= 4 × 60 +30= 270 minutes

so 10800=21 × x
x= 514.28 minutes for first printer

Qns 5: Due to some defect in our elevator, I was climbing down the staircase. I would climb down just 7 steps when I saw a man on the ground floor. Continuing to walk down, I greeted the man and I was surprised to see that when I was yet to get down 4 steps to reach the ground floor, the man had already finished climbing the staircase. He perhaps climbed up 2 steps for every 1 of mine. How many steps did the staircase have?
(a) 22 (b)24 (c)26 (d) 28
Solution:
As per given condition
Let x be the no of steps taken by me then he must have climbed 2x number of steps. As old man takes 2 steps for every one step he takes and he has to complete 4 steps and 7 steps already taken by him so.
7+x+4=2x
x=11
Total steps => 2x=22

Qns 6: Ajit was driving down the countryside when he saw a farmer tending his pigs and ducks in his yard. Ajit asked the farmer how many of each he had. The farmer replied in an amusing way that there were 60 eyes and 86 feet between them. How many ducks and how many pigs were there?
(a)14, 15 (b)16, 17 (c)17, 13(d)20, 22
Solution:
let the no of ducks be X and no of pigs be Y.
then,since there are 60 eyes in total and both ducks and pigs have 2 eyes we have :
2X+2Y=60 --(1)
and total no of legs are 86, ducks have 2 legs while a pig has four so.:
2X+4y=86 ---(2)
subtracting (1) from (2), we get
2Y=26. i.e. Y =13
putting value in (1),

we get X=17
So there are 17 ducks and 13 pigs.

Qns 7: Two pipes a and b separately fill a tank in 15/2 min and 5 min respectively and third pipe c can empty the same tank at the rate of 14litre/minute. If all the pipes are open when the cistern is already full, it is emptied in 1 hr. How many litres does the cistern can hold?
(a)60 litre (b) 40 litre (c) 45 litre d) 50 litre
Solution:
LET TOTAL WATER IN CISTERN=X LITRE
(SPEED=LITRE/TIME) which means a pipe can add how much water (in litre) if it fills the tank completely in x minutes.
SPEED OF A = 2X/(15) Litre/Minute
SPEED OF B = X/(5) Litre/Minute
SPEED OF C=14 Litre/Minute (given)
X is the quantity of water already present in tank as the tank is full and X/5 is the amount which A is adding and 2X/15 is the amount which B is adding and C is draining out water at the rate of 14 litres per minute.
Now ACCORDING TO QUESTION
Total amount of water inlet= total amount of water outlet
X+ (2X/(15)+ X/(5)) ×60 = 60×14,
X+ X/3×60 = 60×14
X+20X=60×14
21 X = 60×14
X=40 LITRE

Qns 8: A water filter takes 40 minutes to filter 20 litres of water. Another filter of same specifications takes 30 min. to filter the same amount of water. If both the filters are used at the same time, then how long will it take them to filter 70 litres of water?
(a) 30 minutes (b) 50 minutes (c) 60 minutes (d) 40 minutes
Solution:
Answer is option 3)1 hour
For the first filter,
40 minutes are taken by it to fill 20 litres of water.
Therefore, in 1 minute = 20/40 = 1/2 litre of water can be filled
For the second filter,
30 minutes are taken by it to fill 20 litres of water.

Therefore, in 1 minute =20/30 = 2/3 litres of water can be filled.
So, both can fill in 1 minutes=((1/2+ 2/3)= 7/6 litres.
Now, if 7/6 litres can be filled in 1 minute then,
70 liters can be filled in=(6/7)×70=60 minutes=1 hour.

Qns 9: A can fill a tank in 6 hours and B can fill the tank in 4 hours. If both the pipes are opened alternatively for an hour with A as the first then in how many hours will the tank b filled?

a)4 hrs b)5 hrs c)6 hrs d)3 hrs

Solution:

A can fill a tank in 6 hours and B can fill the same in 4 hours so take the LCM of 6 and 4 to convert the capacity of tank in no of units of work and that is 12. So the tank capacity is 12 units.
for pipe A=>>>> (12)/6 =2 units of work per hour .
for pipe B=>>>> (12)/4 = 3 units of work per hour.
so alternatively it fills 12 units of work if started by A,
2+3+2+3+2=12 so the required answer is 5 hours.

Qns 10: A woman in her conversation said "if you reverse my own age, in figures it will represent my husband's age. He is of course senior to me and difference between our ages is 0ne-eleventh of their sum. What is the difference between the age of woman and her husband's age?

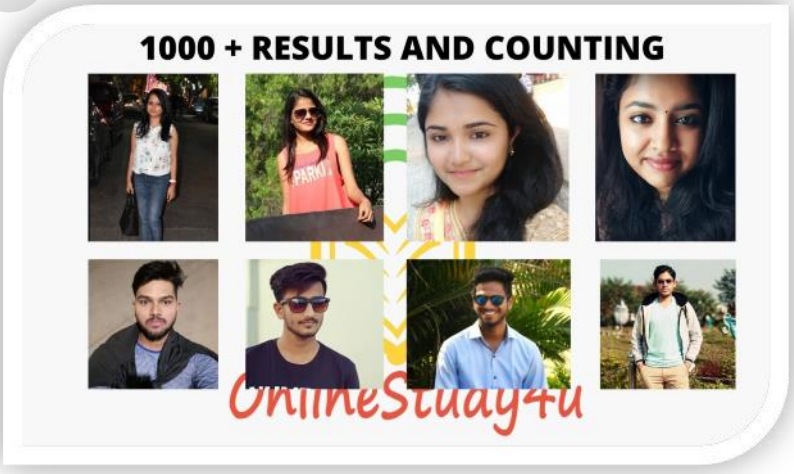
a)8 years b)9 years c)7 years d)11 years

Solution:
Suppose man's age be xy or we can write it 10x+y as y is unit's digit and x is the ten's digit then as per given condition woman's age will be yx or in similar way 10y+x
According to the given condition
(10x+y) – (10y+x)=1/11 (10x+y+10y+x)
9x-9y = x+y
Rearrange the equation to get the similar variables on one side
8x=10y
x/y = 10/8= 5/4
so the required ages are xy=54 and yx=45
proof: (54+45)/11 =9
54-45=9;

Qns 11: When I was married 10 years ago my wife is the 6th member of the family. Today my father died and a baby born to me. The average age of my family during my marriage is same as today. What is the age of Father when he died?
a)65 years b)60 years c)70 years d)62 years

Solution:
let average age was 'x' years 10 yrs ago,
so the total age 10 years ago for the whole family was 6 × x years,
At present,
father died, now members remain= 5,
now total age after 10 yrs is (no. of member)×(x+10) yrs,
i.e.total age is 5(x+10)
and after baby born total age = 5(x+10)+0, because baby age is 0 yrs
as per question, the average is same
i.e. x= (5x+50+0)/6
after solving. x=50,i.e. father's age before 10 yrs was 50 yrs,
now father died after 10 yrs hence age at dead time= 50+10=60 yrs.

Qns 12: Raju is 10 years elder to Sita. 10 years from now Raju would be twice as old as Sita was before 10 years. How old would be Sita after 12 years?
(a) 50 years (b) 54 years (c) 52 years (d)57years
Solution:
If R and S are their present ages, then
R=S+10 =>>>> (I)
and
R+10= 2 × (S-10) =>>>>>> (II)
Substitute equation (I) in equation
(II) we get
S+10+10 = 2S-20
2S-S= 40
S=40 years and substitute it into
equation in (I)
R= 40+10 = 50 years
R=50 and S=40
At present, Sita is 40 years old.
After 12 years, Sita will be 52 years old.



Qns 13: Joe's age, Joe's sister's age and Joe's fathers age sums up to a century. When son is as old as his father, Joe's sister will be twice as old as now. When Joe is as old as his father then his father is twice as old as when his sister was as old as her father. What is the age of the father?

a)58 years b)52 years c)54 years d)50 years

Solution:

Joe+sister+father=100 (as century means 100 years) =>>>> (1)

after x years suppose joe's age is equal to his father

joe+x=father =>>> (I)

therefore,

sister + x=2 × sister

sister=x =>>>(II)

comparing eqautions (I) and (II) we get

joe+sister=father =>>>>(2)

substitute equation (2) into (1)

therefore, 2 × father=100

hence, Father=50

Qns 14: The difference of two numbers is 15. The LCM and HCF 180 and 15 respectively. Find the numbers.

a)45, 30 b)45,60 c)30,15 d)60,15

Solution:

Let one number be X then other number will be x+15

as we know that lcm × hcf = product of those numbers

180×15=X(x+15)

2700=x^2+15x

x^2+15x-2700=0

x^2+ 60x - 45x - 2700 =0

(x+60)(x-45) = 0

If product of two numbers is zero then either of them is zero. So

either x+60=0 or x-45=0

x=45 or x= -60

x=45

One Number = 45

other number = 60

it will not be 15 and 30 as the l.c.m of 15 and 30 will be 30

Qns 15: A taxi driver states that his cab number is divisible by the no 2,3,4,5,6 with a remainder of 1 and when the number is divided by 11 it does not give any remainder.
a)11 b)1331 c)121 d)145
Solution:
On finding the LCM of 2,3,4,5 & 6 we get the value as 60, on adding 1 to 60 satisfy the first condition
Now 61 not divisible by 11
Then multiply 60 by 2,
we get 120: 120+1, 121 is exactly divisible by 11

Qns 16: Let p and q be two prime numbers such that p is greater than q. If 319 is their LCM then the difference of thrice of q and p is:
(a)1 (b)3 (c)5 (d)4
Solution:
We know that, HCF of two prime numbers is 1.
Product of HCF and LCM = 1 x 319 = 319.
Remember that, Product of two number = Product of their HCF and LCM
pq = 319

Now, co-primes with product 319 are (1,319) and (29,11)
Since p > q, p = 29 and q = 11
Then 3q - p = 33 - 29 = 4.

Qns 17: Find the smallest number which leaves 22, 35, 48 and 61 as remainders when divided by 26, 39, 52 and 65 respectively.
(a)776 (b)767 (c)744 (d)722
Solution:
In this kind of questions please check the difference of divisor and remainder they must be equal and if so then take the lcm of the divisors and subtract the common difference.
(26-22, 39-35, 52-48, 65-61) = (4,4,4,4)
LCM of (26,39,52,65) =780
Req. number= 780-4 =776

Qns 18: A sales man has a liberty to sell a hair drier in his store between 300 and 700. The profit earned by selling the drier for Rs. 650 is twice the loss incurred when it is sold for Rs. 350. Find the cost price of the Drier?

(a)Rs400 (b)Rs 350 (c)Rs450 (d)Rs420

Solution:

Profit =selling price-cost price

loss=cost price-selling price

Given 650-cp= 2(cp-350)

650-cp= 2cp-700

3cp = 1350

Cost price= 450 Rs.

Qns 19: The true discount on Rs. 2562 due 4 months hence is Rs. 122. The rate percent is:

A. 12% B. 40/3% C. 15% D. 14%

Solution:

Option: C

Simple interest of 4 months i.e. of 1/3 years=Rs. 122

so principal=2562-122=2440.

now R= (SI×100)/(P×time)

so R=(122×100×3)/(2440×1)=15

as time is 4 months or we can say 1/3 year

Qns 20: Nitish sold his watch and sunglasses at a loss of 4% and gain of 4% respectively for 2600 to Kamal. Kamal sold the same sun glasses and watch at a loss of 4% and gain of 4% respectively for 2700. The price of watch and sun glasses to Nitish were.

a. (Rs.1960, Rs.700) b. (Rs.2000, Rs.1000) c. (Rs.1500, Rs.700)

d. (Rs.800, Rs.2000)

Solution:

Let the CP of watch be Rs x and sunglasses be Rs y.

As the watch is sold at loss at rate of 4% percent so selling price will be

SP= x×((100-4))/100

Similarly, the sunglasses are sold at profit at rate of 4% so selling price will be

SP= y×((100+4))/100

As per given conditions

2600= 96x/100+104y/100

2700= 96y/100+104x/100

On solving,

y=700 , x=1960

Qns21: Ankit sold an article for Rs 324 at a profit of 8%. What would have been the loss incurred by him it was sold for Rs. 279?

A)10% B)8% C)9% D)12% E)7%

Solution:

Ans: 7%

If he sold article at 324 at a profit of 8% it mean original price is 300 rs i.e 1% is 3 rs.

Or you can calculate it by using the formula SP= (CP×(100+%profit))/100

Substitute the values in this formula

324= x×(100+8)/100

Then the cost price will be Rs. 300

When he sold article at 279 that mean it 21 less from cost price

Loss % = 100×(cp-sp)/cp =100×(300-279)/300=

100×21/300 = 7%.

Qns 22: The printed price on a book is Rs.400, a bookseller offers a 10% discount on it. If he still earns profit of 12%, then the cost price of the book is?

a)Rs.280 b)Rs.353 c)Rs.321.42 d)Rs.300

Solution:

Discount = 10% of 400= Rs. 40

Selling price =printed price (marked price)- discount

so,400-40=360(s.p)

he earns a profit of 12%,

SP= CP×((100+p))/100

=>360= CP×((100+12))/100

so 1.12 CP=360

=> CP=360/1.12

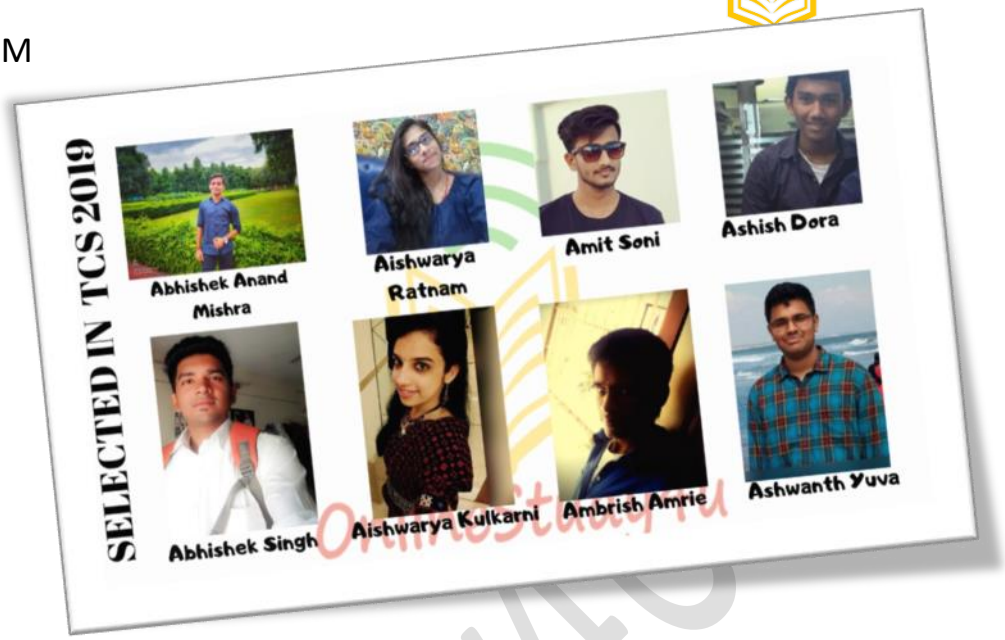
=>CP= Rs. 321.42

Qns 23: Sonia is one fifth of the age of her mother was 15 years ago and Sonia's brother is three-fifth the age his mother was 10 years ago. If the sum of Sonia and her brother's age is 31. Then how old is Sonia's mother?

A.40 yrs B.50 yrs C.45 yrs D.46 yrs

Solution:

Let the Mother's present age=M
Sonia's present age = S
His brother's present age = B
Then as per given conditions
S+B= 31 ======> (1)
S=1/5 (M-15) ======> (2)
B=3/5 (M-10) ======> (3)
Substitute (2) and (3) in (1)
1/5 (M-15) + 3/5 (M-10) =31
1/5 (4M-45) =31
4M-45 =155
4M = 200
M =50 years



Qns 24: A plane travels in the shape of equilateral triangle have speed of 20km/hr, 40km/hr and 60km/hr. Find the average speed of the plane.
a.360/13 km/h b.354/13km/h c.360/11 km/h d.358/17km/h
Solution:
=>>>>>>average speed = (total distance)/(total time taken)
Let the distance travelled be 'd' on each side of the triangle then total distance will be d+d+d=3d
The time taken by it during first side will be
Time =distance/speed= d/20
Similarly for second side =d/40
for third side = d/60
substitute the values in the formula for average speed
average speed = (d+d+d)/(d/20+d/40+d/60) where d= side of eq. triangle
=(3×20×40×60)/((20×40)+(40×60)+(20×60))
= 360/11 km/h
= 32.73 km/h

Qns 25: The average age of 10 members of a committee is the same as it was 4 years ago, because an old member has been replaced by a young member. Find how much younger is the new member than oldest one?
a.45 years b.40 years c.42 years d.38 years
Solution:

Let the members be Old Having age O + other 9 having average age x and New one having age Y
Sum of their ages = (Y + 9 × x) and
average = (Y+9×x)/10
Before 4 years sum was (O + 9 x – 10 × 4) and
average = (O+9x-40)/10
equating, Y + 9 x = O + 9x – 40
Y = O – 40
Younger is 40 years younger than Old one.

Qns 26: The average age of 30 boys of a class is equal to 14 yrs. When the age of the class teacher is included the average becomes 15 yrs. Find the age of the class teacher.
A.40 yrs B.42 yrs C.45 yrs D.46 yrs
Solution:
The average age of 30 boys of a class is equal to 14 yrs:
i.e Sum of all boys:30*14
including class teacher:31 candidates in a class
&avg age is:15 yr
i.e. sum of all:31*15(include class teacher) =465
so,the age of the class teacher:465-420=45yr
answer will be 45 yrs(option c)

Qns 27: Seats for Mathematics, Physics and Biology in a school are in the ratio 5 : 7 : 8. There is a proposal to increase these seats by 40%, 50% and 75% respectively. What will be the ratio of increased seats?
Options
A. 2 : 3 : 4 B. 6 : 7 : 8 C. 6 : 8 : 9 D. None of these
Solution:
let 100% seats are there in all then mathematics increased by 40% then
5×140/100 = 7
physics is increased by 50% then
7×150/100 = 10.5
biology increased by 75% then
8×175/100 = 14
then ratios of increasing seats are 7:10.5:14
multiply this ratio by 2.
14:21:28

2:3:4 is ans

Qns 28: A student gets an aggregate of 60% marks in five subjects in the ratio 10 : 9 : 8 : 7 : 6. If the passing marks are 50% of the maximum marks and each subjects has the same maximum marks, in how many subjects did he pass the exam?
(a)5 subjects (b) 4 subjects (c) 3 subjects (d) 2 subjects
Solution:
Let the full marks of each subject is 100. So,
Total Mark in five subjects = 500.
Student gets 60% aggregate marks i.e. 60% of 500 = 300 marks.
10x + 9x +8x +7x +6x = 300
40x = 300
x = 300/40 = 7.5.
Marks in first subject = 10x = 10 ×7.5 = 75.
Marks in second subject = 9x = 9 ×7.5 = 67.5
Marks in third subject = 8x = 8 ×7.5 = 60.
Marks in fourth subject = 7x = 7 × 7.5 = 52.5
Marks in last subject = 6 ×7.5 = 45.
Thus, he passed in 4 subjects.

Qns 29: Increasing of length and breadth is proportional. length=6 which changes into 21 and breadth changes to 14. What was the previous value of breadth?
a.4 units b.3 units c.5 units d.6 units
Solution:
let the previous length be x
(previous length)/(previous breadth) = (new length)/(new breadth)
6/(x) = 21/14
or, x=(14×6)/21
or, x=4

Qns 30: The radius of the circle is reduced from 5cm to 4cm then the % change of area.
a.32 b.35 c.36 d.37
Solution:
Radius is reduced to 4 from 5 change in radius is
(final-initial)/initial×100
(4-5)/5×100 which is 20% reduced.

The formula for change in the area in percentage is (x +x – (x^2/100))
where x is the percent change in radius.
20 +20 – ((20)^2)/100 =36
So 36% decrease in area.

Qns 31: In an exam 49% candidates failed in English and 36% failed in Hindi and 15% failed in both subjects. If the total number of candidates who passed in English alone is 630. What is the total number of candidates appeared in exam?
a.3600 b.3513 c.3000 d.3587
Solution:
Candidates which are not failed in English P(E) = (100-49) % = 51%
Candidates which are not failed in Hindi P(H)= (100-36) % = 64%
Candidates which are not failed in both P(E∩H) = P(E) + P(H)- P(EUH)
P(EUH) = 100- **P($\overline{E} \cap \overline{H}$)** = 100%- 15% = 85%)
= P(E∩H) = (51+64-85) % = 30 %
pass in English only=51-30=21 %
21/100× X =630
⇨ x=3000

Qns 32: It has 20L mixture contains milk and water in the ratio 3:5, replace 4 litres of mixture with 4 litres of water what is the final ratio of milk and water?
a.3:7 b.4:3 c.6:11 d.3:5
Solution:
Total mixture = 20 litre and divide this in the ratio of 3:5
Amount of milk = 3/8× 20 = 7.5L
Amount of water = 5/8× 20 = 12.5L
if we fetch 4L mixture according to ratio it will be 1.5L milk & 2.5L water, replace this mixture from the water then it will be 6L milk (7.5 – 1.5) and 14L (12.5-2.5+4) water then ratio will be 6/14 = 3/7

Qns 33: A mixture of 80 litres containing milk and water contains 10% water. How much water must be added to make water 20% in the new mixture?
a.13 litre b.10 litre c.12 litre d.14 litre
Solution:
Answer is 10 litre of water is to be added.
At present there is 72 litre milk and 8 litre water as 10 % of 80 litre is 8 litre.
Now 72 litre milk should be 80% of mixture in new case. Then

total mixture × 80/100 = 72
Total mixture = 90 litre
so 10 litre water is to be added.

Qns 34: In a mixture of 90 litres, the ratio of milk and water is 4 : 2. How much water should be added to the mixture so that the ratio of milk and water becomes 6 : 4 ?
1) 50 2) 10 3) 40 4) 20 5) None of these
Solution: 2) 10 litres
Water in the 90 litres of mixture = 90 × 2/6 = 30 litres
and remaining 60 litres is milk
If 'x' litres of water is added and ratio of milk and water becomes 6:4, then
60/(30+x)= 6/4
x=10 litres

Qns 35: A mixture has milk and water in the ratio 5:1. 20 liters of water is added and the ratio now becomes 5:6. How much milk was present in original mixture?
a.23 litres b.20 litres c.21 litres d.24 litres
Solution:
If milk and water in original mixture is 5x and x respectively, then
5x/(x+20) = 5/6
30x = 5x + 100
25x = 100
x=4
So milk in original mixture= 5×4 =20 litres

Qns 36: Two cars are 500 cm apart. Each is moving forward for 100 cm at a velocity of 50 cm/s and receding back for 50 cm at 25cm/s at what time they will collide with each other.
a.13 sec b.15 sec c.14 sec d.17 sec
Solution:
Each car is moving forward for 100 cm with velocity 50cm/s
so time to cover 100cm is = 100/50 = 2 sec
again receding back for 50 cm at 25cm/s velocity
so time to cover 50 cm is=50/25=2 sec
actually they individually cover (100-50)=50 cm in (2+2)=4 sec
so in 12 sec they together cover (150+150)=300 cm
and after that both move 100 cm in 2 sec

so after (12+2)=14 sec they cover (300+200)=500cm
so they collide after 14 sec.

Qns 37: Every day a cyclist meets a train at a particular crossing. The road is straight before the crossing and both are travelling in the same direction. The cyclist travels with a speed of 10 kmph.one day the cyclist comes late by 25 min and meets the train 5km before the crossing. What is the speed of the train?
a.40 km/h b.54 km/h c.60 km/h d.58 km/h
Solution:
Answer is Speed of the train = 60km/hr.
Speed of Cyclist travel = 10km/hr.
It means, Cyclist travels 5km in 30minutes.
If Cyclist comes late by 25 min and meets the train 5km before the crossing means, it shows Train can travel 5Kms in 5minutes.
So, speed of train is ((5 km)/(5 min)) = (1 km)/(1 min) = 60km per hour.

Qns 38: In a 500 m race, Ravi beats Ramesh by 5 seconds or 100 m. They decide to run another race and this time Ravi gives Ramesh a head start of 200 m. If Ravi's speed is twice his previous speed and Ramesh's speed is one and half times his previous speed, how far from the starting point should the winning post be so that they finish at the same time?
A) 500 m B) 1000 m C) 1500 m D) 2000 m
Solution:
Ans will be 500 m
Explanation:
Ravi beats Ramesh by 5 sec or 100 meter means Ramesh cover 100mtr in 5 sec....
by this we can get Ramesh's speed is 20m/sec
20m.....in 1 sec
500 m .....in 500/20=25 sec (Ramesh's time)
so Ravi takes 20 sec to cover 500 meters.....by this we can get that Ravi's speed is 25m/sec
now assume x be the distance from starting line where we need to put the winning post.
According to question Ravi's speed will be 25×2=50m/sec &
Ramesh's speed will be 20×1.5=30 m/sec
now assume x be the distance from starting line where we need to put the winning post.
they will take same time to reach the winning post.
As Ravi gives Ramesh a 200 m ahead start so he has to accede x meter and Ramesh has to accede (x-200) meter

Hence we may write,
x/50 = (x-200)/30
30x = 50x – 10000
20x=10000
x=500 meter

Qns 39: At 10 am 2 trains started travelling towards each other from station 287 miles apart they passed each other at 1:30 pm the same day. If average speed of the faster train exceeded by 6 miles /hr what is speed of faster train in miles/hr?
a.42 b.44 c.42 d.40
Solution:
Let the speed of slower train is x miles per hour
then speed of faster train is=x+6 miles per hour
Relative speed of the trains = speed of train A+ Speed of train B (as they are moving towards each other)
now, 287/(x+x+6) = 7/2
after solving the equation we will get x=38 miles per hour
so faster train=x+6
38+6=44 miles per hour

Qns 40: Two people X & Y walk on the wall of a go down in opposite direction. They meet at a point on one side and then go ahead. X after walking for some time, walks in opposite direction for 15 meters. Then again he turns back and walks in the original direction. What distance did Y walk before they met again, if X walks 11 meters by the time Y walks 8 meters.
(a) 76 (b) 80 (c) 110 (d) 112
Solution:
X turn back for 15 meters So X was 30 meter behind the Y
they want to be in ratio 11 : 8
by hit and trial 22:16
33:24
44:32
.....
110:80 which have difference 30 meters
so answer is Y travelled 80 meters and X travelled 110 meters

Qns41: A man covers a distance of 1200 km in 70 days resting 9 hours a day, if he rests 10 hours a day and walks with speed 1½ times of the previous in how many days will he cover 750 km?

Options:

1: 30 2: 31.25 3: 31 4: 33

Distance d = 1200km

let x be the speed

he walks 15 hours a day (i.e. 24 - 9)... so totally he walks for =15 × 70 =1050hrs...

x = speed = distance/time = 1200/1050 = 120/105 = 24/21 =8/7kmph

given of Now that he travels now at the speed 1½ of previous speed

so 3/2 * 8/7 = 24/14 =12/7

new speed = 12/7 kmph

now he rests 10hrs a day, means he walks 14hrs a day

time = Distance/ Speed = 750/ (12/7) = 437.5hrs

=> 437.5 /14 = 31.25

so he will take 31.25 days to cover 750km

Qns 42: Shanti's school normally FINISHES AT 4 PM. her mom drives from home to pick her up, reaching the school exactly at 4 pm. One day, a half holiday is announced and the School finishes for the day at 1 pm. Rather than sitting and Waiting , Shanti decides to start walking towards home. Her mother meets her along the way and as a result they reach home an hour earlier than normal. What is the ratio of the Shanti's walking speed to her mother's driving Speed?

Options:

1: 1:4 2: 1:5 3: 1:6 4: 1:7

Solution:

Together they save 1 hour, i.e, in a one way trip, they would save half Hour each.

therefore, instead of meeting Shanti at 4pm in the school, her mother meets her at 3.30pm(half an hour earlier, to & fro will save 1 hour)

Therefore from the meeting point, to reach the school, the car would take .5 hrs

However, Shanti took 2.5 hrs(3.30-1) to reach the meeting point

Therefore, .5 Times Mom's speed = 2.5 Times Shanti's speed-----(distance=time x speed, since distance is same, equating the product of time and speed for both the cases)

therefore, ratio of the speeds is 1:5

Qns 43: Riya and Priya set on a journey. Riya moves eastward at a speed of 20kmph and Priya moves westward at a speed of 30 kmph. How far will be priya from Riya after 30 minutes

a. 25kms b. 10kms c. 50kms d. 30kms

Solution:

Total eastward distance= 20kmph × 1/2hr=10 km

total westward distance= 30kmph× 1/2hr =15 km

total distance between them= 10+15=25km

answer is 25km

Qns 44: Two trains leaving from two station 50 miles away from each other with constant speed of 60 miles per hour, approaches towards each other on different tracks. If length of each train is 1/6 mile. When they meet how much time they need to pass each other totally?

a. 1/7 minutes b. ¼ minutes c. 1/5 minutes d. 1/6 minutes

Solution:

Both are approaching each other with relative speed=60+60=120miles/h

distance=50miles

time=50/120= 5/12hrs= 25 minutes to meetnow,

relative length of train= 1/6 + 1/6= 1/3 miles

relative speed = 120miles/h

time to cross both the trains= (1/3)/120 = 1/360 hrs

= 1/6 minutes

Qns 45: Train starts from Amritsar to Bombay at 9am. It reaches destination after 3days at 9:30am. Every day a train starts. How many trains does it come across on the way?

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

Solution:

4 trains

because one train is taking 3 days

so 1 train first day

another at second day

and 3rd one at third day

but as given train reaches at 9.30 am instead of 9.00 am

so on the same day train already left

that train will be 4th train

Qns 46: A train 120 meter long passes an electric pole in 12 seconds and another train of same length traveling in opposite direction in 8 seconds. The speed of the second train is?
Options:
a.20 m/s b.25 m/s c.36 m/s d.35 m/s
Solution:
speed of 1st train = 120/12 =10m/s
let the speed of 2nd is v
then and now the first train is crossing second train coming from opposite direction so the length of the trains will be added and the relative speed is the sum of individual speeds of the train.
240/(v+10)=8
8v=160
v=20m/s

Qns 47: There are two bridges running parallel over river Kauvery, and they are 1 KM apart. A man started rowing the boat upstream under first bridge, his hat fell into river while he was exactly under second bridge. He realized that after 15 meters, and started rowing in opposite direction, he eventually caught his hat under First Bridge. What is the speed of river Kauvery?
(a)3 km/h (b)4 km/h (c) 6 km/h (d) 2 km/h
Solutions:
Let the upstream velocity=x km/h
so he goes first 1 km then 15 min with this velocity
so total goes= (x×15/60+1)km= (x+4)/4 km
and now he is covering the same distance in downstream in 15 min
so his downstream velocity= (x+4)/4 ×1/15 = (x+4)/60 km/min
now speed of river=1/2 [downstream speed-upstream speed]
=> 1/2[(x+4)/60 - x/60] km/min
=1/2 × 4/60 = 2/60km/min so multiply this with 60 to convert this into km/hr
=2km/h

Qns 48: If ab + b + a = 135
bc + b + c = 47
ca + a + c = 101
What is the value of a + b + c?
(a)36 (b)35 (c)28 (d)26

Solution:
ab+a+b+1 = 135 + 1
a(b+1)+1(b+1) =136
(a+1)(b+1) =136 —-1
Same for further 2
(b+1)(c+1)=48 ——2
(a+1)(c+1)=102 ——-3
Now make factors
For eq1 , factors 17*8
For 2, factors 8*6
For 3 , factors 6*17
So by factors
a+1 = 17 => a=16
b+1=8 => b=7
c+1=6 => c=5
a+b+c=28

Qns 49: A set of 7 pens, 9 erasers and 11 sharpeners costs Rs 79 and 2 pens, 5 erasers and 8 sharpeners cost Rs 42. Find the total cost of one sharpener, one eraser and one pen.
(a)8 (b)7 (c)9 (d)6
Solution:
Let P for Pen, E for Eraser and S for sharpner
7P+9E+11S=79 ======> equation (1)
2P+5E+8S=42 =======> equation (2)
We need to find P+E+S=?
eliminating P.... eq1 ×2 - eq2×7, gives
17E+34S=136 ==== > equation (3)
eliminating S ....eq1×8 - eq2 × 11, gives
34P+17E=170 ==== > equation (4)
adding eq3 and eq4,
34P+34E+34S=306
P+E+S=9

Qns 50: If x=y=2z and xyz=256 then what is the value of x?
a)12 (b)8 (c)16 (d)6
Solution:
XYZ=256

(2Z)(2Z)Z=256
4Z3=256
Z3=64
Z3=43
SO Z=4
AS X=2Z
X=8

Qns51: The difference of 2numbers is 8 and the difference of their squares is 160. Find the numbers?
(a)14, 6 (b)13, 2 (c)11, 5 (d) 12, 4
Solution:
x-y = 8 ---------(1)
x^2-y^2 = 160
=> (x+y)×(x-y)= 160
Substituting equation (1) in the above equation we get
8(x+y)= 160
=>x+y = 20 ---------(2)
solve 1 & 2
x=14, y = 6

Qns52: If m=(2-√3), then the value of $\frac{m^6+m^4+m^2+1}{m^3}$ is:

A. 64 B. 56 C. 69 D. 52
Solution:
given, $\frac{m^6+m^4+m^2+1}{m^3}$
$(\frac{m^6}{m^3}+\frac{m^4}{m^3}+\frac{m^2}{m^3}+\frac{1}{m^3})$
$(m^3 + m + \frac{1}{m^1}+\frac{1}{m^3})$

now, m = (2 - √3)
m^3 = (26 - 15√3)
$\frac{1}{m^1}$ = (2 + √3)
$\frac{1}{m^3}$ = (26 + 15√3)

adding $(m + \frac{1}{m^1} + m^3 + \frac{1}{m^3})$

$(2 - \sqrt{3} + 2 + \sqrt{3} + 26 - 15\sqrt{3} + 26 + 15\sqrt{3})$

$=56$

Qns 53: A speedboat whose speed is 15 kmph in still water goes 30 kmph downstream and comes back in a total of 4hrs 30min. What is the speed of the stream in kmph?

Options:

a.3 km/h b.5 km/h c.6 km/h d.8 km/h

Solution:

Let the speed of the stream be x km/hr. Then,

Speed downstream = (15 + x) km/hr,

Speed upstream = (15 - x) km/ph

30/(15+x)+30/(15-x)=4.5

solve for x

x=5kmph

Qns 54: A river runs at 4 km/hr. if the time taken by a man to row is boat upstream is 3 as the time taken by him to row it downstream then find the speed of the boat in still water.

a.6 km/h b.5 km/h c.7 km/h d.8 km/h

Solution:

Time(Upstream)=3T(Downstream)

d/(x-y)=3d/(x+y)

x+y=3x-3y

4y=2x

x=2y

x=8Kmph

Qns55: A man rows to a place 48 km distant and come back in 14 hours. He finds that he can row 4 km with the stream in the same time as 3 km against the stream. The rate of the stream is:

A. 1 km/hr B. 1.5 km/hr C. 2 km/hr D. 2.5 km/hr

Solution: 1 km/hr

If upstream speed is 3x and downstream speed is 4x, then

48/4x+ 48/3x = 14

48/12x×7 = 14

then x= 2
Hence if speed of boat in still water is B and speed of stream is S, then
B+S = 8 km/hr
B-S = 6 Km/hr
solving it, we get (
first add them to get the value of the variable B i.e. the speed of the boat and then subtract the equations to get the value of S i.e the speed of the stream)
S= 1 km/hr and B= 7 km/hr

Qns 56: A man can row at 5 kmph in still water. If the velocity of current is 1 kmph and it takes him 1 hour to row to a place and come back, how far is the place?
a.2.4 km b.2.5 km c.3 km d.3.6 km
Solution: 2.4 kms
upstream speed = 5-1= 4 kmph
downstream speed = 5-1= 4 kmph
If x is the distance in one direction, then
x/4 + x/6 =1
x ×5/(12) =1

solving it, we get
x= 2.4 kms

Qns 57: The ratio of the present ages of two Friends is 2 : 3 and six years back, the ratio was 1 : 3. What will be the ratio of their ages after 4 years ?.
a.3/4 b.5/13 c.3/11 d.3/7
let present age of two friends is x and y respectively
x/y = 2/3 =======> equation (1)
6 years ago the ages will be
(x-6)/(y-6) = 1/3
3x-18=y-6
3x-y=12 ======> equation (2)
from equation (1)
x=2y/3 ======> equation (3)
putting the value of x in equation (2)
3 ×2y/3 – y = 12
we get y=12 and substitute this value in equation (3) and we will get the value of x i.e. x=8
this is present age so after 4 years

(8+4)/(12+4)
= 3/4 ANS

Qns 58: Rs 8000 was divided among 5 men, 8 women and 10 boys, such that the ratio of the shares of men, women, and boys is 17:12:11. What is the share of the boy?
A) Rs. 220 B) Rs. 480 C) Rs. 300 D) Rs. 680
Solution:
According to question the total money 8000 is being divided in the ratio of 17:12:11. Let the amount shared between them is 17x, 12x and 11 x respectively so Total ratio=17x+12x+11x=40x
Now 8000 =40x
X= 200
total money shared between 5 men=200*17 = Rs. 3400
No. Of men=5
3400÷5= Rs.680
Total money shared between 8 women=200*12= Rs.2400
No. Of women=8
2400÷8= Rs.300
Total money shared between 10 Boys=200*11= Rs. 2200
No. Of boys=10
2200÷10= Rs. 220

Qns 59: The sum of three numbers is 147. If the ratio of first to second is 2:3 and that of the second to the third is 5:8 then the second number is
A) 30 B) 72 C) 45 D) 36
Solution:
Let the three parts be A, B, C. Then,
A : B = 2 : 3 and B : C = 5 : 8 to equate the value of B perform the following action
= (5×3/5) : (8×3/5) = 3 : 24/5
A : B : C = 2 : 3 : 24/5 = 10 : 15 : 24
Given A+B+C= 147
B = 147 × 15/49
B = 45

Qns 60: A and B invest in a business in the ratio 2 : 3. If 10% of the total profit goes to charity and B's share is Rs. 5400, the total profit is:
A) Rs. 12000 B) Rs. 15000 C) Rs. 9000 D) Rs. 10000

Given:
A:B=2:3
B's share=5400.capital invested
Let the total profit =x
As 10 % profit is being sent to charity which means 90% of profit is being shared between A and B in the ratio similar to the capital invested by them i.e. 2:3
So as per given condition: x × 90/100 × 3/5 = 5400
x = 20 × 500 = Rs. 10000

Qns 62: In how many ways a team of four can be formed from four boys and three girls such that atleast one boy and one girl should be there?
(a)36 (b)34 (c)35 (d)38
Solution: 34 ways
Here we are applying combination formula
The possible cases are for atleast one boy and one girl have to be selected and form a team of 4 members are as follows:
(one boy & three girls) or (two boys & two girls) or (three boys & one girl)
$=({}^4_1C \times {}^3_3C) + ({}^4_2C \times {}^3_2C) + ({}^4_3C \times {}^3_1C)$

=4+18+12=34

Qns 63: Find the total number of four digit numbers that can be formed using the digits 1,2,5,6.
If repetition is allowed then all the above said digits can occupy the places in four digit number and that means each place can be filled in by 4 ways
So the total number is 4×4×4×4=256

If repetition is not allowed then first place can be filled by 4 ways and the second place can be filled by 3 ways and third place can be filled by 2 ways and the last place can be filled in only a single way
So the total number is 4×3×2×1=24

Qns 64: Raju has 6 balls. Out of which 4 green and 2 blue. He will pick 2 balls. What is probability that it contain 1 blue and 1 green?
a.3/13 b.4/13 c.8/15 d.5/17
We have to apply the concept of probability and combination
Total no of possible ways to select 2 balls among 6 are ${}^6_2C = \frac{6\times5}{2}$

And the required conditions to select one green ball among 4 green and one blue among 2 blue are

$${}^4_1C \times {}^2_1C$$

So the required probability $=\frac{{}^4_1C \times {}^2_1C}{{}^6_2C} = \frac{8}{15}$

Qns 65: How many three digit numbers can be formed using 2,3,4 and 5 with none of the digits being repeated?

a.20 b.24 c.22 d.21

Solution:

As repetition is not there so

1st position can be filled by 4 ways,2nd place can be filled by 3 ways and 3rd place can be filled by 2 ways and 4th place can be filled in one way

total no. of ways= 4×3×2×1=24

Qns 66: A group of 6 members to be made from 8 boys and 6 girls. How many ways of forming group provided that there will be exactly 3 boys?

a.1020 b.1140 c.1120 d.1024

Solution:

Here we have to select among a group of persons then we will use the concept of combination

3 boys out of 8 boys & 3 girls out of 6 girls because total 6 member of a group where exactly 3 boys.

8C3 × 6C3= 8!/(5!×3!) × 6!/(3!×3!)

56 × 20=1120

Qns 67: A circular cylinder of internal diameter 8cm and height 10cm contain water to a depth of 6cm.Two solid lead sphere each of diameter 4cm are placed in it. Find height by which water level rises.

a) 2cm b) 0cm c) 1cm d) 11/3 cm

Solutions:

volume of cylinder = $(\text{pi}\times r^2\times h)$, where pi is universal constant and r is the radius of cylinder and h is the height of the cylinder

volume of sphere = $\frac{4\times pi}{3}\times r^3$ where r is radius of the sphere

r(sphere) = 2, so volume of 2 sphere is $\frac{64pi}{3}$

r(cylinder) = 4,

pi×4^2×h = $\frac{64pi}{3}$

so h = 4/3 = $1\frac{1}{3}$ cm

Qns 68: There is a rectangular Garden whose length and width are 60m X 20m.There is a walkway of uniform width around garden. Area of walkway is 516m2. Find the width of the walkway.

i.1 ii.2 iii.3 iv.4

ANSWER: III (3m)

Area of Garden = 60×20 = 1200 sq m.

Total Area of garden and walkway = 1200+516= 1716 sq m.

Let assume width of walk way be x

So (60+2x) × (20+2x) = 1716

Factorising the above equation we get two factors

Or x = 3, -43 negative value can not be possible

3 is correct answer, since 3 is positive.

Qns 69: The ratio of the length and the breadth of a rectangular plot is 6 : 5 respectively; if the breadth of the plot is 34 metre less than the length, what is the perimeter of the rectangular plot?

A) 374 metre B) 408 metre C) 814 metre D) 748 metre E) None of these

Solution: d

Let the length be=6x

then breadth will be =5x

given.... 5x=6x-34

hence x=34

length=6×34=204

breadth=5×34=170

Perimeter of rectangular plot= 2(l+b)

= 2(204 +170)

=748 meters

Qns 70: A square park is surrounded by a path of uniform width 2 metres all round it. The area of the path is 288 sq. metres. The perimeter of the park is

Options:

(1) 142 m (2) 128 m (3) 136 m (4) 118 m

Solution:
let the side of a square is x
area of square will be x^2
now 2m is adding to both sides, so area will become (x+4)(x+4)
it gives x^2+ 4x + 4x + 16
now the area of path is (x^2+8x+16) – x^2=288
8x+16 = 288
8x =272 and
the perimeter of the square is 4x
which gives 4x=136
so 136 is the answer

Qns71: The length of a cold storage is double its breadth. Its height is 3 metres. The area of its four walls (including doors) is 108 m2. Find its volume.
Options:
(1) 142 (2) 216 (3) 136 (4) 118
Solution:
let the breadth of the storage be b meters
therefore the length of the storage l=2b meters
height of the storage =3 meters
now the area of the four wall = 2(l+b)h
already know that area= 108 m2 (given)
=> 2(l+b)h =108
=> 2(2b+b)3=108
=> 2 x 3b x 3=108
=> 18b=108
=> b=6m
now l=2b
=2x6
=12m
=>l=12m
now volume of the storage is l x b x h= 12m x 6m x 3m
= 216m^3

Qns 72: A cube has a volume of 512 cubic meters. If each side is doubled in length, what will be it's new Volume in cubic meters?
a)5000 b)5182 c)6897 d)4096 e)2056

Solution:

If x is side of original cube, then x3= 512

when each side is doubled,

then vol = $(2x)^3 = 8x^3 = 8 \times 512 = 4096$ cubic meters.....option d)

Qns 73: 3 cos 80° cosec 10° + 2 cos 59° cosec 31° = ?

(1) 1 (2) 5 (3) 6 (4) 7

Solution:

3cos(90-10) ° Cosec10°+2cos(90-31) °cosec(31) °

=3sin10° cosec10°+2sin31° cosec31°

=3+2

=5

Qns 74: If tan θ + cot θ = 2, then the value of $\tan^2\theta + \cot^2\theta$ is

A) 2 B) 1 C) √2 D) 0

Solution: A) 2

Solution:-

$\tan^2\theta + \cot^2\theta = 2$

sq. both side

$\tan^2\theta + \cot^2\theta + 2\tan\theta \cot\theta = 4$

$\tan^2\theta + \cot^2\theta + 2 = 4$

$\tan^2\theta + \cot^2\theta = 2$

Qns 75: A circle is inscribed in a Triangle of side 6cm and a square is inscribed in the Circle. What is the area of square?

(1) 6 (2) 8 (3) 4 (4) 5

Solutions

The radius of the in circle in a equilateral triangle is $\frac{a}{2\sqrt{3}}$ where a=side of triangle=6 cm

so the diameter of the circle would be the diagonal of square

so diagonal=$2\times\frac{a}{2\sqrt{3}} = \frac{a}{\sqrt{3}}$

so area of square $= \frac{1}{2}(\text{diagonal})^2 = \frac{6\times6}{2\times3} = 6\ \text{cm}^2$

Qns 76: A pole seen from a certain distance at an angle of 30 degrees and 100 meters ahead by 45 degrees. What is the height of pole?

(A) 57.73 m. (B) 84.62 m. (C) 102.46 m. (D) 136.61 m.

Solution:

Answer is Option (D)--136.61 m

If the height of the pole is b and the distance between the person seeing the pole at 45 degrees and the pole is a,

$\tan 45° = \frac{b}{a}$

$\Rightarrow 1 = \frac{b}{a}$

$\Rightarrow a = b$

Then, $\text{Tan}30° = \frac{b}{100+a}$

$\Rightarrow \frac{1}{\sqrt{3}} = \frac{a}{100+a}$; since a=b

$a = \frac{100}{\sqrt{3}-1} = \frac{100}{0.732} = 136.61$ m (Option D)

Qns77: Two dice are tossed once. What is the probability of getting an even no. on first die or sum is 8.

a.5/9 b.3/7 c.4/11 d.3/4

Total outcomes=6×6=36

Number of combinations with even number on first die are (2,1)(2,2),.....(2,6) and (4,1)(4,2).....(4,6) and (6,1)(6,2).....(6,6), Total 6 ×3=18

Number of combinations with sum 8 are (2,6) (3,5) (4,4) (5,3) (6,2),Total=5 and among these (2,6) (4,4) (6,2) are already included in the earlier combinations of even number on first die, so remaining 2 i.e (3,5) (5,3)

So probability of getting an even number on first die or sum 8= (18+2)/36 = 20/36 = 5/9

Qns 78: There are 3 red balls,3 green balls and 3 blue balls are present. What is the probability of atleast two of them are of same colour if 3 balls are drawn?

(1) 14/42 (2) 27/42 (3) 13/25 (4) 11/42

Solution:

3 balls are drawn two of them are of same color:

there are three cases (i)red (ii)green (iii)blue

(i)red means 2 of them are red and any one out of 6 other balls=$^3_2C \times {}^6_1C$

(ii)green means 2 of them are green and any one out of 6 other balls= $^3_2C \times {}^6_1C$

(iii)blue means 2 of them are blue and any one out of 6 other balls=$^3_2C \times {}^6_1C$

initially 3 balls are drawn out of 9 balls= ${}^{9}_{3}C$=84

therefore total probability is $\frac{{}^{3}_{2}C\times{}^{6}_{1}C+{}^{3}_{2}C\times{}^{6}_{1}C+{}^{3}_{2}C\times{}^{6}_{1}C}{{}^{9}_{3}C}=\frac{27}{42}$ is the answer.

Qns 79: A single letter is drawn at random from the word."ASPIRATION", the probability that it is a vowel is?

(1) 1/3 (2) ½ (3) ¼ (4) 1/5

Solution:

given word: ASPIRATION

vowels= AIAIO= 5

no of vowels: 5

total no of words: 10

total probability of drawing 1 letter from 10 is:

Required probability is:

so probability= $\frac{{}^{5}_{1}C}{{}^{10}_{1}C}=\frac{1}{2}=0.5$

Qns80: What is the probability of drawn an ace or a space or both from a dew of cards.

a.14/52 b.13/52 c.16/52 d.11/52

Solution:

The probability of an ace or a spade.

The probability of an ace is $\frac{4}{52}$.

The probability of a spade is $\frac{13}{52}$

But, we have to subtract off the ace of spades else we double count it.

$\frac{4}{52}+\frac{13}{52}-\frac{1}{52}$

$\frac{16}{52}$

Qns81: The arithmetic mean of 2 numbers is 34 and their geometric mean is 16. One of the numbers will be

a. 4 b. 16 c. 18 d. 12

Solution: a=4

Let two numbers be a,b

(a+b)/2= 34

a+b=68---------(1)
sqrt(ab)= 16
a×b=256
So b=256/a-----(2)
Put (2) in (1)
a^2-68a+256=0
a^2-64a -4a +256=0
a(a-64)-4(a-64)=0
On solving a=4 , b=64 or vice versa.

Qns 82: If the 3rd and 9th terms of arithmetic progression are 4 and -8 respectively, then which term will be zero?
a)4th b)5th c)6th d)7th
Solution:
It's easy if you get the concept right
So, if its an a.p. then the series is something like: a, a+d, a+2d, a+3d
which can be generalised by writing it in the following form: a+(n-1)d for all n greater or equal to zero
Now if the 3rd term is 4 and the 9th term is -8, then we can write it as
a+(3–1)d=4 and a+(9–1)d=-8
on solving these equations we get that a=8 and d= -2
Now, we can equate the general form of an a.p. term to zero and find the respective n i.e.
8+(n-1)*(-2)=0
on solving this we get, n=5
Hence zero is the fifth term of the a.p.

Qns 83: Find the next term in the given series -
47, 94, 71, 142, 119, 238, . ?
a.215,430 b.360,250 c.320,480 d.340,480
Solution: Ans : 215, 430
(47, 94) (71, 142) (119, 238) (x, Y)
47 * 2 = 94
94 - 23 = 71
71 × 2 =142
142 - 23 = 119
119 × 2 = 238
238 - 23 = 215

215 × 2 = 430
So the next 2 terms are 215, 430

Qns 84: The sum of series represented as

$$\frac{1}{1\times5}+\frac{1}{5\times9}+\frac{1}{9\times13}+\ldots\ldots\ldots\ldots\ldots\frac{1}{221\times225}$$ **is**

a.28/221 b.56/221 c.56/225 d.none of these

Solution:

$$\frac{1}{1\times5}+\frac{1}{5\times9}+\frac{1}{9\times13}+\ldots\ldots\ldots\ldots\ldots\frac{1}{221\times225}$$

$$=\frac{1}{4}\times\left[\frac{(5-1)}{1\times5}+\frac{(9-5)}{5\times9}+\frac{(13-9)}{9\times13}+\ldots\ldots\ldots\ldots\ldots\frac{(225-221)}{221\times225}\right]$$

$$=\frac{1}{4}\times\left[\left(1-\frac{1}{5}\right)+\left(\frac{1}{5}-\frac{1}{9}\right)+\left(\frac{1}{9}-\frac{1}{13}\right)+\ldots\ldots\ldots\ldots\left(\frac{1}{221}-\frac{1}{225}\right)\right.$$

$$=\frac{1}{4}\times\left(1-\frac{1}{225}\right)$$

$$=\frac{1}{4}\times\left(\frac{224}{225}\right)$$

$$=\frac{56}{225}$$

Qns 85: Find the 8th term in the series 3,11,31,69,131,....
Options:
(1) 521 (2) 351 (3) 223 (4) 131
Solution: (1)
$1^3=1+2=3$
$2^3=8+3=11$
$3^3=27+4=31$
$4^3=64+5=69$
$5^3=125+6=131$
$6^3=216+7=223$

7^3=343+8=351
8^3=512+9=521

Qns 86: If x + y + z = 0 then,

$$\frac{(x^2 + y^2 + z^2)}{(x-y)^2+(y-z)^2+(z-x)^2} = ?$$

Options: A.0 B.1 C.xyz D.x+y+z E.None

Solution:

=>$(x + y + z)^2 = x^2 + y^2 + z^2 + 2xy + 2xz + 2yz$
=> x + y + z = 0 given
=>So, $x^2 + y^2 + z^2 = - 2(xy + xz + yz)$ .....(1)

$$\frac{(x^2 + y^2 + z^2)}{(x-y)^2+(y-z)^2+(z-x)^2} = ?$$

$$\frac{(x^2 + y^2 + z^2)}{2(x^2 + y^2 + z^2)- 2(xy + xz + yz)}$$

$$\frac{(x^2 + y^2 + z^2)}{2(x^2 + y^2 + z^2) + x^2 + y^2 + z^2}$$ [:: from (1)]

$$\frac{(x^2 + y^2 + z^2)}{3(x^2 + y^2 + z^2)}$$ .....[::if x,y,z != 0, excluding the trivial case]

=>ans 1/3 (d)None

Qns 87: Find $\frac{7x+4y}{x-2y}$ if $\frac{x}{2y} = \frac{3}{2}$?

A. 6 B. 8 C. 7 D. data insufficient

Solution:

d) None of these

$\frac{x}{2y} = \frac{3}{2}$ ==> x=3y

$\frac{7(3y)+4y}{3y-2y}$

$\frac{21y+4y}{y}$

$\frac{25y}{y}$ ==>25

Qns 88: The radius of a sphere is increased by 50%. The increase in surface area of the sphere is :

a. 100% b. 125% c. 150% d. 200%

Solution: 125%

Assume radius 100.

then surface area is $4\times\frac{22}{7}\times100\times100$.

after increase radius by 50% the radius become 100+50% of 100=150,then new surface area is $4\times\frac{22}{7}\times150\times150$

then put the values into formula of percentage

$\frac{4\times\frac{22}{7}\times150\times150 - 4\times\frac{22}{7}\times100\times100.}{4\times\frac{22}{7}\times100\times100.} \times 100 = 125\%$

Qns 89: A polygon has 44 diagonals. Number of sides = ?

A. 7 B. 11 C. 8 D. 9 E. 10

Solution:

No. of diagonals= $\frac{n(n-3)}{2}$

where n=no. of sides

$44=\frac{n(n-3)}{2}$

$n^2-3n-88=0$

On factorization

$n^2-11n+8n-88=0$

$n(n-11)+8(n-11)=0$

$(n-11)(n+8)=0$

$n=11$

Qns 90: If the sum of two numbers is 22 and the sum of their squares is 404, then the product of the numbers is

A. 40 B. 44 C. 80 D. 88

Solution:

According to the given conditions x+y = 22

and $x^2+y^2 = 404$

now $(x+y)^2 = x^2+y^2+2xy$

so $(22)^2 = 404 + 2xy$

so $xy = \frac{80}{2} = 40$

Qns91: If 1st day of a month is Thursday, then find the number of days in that month.

Statement A) 4th Sunday of month is on 25th.

Statement B) Last day of month is 5th Saturday

(1) 31 (2) 28 (3) 30 (4) 29

Solution:

Since 4th Sunday is on 25

and last day is Saturday

so, 25+mon+tue+wed+thurs+fri+sat=25--26--27--28--29--30--31

so 31 is the answer

Qns 92: What was the day of the week 15th August, 1947?

A. Sunday B. Monday C. Tuesday D. Friday

Solutions:

Formula : {Date +Month + Year + Leap Year } / 7

Normal Year = 365 days and Leap year= 366 (Leap year should be divided by Step1 :

divide 47/4 = 11(quotient) that means 11 leap year.

Step2: date(15) + month(2) + year -last two digit(47) +11 = 75/7 = 5

Code for months:
January- 0, February – 3, March-3 , April-6 ,May- 1,June -4,July- 6 ,August- 2
September - 5, October – 0 , November – 3 ,December – 5

Qns 93: A flight from Dubai to London is scheduled to leave Dubai at 10 am local time. London local time is 4 hours behind Dubai. The plan requires 9 hours to cover the distance. If the plane takes off two hours late, what will be the local time at London?
Options:
(1) 5 pm (2) 7 pm (3) 3 pm (4) 6 pm
Solution:
Answer is 5 p.m
Dubai time=10 a.m
2 hrs late=12.00 p.m
Takeoff time 9 hrs, so 21.p.m ie. 9 p.m
London time 4 hrs behind so
answer is 5.00 pm

Qns 94: Lion tells lie on Monday, Tuesday, and Wednesday. Rat tells lie on Thursday, Friday and Saturday. Both of them speak truth on other days. Lion tells, "Yesterday was one of the days which I tell lying". Rat also tells, "Yesterday was one of the days which I tell lying". What day was yesterday?
(1) Monday (2) Tuesday (3) Wednesday (4) Thursday
Lion speak lies on Monday, Tuesday, Wednesday;
Lion speak truth on Sunday, Thursday, Friday, Saturday;

Rat speak truth on Sunday, Monday, Tuesday, Wednesday;
Rat speak lie on Thursday, Friday, Saturday;

Suppose, Lion tells truth on Thursday that Yesterday(Wednesday) was one of the day which he/she tell lying.
Then Rat tells lie on Thursday that Yesterday(Wednesday) was one of the day which he/she tell lying.
So Yesterday is Wednesday

Qns 95: Fifty minutes ago it was four times as many minutes past 3'o clock, how many minutes is it to six' o clock?

(1) 70 (2) 62 (3) 64 (4) 60

Solution:

1) Let T be the Current time in minutes
2) Time 50 minutes before will be T-50 minutes
3) 50 mins before Time Past 3'o Clock will be T-50-180 (as 3'o clock is equal to 180 mins)
4) From Question it says Time before 50 minutes is 4 Times time past 3'o Clock

i.e T-50 = 4(T-50-180)
i.e T-50=4(T-230)
i.e T-50=4T-920
i.e 3T=870
i.e T=290 minutes
This mean Current Time is 4Hr 50 mins
Hence its 70 mins to 6'o Clock

Qns 96: What is the remainder when 789456123 is divided by 999?

Options:

(1) 142 (2) 274 (3) 135 (4) 369

Solution:

there is a simple trick for 99 or 999..you have to add the digits from right side for 99 you will select the last 2 digits and add with next two last digits and go on.
Similarly for 999 you will add last three digits then its next two last digits and so on..

so you will get 123 + 456 +789 =1368 again select last 3 and add them you will get 368 + 001 i.e 369 ans

Qns 97: The ratio of boys to girls is 6:4. 60% of the boys and 40% of girls take lunch in the canteen. What percentage of class takes lunch?

(1) 42 (2) 27 (3) 52 (4) 13

Solution:

Let total no of students 100,
Number of boys= 60
Number of girls = 40,
so lunch taken by boy and girl respectively $60 \times 60/100=36$
and $40 \times 40/100 = 16$
so total 52 students takes lunch out of 100 students..so required % is 52%.

Qns 98: A man spends half of his salary on household expenses, 1/4th for rent, 1/5th for travel expenses, the man deposits the rest in a bank. If his monthly deposits in the bank amount 50, what is his monthly salary?
(a) Rs.500 (b) Rs.1500 (c) Rs.1000 (d) Rs. 900
Solutions:
ans is c)1000
Let the person's salary is x
Expenditure on household expenses is , $\frac{x}{2}$
Expenditure on rent is $\frac{x}{4}$
Expenditure on travel expenses is $\frac{x}{5}$
remaining amount deposit in bank is 50
$x - \frac{x}{2} - \frac{x}{4} - \frac{x}{5} = 50$
$(20x-10x-5x-4x) = 50 \times 20$
$x=1000$

Qns 99: A finishes a work in 10 days, B finishes a work in 15 days.
They worked together. 5000 has to be shared between A and B. How much does A get?
(1) 3000 (2) 3150 (3) 3050 (4) 3210
Solution:
A work for 10 days
B work for 15 days
L.c.m of 10 and 15 is 30 which is to be treated as per total units of work
Share of A and B is divided as per the efficiency of above two.
A's share is = 30/10 =3
B's share is= 30/15 =2
A and B's share is 3:2
3x+2x=5000
5x=5000
x=1000
then A's share is 3x=3×1000=3000

Qns 100: A and B are standing in a queue. A is 18th from the front and B is 11th from the back. If there are 5 persons standing between A and B, then how many persons are standing in the queue?
a) 34 b) 22 c) 28 d) Cannot be determined

Solution:

It is simple addition: 18 + 11 + 5 = 34.

How?

A is 18th from the front, so, there are 18 persons from 1 to A.

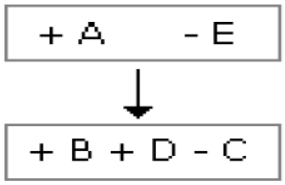
B is 11th from the back, so there are 11 persons from 1 to B (counting backwards).

There are 5 persons standing between them. Just adding three numbers do the trick.

Q101.A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the A has 3 children. B is the brother of C and C is the sister of D, E who is the wife of A is the mother of D. There is only one daughter of the husband of E. What is the relation between D and B? Mother of D. There is only one daughter of the husband of E. What is the relation between D and B.

A. Brother B. Sister C. Uncle D. Cousin

Solution: With the chart



Therefore, D is a boy because there is only one daughter of E.

Hence, B is the brother of D.

Q102. A is B's sister. C is B's mother. D is C's father. E is D's mother. Then, how is A related to D?

A) Grandfather B) Grandmother C) Daughter D) Granddaughter

Solutions:

A is the sister of B and B is the daughter of C.

So, A is the daughter of C. Also, D is the father of C.

So, A is the granddaughter of D.

Q103. P is the brother of Q and R. S is R's mother. T is P's father. Which of the following statements cannot be definitely true?

A) T is Q's father B) S is P's mother C) P is S's son D) Q is T's son

Solutions:

P, Q, R are children of same parents. So. S who is R's mother and T, who is R's father will be mother and father of all three. However, it is not mentioned whether Q is male or female

So, D cannot be definitely true.

Q104 .In a family, there are six members A, B, C, D, E and F.

A and B are a married couple, A being the male member. D is the only son of C, who is the brother of A. E is the sister of D. B is the daughter-in-law of F, whose husband has died. How is E related to C ?

A) Sister B) Daughter C) Cousin D) Mother

Solutions:

A is a male and married to B. So, A is the husband and B is the wife. C is the brother of A. D is the son of C. E. who is the sister of D will be the daughter of C. B is the daughter-in-law of F whose husband has died means F is the mother of A.

Clearly. E is the daughter of C.

Q105. A is father of C and D is son of B. E is brother of A. If C is sister of D, how is B related to E?

A) Daughter B) Brother C) Husband D) Sister-in-law

Solutions:

A is father of C and C is sister of D. So, A is father of D.

But D is son of B. So, B is the mother of D and wife of K Also. E is the brother of A So, B is the sister-in-law of E.

Q106. In a certain code, MONKEY is written as XDJMNL. How is TIGER written in that code ?

A) SHFDQ B) HFDSQ C) RSAFD D) QDFHS

Solutions:

The letter of the word are written in a reverse order and then each letter is moved one step backward to obtain the code.

Q107.If Z = 52 and ACT = 48, then BAT will be equal to

A) 39 B) 41 C) 44 D) 46

Solutions:

In the given code, A = 2, B = 4, C = 6,.... , Z = 52.

The position of every letter is multiplied by 2.

So, ACT = 2 + 6 + 40 = 48 and

BAT = 4 + 2 + 40 = 46

Q108.In a certain code language,

(A) 'pit na som' means 'bring me water'

(B) 'na jo tod' means 'water is life'

(C) 'tub od pit' means 'give me toy'
(D) 'jo lin kot' means 'life and death'
Which of the following represents 'is' in that language?
A) jo B) na C) tod D) lin
Solutions:
In statements A and B, the common code word is 'na' and the common word is 'water'.
So, 'na' means 'water'.
In statements B and D, the common code word is 'jo' and the common word is 'life'.
So, 'jo' means 'life'.
Thus, in statements B, 'tod' represents 'is'.

Q109.Acording to a military code, SYSTEM is SYSMET and NEARER is AENRER. What is the code for FRACTION?
A) CARFTINO B) CARFTION C) ARFCNOIT D) CARFNOIT
Solutions: The letter is the first half and the letter half of the word are separately reversed to obtain the code.

Q110.In a certain code language, 'PROBLEM' is written as MPERLOB. How will 'PROBLEM' is written as MPERLOB. How will 'NUMBERS' be written in that code?
A) SNUREMB B) SNRUBME C) SNRUEMB D) SNRUMEB
Solutions:

Explanation:

$$\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ P & R & O & B & L & E & M \end{array} \Rightarrow \begin{array}{ccccccc} 7 & 1 & 6 & 2 & 5 & 3 & 4 \\ M & P & E & R & L & O & B \end{array}$$

Similarly, $\begin{array}{ccccccc} 1 & 2 & 3 & 4 & 5 & 6 & 7 \\ N & U & M & B & E & R & S \end{array} \Rightarrow \begin{array}{ccccccc} 7 & 1 & 6 & 2 & 5 & 3 & 4 \\ S & N & R & U & E & M & B \end{array}$

Q111. In a certain code language 'ROUTINE' is written as 'VMRGFLI'. How will 'CRUELTY' be written in that code language?
A) UPVCZLR B) VPCVZRL C) CVCPZRL D) VCPCZLR
Solutions:
ROUTINE IS 7 LETTER WORD.. (1st=R,2nd=O,3rd=U,4th=T,5th=I,6th=N,7th=E)
1st and 3rd letter interchanging. (UORTINE)
5th and 7th letter interchanging. (UORTENI)
1st letter shifting one after that (VORTENI)
2nd letter shifting two befor that (VMRTENI)

3rd letter remains same (VMRTENI)
4th letter
(total alphabets - current)+1
(26 - 20)+1= 7.(i.e) G (VMRGFNI)
5th letter shifting one after that (VMRGFNI)
6th letter shifting two befor that (VMRGFLI)
7th letter remains same (VMRGFLI
Like that,
CRUELTY IS 7 LETTER WORD.. (1st=C,2nd=R,3rd=U,4th=E,5th=L,6th=T,7th=Y)
1st and 3rd letter interchanging. (URCELTY)
5th and 7th letter interchanging. (URCEYTL)
1st letter shifting one after that (VRCEYTL)
2nd letter shifting two befor that (VPCEYTL)
3rd letter remains same (VPCEYTL)
4th letter
(total alphabets - current)+1
(26 - 5)+1= 22.(i.e) V (VPCVYTL)
5th letter shifting one after that (VPCVZTL)
6th letter shifting two befor that (VPCVZRL)
7th letter remains same (VPCVZRL).

Q112. In a row of 25 children facing South, R is 16th from the right end and B is 18th from the left
end. How many children are there between R and B?
a) 2 b) 4 c)3 d) Data inadequate e) None
Solution:
Position of R from L.H.S = Total number of students + 1 – Position of R from R.H.S = 25 + 1 – 16 = 10
Number of students between R and B = 18 -10- 1 =7

Q113.In a Class of 20students, Mridul'srank is 12th from the top and Veena's rank is 17th from the bottom. If Rohan's rank is exactly between Mriduland Veena's rank, what is Rohan's rank from the top?
1.9th 2.8th 3.10th 4.7th
Solution:
Total Number of students: 20
MridualRank for top =12th

Veena rank from top= (20+1) –17 = 4
Rohan Rank is in between= 4+12 /2 =8th

Q114.Adarsh is eleventh from the left end and Naveen is 20th from the right end in a row. If they interchange their positions, Adarsh becomes fifteenth from the left end. How many persons are there in the row?
(a) 36(b) 35(c) 33(d) 34(e) None of these
Solution:
As Adarsh position from the left end is 11.
And Naveen position from right end is 20 and after interchanging their positon will be interchanged i.e now Naveen is 11 from left end and Adarsh is 20 from right end and itis given that after interchange Adarsh is 15th from left end
so total persons = (left + right)-1= 15+20-1= 34.
----------11th(A) N(20th)----------
----------A(15th)----------

Q115.Among P, Q, R, S and T, each of them is of different weights, Q is lighter than only T. P is heavier than only S. Who will be second heaviest among the following?
(a)R (b) S (c) T (d) Q
Solution:
1.<_<_<Q <T
2.>_>_>_P>S

T > Q > R > P > S

Q116.Among A, B, C, D and E, A is taller than only B but shorter than C. C is taller than E. C is not the tallest. Who among them will be in the middle if they stand in the order of their height?
(a) A (b) C (c) B
(d) D(e) None of these
Solution:
1.D > C > E > A > B

Q117.In a row of 25 children, Nayanis 14th from the right end. Arun is 3rd to the left of Nayanin the row. What is Arun's position from the left end of the row?
a. 8thb. 9thc. 7thd. 10the. None of these
Solution:

Total Children = 25
Nayan is 14thfrom right end.
Arun is 3rdleft means 17thfrom right end.
Arun position from left = (25+1) –17 = 9th

Q118. In a class of 180, where girls are twice the number of boys, Rupesh[a boy] ranked 34th from the top. If there are 18 girls ahead of Rupesh, how many boys are after him in rank?
A) 45B) 44 C) 60D) can't be determined
Solutions:
No. of boys up to the 34th rank = 34-18 = 16
Total no of boys = 180x1/(2+1) = 60
number of boys after the rank of Rupesh = 60 -16 = 44

Q119. DIRECTIONS for the question: Answer the question based on the information given. Many business offices are located in buildings having 2-8 floors. If a building has more than 3 floors, it has a lift. If the above statements are true, which of the following must be true?
2nd floors do not have lifts
7th floors have lifts
Only floors above the 3rd floors have lifts
All floors may be reached by lifts
Solutions:
The question states that if the building has more than three floors than it has lift. Then the buildings, which have say five floors they have a second floor also, thus first option is wrong. The 2nd is the right answer. The third option is wrong, using same logic as in case of the first option. The 4th cannot be definitely true, because had it been the case, then even the building with two floors would have had lifts.

Q120. Statement/Conclusion: Chandigarh is a pleasant city.
Which of the following, if true, would most strengthen the above conclusion?"
I. There are many great galleries in Chandigarh.
II. Patiala has many great restaurants.
Solutions:
Sometimes people are confused as to whether they have to consider if the options are true or not. You don't have to do this. You can assume all the options are true. You don't have to ask yourself whether it is actually true that Patiala has many great restaurants. It's clear

that Option I would be the right answer, because it's the only answer that actually applies to Chandigarh.

Q121. Directions:- In the following questions a fact or situation is given followed by two suggested courses. A course of action is a step of administrative decision taken for improvement or follow- up action. Read the situation and then decide which of the given courses of action follows.
Give answer,
(a) if only course of action I follows
(b) if only course of action II follows
(c) if both the course of action follow
(d) if neither follows
(e) If the data given is inadequate
Statement: The officer in-charge of a company had a hunch that some money was missing from the safe.
Courses of Action:
I) He should get it recounted with the help of the staff and check it with the balance sheet
II) He should inform the police
Solutions: a
Clearly, a suspicion first needs to be confirmed and only when it is confirmed , should an action be taken. So only course I follows.

Q122.Directions: Below in each question are given two statements I and II. These statements may be either independent causes or may be effects of independent causes. One of these statements may be the effect of the other statement. Read both the statements and decide which of the following answer choices correctly depicts the relationship between these two statements.
Marks answer:
(a) if statement I is the cause and statement II is the effect.
(b) if statement II is the cause and statement I is its effect.
(c) if both the statements I and II are independent causes.
(d) if both the statements I and II are effects of independent causes.
(e) if both the statements are effects of some common cause.

I. The prices of food grains and other essential commodities in the open market have risen sharply during the past three months.

II. The political party in opposition has given a call for general strike to protest against the government's economic policy

Solutions:

Solutions:

a.Since the prices of food grains and other essential commodities in the open market have been raised sharply during the past three months, so the political party in opposition has given a call for general strike to protest against the government's economic policy.

Q123. Flow: River:: Stagnant : ?

A. Rain B. Stream C. Pool D. Canal

Solutions:As Water of a River flows similarly water of Pool is Stagnant.

Q124.Embarrassed is to humiliated as frightened is to

A.terrified B.agitated C.courageous D.reckless

Solutions:

If someone has been humiliated, they have been greatly embarrassed. If someone is terrified, they are extremely frightened. The answer is not choice b because an agitated person is not necessarily frightened. Choices c and d are incorrect because neither word expresses a state of being frightened.

Q125.BCDE: PQRS :: WXYZ : ?

(a) EFGH (b) KLMN (c) QJSP (d) TSUV

Solutions:

A B C D E F G H I J K L M N O P Q R T U V W X Y Z.

shifted by 14 letters.

Q126.441 : 462 :: 841 : ?

A 800 B 830 C 870 D 890

Solutions:

441 = 21^2

462 = 441 + 21

841 = 29^2

870 = 841 + 29

Direction (127-129):Answer the following questions based on these conditions :T, Q, R, W and E are sitting in a straight line. T sits between Q and R.W do not sit in the middle and is the immediate left of E.Q and E occupy the extreme positions.

Q127. Find the position of W with reference to R.

a.Immediate Left
b.Second Left
c.Third Left
d.Immediate Right
e.None of the above

Solution: d
Q T R W E

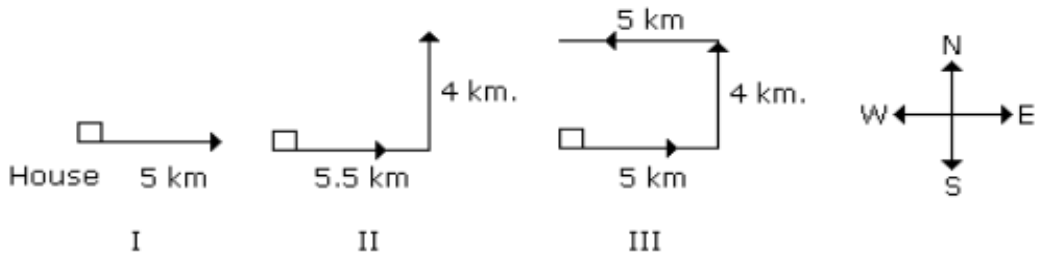
Q128. Find the person who sits on the second right to Q?

a.R
b.W
c.E
d.T or E
e.None of the above
Solution: a
Q T R W E

Q129. Find the neighbor of T?

a.Q
b.Q or R
c.R or E
d.E
e.R or W
Solutions:
Solution: b
Q T R W E

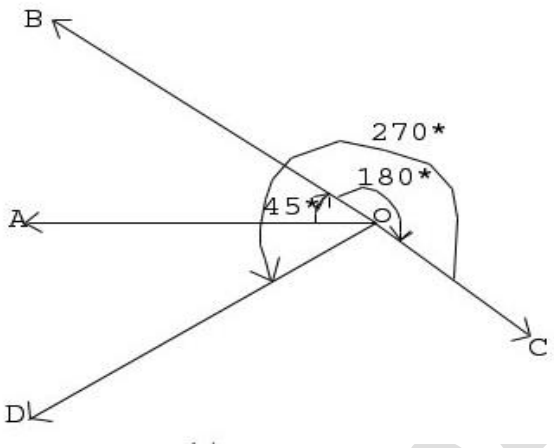
Q130. Siva starting from his house, goes 5 km in the East, then he turns to his left and goes 4 km. Finally he turns to his left and goes 5 km. Now how far is he from his house and in what direction?
a.4km north b.4km south c.4km East d.4km west



Q131.A man is facing west. He turns 45 degree in the clockwise direction and then another 180 degree in the same direction and then 270 degree in the anticlockwise direction. Find which direction he is facing now ?

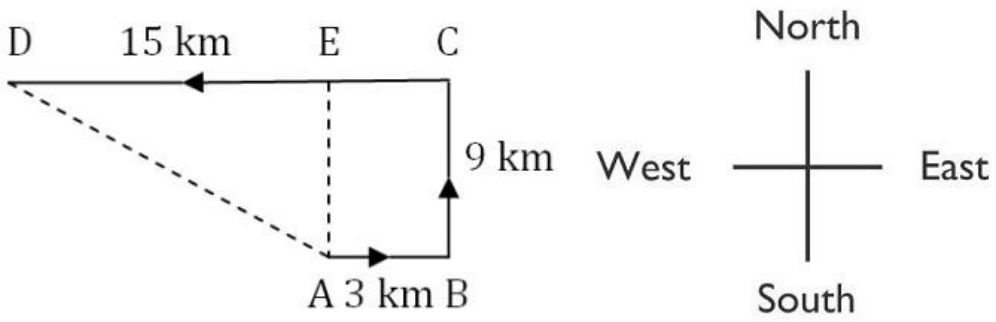
a.South-West b.West c.South d.East-South

Solution: (A) **South-West**



Q132. A person starts from a point A and travels 3 km eastwards to B and then turns left and travels thrice that distance to reach C. He again turns left and travels five times the distance he covered between A and B and reaches his destination D. The shortest distance between the starting point and the destination is

a)12 km (b) 15km (c) 16 km (d) 18 km (e)None of these



$AD^2 = 9^2 + 12^2$
$AD^2 = 81+ 144$
or $AD^2 = 225$
or $AD^2 = 15^2$
AD = 15

Q133. Answer these questions referring to the letter sequence given below:
I X Y A N O F M P B L Q R D S T W C K G U V E J Z H
Q. If the letters of the above given series are written in reverse order, which letter will be the third to the left of eighteenth letter from your right?
(a) O (b) U (c) V (d) N (e) None of these
Solutions:
H Z J E V **U** G K C W T S D R Q L B P M F O N A Y X I

Q134. Answer these questions referring to the letter sequence given below:
I X Y A N O F M P B L Q R D S T W C K G U V E J Z H Q10.
What will come in place of question mark (?) in the following series?
XAO FPL QDT ?
a)LJM (b) LJE (c) WKG (d) WKU (e) None of these
Solution:
After QDT the next letter is W and then the alternate letters are K and U
So WKU will be the next word.

Q134.If FEATURES is written as GCDPZLLK in a code, what will be the fourth letter from the left. If ADVANTAGE is written in that code
a.W b.V c.X d.Y
Solutions:

F	**E**	**A**	**T**	**U**	**R**	**E**	**S**
+1	**-2**	**+3**	**-4**	**+5**	**-6**	**+7**	**-8**
G	**C**	**D**	**P**	**Z**	**L**	**L**	**K**

A	**D**	**V**	**A**	**N**	**T**	**A**	**G**	**E**
+1	**-2**	**+3**	**-4**	**+5**	**-6**	**+7**	**-8**	**+9**
B	**C**	**Z**	**W**					

So W will be the fourth letter from left.

Q135. Analyse the list of the words in the Questions Statement below:
Choose the response that represents the most meaningful relation between the words(The relationship between the word might be based on size, quantity, Chronological sequence, value, appearance or the order of steps in a process.
1. Cotton 2.plough 3.Mill 4.Seed 5.Cloth
a. 3,1,2,4,5
b. 1,5,4,3,2
c. 3,4,5,2,1
d. 2,4,1,3,5
Solutions:
First A farmer will plough the land , then he will put the seed into the field. Once it grows to cotton then it will be taken to mill and then clothes will be produced.
So the correct order is option d.
Plough -> seed -> cotton -> mill -> cloth
2,4,1,3,5

Directions for Questions 136 to 140: Read the following information carefully and answer the questions given below :
Eleven friends M, N, O, P, Q, R, S, T, U, V and W are sitting in the first row of the stadium watching a cricket match.
T is to the immediate left of P and third to the right of U.
V is the immediate neighbour of M and N and third to the left of S.
M is the second to the right of Q, who is at one of the ends.
R is sitting next to the right of P and P is second to the right of O.

Q136. Who is sitting in the centre of the row?
1. N 2. O 3. S 4. U
Solutions. The correct arrangement is
Q W M V N U S O T P R
So U is sitting in the centre of the row.

Q137. Which of the following people are sitting to the right of S?
1. OTPQ
2. OTPR
3. UNVM

4. UOTPR

Solutions. The correct arrangement is

Q W M V N U S O T P R

Now clearly OTPR sits to the right of S so option 1 is the correct answer.

Q138. Which of the following statements is true with respect to the above arrangement?

1. There are three persons sitting between P and S
2. W is between M and V.
3. N is sitting between V and U
4. S and O are neighbours sitting to the immediate right of T

Solutions:

Solutions. The correct arrangement is

Q W M V N U S O T P R

Option 2 is the correct answer.

N is sitting between V and U.

Q139. Who are the immediate neighbours of T?

1. O, P
2. O, R
3. N, U
4. V, U

Solutions. The correct arrangement is

Q W M V N U S O T P R

The neighbour of T is O and P, so option 1 is correct.

Q140.If Q and P, O and N, M and T, and W and R interchange their positions then which of the following pairs of friends is sitting at the ends?

1. P and Q
2. Q and R
3. P and W
4. W and R

Solutions. The correct arrangement is

Q W M V N U S O T P R

After interchanging P and W will be sitting at the end. So option 3 will be the correct answer.

Q141. Find the missing number:

5	6	12
4	3	4
2	3	?
18	27	96

a.4 b.5 c.6 d.3

Solutions:

5 + 4 * 2 =18

6 + 3 * 3= 27

12 + 4 * 6 =96

Q142. Statements:

All women are engineers.

Some singers are engineers.

Conclusions:

I. Some engineers are women.

II. All women are singers.

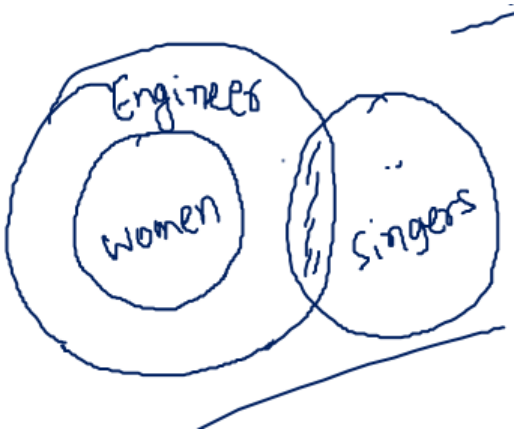
III. All Singers are women.

(a) Only conclusion I and II follows

(b) Only I follows

(c) Only conclusion II and III follows

(d) Only III follows
Solutions : only two follows



Q143. How many 4's are there preceded by 7 but not followed by 3?
5 9 3 2 1 7 4 2 6 9 7 4 6 1 3 2 8 7 4 1 3 8 3 2 5 6 7 4 3 9 5 8 2 0 1 8 7 4 6 3
A) Four B) Three
C) Six D) Five
Solutions:
7 4 2
7 4 6
7 4 1
7 4 6
Only at these placees 4 is preceded by 7 but not followed by 3.

Q144. If the 30th january 2003 was thursday, what was the day day on 2nd march, 2003?
A) sunday B) thursday
C) tuesday D) Saturday
Solutions:
30th january, 2003 was thursday.
So, 6th, 13th, 20th, 27th february were all thursdays.
thus 2nd march, 2003 was 3 days after thursday, i.e. , sunday

Q145. If the positions of the first and the third digit within each number are interchanged, which of the following will be the third digit of the second lowest number ?
987, 514, 658, 487, 404, 269
A) 8 B) 9
C) 2 D) 4

Solutions:

According to the question, after the position of the first and third digit interchanged new numbers are

789, 415, 856, 784, 404, 962

962, 856, 789, 784, 404, 415

Here the second lowest number is 404 and the last digit of it is '4'.

Q146. There are five books of different thickness. A is thicker than C and B is thicker than D. E is not as thick as B, but is thicker than C. D is not as thick as C. Which is the thinnest book?

A) E B) D

C) B D) C

Solutions:

A > C -----(i), B > D -----(ii), E < B --------(iii), E > C ---------(iv), C > D ---------(v)

from (i) and (v), we get A > C > D ---------(I)

from (iii) and (iv), we get B > E > C --------(II)

From (I) and (II) , it is clear that 'D' is the thinnest.

Q147. The priest told the devotee, "The temple bell is rung at regular intervals of 45 minutes. The last bell was rung five minutes ago. The Next bell is due to be rung at 7:45am". At what time did the priest give this information to the devotee?

A) 7.40 am B) 7.05 am

C) 7.00 am D) 6.55 am

Solutions:

Clearly, the last bell rang 45 minutes before 7.45 am, i.e at 7.00 am. But it happened five minutes before the priest gave the information to the devotee. So, the information was given at 7.05 am

Q148. If it is possible to form a number with the second, the fifth and the eighth digits of the number 31549786, which is the perfect square of a two - digit even number, which of the following will be the second digit of that even number ?

A) 1 B) 4

C) 6 D) None of these

Solutions:

The 2nd, 5th and 8th digits of the number 31549786 are 1, 9 and 6 respectively.

The perfect square of a two - digit even number, formed using the digits 1, 9 and 6 is 196.

And, 14 x 14 = 196

So, the required even number is 14. Clearly, its second digit is 4.
Hence, the answer is (b).

Q149. Nitin correctly remembers that Nidhi's birthday is before Friday but after Tuesday. Dheeraj correctly remembers that Nidhi's birthday is after Wednesday but before Saturday. On which of the following days does Nidhi's birthday definitely fall?
A) Monday B) Tuesday
C) Wednesday D) Thursday
Solutions:
According to Nitin, Nidhi's birthday falls on Wednesday or Thursday ---------(i)
According to Dheeraj , Nidhi's birthday falls on Thursday or Friday ---------(ii)

From (i) and (ii), Nidhi's birthday falls on Thursday.

Q150. Six friends A, B, C, D, E and F joined an institute in the year 1993 but on different days. Only E has joined after C and D. C joined immediately before A and immediately after B. F is not the first or the last person to join. D will not be in any corner.
Who is the first person joining the Institute?
A) E B) D
C) A D) B
Solutions:
The only possible way is BCAFDE
As D & F is not in any corner and E is after C and D. C is after B and before A
So the first person to join the institute is B

Q151. Pointing to a photograph Latha says, "He is the son of the only son of my grandfather. "How is the man in the photograph related to Latha?
A.brother B.Uncle C. Cousin D. Data Inadequate
Solutions: A
Grandfather only son -> father
Father son is brother.

Previous Year 30 MINUTES CODING QUESTIONS for TCS NQT

PROBLEM 1

At the annual meeting of Board of Directors of Acme Inc, everyone starts shaking hands with everyone else in the room. Given the fact that any two persons shake hand exactly once, can you tell the total count of handshakes?

Input Format

The first line contains the number of test cases T, T lines follow.
Each line then contains an integer N, the total number of Board of Directors of Acme.

Output Format

Print the number of handshakes for each test-case in a new line.

Constraints

$1 <= T <= 1000$
$0 < N < 10^6$

Sample Input

2
1
2

Sample Output

0
1

Explanation

Case 1 : The lonely board member shakes no hands, hence 0.
Case 2 : There are 2 board members, 1 handshake takes place.

SOLUTION

```
#include "stdio.h"

int main()

{

   int n; //testcases

   scanf("%d",&n);

   int arr[n];

   for(int i=0; i<n; i++)    {

      scanf("%d",&arr[i]);

      printf("%d\n", arr[i]*(arr[i]-1)/2);

   }

   return 0;

}
```

PROBLEM 2

Jim is off to a party and is searching for a matching pair of socks. His drawer is filled with socks, each pair of a different color. In its worst case scenario, how many socks (x) should Jim remove from his drawer until he finds a matching pair?

Input Format

The first line contains the number of test cases T.
Next T lines contains an integer N which indicates the total pairs of socks present in the drawer.

Output Format

Print the number of Draws (x) Jim makes in the worst case scenario.

Constraints

$1 \leq T \leq 1000$
$0 < N < 10^6$

Sample Input

2
1
2

Sample Output

2
3

Explanation

Case 1 : A pair of socks are present, hence exactly 2 draws for the socks to match.
Case 2 : 2 pair of socks are present in the drawer. The first and the second draw might result in 2 socks of different color. The 3rd sock picked will definitely match one of previously picked socks. Hence, 3.

SOLUTION

```
#include "stdio.h"
int main()
{
   int n,a; //testcases
   scanf("%d",&n);
   for(int i=0; i<n; i++) {
      scanf("%d",&a);
      printf("%d\n",a+1);
   }
   return 0;
}
```

PROBLEM 3

A left rotation operation on an array shifts each of the array's elements 1 unit to the left. For example, if 2 left rotations are performed on array $[1, 2, 3, 4, 5]$, then the array would become $[3, 4, 5, 1, 2]$.

Given an array a of n integers and a number, d, perform d left rotations on the array. Return the updated array to be printed as a single line of space-separated integers.

Function Description

Complete the function rotLeft in the editor below. It should return the resulting array of integers.

rotLeft has the following parameter(s):

- An array of integers a.
- An integer d, the number of rotations.

Input Format

The first line contains two space-separated integers n and d, the size of a and the number of left rotations you must perform.
The second line contains n space-separated integers $a[i]$.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq d \leq n$
- $1 \leq a[i] \leq 10^6$

Output Format

Print a single line of n space-separated integers denoting the final state of the array after performing d left rotations.

Sample Input

```
5 4
1 2 3 4 5
```

Sample Output

```
5 1 2 3 4
```

Explanation

When we perform $d = 4$ left rotations, the array undergoes the following sequence of changes:

$$[1, 2, 3, 4, 5] \rightarrow [2, 3, 4, 5, 1] \rightarrow [3, 4, 5, 1, 2] \rightarrow [4, 5, 1, 2, 3] \rightarrow [5, 1, 2, 3, 4]$$

SOLUTION

```
#include "stdio.h"
int main()
{
   int n,d;
   scanf("%d %d",&n,&d);
```

```
    int arr[n];
    for(int i=0; i<n; i++)
        scanf("%d",&arr[(n-d+i)%n]);
    for(int i=0; i<n; i++)
        printf("%d ",arr[i]);
    return 0;
}
```

PROBLEM 4

John works at a clothing store. He has a large pile of socks that he must pair by color for sale. Given an array of integers representing the color of each sock, determine how many pairs of socks with matching colors there are.

For example, there are $n = 7$ socks with colors $ar = [1, 2, 1, 2, 1, 3, 2]$. There is one pair of color 1 and one of color 2. There are three odd socks left, one of each color. The number of pairs is 2.

Function Description

Complete the sockMerchant function in the editor below. It must return an integer representing the number of matching pairs of socks that are available.

sockMerchant has the following parameter(s):

- n: the number of socks in the pile
- ar: the colors of each sock

Input Format

The first line contains an integer n, the number of socks represented in ar.
The second line contains n space-separated integers describing the colors $ar[i]$ of the socks in the pile.

Constraints

- $1 \leq n \leq 100$
- $1 \leq ar[i] \leq 100$ where $0 \leq i < n$

Output Format

Return the total number of matching pairs of socks that John can sell.

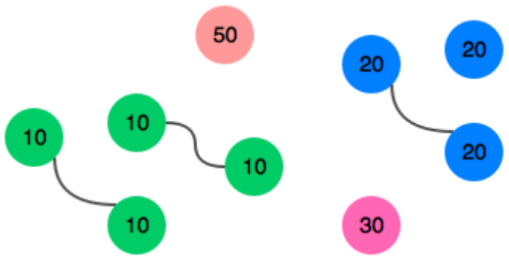
Sample Input

```
9
10 20 20 10 10 30 50 10 20
```

Sample Output

```
3
```

Explanation



John can match three pairs of socks.

SOLUTION

```
#include "stdio.h"
int main()
{
   int n;
   scanf("%d",&n);
   int arr[n], freq[101]={ };
   for(int i=0; i<n; i++)
{
      scanf("%d",&arr[i]);
      freq[arr[i]]++;
   }
   int pairCount=0;
   for(int i=0; i<=100; i++)
 {
      pairCount = pairCount + freq[i]/2;
```

```
    }
    printf("%d",pairCount);
    return 0;
}
```

PROBLEM 5

You are in charge of the cake for your niece's birthday and have decided the cake will have one candle for each year of her total age. When she blows out the candles, she'll only be able to blow out the tallest ones. Your task is to find out how many candles she can successfully blow out.

For example, if your niece is turning 4 years old, and the cake will have 4 candles of height 4, 4, 1, 3, she will be able to blow out 2 candles successfully, since the tallest candles are of height 4 and there are 2 such candles.

Function Description

Complete the function `birthdayCakeCandles` in the editor below. It must return an integer representing the number of candles she can blow out.

birthdayCakeCandles has the following parameter(s):

- ar: an array of integers representing candle heights

Input Format

The first line contains a single integer, n, denoting the number of candles on the cake.
The second line contains n space-separated integers, where each integer i describes the height of candle i.

Constraints

- $1 \leq n \leq 10^5$
- $1 \leq ar[i] \leq 10^7$

Output Format

Return the number of candles that can be blown out on a new line.

Sample Input 0

```
4
3 2 1 3
```

Sample Output 0

```
2
```

Explanation 0

We have one candle of height 1, one candle of height 2, and two candles of height 3. Your niece only blows out the tallest candles, meaning the candles where $height = 3$. Because there are 2 such candles, we print 2 on a new line.

SOLUTION

```
#include "stdio.h"
int main()
{
   int n,max=0,count=0; //No of candles
   scanf("%d",&n);
   int arr[n];
   for(int i=0; i<n; i++)
   {
      scanf("%d",&arr[i]);
   }
   for(int i=0; i<n; i++)
   {
      if(max < arr[i])
      {
         max=arr[i];
         count=1;
      }
      else if (max == arr[i])
         count++;
   }
   printf("%d",count);
   return 0;
}
```

PROBLEM 6

Lily likes to play games with integers. She has created a new game where she determines the difference between a number and its reverse. For instance, given the number 12, its reverse is 21. Their difference is 9. The number 120 reversed is 21, and their difference is 99.

She decides to apply her game to decision making. She will look at a numbered range of days and will only go to a movie on a beautiful day.

Given a range of numbered days, $[i \ldots j]$ and a number k, determine the number of days in the range that are beautiful. Beautiful numbers are defined as numbers where $|i - reverse(i)|$ is evenly divisible by k. If a day's value is a beautiful number, it is a beautiful day. Print the number of beautiful days in the range.

Function Description

Complete the beautifulDays function in the editor below. It must return the number of beautiful days in the range.

beautifulDays has the following parameter(s):

- i: the starting day number
- j: the ending day number
- k: the divisor

Input Format

A single line of three space-separated integers describing the respective values of i, j, and k.

Constraints

- $1 \leq i \leq j \leq 2 \times 10^6$
- $1 \leq k \leq 2 \times 10^9$

Output Format

Print the number of beautiful days in the inclusive range between i and j.

Sample Input

```
20 23 6
```

Sample Output

```
2
```

Explanation

Lily may go to the movies on days 20, 21, 22, and 23. We perform the following calculations to determine which days are beautiful:

- Day 20 is beautiful because the following evaluates to a whole number: $\frac{|20-02|}{6} = \frac{18}{6} = 3$
- Day 21 is not beautiful because the following doesn't evaluate to a whole number: $\frac{|21-12|}{6} = \frac{9}{6} = 1.5$
- Day 22 is beautiful because the following evaluates to a whole number: $\frac{|22-22|}{6} = \frac{0}{6} = 0$
- Day 23 is not beautiful because the following doesn't evaluate to a whole number: $\frac{|23-32|}{6} = \frac{9}{6} = 1.5$

Only two days, 20 and 22, in this interval are beautiful. Thus, we print 2 as our answer.

SOLUTION

```
#include "stdio.h"
#include "math.h
int revNum(int n)
{
   int rev=0;
   while(n!=0)
   {
      rev = rev*10 + (n%10);
      n = n /10;
   }
   return rev;
}
int main()
{
   int i,j,k,bCount=0;
   scanf("%d%d%d",&i, &j, &k);
   for(int temp=i; temp<=j; temp++)
   {
      if(abs(temp-revNum(temp))%k==0)
         bCount++;
   }
   printf("%d",bCount);
   return 0;
}
```

PROBLEM 7

Given an array of integers, find and print the maximum number of integers you can select from the array such that the absolute difference between any two of the chosen integers is less than or equal to 1. For example, if your array is $a = [1, 1, 2, 2, 4, 4, 5, 5, 5]$, you can create two subarrays meeting the criterion: $[1, 1, 2, 2]$ and $[4, 4, 5, 5, 5]$. The maximum length subarray has 5 elements.

Function Description

Complete the pickingNumbers function in the editor below. It should return an integer that represents the length of the longest array that can be created.

pickingNumbers has the following parameter(s):

- a: an array of integers

Input Format

The first line contains a single integer n, the size of the array a.
The second line contains n space-separated integers $a[i]$.

Constraints

- $2 \leq n \leq 100$
- $0 < a[i] < 100$
- The answer will be ≥ 2.

Output Format

A single integer denoting the maximum number of integers you can choose from the array such that the absolute difference between any two of the chosen integers is ≤ 1.

Sample Input 0

```
6
4 6 5 3 3 1
```

Sample Output 0

```
3
```

Explanation 0

We choose the following multiset of integers from the array: $\{4, 3, 3\}$. Each pair in the multiset has an absolute difference ≤ 1 (i.e., $|4 - 3| = 1$ and $|3 - 3| = 0$), so we print the number of chosen integers, 3, as our answer.

Sample Input 1

```
6
1 2 2 3 1 2
```

Sample Output 1

```
5
```

Explanation 1

We choose the following multiset of integers from the array: $\{1, 2, 2, 1, 2\}$. Each pair in the multiset has an absolute difference ≤ 1 (i.e., $|1 - 2| = 1$, $|1 - 1| = 0$, and $|2 - 2| = 0$), so we print the number of chosen integers, 5, as our answer.

SOLUTION

```
#include "stdio.h"

int main()
{
   int n,k, max=0;
   //Take n as input
   scanf("%d",&n);
   int arr[100] = {};
   for(int i=0; i<n; i++)
   {
      scanf("%d",&k);
      arr[k]++;
   }

   //Find the maximum count/ length of the array
   for(int i=0; i<n-1; i++)
   {
      if(arr[i] + arr[i+1] > max)
         max = arr[i] + arr[i+1];
```

```
    }
    printf("%d",max);

    return 0;
}
```

PROBLEM 8

You are given an array of n integers, $ar = [ar[0], ar[1], \ldots, ar[n-1]]$, and a positive integer, k. Find and print the number of (i, j) pairs where $i < j$ and $ar[i] + ar[j]$ is divisible by k.

For example, $ar = [1, 2, 3, 4, 5, 6]$ and $k = 5$. Our three pairs meeting the criteria are $[1, 4]$, $[2, 3]$ and $[4, 6]$.

Function Description

Complete the divisibleSumPairs function in the editor below. It should return the integer count of pairs meeting the criteria.

divisibleSumPairs has the following parameter(s):

- n: the integer length of array ar
- ar: an array of integers
- k: the integer to divide the pair sum by

Input Format

The first line contains 2 space-separated integers, n and k.

The second line contains n space-separated integers describing the values of $ar[ar[0], ar[1], \ldots, ar[n-1]]$.

Constraints

- $2 \leq n \leq 100$
- $1 \leq k \leq 100$
- $1 \leq ar[i] \leq 100$

Output Format

Print the number of (i, j) pairs where $i < j$ and $a[i] + a[j]$ is evenly divisible by k.

Sample Input

```
6 3
1 3 2 6 1 2
```

Sample Output

```
5
```

Explanation

Here are the 5 valid pairs when $k = 3$:

- $(0, 2) \rightarrow ar[0] + ar[2] = 1 + 2 = 3$
- $(0, 5) \rightarrow ar[0] + ar[5] = 1 + 2 = 3$
- $(1, 3) \rightarrow ar[1] + ar[3] = 3 + 6 = 9$
- $(2, 4) \rightarrow ar[2] + ar[4] = 2 + 1 = 3$
- $(4, 5) \rightarrow ar[4] + ar[5] = 1 + 2 = 3$

SOLUTION

```
#include "stdio.h"

int main()
{
   //Input n and k
   int n, k, count = 0;
   scanf("%d %d",&n, &k);

   //Take the array as input and calculate the count
   int arr[n];
   for(int i=0; i<n; i++)
   {
      scanf("%d",&arr[i]);
      for(int j=0; j < i; j++)
         count += ((arr[i]+arr[j])%k == 0);
   }
```

```
    printf("%d",count);
    return 0;
}
```

PROBLEM 9

You are choreographing a circus show with various animals. For one act, you are given two kangaroos on a number line ready to jump in the positive direction (i.e, toward positive infinity).

- The first kangaroo starts at location $x1$ and moves at a rate of $v1$ meters per jump.
- The second kangaroo starts at location $x2$ and moves at a rate of $v2$ meters per jump.

You have to figure out a way to get both kangaroos at the same location at the same time as part of the show. If it is possible, return YES, otherwise return NO.

For example, kangaroo 1 starts at $x1 = 2$ with a jump distance $v1 = 1$ and kangaroo 2 starts at $x2 = 1$ with a jump distance of $v2 = 2$. After one jump, they are both at $x = 3$, ($x1 + v1 = 2 + 1$, $x2 + v2 = 1 + 2$), so our answer is YES.

Function Description

Complete the function kangaroo in the editor below. It should return YES if they reach the same position at the same time, or NO if they don't.

kangaroo has the following parameter(s):

- x1, v1: integers, starting position and jump distance for kangaroo 1
- x2, v2: integers, starting position and jump distance for kangaroo 2

Input Format

A single line of four space-separated integers denoting the respective values of $x1$, $v1$, $x2$, and $v2$.

Constraints

- $0 \leq x1 < x2 \leq 10000$
- $1 \leq v1 \leq 10000$
- $1 \leq v2 \leq 10000$

Output Format

Print YES if they can land on the same location at the same time; otherwise, print NO.

Note: The two kangaroos must land at the same location after making the same number of jumps.

Sample Input 0

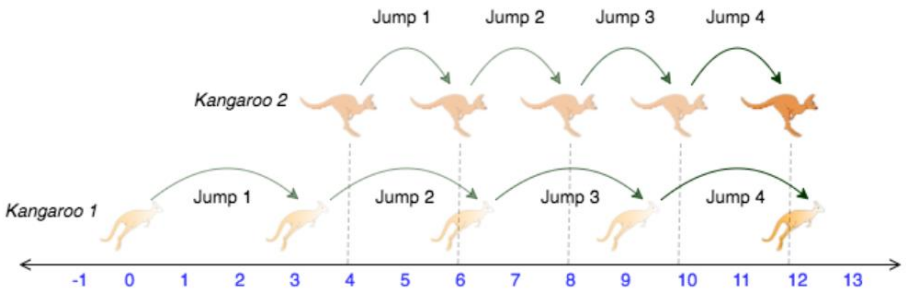
```
0 3 4 2
```

Sample Output 0

```
YES
```

Explanation 0

The two kangaroos jump through the following sequence of locations:



From the image, it is clear that the kangaroos meet at the same location (number 12 on the number line) after same number of jumps (4 jumps), and we print YES.

Sample Input 1

```
0 2 5 3
```

Sample Output 1

```
NO
```

Explanation 1

The second kangaroo has a starting location that is ahead (further to the right) of the first kangaroo's starting location (i.e., $x_2 > x_1$). Because the second kangaroo moves at a faster rate (meaning $v_2 > v_1$) and is already ahead of the first kangaroo, the first kangaroo will never be able to catch up. Thus, we print NO.

SOLUTION

```
#include "stdio.h"

int main()
{
   int x1,v1,x2,v2;

   //Take the input
   scanf("%d %d %d %d", &x1, &v1, &x2, &v2);

   //Calculate
   if(v1 > v2)
   {
```

```
        if((x2 - x1) % (v1 - v2) == 0)
            printf("YES");
        else
            printf("NO");
    }
    else
        printf("NO");

    return 0;
}
```

PROBLEM 10

Given five positive integers, find the minimum and maximum values that can be calculated by summing exactly four of the five integers. Then print the respective minimum and maximum values as a single line of two space-separated long integers.

For example, $arr = [1, 3, 5, 7, 9]$. Our minimum sum is $1 + 3 + 5 + 7 = 16$ and our maximum sum is $3 + 5 + 7 + 9 = 24$. We would print

```
16 24
```

Function Description

Complete the miniMaxSum function in the editor below. It should print two space-separated integers on one line: the minimum sum and the maximum sum of 4 of 5 elements.

miniMaxSum has the following parameter(s):

- arr: an array of 5 integers

Input Format

A single line of five space-separated integers.

Constraints

$1 \leq arr[i] \leq 10^9$

Output Format

Print two space-separated long integers denoting the respective minimum and maximum values that can be calculated by summing exactly four of the five integers. (The output can be greater than a 32 bit integer.)

Sample Input

```
1 2 3 4 5
```

Sample Output

```
10 14
```

Explanation

Our initial numbers are 1, 2, 3, 4, and 5. We can calculate the following sums using four of the five integers:

1. If we sum everything except 1, our sum is $2+3+4+5=14$.
2. If we sum everything except 2, our sum is $1+3+4+5=13$.
3. If we sum everything except 3, our sum is $1+2+4+5=12$.
4. If we sum everything except 4, our sum is $1+2+3+5=11$.
5. If we sum everything except 5, our sum is $1+2+3+4=10$.

Hints: Beware of integer overflow! Use 64-bit Integer.

SOLUTION

```
#include<stdio.h>

int main()
{
   unsigned long long int arr[5], min, max, sum = 0;

   //Take the array as input
   for(int i=0; i<5; i++)
      scanf("%lld",&arr[i]);

   //Find the sum, min and max
   min = max = arr[0];
   sum += arr[0];

   for(int i=1; i<5; i++)
   {
```

```
        if(min > arr[i])
            min = arr[i];

        if(max < arr[i])
            max = arr[i];

        sum = sum + arr[i];
    }

    //Print min sum and max sum
    printf("%lld %lld",(sum-max), (sum-min));

    return 0;
}
```

PROBLEM 11

Given a sentence, s, print each word of the sentence in a new line.

Input Format

The first and only line contains a sentence, s.

Constraints

$1 \leq len(s) \leq 1000$

Output Format

Print each word of the sentence in a new line.

Sample Input 0

```
This is C
```

Sample Output 0

```
This
is
C
```

Explanation 0

In the given string, there are three words ["This", "is", "C"]. We have to print each of these words in a new line.

Sample Input 1

```
Learning C is fun
```

Sample Output 1

```
Learning
C
is
fun
```

Sample Input 2

```
How is that
```

Sample Output 2

```
How
is
that
```

SOLUTION

```
#include "stdio.h"
#include "string.h"

int main()
{
   char str[1001];

   //Read the string
   scanf("%[^\n]%*c",str);

   //Logic to print the tokens
   for(int i=0; i<strlen(str); i++)
   {
      if(str[i] == ' ')
         printf("\n");
      else
```

```
        printf("%c",str[i]);
    }

    return 0;
}
```

PROBLEM 12

Monica wants to buy a keyboard and a USB drive from her favorite electronics store. The store has several models of each. Monica wants to spend as much as possible for the 2 items, given her budget.

Given the price lists for the store's keyboards and USB drives, and Monica's budget, find and print the amount of money Monica will spend. If she doesn't have enough money to both a keyboard and a USB drive, print `-1` instead. She will buy only the two required items.

For example, suppose she has $b = 60$ to spend. Three types of keyboards cost $keyboards = [40, 50, 60]$. Two USB drives cost $drives = [5, 8, 12]$. She could purchase a 40 keyboard $+ 12$ USB drive $= 52$, or a 50 keyboard $+ 8$ USB drive $= 58$. She chooses the latter. She can't buy more than 2 items so she can't spend exactly 60.

Function Description

Complete the getMoneySpent function in the editor below. It should return the maximum total price for the two items within Monica's budget, or -1 if she cannot afford both items.

getMoneySpent has the following parameter(s):

- keyboards: an array of integers representing keyboard prices
- drives: an array of integers representing drive prices
- b: the units of currency in Monica's budget

Input Format

The first line contains three space-separated integers b, n, and m, her budget, the number of keyboard models and the number of USB drive models.
The second line contains n space-separated integers $keyboard[i]$, the prices of each keyboard model.
The third line contains m space-separated integers $drives$, the prices of the USB drives.

Constraints

- $1 \leq n, m \leq 1000$
- $1 \leq b \leq 10^6$
- The price of each item is in the inclusive range $[1, 10^6]$.

Output Format

Print a single integer denoting the amount of money Monica will spend. If she doesn't have enough money to buy one keyboard and one USB drive, print `-1` instead.

Sample Input 0

```
10 2 3
3 1
5 2 8
```

Sample Output 0

```
9
```

Explanation 0

She can buy the 2^{nd} keyboard and the 3^{rd} USB drive for a total cost of $8 + 1 = 9$.

Sample Input 1

```
5 1 1
4
5
```

Sample Output 1

```
-1
```

Explanation 1

There is no way to buy one keyboard and one USB drive because $4 + 5 > 5$, so we print -1.

SOLUTION

```
#include "stdio.h"

int main()
{
   int budget, n, m;

   //Input the budget, no of keyboards and no of drives
   scanf("%d %d %d",&budget, &n, &m);

   int keyboards[n],drives[m], result = -1;

   //Take the keyboard an drive prices as input
   for(int i=0; i<n; i++)
```


```
    scanf("%d",&keyboards[i]);

  for(int i=0; i<m; i++)
    scanf("%d",&drives[i]);

  //Find the money that Monica will spend
  for(int i=0; i<n; i++)
  {
    for(int j=0; j<m; j++)
    {
      if(keyboards[i]+ drives[j] <= budget)
        result = result > keyboards[i] + drives[j] ? result : (keyboards[i] + drives[j]);
    }
  }

  //Print the result
  printf("%d",result);

  return 0;
}
```

PROBLEM 13

Calculate and print the sum of the elements in an array, keeping in mind that some of those integers may be quite large.

Function Description

Complete the aVeryBigSum function in the editor below. It must return the sum of all array elements.

aVeryBigSum has the following parameter(s):

- ar: an array of integers .

Input Format

The first line of the input consists of an integer n.

The next line contains n space-separated integers contained in the array.

Output Format

Print the integer sum of the elements in the array.

Constraints

$1 \leq n \leq 10$

$0 \leq ar[i] \leq 10^{10}$

Sample Input

```
5
1000000001 1000000002 1000000003 1000000004 1000000005
```

Output

```
5000000015
```

Note:

The range of the 32-bit integer is $(-2^{31})\ to\ (2^{31}-1)\ or\ [-2147483648, 2147483647]$.

When we add several integer values, the resulting sum might exceed the above range. You might need to use long long int in C/C++ or long data type in Java to store such sums.

SOLUTION

```
#include<stdio.h>

int main()
{
   int n;
   scanf("%d",&n);

   //Declare the array and sum variable
   unsigned long long int ar[n], sum=0;
```

```
    //Input the array
    for(int i=0; i<n; i++)
    {
       scanf("%lld",&ar[i]);
       sum += ar[i];
    }

    printf("%lld",sum);

    return 0;
}
```

PROBLEM 14

Given a string, s, consisting of alphabets and digits, find the frequency of each digit in the given string.

Input Format

The first line contains a string, num which is the given number.

Constraints

$1 \leq len(num) \leq 1000$

All the elements of num are made of english alphabets and digits.

Output Format

Print ten space-separated integers in a single line denoting the frequency of each digit from 0 to 9.

Sample Input 0

```
a11472o5t6
```

Sample Output 0

```
0 2 1 0 1 1 1 1 0 0
```

Explanation 0

In the given string:

- 1 occurs two times.
- $2, 4, 5, 6$ and 7 occur one time each.
- The remaining digits $0, 3, 8$ and 9 don't occur at all.

Sample Input 1

```
lw4n88j12n1
```

Sample Output 1

```
0 2 1 0 1 0 0 0 2 0
```

Sample Input 2

```
lv888861256338ar0ekk
```

Sample Output 2

```
1 1 1 2 0 1 2 0 5 0
```

SOLUTION

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

int main()
 {
   char str[1001]; //Declare the string
```

```
    //Input the string
    scanf("%s",str);

    //Counting array
    int count[10] = { };

    //Count the frequency of the digits
    for(int i=0; i < strlen(str); i++)
    {
       if(str[i]>='0' && str[i]<='9')
       {
          count[str[i]-'0']++;
       }
    }

    //Print the frequencies
    for(int i=0; i<10; i++)
       printf("%d ",count[i]);

    return 0;
}
```

PROBLEM 15

Write a program to reverse a string given as input

SOLUTION

Two methods can be used.

Method 1:

```
#include <stdio.h>
#include <string.h>
int main()
{
  char s[100];
```

```
  printf("Enter a string to reverse\n");
 gets(s);

  strrev(s);

  printf("Reverse of the string: %s\n", s);

  return 0;
}
```

Method 2:

```
#include <stdio.h>
int main()
{
  char s[1000], r[1000];
  int begin, end, count = 0;

  printf("Input a string\n");
  gets(s);

  // Calculating string length

  while (s[count] != '\0')
    count++;

  end = count - 1;

  for (begin = 0; begin < count; begin++) {
    r[begin] = s[end];
    end--;
  }

  r[begin] = '\0';

  printf("%s\n", r);

  return 0;
}
```

PROBLEM 16

Write a program to reverse a given integer number

SOLUTION:

This program takes an integer input from the user. Then the while loop is used until n != 0 is false (0).
In each iteration of the loop, the remainder when n is divided by 10 is calculated and the value of n is reduced by 10 times.
Inside the loop, the reversed number is computed using:

```
rev = rev*10 + remainder;
```

```
#include <stdio.h>
int main() {
   int n, rev = 0, remainder;
   printf("Enter an integer: ");
   scanf("%d", &n);
   while (n != 0) {
      remainder = n % 10;
      rev = rev * 10 + remainder;
      n /= 10;
   }
   printf("Reversed number = %d", rev);
   return 0;
}
```

PROBLEM 17

Write a program to check if the given number is a palindrome or not. A Palindrome number is something that remains the same when read backwards. Ex. 2002, 19191 etc.

SOLUTION:

```
#include<stdio.h>
int main()
{
```

```
  int Number, Temp, Reminder, Reverse = 0;
  printf("\nPlease Enter any number to Check for Palindrome\n");
  scanf("%d", &Number);
  for(Temp = Number; Temp > 0; Temp =  Temp /10 )
  {
    Reminder = Temp %10;
    Reverse = Reverse *10+ Reminder;
  }
  printf("Reverse of entered number is = %d\n", Reverse);
  if ( Number == Reverse )
    printf("\n%d is Palindrome Number.\n", Number);
  else
    printf("%d is not the Palindrome Number.\n", Number);
  return 0;
}
```

PROBLEM 18

Write a program to find the prime numbers within a given range.

SOLUTION:

```
#include <stdio.h>
int main()
{
  int num1, num2, flag_var, i, j;
  /* Ask user to input the from/to range
   * like 1 to 100, 10 to 1000 etc.
   */
  printf("Enter two range(input integer numbers only):");
  //Store the range in variables using scanf
```

```
  scanf("%d %d", &num1, &num2);

  //Display prime numbers for input range
  printf("Prime numbers from %d and %d are:\n", num1, num2);
  for(i=num1+1; i<num2; ++i)
  {
    flag_var=0;
    for(j=2; j<=i/2; ++j)
    {
      if(i%j==0)
      {
        flag_var=1;
        break;
      }
    }
    if(flag_var==0)
      printf("%d\n",i);
  }
  return 0;
}
```

PROBLEM 19

Write a program to check whether a given year is leap year or not.

SOLUTION:

```
#include <stdio.h>
int main()
{
        int year;
        printf("Enter a year to check if it is a leap yearn");
```

```
        scanf("%d", &year);
        if(year%400 == 0)
                printf("%d is a leap year.n", year);
        else if(year%100 == 0)
                printf("%d isn't a leap year.n", year);
        else if (year%4 == 0)
                printf("%d is a leap year.n", year);
        else
                printf("%d isn't a leap year.n", year);
        return 0;
}
```

PROBLEM 20

Write a program to find the greatest number among 10 given numbers.

```
#include <stdio.h>
 int main() {
   int a[10];
   int i;
   int greatest;
   printf("Enter ten values:");
   //Store 10 numbers in an array
   for (i = 0; i < 10; i++)
{
   scanf("%d", &a[i]);
}
   greatest = a[0];
   for (i = 0; i < 10; i++)
   {
        if (a[i] > greatest)
        {
                greatest = a[i];
   }
   }
   printf("Greatest of ten numbers is %d", greatest);
   return 0;
 }
```

PROBLEM 21

Write a program to generate Fibonacci series upto a given limit.

SOLUTION:

```
#include<stdio.h>

int main()

{

  int n, first = 0, second = 1, next, c;

  printf("Enter the number of terms\n");

  scanf("%d",&n);

  printf("First %d terms of Fibonacci series are :-\n",n);

  for ( c = 0 ; c < n ; c++ )

  {

    if ( c <= 1 )

      next = c;

    else

    {

      next = first + second;

      first = second;

      second = next;

    }

    printf("%d\n",next);

  }

  return 0;

}
```

PROBLEM 22

Write a program to find the HCF of two given numbers.

SOLUTION:

Step by step descriptive logic to find HCF.

1. Input two numbers from user. Store them in some variable say num1 and num2.
2. Declare and initialize a variable to hold hcf i.e. hcf = 1.
3. Find minimum between the given two numbers. Store the result in some variable say min = (num1<num2) ? num1 : num2;.
4. Run a loop from 1 to min, increment loop by 1 in each iteration. The loop structure should look like for(i=1; i<=min; i++).
5. Inside the loop check if i is a factor of two numbers i.e. if i exactly divides the given two numbers num1 and num2 then set i as HCF i.e. hcf = i.

```
#include <stdio.h>
int main()
{
   int i, num1, num2, min, hcf=1;

   /* Input two numbers from user */
   printf("Enter any two numbers to find HCF: ");
   scanf("%d%d", &num1, &num2);

   /* Find minimum between two numbers */
   min = (num1<num2) ? num1 : num2;

   for(i=1; i<=min; i++)
   {
      /* If i is factor of both number */
      if(num1%i==0 && num2%i==0)
      {
         hcf = i;
      }
   }
```


```
    printf("HCF of %d and %d = %d\n", num1, num2, hcf);
    return 0;
}
```

PROBLEM 23

Write a program to find the factorial of a given number.

SOLUTION:

```
#include <stdio.h>

int main()
{
    int num,i;
    long int fact;

    printf("Enter an integer number: ");
    scanf("%d",&num);

    /*product of numbers from num to 1*/
    fact=1;
    for(i=num; i>=1; i--)
        fact=fact*i;

    printf("\nFactorial of %d is = %ld",num,fact);

    return 0;
}
```

Using Recursion, we would do it as:

```
#include<stido.h>
//function for factorial
long int factorial(int n)
```

```
{
   if(n==1)    return 1;
   return n*factorial(n-1);
}
int main()
{
   int num;

   printf("Enter an integer number :");
   scanf("%d",&num);

   printf("\nFactorial of %d is = %ld",num,factorial(num));

   return 0;
}
```

PROBLEM 24

Write a program to check if the given number is odd or even.

SOLUTION:

```
#include<stdio.h>
int main()
{
 int number;

 printf(" Enter an int value to check Even or Odd \n");
 scanf("%d", &number);

 if ( number%2 == 0 ) //Check whether remainder is 0 or not
   printf("Given number %d is EVEN NUMBER \n", number);

 else
   printf("Given number %d is ODD NUMBER \n", number);
```

```
 return 0;
}
```

PROBLEM 25

Write a program to find the square root of a number in C.

SOLUTION:

```
#include<stdio.h>
#include<math.h>
int main()
{
        double number, result;
        printf(" \n Please Enter any Number to find Square root : ");
        scanf("%lf", &number);
        result = sqrt(number);
        printf("\n Square Root a given number %.2lf  =  %.2lf", number, result);
        return 0;
}
```

PROBLEM 26

Write a program to convert a number from Binary to Decimal in C.

SOLUTION:

```
#include<stdio.h>
#include<math.h>
int main()
{
        long int i,n,x=0,a;
        printf("Enter any binary number: ");
        scanf("%ld",&n);
        printf("\nThe decimal conversion of %ld is ",n);

        for(i=0;n!=0;++i)
        {
```

```
            a=n%10;
            x=(a)*(pow(2,i))+x;
            n=n/10;
        }
        printf("%ld",x);
        return 0;
}
```

PROBLEM 27

Write a program to find the sum of the digits of a given number.

SOLUTION:

```
#include <stdio.h>
void main()
{
   long num, temp, digit, sum = 0;

   printf("Enter the number \n");
   scanf("%ld", &num);
   temp = num;
   while (num > 0)
   {
      digit = num % 10;
      sum  = sum + digit;
      num /= 10;
   }
   printf("Given number = %ld\n", temp);
   printf("Sum of the digits %ld = %ld\n", temp, sum);
}
```

PROBLEM 28

Write a program to find the average of two given numbers.

SOLUTION:

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

```
void main()
{
        int a, b, avg;
        printf(“Enter two numbers: ”);
        scanf(“%d %d”,&a, &b);
        avg = (a+b)/2;
        printf(“The average is = %d\n”,avg);
}
```

PROBLEM 29

Write a program to concatenate two strings in C.

SOLUTION:

```
#include <string.h>
int main()
{
   char s1[1000],s2[1000];
   int i,j;

   printf("Enter  string1: ");
   gets(s1);
   printf("Enter  string2: ");
   gets(s2);
   j=strlen(s1);

   for(i=0;s2[i]!='\0';i++)
   {
        s1[i+j]=s2[i];
        }
        s1[i+j]='\0';

   printf("combined two strings ='%s'\n",s1);

   return 0;
```

```
}
```

PROBLEM 30

Write a program to find the LCM of two given numbers.

SOLUTION:

```
#include <stdio.h>
int main()
{
  int num1, num2, maxValue;

  printf("Enter two numbers: ");
  scanf("%d %d", &num1, &num2);
  //largest integer among num1 and num2 is stored in maxValue
  maxValue = (num1 > num2) ? num1 : num2;

  while(1)  //always true
  {
    if ((maxValue % num1 == 0) && (maxValue % num2 == 0))
    {
      printf("LCM: %d", maxValue);
      break;
    }
    ++maxValue;
  }
  return 0;
}
```

PROBLEM 31

Write a program to find the area of triangle given base and height.

SOLUTION:

The area of a triangle is $= \frac{1}{2} * base * height$

```
#include<stdio.h>
int main()
```

```
{
        float base, height, area;

        printf("\n Please Enter the Base of a Triangle  :  ");
        scanf("%f", &base);
        printf("\n Please Enter the Height of a Triangle  :  ");
        scanf("%f", &height);

        area = (base * height) / 2;
        printf("\n The Area of a Triangle using Base and Height = %.2f\n", area);

        return 0;
}
```

PROBLEM 32

Write a program to swap two numbers in C.

SOLUTION:

```
// C program to swap two variables
#include <stdio.h>

int main()
{
        int x, y;
        printf("Enter Value of x ");
        scanf("%d", &x);
        printf("\nEnter Value of y ");
        scanf("%d", &y);

        int temp = x;
        x = y;
        y = temp;

        printf("\nAfter Swapping: x = %d, y = %d", x, y);
```

```
    return 0;
}
```

PROBLEM 33

Writea program to check if the given number is Armstrong or not.

SOLUTION:

A positive integer is called an Armstrong number (of order *n)* if

$$abcd... = a^n + b^n + c^n + d^n +$$

In the case of an Armstrong number of 3 digits, the sum of cubes of each digit is equal to the number itself. For example, 153 is an Armstrong number because

$$153 = 1*1*1 + 5*5*5 + 3*3*3$$

Checking Armstirng Number of 3 digits:

```
#include <stdio.h>
int main() {
   int num, originalNum, remainder, result = 0;
   printf("Enter a three-digit integer: ");
   scanf("%d", &num);
   originalNum = num;

   while (originalNum != 0) {
      // remainder contains the last digit
      remainder = originalNum % 10;

      result += remainder * remainder * remainder;

      // removing last digit from the orignal number
      originalNum /= 10;
   }

   if (result == num)
```

```
    printf("%d is an Armstrong number.", num);
  else
    printf("%d is not an Armstrong number.", num);

  return 0;
}
```

Checking Armstring number of n digits:

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

int main() {
  int num, originalNum, remainder, n = 0, result = 0, power;
  printf("Enter an integer: ");
  scanf("%d", &num);

  originalNum = num;

  while (originalNum != 0) {
    originalNum /= 10;
    ++n;
  }
  originalNum = num;

  while (originalNum != 0) {
    remainder = originalNum % 10;

    // pow() returns a double value
    // round() return the equivalent int
```

```
        power = round(pow(remainder, n));
        result += power;
        originalNum /= 10;
    }

    if (result == num)
        printf("%d is an Armstrong number.", num);
    else
        printf("%d is not an Armstrong number.", num);
    return 0;
}
```

PROBLEM 34

Write a program to convert a number from Decimal to Binary.

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main(){
int a[10],n,i;
system ("cls");
printf("Enter the number to convert: ");
scanf("%d",&n);
for(i=0;n>0;i++)
{
a[i]=n%2;
n=n/2;
}
printf("\nBinary of Given Number is=");
for(i=i-1;i>=0;i--)
{
printf("%d",a[i]);
```

```
}
return 0;
}
```

PROBLEM 35

Write a program to convert a number from Binary to Octal.

SOLUTION:

```
#include <stdio.h>
int main()
{
   long int binarynum, octalnum = 0, j = 1, remainder;

   printf("Enter the value for  binary number: ");
   scanf("%ld", &binarynum);
   while (binarynum != 0)
   {
      remainder = binarynum % 10;
      octalnum = octalnum + remainder * j;
      j = j * 2;
      binarynum = binarynum / 10;
   }
   printf("Equivalent octal value: %lo", octalnum);
   return 0;
}
```

PROBLEM 36

Write a program to convert a number from Decimal to Octal.

SOLUTION:

```
#include<stdio.h>
int main()
{
   long decimalnum, remainder, quotient;
   int octalNumber[100], i = 1, j;
```

```
    printf("Enter the decimal number: ");
    scanf("%ld", &decimalnum);
    quotient = decimalnum;
    while (quotient != 0)
    {
        octalNumber[i++] = quotient % 8;
        quotient = quotient / 8;
    }
    printf("Equivalent octal value of decimal no %d: ", decimalnum);
    for (j = i - 1; j > 0; j--)
        printf("%d", octalNumber[j]);
    return 0;
}
```

PROBLEM 37

Write a program to swap two numbers without using a third variable.

SOLUTION:

```
include<stdio.h>
 int main()
{
     int a=10, b=20;
     printf("Before swap a=%d b=%d",a,b);
     a=a+b;//a=30 (10+20)
     b=a-b;//b=10 (30-20)
     a=a-b;//a=20 (30-10)
     printf("\nAfter swap a=%d b=%d",a,b);
     return 0;
}
```

PROBLEM 38

Write a program to print Hello World in C without using semicolon.

SOLUTION:

```
#include<stdio.h>
void main()
{
    if(printf("hello world"))
   {
   }
}
```

PROBLEM 39

Write a program to multiply two matrices in C.

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
     int a[10][10],b[10][10],mul[10][10],r,c,i,j,k;
     system("cls");
     printf("enter the number of row=");
     scanf("%d",&r);
     printf("enter the number of column=");
     scanf("%d",&c);
     printf("enter the first matrix element=\n");
     for(i=0;i<r;i++)
     {
     for(j=0;j<c;j++)
     {
     scanf("%d",&a[i][j]);
     }
     }
     printf("enter the second matrix element=\n");
     for(i=0;i<r;i++)
     {
     for(j=0;j<c;j++)
```

```
{
scanf("%d",&b[i][j]);
}
}

printf("multiply of the matrix=\n");
for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
mul[i][j]=0;
for(k=0;k<c;k++)
{
mul[i][j]+=a[i][k]*b[k][j];
}
}
}
//for printing result
for(i=0;i<r;i++)
{
for(j=0;j<c;j++)
{
printf("%d\t",mul[i][j]);
}
printf("\n");
}
return 0;
}
```

PROBLEM 40

Write a C program without main() function.

SOLUTION:

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

```
#define start main
void start()
{
  printf("Hello");
}
```

PROBLEM 41

Write a program to print Alphabet Triangles like this:

```
    A
   ABA
  ABCBA
 ABCDCBA
ABCDEDCBA
```

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main(){
 int ch=65;
  int i,j,k,m;
 system("cls");
  for(i=1;i<=5;i++)
  {
    for(j=5;j>=i;j--)
       printf(" ");
    for(k=1;k<=i;k++)
       printf("%c",ch++);
       ch--;
    for(m=1;m<i;m++)
       printf("%c",--ch);
    printf("\n");
    ch=65;
  }
return 0;
}
```

PROBLEM 42

Write a program to print a number triangle of given range like this:

Range = 7

```
    1
   121
  12321
 1234321
123454321
```

```
 12345654321
1234567654321
```

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    int i,j,k,l,n;
    printf("enter the range=");
    scanf("%d",&n);
    for(i=1;i<=n;i++)
    {
    for(j=1;j<=n-i;j++)
    {
    printf(" ");
    }
    for(k=1;k<=i;k++)
    {
    printf("%d",k);
    }
    for(l=i-1;l>=1;l--)
    {
    printf("%d",l);
    }
    printf("\n");
    }
    return 0;
}
```

PROBLEM 43

Write a program to generate Fibonacci triangle upto given limit like this:

Limit:9

1


```
1       1
1       1       2
1       1       2       3
1       1       2       3       5
1       1       2       3       5       8
1       1       2       3       5       8       13
1       1       2       3       5       8       13      21
1       1       2       3       5       8       13      21      34
```

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
  int a=0,b=1,i,c,n,j;
   printf("Enter the limit:");
   scanf("%d",&n);
   for(i=1;i<=n;i++)
   {
      a=0;
      b=1;
      printf("%d\t",b);
      for(j=1;j<i;j++)
      {
         c=a+b;
         printf("%d\t",c);
         a=b;
         b=c;

      }
      printf("\n");
   }
return 0;
}
```

PROBLEM 44

Write a program to print numbers in character like this:

231 -> two thre one

5996 -> five nine nine six

SOLUTION:

```
#include<stdio.h>
#include<stdlib.h>
int main()
{
    long int n,sum=0,r;
    printf("enter the number=");
    scanf("%ld",&n);
    while(n>0)
    {
    r=n%10;
    sum=sum*10+r;
    n=n/10;
    }
    n=sum;
    while(n>0)
    {
    r=n%10;
    switch(r)
    {
    case 1:
    printf("one ");
    break;
    case 2:
    printf("two ");
    break;
    case 3:
    printf("three ");
    break;
    case 4:
    printf("four ");
    break;
    case 5:
    printf("five ");
    break;
    case 6:
    printf("six ");
    break;
```

```
    case 7:
    printf("seven ");
    break;
    case 8:
    printf("eight ");
    break;
    case 9:
    printf("nine ");
    break;
    case 0:
    printf("zero ");
    break;
    default:
    printf("tttt");
    break;
    }
    n=n/10;
    }
    return 0;
}
```

PROBLEM 45

Write a program to find the roots of a quadratic equation.

SOLUTION:

The standard form of a quadratic equation is:

$ax^2 + bx + c = 0$, where
a, b and c are real numbers and
a != 0

The term b2-4ac is known as the discriminant of a quadratic equation. It tells the nature of the roots.

- If the discriminant is greater than 0, the roots are real and different.
- If the discriminant is equal to 0, the roots are real and equal.
- If the discriminant is less than 0, the roots are complex and different.

If the discriminant > 0,

$$root1 = \frac{-b + \sqrt{(b - 4ac)}}{2a}$$

$$root2 = \frac{-b - \sqrt{(b - 4ac)}}{2a}$$

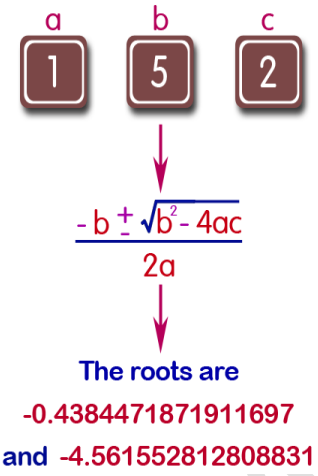
If the discriminant = 0,

$$root1 = root2 = \frac{-b}{2a}$$

If the discriminant < 0,

$$root1 = \frac{-b}{2a} + i\frac{\sqrt{-(b - 4ac)}}{2a}$$

$$root2 = \frac{-b}{2a} - i\frac{\sqrt{-(b - 4ac)}}{2a}$$




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

void main()
{
  int a,b,c,d;
  float x1,x2;

  printf("Input the value of a,b & c : ");
  scanf("%d%d%d",&a,&b,&c);
  d=b*b-4*a*c;
  if(d==0)
  {
   printf("Both roots are equal.\n");
   x1=-b/(2.0*a);
   x2=x1;
   printf("First  Root Root1= %f\n",x1);
   printf("Second Root Root2= %f\n",x2);
  }
  else if(d>0)
        {
          printf("Both roots are real and diff-2\n");
          x1=(-b+sqrt(d))/(2*a);
          x2=(-b-sqrt(d))/(2*a);
          printf("First  Root Root1= %f\n",x1);
          printf("Second Root root2= %f\n",x2);
        }
```

```
        else
            printf("Root are imeainary;\nNo Solution. \n");
}
```

PROBLEM 46

Write a program to find the sum of all prime numbers in a given range.

SOLUTION:

1. Input upper limit to find sum of prime from user. Store it in some variable say *end*.
2. Initialize another variable sum = 0 to store sum of prime numbers.
3. Run a loop from 2 to *end*, incrementing 1 in each iteration. The loop structure should look like for(i=2; i<=end; i++).
4. Inside the loop check if loop counter variable is prime or not. If *i* is prime then add *i* to *sum* i.e. sum = sum + i.
5. Finally after loop print the resultant value of *sum*.

```
#include <stdio.h>
int main()
{
   int i, j, start, end;
   int isPrime, sum=0;

   printf("Enter lower limit: ");
   scanf("%d", &start);
   printf("Enter upper limit: ");
   scanf("%d", &end);

   for(i=start; i<=end; i++)
   {
      isPrime = 1;
      for(j=2; j<=i/2 ;j++)
      {
         if(i%j==0)
         {
            /* 'i' is not prime */
            isPrime = 0;
            break;
         }
      }
```

```
        if(isPrime==1)
        {
            sum += i;
        }
    }

    printf("Sum of all prime numbers between %d to %d = %d", start, end, sum);

    return 0;
}
```

OUTPUT:

Enter lower limit: 10

Enter upper limit: 20

Sum of all prime numbers between 10 to 20 = 60

PROBLEM 47

Write a C program to print your name 10 times without using loop or goto statement.

SOLUTION:

We can use recursion to do this.

```
#include <stdio.h>
void printName(char* name,int count)
{
    printf("%03d : %s\n",count+1,name);
    count+=1;
    if(count<10)
        printName(name,count);
}
int main()
{
    char name[50];
    printf("\nEnter you name :");
    scanf("%s",name);
    printName(name,0);
    return 0;
```

}

OUTPUT:

```
Enter you name :Ramesh
001 : Ramesh
002 : Ramesh
003 : Ramesh
004 : Ramesh
005 : Ramesh
006 : Ramesh
007 : Ramesh
008 : Ramesh
009 : Ramesh
010 : Ramesh
```

PROBLEM 48

Write a C program to print the code of the current program that you are writing.

SOLUTION:

Its a trick by which you can print your current source code file, use __FILE__ to specify current file name and read the file (using file handling) and print it on screen, that will your output.

```
#include <stdio.h>
int main(void)
{
   FILE *fp;
   char c;
   fp = fopen(__FILE__, "r");
   do
   {
      c=fgetc(fp);
      putchar(c);
```

```
    }
    while(c!=EOF);
    fclose(fp);
    return 0;
}
```

The above same code will be printed in the output.

PROBLEM 49

Write a C Program to check number is whether EVEN or ODD without using any arithmetic or relational operators

SOLUTION:

We can check whether an integer number is EVEN or ODD without using any Arithmetic or Relational operators.

Here is a simple trick that we can use to check whether number is EVEN or ODD. Using Logical AND (&) operator we can check it, each EVEN number has 0th bit LOW (0) and ODD number has 0th bit HIGH (1).

The statement (number & 0x01) will check that 0th bit is HIGH, if it is HIGH (1) number will be an ODD otherwise number will be an EVEN.

```
#include <stdio.h>

int main()
{
    int number;

    //input an integer number
    printf("Please input an integer number: ");
    scanf("%d",&number);

    //check 0th bit of number is 1 or 0
    (number & 0x01) ? printf("%d is an ODD Number.", number) :  printf("%d is an EVEN Number.",number) ;

    printf("\n");
```

```
    return 0;
}
```

PROBLEM 50

Write a C program to do binary addition and binary subtraction.

SOLUTION:

Binary addition/subtraction is similar to regular (daily life) addition/subtraction, but here addition/subtraction performs only two digits those are 0 and 1, these are binary digits hence such kind of addition/subtraction is called binary addition/subtraction.

Example of Binary Addition:
Take two numbers, suppose numbers are 10 and 20 their binaries are 1010 and 10100.

```
In binary addition
0+0     =       0
0+1     =       1
1+0     =       1
1+1     =       0       (1 carries out)
Now add 10 and 20
10      =       0 1 0 1 0
20      =       1 0 1 0 0
=       1 1 1 1 0
=       30
```

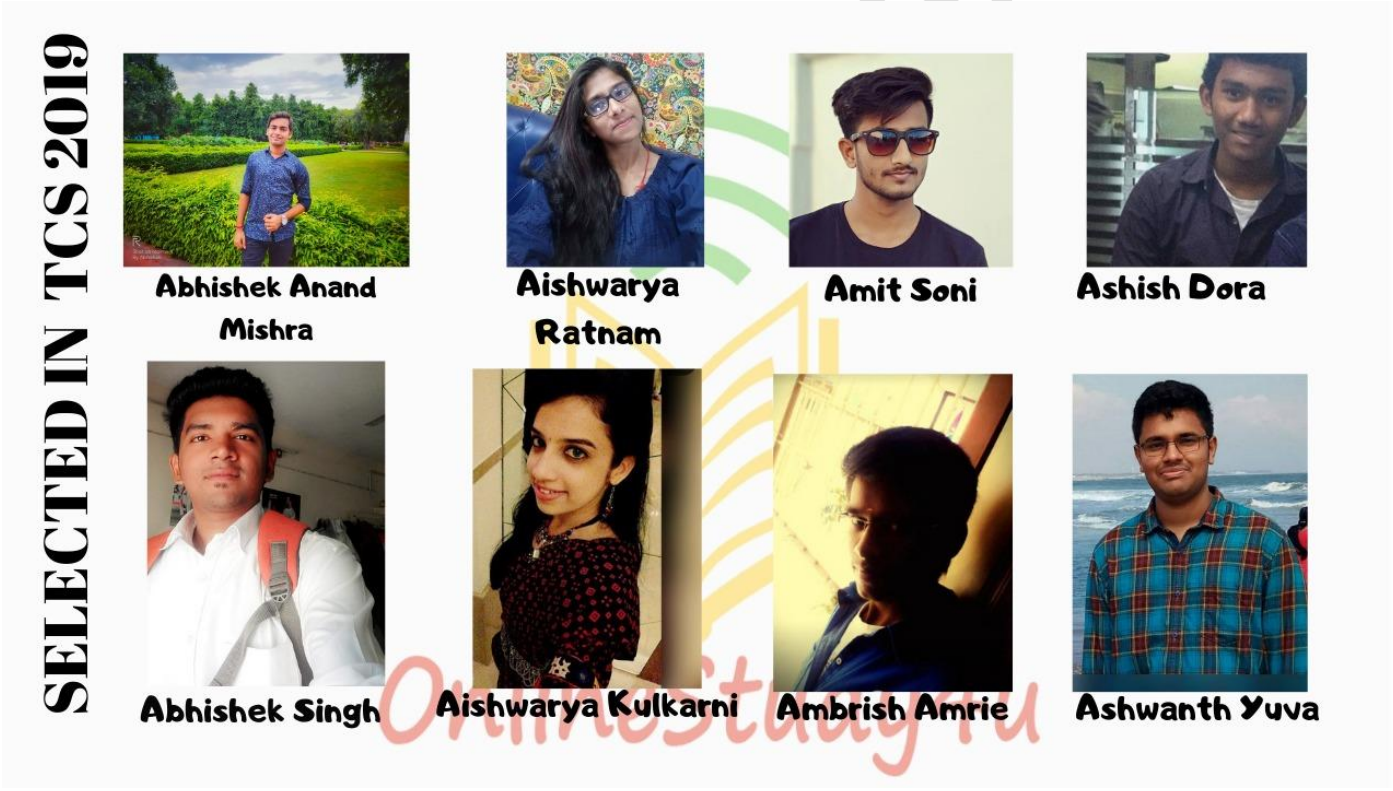
Example of Binary Subtraction:

Take two numbers, suppose numbers are 20 and 10 their binaries 10100 and 1010.

```
In binary subtraction
0-0     =       0
1-0     =       1
0-1     =       1       (1 borrows out)
1-1     =       0

Now sub 10 from 20
20      =       1 0 1 0 0
10      =       0 1 0 1 0
=       0 1 0 1 0
=       10
```

```
#include <stdio.h>

//function for Binary Addition
int binAddition(int a,int b)
{
    int c; //carry
    while (b != 0) {
        //find carry and shift it left
        c = (a & b) << 1;
        //find the sum
        a=a^b;
        b=c;
    }
    return a;
}

//function for Binary Subtraction
int binSubtracton(int a, int b)
{
    int carry;
    //get 2's compliment of b and add in a
    b = binAddition(~b, 1);

    while (b != 0) {
        //find carry and shift it left
        carry = (a & b) << 1;
        //find the sum
        a = a ^ b;
        b = carry;
    }
    return a;
}


int main()
{
   int number1,number2, binAdd, binSub;

   printf("Input first integer value: ");
```

```
    scanf("%d",&number1);

    printf("Input second integer value: ");
    scanf("%d",&number2);

    binAdd=binAddition(number1,number2);
    binSub=binSubtracton(number1,number2);

    printf("Binary Addition: %d\n",binAdd);
    printf("Binary Subtraction: %d\n",binSub);

    return 0;

}
```



PREVIOUS YEAR MCQ's TCS NQT

Q1. Property which allows to produce different executable for different platforms in C is called?
A. File inclusion
B. Selective inclusion
C. Conditional compilation
D. Recursive macros
Answer: Option C
Explanation: Conditional compilation is the process of defining compiler directives that cause different parts of the code to be compiled, and others to be ignored. This technique can be used in a cross-platform development scenario to specify parts of the code that are compiled specific to a particular platform.

Q2. C preprocessors can have compiler specific features.
A. true
B. false
C. Depends on the standard
D. Depends on the platform
Answer: Option A
Explanation: C preprocessors can have compiler specific features. Explanation: #pragma is compiler specific feature. The '#pragma' directive is the method specified by the C standard for providing additional information to the compiler, beyond what is conveyed in the language itself.

Q3. Preprocessor feature that supply line numbers and file names to compiler is called?
A. Selective inclusion
B. macro substitution
C. Concatenation
D. Line control
Answer: Option D
Explanation: The C preprocessor informs the C compiler of the location in your source code where each token came from. Presently, this is just the file name and line number. All the tokens resulting from macro expansion are reported as having appeared on the line of the source file where the outermost macro was used. We intend to be more accurate in the future.

Q4. Which of the following are C preprocessors?
A. #ifdef
B. #define
C. #endif
D. All of the mentioned.
Answer: Option D
Explanation: A,B & C are valid pre-processors which does specific task.

Q5. The C-preprocessors are specified with _____symbol.
A. #
B. $
C. " "
D. None of the mentioned.
Answer: Option A
Explanation: # symbol is used for preprocessors. Ex.#include, #define, etc.

Q6. What is the output of this C code?

```
#define a 20
int main()
{
const int a = 50;
printf("a = %d\n", a);
}
```

A. a = 50
B. a = 20
C. Run time error
D. Compilation Error
Answer: Option D
Explanation: The #define substitutes a with 20 leaving no identifier and hence compilation error.
Compilation Error: expected identifier or '(' before numeric constant

Q7.What is the output of this C code?

```
int main()
{
int var = 010;
printf("%d", var);
}
```

A. 2
B. 8

C. 9
D. 10
Answer: Option B
Explanation: 010 is octal representation of 8.

Q8. enum types are processed by?
A. Compiler
B. Preprocessor
C. Linker
D. Assembler
Answer: Option A
Explanation: Compilers process the entire code which includes enum also.

Q10. What is the output of this C code?

```
int main()
{
const int a;
a = 32;
printf("a is %d", a);
return 0;
}
```

A. a is 32
B. Compile time error
C. Run time error
D. none
Answer: Option B
Explanation:
Since the constant variable has to be declared and defined at the same time, not doing it results in an error.

Q11. Comment on the output of this C code?

```
int const print()
{
printf("AllIndiaExams.in");
www.freshersnow.com
return 0;
}
void main()
```

{
print();
}
A. AllIndiaExams.in is printed infinite number of times
B. AllIndiaExams.in
C. Runtime Error
D. complilation
error
Answer: Option B
Explanation:
The the function is called and the output is printed

12. Does this compile without error?
int main()
{
int k;
{
int k;
for (k = 0; k < 10; k++);
}
}
A. Yes
B. No
C. Depends on the compiler
D. Depends on the C standard implemented by compilers
Answer: Option A
Explanation:
There can be blocks inside block and within blocks variables have only block scope.
Output:

13. What is the output of this C code?
void main()
{
int k = 4;
float k = 4;
printf("%d", k)
}
A. Compile time error
B. 4
C. 4.0000000

D. 4.4
Answer: Option A
Explanation:
Since the variable k is defined both as integer and as float, it results in an error.

14. A variable declared in a function can be used in main?
A. True
B. False
C. True if it is declared static
D. None of the mentioned.
Answer: Option B
Explanation:
Since the scope of the variable declared within a function is restricted only within that function,
the above statement is false.

15.The name of the variable used in one function cannot be used in another function?
A. True
B. False
C. May be
D. None of the mentioned.
Answer: Option B
Explanation:
Since the scope of the variable declared within a function is restricted only within that function, the same name can be used to declare another variable in another function.

16. C99 standard guarantees uniqueness of ____ characters for internal names.
A. 31
B. 63
C. 12
D. 14
Answer: Option B
Explanation:
ISO C99 compiler may consider only first 63 characters for internal.

17. Which of the following is not a valid variable name declaration?
A. int __a3;
B. int __3a;

C. int __A3;
D. None of the mentioned.
Answer: Option D
Explanation:
None.
All the variables follow the guidelines for a valid variable name.

18. Which of the following is not a valid variable name declaration?
A. int _a3;
B. int a_3;
C. int 3_a;
D. int _3a
Answer: Option C
Explanation:
Variable name cannot start with a digit.

19. All keywords in C are in?
A. Lower Case letters
B. Upper Case letters
C. Camel Case letters
D. None
Answer: Option A
Explanation:
The keywords are always in lower case letters.

20. Variable name resolving (number of significant characters for uniqueness of variable) depends on?
A. Compiler and linker implementations
B. Assemblers and loaders implementations
C. C Language
D. None
Answer: Option A
Explanation:
It depends on the standard to which compiler and linkers are adhering to.

Q21. Which of the following is not a valid C variable name?
A. int number;
B. float rate;
C. int variable_count;

D. int $main;
Answer: Option D
Explanation: Since only underscore and no other special character is allowed in a variable name, it results in an error.

Q22. Which is valid C expression?
A. int my_num = 100,000;
B. int my_num = 100000;
C. int my num = 1000;
D. int $my_num = 10000;
Answer: Option B
Explanation: space, comma and $ cannot be used in a variable name.

Q23. What is the output of this C code?
```
int main()
{
int y = 10000;
int y = 34;
printf("Hello World! %d\n", y);
return 0;
}
```
A. Compile time error
B. Hello World! 34
Answer: Option A
Explanation: Since y is already defined, redefining it results in an error.

Q24. Which of the following is not a valid variable name declaration?
A. float PI = 3.14;
B. double PI = 3.14;
C. int PI = 3.14;
D. #define PI 3.14
Answer: Option D
Explanation: #define PI 3.14 is a macro preprocessor, it is a textual substitution.

Q25. Which of the following cannot be a variable name in C?
A. Volatile
B. True
C. friend
D. export
Answer: Option A

Explanation: Volatile is a keyword in C programming language.

Q26. What is the output of this C code?

```
int main()
{
void foo();
void f()
{
foo();
}
f();
}
void foo()
{
printf("2 ");
}
```

A. 2 2
B. 2
C. Compile time error
D. Depends on the compiler

Answer: Option D
Explanation:
Even though the answer is 2, this code will compile fine only with gcc. GNU C supports nesting of functions in C as a language extension where as standard C compiler doesn't.

Q27. What is the output of this C code?

```
void foo();
int main()
{
void foo();
foo();
return 0;
}
void foo()
{
printf("2 ");
}
```

A. Compile time error
B. 2

C. Depends on the compiler
D. Depends on the standard
Answer: Option B
Explanation:
main() function calls foo() function which prints 2 on the screen.

Q28. What is the default return type if it is not specified in function definition?
A. void
B. int
C. double
D. short int
Answer: Option B
Explanation:int is the default data type.

Q29. What is the output of this C code?

```
int foo();
int main()
{
int i = foo();
}
foo()
{
printf("2 ");
return 2;
}
```

A. 2
B. Compile time error
C. Depends on the compiler
D. Depends on the standard
Answer: Option A
Explanation:
main() function calls foo() function. foo() doesn't have a return type. So it becomes int.

Q30. functions can return structure in c?
A. true
B. false
C. Depends on the compiler
D. Depends on the standard
Answer: Option A
Explanation:

A function can return a structure object in C.

Q31. functions can return enumeration constants in c?
A. true
B. false
C. depends on the compiler
D. depends on the standard
Answer: Option A
Explanation:
A function can return enum in C as they are same as normal variables.

Q32. Which keyword can be used for coming out of recursion?
A. break
B. return
C. exit
D. Both (a) and (b)
Answer: Option B
Explanation:
return keyword returns the control to the calling function which cuts off the recursion stack.

Q33. What is the output of this C code?

```
int main()
{
 int a = 0, i = 0, b;
 for (i = 0;i < 5; i++)
 {
 a++;
 continue;
 }
}
```

A. 2
B. 3
C. 4
D. 5
Answer: Option D
Explanation: a is initially 0. Then 5 times it is increased which makes its value 5.

Q34. Which keyword is used to come out of a loop only for that iteration?
A. break
B. continue

C. return
D. None of the mentioned
Answer: Option B
Explanation:
continue keyword skips the current loop

Q35. What is the output of this C code?

```
void main()
{
double k = 0;
for (k = 0.0; k < 3.0; k++)
printf("Hello");
}
```

A. Run time error
B. Hello is printed thrice
C. Hello is printed twice
D. Hello is printed infinitely
Answer: Option B
Explanation: The for loop is executed 3 times. Thus Hello is printed 3 times

Q36. What is the output of this C code?

```
void main()
{
double k = 0;
for (k = 0.0; k < 3.0; k++);
printf("%lf", k);
}
```

A. 2.000000
B. 4.000000
C. 3.000000
D. Run time error
Answer: Option C
Explanation:
%lf represent long float

Q37. typedef which of the following may create problem in the program?
A. ;
B. printf/scanf
C. Arithmetic operators
D. All of the mentioned.

Answer: Option D
Explanation: We should not typedef C keywords

Q38. typedef declaration:
A. Does not create a new type
B. It merely adds a new name for some existing type.
C. Both a & b
D. None of the mentioned
Answer: Option C
Explanation: Typedef only creates a new name for the original one. So option C is correct.

Q39. What is the output of this C code?

```
typedef struct p
{
int x, y;
}k;
int main()
{
struct p p = {1, 2};
k k1 = p;
printf("%d\n", k1.x);
}
```

A. Compile time error
B. 1
C. 0
D. Depends on the standard
Answer: Option B
Explanation: The x value in the structure is initialized with 1. So 1 is printed.

Q40. The following query belongs to which condition types?

```
SELECT fname
FROM person
WHERE dept_id= (SELECT dept_id FROM department WHERE names='s');
```

A. Equality condition
B. Inequality condition
C. Range condition
D. All ofthe mentioned
Answer: Option A

Explanation: In the following query column equate to the value returned by subquery. So, option A is the answer

TCS NQT 2021 Numerical Ability Question paper:

Q1. X is four times as efficient as Y in respect of doing a particular work. Working together they complete the work in 16 days. In how many days y working alone will be able to half the work?
1. 80
2. 20
3. 40
4. 60
Solutions: option (3)
Let’s assume Efficiency of Y = b
Efficiency of X = 4b
Time taken by both to complete a work = 16 days
1/4b + 1/b = 1/16
(1+4)/4b = 1/16
5/4b = 1/16
b = 20
Hence X will do the work in 20 days And Y will do the work in 80 days Thus Y will do half of work in 40 days

Q2. The collection of numbers which comprise the data given below is arranged in ascending order.
(3,7,9, N - 1,15,18,19,20)
If the median of the data is 12.5, what is the value of N?
1. 10.5
2. 11.5
3. 11
4. 12
Solution: option(3)
Median of the even data = (sum of middle terms) / 2
= [(N - 1) + 15] / 2 = 12.5
⇨ N=11

Q3. How much percentage is (0.025% of 240% of 1.5) of 0.9?
1. 10
2. 0.01
3. 0.1
4. 1

5. None of these
Solution: option(5)
=> { (0.025% of 240% of 1.5)/0.9 }x 100
=> [{ (25/100000) x (240/100) x 15 } / 9] x 100
=> 0.1

Q4. After purchasing two copies of the same book, X sold them respectively at 0.8 and 1.4 times their cost prices. What was the percentage gain earned or loss incurred by X?
1. 10% loss
2. 5% gain
3. 10% gain
4. 5% loss
Solution: Option(3)
Let the C.P of each copy be Rs 100
A/C to questions, one copy is sold at 0.8 x 100 = 80
another copy is sold at 1.4 x 100 = 140
Total money spent in buying the copies = Rs 200
Total money earned after selling the copies = Rs (80 + 140) = Rs 220
Total gain of Rs 20.
Therefore gain% = 20/200 * 100 = 10%.

Q5. The diameter of a pizza is 30 cm. What is the area(in cm ^2)of the upper surface of a sector of the pizza whose arc length is 8 cm?
1. 120
2. 120π
3. 60π
4. 60
Solution: option(4)
Area of sector when arc is given = (L x r)/2
Where L = length of arc and r = radius of the circle
Here L = 8 cm and r = 15 cm
Therefore, Area =(8 x15)/2 = 60cm2

Q6. In a competitive exam, 5 marks are awarded for every correct answer and for every wrong answer, 2 marks are deducted. Sathwik scores 32 marks in the examination. If 4 marks had been awarded for each correct answer and 1 mark

had been deducted for each incorrect answer, Sathwik would have scored 34 marks. If Sathwik attempted all the questions, how many questions were there in the test ?

1. 14
2. 12
3. 20
4. 26

Solution: option(4)

Lets assume x is the number of correct question and y is the number of wrong questions.

Marks for correct answer =5x and Marks for wrong answer=2y

Correct answer =4x and wrong answer= 1y So,

5x -2y = 32

4x-2y =34 ----- *2

Now

5x-2y =32

8x-4y=68

By solving 3x=36 x=12

Now to find y, 5*12 -2y =32

60 -2y= 32 ,y=14

By adding x+y, 12+24 =26

Questions in the test =26

Q7. The mean of a set of data is 5. What will be the mean if ten is subtracted from each data ?

1. -5
2. 5
3. 10
4. -15

Solution: option(1)

Explanation let the number of data be n

so sum of data = mean * number of data

= 5 n

now 10 is subtracted to each data so now sum becomes = 5n-10n =-5n

mean = sum of data /no. of data

=-5n/n = -5

so new mean becomes -5

Q8. What is the sum (in RS) which when divided among X Y Z in the proportion 3:5:7 provides rupees 8000 more to Z then what it would have done to him when the proportion is 11 : 15 : 19?
a. 180000
b. 120000
c. 175000
d. 135000
Solution: option(1)
Let the amount = X , given ratios are= 3:5:7, Sum of ratios = 3+5+7 = 15
Z ‘s share = 7 X/ 15
second ratios are = 11:15:19, Sum of ratios = 11+15+19 = 45
Z’ share = 19 X / 45
Given that 7x/15 - 19 X /45 = 8000
21X - 19 X / 45 = 8,000
2X / 45 = 8000
X = 8000 x 45/ 2= 4000 x 45 = 1, 80,000
Q9. A man has to travel 50 km in 2 hours. He could cover 20 km in one hour, and then had to stop for 10 minutes for refueling. By What factor should he increase his speed with reference to that during the first hour so as to be able to complete the journey as per schedule?
a. 1.5
b. 1.8
c. 1.2
d. 2.4
Solution: option(b)
Total time he has = 2 hrs
total distance he has to covered = 50 km
in first 1 hr he completed 20 km
so S1= 20 km/hr
so remaining distance = 50-20 = 30 Km and remaining time = 1 hr
now he spent 10 minutes for refueling
so total remaining time he has = 60-10 = 50 minutes he has to complete 30 km in this time
speed = 30/(10/60) km/hr speed = 36 km/hr
for making a factor of initial speed as 20 km/hr
36/20 = 1.8 times.

Q10. If $5^x 3^y = 225 \times 405$, find the value of X^{2y-3x}
a. 27
b. 81
c. 125
d. 25
Solution: option(a)
Prime Factor of 225 = 5 x 5 x 3 x 3
Prime Factor of 405 = 3 x 3 x 3 x 3 x 5
$5^3 3^6 = 5^x 3^y$
So X = 3 and Y = 6
After solving we get 27 as answer

Q11. What is the diameter (in cm) of a solid right circular cylinder whose height is 6 cm and the area of the curved surface is five times the combined area of the two flat surfaces
1. 2.4
2. 0.91.2
3. 3
4. 1.2
Solution: option(4)
Here h = 6 cm
Curved surface area = 2πrh
2πrh = 5(2πr)
2 x x r x 6 = 10 x x r^2 12 x π x r = 10 x xr^2
12 = 10r
1.2 = r

Q12. A train travelling at 79km/hr crosses a man, going in the same direction at 7km/hr, in 12 second. If the same train crosses a woman coming from the opposite direction in 10seconds, then the speed in (km/hr) of the woman is ?
a. 7.4
b. 6.6
c. 5.8
d. 5.2
Solution: option(1)

A/C to the questions,
Trains and man are moving in same direction.
So relative speed= (79-7)= 72km/hr.
t =12second
d =s * t
d = 72 * 5/18 * 12 = 240
Again,
Train crosses a woman in opposite direction in 10second.
Assume woman speed is xkm/hr.
D = st
240 = (79+x) * 5/18 * 0
X = 7.4km/hr

Q13. An item was sold at a profit of 12% after giving a discount of 12.5% on the list price. What would be the gain or loss percentage if a discount of 25% is given on the list price ?
1. 2.5% gain
2. 2.5% loss
3. 4% loss
4. 4% gain
Solution: option(3)
Let us assume Cp ------- > 100%
Sp -------- > 112% (12% profit)
But Sp is 12.5% of M.P => 12.5% discount
=> 87.5% of M.P = 112
=> list price = 128
25% discount on M.P = 25% of 128 = 32
=> 128 - 32 = 96 = S.P
C.P = 100 => SP = 96 => 4% loss

Q14. If (x+10)% of 240 is 60% more than x% of 180, then 15% of (x+20) is what percent less than 25% of x ?
1. 15
2. 19 1/21
3. 16
4. 15 ½
Solution: option(3)

(x + 10)% of 240 = x% of 180 + 60% of 180
if you solve this expression x value = 50
15% of x+20 is 10.5
25% of x is 12.5
so how much less = 2/12.5 * 100 = 16

Q15. A sum invested on simple interest grows to Rs 22500/- and Rs 25500/- is seven and nine years respectively. What is the rate percentage of the interest ?
1. 7.5
2. 9.6
3. 12.5
4. 13.5
Solution: option(3)
Total Interest of two years= 25500-22500=3000
Interest of one year= 3000/2 = 1500
Total Interest = 9 * 1500 = 13500
Principle = 25500 - 13500 = 12000
R= SI * 100/P *t
= 13500 *100/1200*9 = 12.5

Q16. If n is an integer such that 1nn352 is a six-digit number exactly divided by 24, what will be the sum of the possible value of n?
a. 21
b. 27
c. 9
d. 15
Solution: option(d)
121nn352 is divisible by 24.
So, it is divisible by 8 and 3.
The number formed by last three digits is 352 = 8* 44
So, the given number is divisible by 8 for any digit in place of n.
Now, the sum of digits of the given number = 2n + 11
2n + 11 is divisible by 3 if n = 2 or 5 or 8
So, the sum of the possible values of n
= 2 + 5 + 8 = 15.

Q17. What is the wrong number in the following series?

CMQ , FPT , JTX ,OYC , UFI a.OYC
b.JTX C.FPT d.UFI
Solution:option(3)
UFI is the wrong number in the series.
Lets take CMQ
Difference between letter C and Letter M is 10 and difference between M and Q is 3
same with OYC , JTX,FPT But not with UFI

Q18. What is the fourth proportional of 0.006, 1.2 and 6/25?
A.4.8
B.3.6
C.36
D.48
Solution:option(d)
Let the fourth proportional be 'x'. So, 0.006 : 1.2::6/25 :x
When a:b:c:d are in proportion then a/b = c/d
0.006/1.2 = 6/25 / x
x= 48
Option D

Q19. A man who has to walk 11 km, finds that in 30 minutes he has travelled two-ninth of the remaining distance. What is his speed in km/hr?
1. 4.2
2. 4
3. 4.5
4. 4.8
Solution: option(4)
distance =11km = 11*2/9 = 22/9 Time =30 min = 30/60=½ hr
x= distance / time x= 22 /9 / ½
x= 44/9
x= 4.8

Q20. The present ages of three brothers are in the proportion 12:14 :17. The difference between the ages of elder and the eldest is 6 years. What will be the proportion of their ages after 4 years?
1. 40:46:55

2. 14:16:19
3. 42:41:15
4. 14:16:18
Solution:Option(b)
Explanation
14 - 17 = 3 parts = 6 years
= 1 part is 2 year
24, 28, 34 = present
28,32,38 = After 4 years
14:16:19

Q21. A work is assigned to 6 men and 12 women, they could complete it in 3 days. It was also observed that together they can do 7 times as much work a man and a woman can do. In how many days would 14 women have done the work?
1. 6
2. 12
3. 9
4. 10
Solution: Option(c)
Explanation
6m + 12w = 3 days …….(1)
6m + 12w = 7 (m + w)
6m + 12w = 7m + 7w
6m + 12w = 6m + 1m +7w
6m + 5w + 7w = 6m + 1m + 7w 1 man = 5 woman
30w + 12w = 3 days 42w = 3 day
14 women =42 * 3/4
= 9 days

Q22. Six square plots are connected end to end to obtain a rectangular plot of area 726 m2. If we take pi = 22/7 by what factor is the perimeter of this plot more than that of circumference of a circle of radius 10 m?
1. 1.45
2. 2.8
3. 2.1
4. 2.45

Solution: option(4)
Area of Rectangle = 726m2
Rectangle is comprised of 6 square plots
A * A = 726/6 = 121
A = 11
Now length of the rectangle will be 6 * 11 = 66 m Perimeter of rectangle = 2(11 + 66) = 154
Perimeter of circle of radius 10 m = 2 pi r = 2 * 22/7 * 10 = 440/7 = 62.85
By factor the perimeter of Rectangular plot is more than circular plot = 154/62.85
= 2.45

Q23. A sum of Rs 12500 is invested on 1st January 2016 at 4% simple interest per annum. How much interest (in Rs) gets accrued on the end of the day on 1st July, 2016?
1. 250
2. 400
3. 500
4. 240
Solution:option(1)
SI = Prt/100
P = 12500
R = 4%
t = 6 months = 0.5 year
SI = (12500 * 4 * 0.5) / 100
SI = 125 * 2 = 250

Q24. Two ants of length 1 cm and 1.2 cm. Crawl in opposite directions with an average speed of 2 and 3 mm per second respectively. How many seconds will they take to cross each other?
1. 2.8
2. 4.4
3. 0.4
4. 1.5
Solution: option(2)
Relative speed of ants = 2 + 3 mmps = 5mmps
Effective distance = 1 + 1.2 = 2.2 cm = 22 mm

Time = distance/speed = 22/5 = 4.4

Q25. A sales representative commission is 6% on all sales up to Rs 15,000 and 5% on all the sales exceeding this. He remits Rs 47,350 to his company after deducting his commission. What was the total sale?
1. 49000
2. 50500
3. 50000
4. 47500
Solution: option(3)
47350 = x - 6% of 15000 - 5% of (x-15000)
47350 = x - 900 - 5% of x - 5% of 15000
47350 + 900 - 750 = x - 5% of x
47500 = 95% of x
=> x = 47500 x 100/95 x = 50000
Rs. 50000

Q26. Raju lends Rs 3000 to Bharath and a certain sum to Charan at the same time of 6% per annum simple interest.If after 5 years ,Raju altogether receives Rs 1650 as interest from Bharath and Charan, What is the sum lent to charan ?
1. Rs 2500
2. Rs 3300
3. Rs 2750
4. Rs 3250
Solution: option(1)
For Bharath and Charan 6% for 5 year = 30% for each 30% for 3000 = 900
=> total interest - 900 = Charan
1650 - 900 = 30% of x (given to Charan) 30% of x = 750
X = Rs 2500

Q27. In a certain code A%B means A is the brother of B, A&B means A is the mother of B, A@B means A is the daughter of B, A$B means A is the father of B, A#B means A is the sister of B.
If K $ Z % U & H # N @ T, how T is related to U?
1. Sister
2. Brother

3. Husband
4. Wife
Solution: option(1)
K $ Z = K is the father of Z (1)
Z % U = Z is the brother of U (2) U & H = U is the mother of H (3) H # N = H is the sister of N (4)
N @ T = N is the daughter of T (5) From statement 3, 4, and 5
As U is the mother of H, H is the sister of N and N is the daughter of T complies that U and T are sisters

Q28. With what value should the highest quantity in the data : 65, 52, 14, 26, 18, 35, 32, 38 be replaced so that the mean and medium become equal?
1. 51
2. 53
3. 66
4. 64
Solution- Option(b)
Explanation
Let‘s sort the given data - 14, 18, 26, 32, 35, 38, 52, 65
mean = 35
median = 32 + 35 /2 = 33.5
Difference = 35 - 33.5 = 1.5
Value = 1.5 x 8 = 12
65-12 = 53

Q29. Among 5 objects P,Q,R,S and T
i. R is twice as heavy as T
ii. S is one and half times as heavy as Q
iii. Q and R together weigh as much as S and T together
iv. P and S together are one and half time as heavy as Q and T together
Which among the five is the heaviest of all?
A. Q
B. S
C. P
D. R
Solution: Option(B)
R = 2T i.e R > T --- (1)

S = 1.5Q i.e S > Q (2)
Q + R = S + T (3)
P + S = 1.5 (Q+T) (4)

After Simplifying we get Option B True.

Q30. In case of frequency distribution of ten continuous classes, the class width is 4 and the lower class limit of the lowest class is 8. What is the upper class limit for the highest class?
1. 40
2. 60
3. 48
4. None
Solution: option(3)
Let x and y be the upper and lower class limit of frequency distribution.
Given, width of the class =4
⇒x − y=4 …….(i)
Also, given lower class (y)=8
On putting y =8 in Eq. (i), we get X − 8 = 4 ⇒ x = 12
So, the upper class limit of the lowest class is 12. Hence, the upper limit of the highest class
= (Number of continuous classes x Class with + Lower class limit of the lowest class)
= 10 × 4 + 8 = 40 + 8 = 48
Hence, the upper class limit of the highest class is 48.

Q31. The area of the sector with central angle 150, of a circle is 231 sq cm. If pi = 22/7, what is the circumference (in cm) of the circle?
1. 264
2. 245
3. 210
4. 250
Solution: option(1)
Area of Sector = $\boldsymbol{\pi}$ r2 (Sector Angle/360) = 231 22/7 * r2 * (15/360) = 231
22/7 * r2 * (1/26) = 231
r2 = ((231 * 24 * 7)/22)
r2 = 21 * 12 * 7

r2 = 1764
r = 42
Circumference of circle = 2πr
2 * 22/7 * 42
= 22 * 12
= 264 cm

Q32. A shopkeeper calculated his profit as 12% with the selling price of an article as the base. What would have been his actual profit percentage if the selling price was 20% more?
1. 21
2. 20
3. 23
4. 24
Solution:- option(c)
Assume the cost price was 100
Then after 12% profit the selling price would have been =100+12 = 112 Now, Profit at 20% would be= 112 x 20 /100 =22.4 So answer is option C

Q33. The sum of the ages of two friends is 74. After one year the ratio of their ages will be 9:10. What was the ratio of their ages nine years ago?
1. 7:6
2. 3:2
3. 4:3
4. 13:12
Solution: option(4)
A/C to questions
x + y = 74
X +1 /Y+1 =9/10
10x + 10 =9y + 9
10x = 9y + 9 -10
10x = 9y-1
X = 9y -1 /10
Now putting value of x in equation 1 : (9y -1 /10) +y -74
9y -1 +10y = 740
19y =741
y= 741 /19 =39

And x = 74 -y
= 74 - 39 =35
Ratio of ages nine years ago = 35-9 /39-9
=26/30
=13:15

Q34. In a certain code, a+b means a is the wife of b; a*b means a is the brother of b and a/b means a is the son of b.
If T/z * U+W, then which of the following is true ?
A- U is the aunt of T
B- W is the wife of Z
C- T is the daughter of Z
D- U is the uncle of T
Solution :-option(D)
A/C to the blood relation tree
T is the son of z , z is the brother of u and u is the wife of W So U is the aunt of T

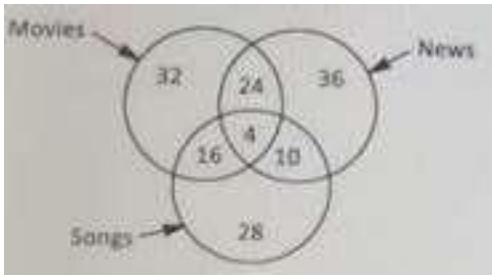
Q35. The following are the criteria for selecting a candidate for the post Assistant Manager.
The candidate must.
(i) Be a graduate in engineering in specification of Human Resource Management with minimum 55% marks.
(ii) Have three years full time experience.
(iii) Have secured more than 60 % in the interview and at least 70% in the written test.
However, if the candidate fulfills the above criteria except. In case of the applicant who satisfies all other criteria except-
at(i) above , but has more than five year experience in relevant field. his/her case is to be referred to the management.
at(ii) above, but has secured more than 65% in the written test as well as in the interview. his/her case to be referred to the HR Operation team.
at(iii) above, but has graduated in engineering with specialization Human Resource Management with a minimum 65% marks in his/her case to be referred to the General Manager.
Amit has completed his B.E with 60% marks without HRM specialization but he has been working as an assistant manager in a required company for the last

six year. He has now secured 65% in the interview and 66% in the written test. Refer to HR department

A- He would be selected.
B- Refer to the General Manager.
C- Refer to Management.

Solution: Because Amit has not done his graduation from Human Resource management and has scored more than 65% marks so his case will ne referred to “general manager”.

Q36. Consider the venn diagram given below:-



The number in the venn diagram indicates the number of the person /people watching the TV programmes. The diagram is drawn after surveying 150 persons in a population of 12000. How many person/people can be expected to watch at least two TV Programs?

A-3200
B- 2880
C-4320
D-2280

Solution: option (c)
24 + 4 + 16 + 10 = 54
Fraction of people who have taken part in survey = 12000/150 = 80
Fraction of people expected to watch at least 2 TV programs = 54 * 80 = 4320

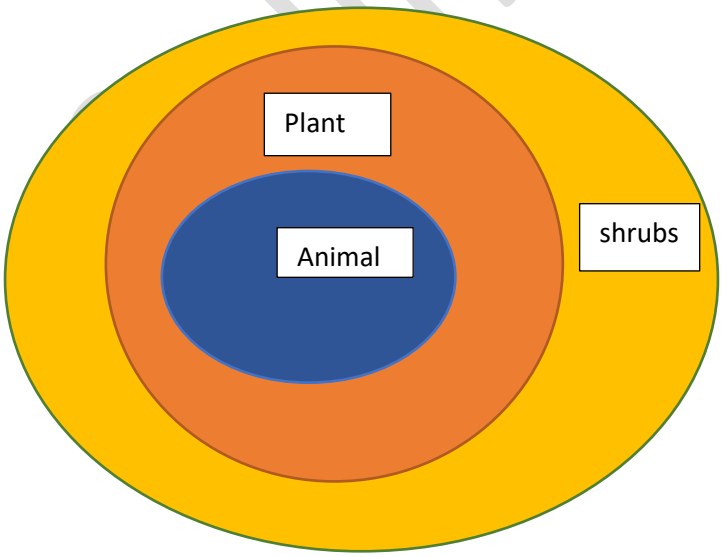
Q37. In a certain code,P+Q means P is the father of Q; P-Q means P is the sister of Q and P/Q means P is the brother of Q.
Which is the following equation,shows that A is the uncle of D ?

1. (A+B+C-D)
2. (A-D+C/B)
3. (A+B/C-D)
4. (A/B+C/D)

Solution: option(4)

The correct answer for this question will be (A/B+C/D) A/B means that A is the brother of B B+C means that B is the father of C, which means that A is the uncle of C Now, C/D means that C is the brother of D, which means that A will be the uncle of D

Q38. Two Statements are given followed by three conclusion numbered l,ll and lll . Assuming the statements to be true, even if they seem to be at variance with commonly known facts, decide which of the conclusion logically follow (s) from the statements.
Statements-
All animals are plants. All plants are shrubs.
Conclusion-
l.Some shrubs are plants.
ll. Some animal are not shrubs.
lll. All animal are shrubs.
A- Only Conclusion l and ll follow. B- None of the Conclusion Follow.
C. Only Conclusion I and III follow
D. None of the above
Solution: Option C
All plants are shrubs implies some shrubs are plant. So conclusion 1 true.
All animals are shrubs so conclusion 2 is false.
All animals are shrubs are also true
So only 1 and 3 conclusion follows.



Q39. Given Below is a question followed by two statements, l and ll ,each containing some information.Decide which of the statement is /are sufficient to answer the question.
The ratio of fees of two different schools is 2: 2.5 What would be the fees of the school if discount of 25% and 35% are given on the both the schools respectively ?
Statements-
l. Discount on the second school fees in Rs. 8750 ?
ll. difference between the discount on the two school fees is Rs. 3750 ?
1. Statement ll alone is sufficient
2. Statement l alone is sufficient
3. Both Statement l and ll together are not sufficient.
4. Both Statement l and ll together are sufficient
Solution:- option(4)
Here both the statements I and II together are sufficient to answer the question.

Q40. 96 men were engaged for a project of constructing a railway track of the length of 18 km in four weeks. After one week it was observed that the work of 4 km was completed. How many additional men should be engaged for timely completion of the project?
a. 16
b. 14
c. 15
d. 12
Solution: option(a)
4 km was completed by 96 men
Remaining work is 14km in three weeks so per week 14/3
For 4km --------- 96men
For 14/3 km ---------- ?
= 14/3 x 96 x ¼ = 112 so additionally 16 men needed

Q41. Various government accross the world have issued strict guidelines for the public to wear masks and wash hands regularly to safeguard their health during covid-19 pandemic.
Assumptions-
I. Covid-19 Pandemic is serious health issue.

II. There are ways by which people can save themselves from Covid-19 pandemic.
Options-
a. Neither I nor II is implicit
b. Both I and II are implicit
c. Only II is implicit
d. Only I is implicit
Solution-Both I and II are implicit.
It’s a serious health issues and govt are asking to wear mask means people can save themselves.

Q42. Given below is a question followed by two statements , I and II, each containing some information. Decide which of the statement(s) is/ are sufficient to answer the question.
How is A related to C?
Statements:-
a. A is the wife of B and B is the brother of C.
b. C is the son of D
1. Statement I alone is sufficient.
2. Statement II is sufficient.
3. Both I and II together are sufficient
4. Both I and II together are not sufficient
Solution:- Statement I alone is sufficient.

Q43. There are five people in the family O,P,Q,R,and S They are working as a farmer ,a teacher,a lawyer,an engineer and a doctor. P is an unmarried daughter of O working as a teacher.S is the brother of Q ,working as a lawyer Q is the husband of the only married couple in the family. O is the father of an unmarried daughter and two sons. Working as farmer O‘s daughter in law is a doctor.
Who is an engineer in the family ?
A- O
B- P
C- R
D- Q
Solution 11: Option D
O - farmer

P- teacher
Q- Engineer
R- doctor
S- lawyer
O is the father of P who is teacher (unmarried daughter) and Q(married) and S (lawyer) (Brother) . So Q is married so R is the wife of Q who is a doctor. The only one who is left is Q so Q is an engineer.

Q44. Given below is a question followed by two statements,I and II.each containing some information Decide which of the statements(s) is/are sufficeint to answer the question.
What is the age of Sumit ?
Statements.
I. Sumit is five year younger than amit , who is double the age of Prateek.
II. Prateek is 10 years elder than Ravi whose age is 22 years.
A- The Combination of both the statement I and II are necessary.
B- The Combination of both the statement I and II are not necessary. C- Statement II alone is sufficient.
D- Statement I alone is sufficient.
Solution :option(A)
From statement1: S= A-5 , A=2P
From statement2: P=10 + R , R=22
P = 10+22 =32
Now Put P in statement1
A= 2P = 2 * 32= 64
S = 64 -5 = 59
The Combination of both the statement I and II are necessary. Option A

Q45. Raju buys 3 goats and 2 sheeps for Rs.11600. When he sells the goats at 20% profit and the sheep at 10% loss, he earns a total profit of Rs.1000. The cost of one sheep is .
A. Rs.2600
B. Rs.4600
C. Rs.2400
D. Rs.2200
Solutions:option(D)
3G + 2S = 11600

Lets assume price of 3G is x and price of 2 sheeps is (11600-x).
A/c to the question,
X * 120/100 + (11600-x) * 90/100 = 12600 (11600+1000 profit)
X = 7200
Price of 2 sheep is 11600 – 7200 = 4400
So price of 1 sheep is 2200.

Q46. What is the value of
59 * 1.59 + 8.46 * 0.53 + 9 * 0.47 * 0.47 ?

a. 9.025
b. 9
c. 6.25
d. 4
e. 100.28

Solution: Answer e

Q47. The ratio is incomes of P and Q is 7:5 and the ratio of their expenditures is 4:3. IF at the end of the year, P and Q save Rs.3000 and Rs. 2000 respectively, what is Q’s income?
A. Rs.5000
B. Rs.4500
C. Rs.4000
D. Rs.7000
Solution: option(A)
Income of A(IA) = 7x
Income of B(IB) = 5x
Expenditure of A(EA)= 4y
Expenditure of B(EB)= 5y

Now,
7x – 4y = 3000 ------ 1
5x -3y = 2000 --------2

We get the value of x=1000 after solving equation 1 and 2,
So B income will be 5000.

Q48. **If the positive square root of (√90+√80) is multiplied by(√2-1) and the product is raised to four, the result would be?**
a.100
b.10
c. 11520000
d. 1600
Solution:
10 (This question can be easily solved using the calculator)

Q49. What will be the percentage increase in the area of a square, If its side is increased by 20%?
A. 44%
B. 40%
C. 36%
D. 20%
Solution:option(A)
Suppose Area =100 , that mean side=10 , because Area of square = side * side
New side = 12
So New Area= 12 * 12 = 144

So the increment in Area will be 44%.

Q50. The average score in Mathematics of a class increases by 10% if the total marks secured by a number of students who form 20% of the class strength and whose average score is 48 is not included in the calculation. What is the average score?
A. 90
B. 60
C. 75
D. 80
Solution: option(D)
Let average score = x
Let Total students = 100 .
So,
→ average score = (Total marks of class) / (Total students)
→ x = (Total marks) / 100
→ Total marks = 100x .

Now, we have given that, 20% of students whose average score is 48 is not included .
Than,
→ 20% of Total students = (20 * 100)/100 = 20 students.
→ their average score = 48 marks.
so,
→ Total marks not included = 48 * 20 = 960 marks.
Now,
→ Marks left now = (100x - 960) marks.
→ students left = 100 - 20 = 80 students.
Therefore,
→ new average score = (Mark left) / (students left) = {(100x - 960)/80} marks.
given that, average score is increased by 10% .
→ (100x - 960) / 80 = (110x/100)
→ 5(100x - 960) = 4 * 110x
→ 500x - 5 * 960 = 440x
→ 500x - 440x = 5 * 960
→ 60x = 5 * 960
dividing both sides by 60,
→ x = 5 * 16
→ x = 80 (Ans.)
Hence, average score of class is 80 marks.

TCS NQT 2021 Coding Question Paper:

Coding question 1:

There is a JAR full of candies for sale at a mall counter. JAR has the capacity N, that is JAR can contain maximum N candies when JAR is full. At any point of time. JAR can have M number of Candies where M<=N. Candies are served to the customers. JAR is never remain empty as when last k candies are left. JAR if refilled with new candies in such a way that JAR get full. Write a code to implement above scenario. Display JAR at counter with available number of candies. Input should be the number of candies one customer can order at point of time. Update the JAR after each purchase and display JAR at Counter. Output should give number of Candies sold and updated number of Candies in JAR.

If Input is more than candies in JAR, return: INVALID INPUT

Given,

N=10, where N is NUMBER OF CANDIES AVAILABLE

K =< 5, where k is number of minimum candies that must be inside JAR ever.

Example 1:(N = 10, k =< 5)

Input Value

3

Output Value

NUMBER OF CANDIES SOLD : 3

NUMBER OF CANDIES AVAILABLE : 7

Example : (N=10, k<=5)

Input Value

0

Output

INVALID INPUT

NUMBER OF CANDIES LEFT : 10

Solution using C:

```
#include <stdio.h>

int main()

{
    int n=10, k=5;

    int num;

    scanf("%d",&num);
```

```
        if(num>=1 && num<=5)
        {
                printf("NUMBER OF CANDIES SOLD : %d\n",num);
                printf("NUMBER OF CANDIES LEFT : %d",n-num);
        }
        else
        {
                printf("INVALID INPUT\n");
                printf("NUMBER OF CANDIES LEFT : %d",n);
        }
        return 0;
    }
```

Solution in C++

```
#include <iostream.h>
using namespace std;
int main()
{
    int n=10, k=5;
    int num;
cin>>num;
    if(num>=1 && num<=5)
    {
       cout<<"NUMBER OF CANDIES SOLD : "<<num<<"\n";
       cout<<"NUMBER OF CANDIES LEFT : "<<n-num;
    }
    else
```

```
        {

            cout<<"INVALID INPUT\n";
            cout<<"NUMBER OF CANDIES LEFT :
            "<<n;

        }

        return 0;

}
```

Solution in Java

```
import java.util.Scanner;

class Main{

    public static void main(String[] args) {

            int n = 10, k = 5;

            int num;

            Scanner sc = new Scanner(System.in);

            num = sc.nextInt();

            if(num >= 1 && num <= 5) {

                    System.out.println("NUMBER OF CANDIES SOLD : " + num);

                    System.out.print("NUMBER OF CANDIES LEFT : " + (n-num));
                     }
                    else {
                    System.out.println("INVALID INPUT");

                    System.out.print("NUMBER OF CANDIES LEFT : " +
                    n);
            }

    }

}
```

Coding question 2

Selection of MPCS exams include a fitness test which is conducted on ground. There will be a batch of 3 trainees, appearing for running test in track for 3 rounds. You need to record their oxygen level after every round. After trainee are finished with all rounds, calculate for each trainee his average oxygen level over the 3 rounds and select one with highest oxygen level as the most fit trainee. If more than one trainee attains the same highest average level, they all need to be selected.

Display the most fit trainee (or trainees) and the highest average oxygen level.

Note:

1. The oxygen value entered should not be accepted if it is not in the range between 1 and 100.

2. If the calculated maximum average oxygen value of trainees is below 70 then declare the trainees as unfit with meaningful message as All trainees are unfitǁ

3. Average Oxygen Values should be rounded.

Example 1:

INPUT VALUES

95

92

95

92

90

92

90

92

90

OUTPUT VALUES

Trainee Number : 1

Trainee Number : 3

Note:

Input should be 9 integer values representing oxygen levels entered in order as
Round 1

Oxygen value of trainee 1

Oxygen value of trainee 2

Oxygen value of trainee 3

Round 2

Oxygen value of trainee 1

Oxygen value of trainee 2

Oxygen value of trainee 3

Round 3

Oxygen value of trainee 1

Oxygen value of trainee 2

Oxygen value of trainee 3

Output must be in given format as in above example. For any wrong input final output should display “INVALID INPUT”
Solution in C:

```
#include <stdio.h>

int main()

{

    int tr[3][3];

    int average[3] = {0};

    int i, j, max=0;

    for(i=0; i<3; i++)

    {

        for(j=0; j<3; j++)
```

```
            {
                scanf("%d", &tr[i][j]);
                if(tr[i][j]<1 || tr[i][j]>100)
                {
                    tr[i][j] = 0;
                }
            }
        }
        for(i=0; i<3; i++)
        {
            for(j=0; j<3; j++)
            {
                average[i] = average[i] + tr[j][i];
            }
            average[i] = average[i] / 3;
        }
        for(i=0; i<3; i++)
        {
            if(average[i]>max)
            {
                max = average[i];

            }
        }
        for(i=0; i<3; i++)
```

```
        {
                if(average[i]==max)
                {
                        printf("Trainee Number : %d\n",i+1);
                }
                if(average[i]<=70)
                {
                        printf("Trainee is Unfit");
                }
        }
        return 0;
}
```

Solution in C++:

```
#include <iostream>
using namespace std;
int main()
{
        int tr[3][3];
        int average[3] = {0};
        int i, j, max=0;
        for(i=0; i<3; i++)
        {
                for(j=0; j<3; j++)
                {
                cin>>tr[i][j];
```

```
            if(tr[i][j]<1 ||tr[i][j]>100)
                                {
                                        tr[i][j] = 0;
                                }
                        }
                }
                for(i=0; i<3; i++)
                {
                        for(j=0; j<3; j++)
                        {
                    average[i]      =       average[i]+tr[j][i];
                       }
                        average[i] = average[i] / 3;


                }
                for(i=0; i<3; i++)
                {
                        if(average[i]>max)
                        {
                                max = average[i];
                        }
                }
                for(i=0; i<3; i++)
                {
                        if(average[i]==max)
```

```
                        {
                        cout<<"Trainee   Number: "<<i+1<<"\n";
                        }
                        if(average[i]<=70)
                        {
                                cout<<"Trainee is Unfit";
                        }
                }
                return 0;
}
```

Solution in Java:

```
import java.util.Scanner;

class Main {

public static void main(String[] args) {
        int[][] tr = new int[3][3];
        int[] average = new int[3];

                int max = 0;

                Scanner sc = new Scanner(System.in);
                for(int i = 0; i < 3; i++) {
                for(int  j  =  0;  j  <  3;  j++)  {
                tri][j] = sc.nextInt();
                if(tr[i][j] < 1 ||tr[i][j] > 100) {
                                        tr[i][j] = 0;

                                        }

                        }

                }

                for(int i = 0; i < 3; i++) {

                        for(int j = 0; j < 3; j++) {
```

```
                                        average[i]=  average[i]+tr[j][i];

                                }

                                average[i] = average[i] / 3;

                        }

        for(int i = 0; i < 3; i++) {
        if(average[i] > max) {
                max = average[i];
                }

                        }

        for(int i = 0; i < 3; i++) {
        if(average[i] == max) {
System.out.println("Trainee Number : " + (i + 1));

                                }

                    if(average[i] <= 70) {
                    System.out.print("Trainee is Unfit");

                                }

                      }

        }

}
```

Coding question 3

Washing Machine works on the principle of a Fuzzy system, the weight of clothes put inside it for wash is uncertain. But based on weight measured by sensors, it decides time and water levels which can be changed by menus given on the machine control area. For low Water level, time estimate is 25 minutes, where approximate weight is 2000 grams or any non-zero positive number below that.

For Medium Water level, time estimated is 35minutes, where approximate weight is between 2001 grams and 4000 grams. For High Water level, time estimated is 45 Minutes, where approximate weight is above 4000 grams. Assume the Capacity of the Machine is maximum 7000 grams. Where the approximate weight is zero, the time estimate is 0 minutes. Write a function which takes numeric weight in the range [0,7000] as input and produces estimated time as output; if input is more than 7000,

then output is: "OVERLOADED!", and for all other inputs, the output statement is "INVALID INPUT”.

Input should be in the form of integer value

Output must have the following format - TimeEstimated: Minutes

Example 1

Input Value

2000

Output Value

Time Estimated: 25 Minutes

Solution using C++

```
#include<iostream>
using namespace std;
int main(){
int w;
cin>>w;
if(w<0)
cout<<"INVALID INPUT";
else if(w==0)
cout<<"Time Estimated : 0 Minutes";
else if (w>0 && w<=2000)
cout<<"Time Estimated: 25 Minutes";

else if(w>=2001 && w <= 4000)
cout<<"Time Estimated: 35 Minutes";

else if(w>=4001 && w <= 7000)
cout<<"Time Estimated: 45 Minutes";

else
cout<<"OVERLOADED!";

return 0;


}
```

Solution using Python

```
w = int(input())
if (w<0):
    print("INVALID INPUT")
```

```
elif(w==0):
   print("Time Estimated : 0 Minutes")
elif (w>0 and w<=2000):
   print("Time Estimated: 25 Minutes")

elif(w>=2001 and w <= 4000):
   print("Time Estimated: 35 Minutes")

elif(w>=4001 and w <= 7000):
   print("Time Estimated: 45 Minutes")

else:
   print("OVERLOADED!")
```

Coding question – 4

Caesar Cipher The Caesar cipher is a type of substitution cipher in which each alphabet in the plaintext or message is shifted by a number of places down the alphabet.For example, with a shift of 1, P would be replaced by Q, Q would become R, and so on.To pass an encrypted message from one person to another, it is first necessary that both parties have the 'key' for the cipher, so that the sender may encrypt it and the receiver may decrypt it.The key is the number of OFFSETs to shift the cipher alphabet. Key can have basic shifts from 1 to 25 positions as there are 26 total alphabets.
As we are designing custom Caesar Cipher, in addition to alphabets, we are considering numeric digits from 0 to 9. Digits can also be shifted by key places.
For example, if given plain text contains any digit with value 5 and key = 2, then 5 will be replaced by 7. -(Minus sign) will remain as it is. Key value less than 0 should result into "INVALID INPUT"

Example 1:

Input:

Enter your PlainText: All the Best

Enter the Key: 1

Output:

The encrypted Text is: Bmm uif Cftu

Write a function customCaesarCipher(int key, String message) which will accept plaintext and key as input parameters and returns its cipher text as output.

Solution using C

```c
#include<stdio.h>
void customCaesarCipher(int key,char str[]);
int main()
{
    int key;
    char str[100];
    scanf("%[^\n]s",str);
    scanf("%d",&key);
    customCaesarCipher(key,str);
    return 0;
}
```

```c
void customCaesarCipher(int key,char str[])
{
    int n=0,i=0;
    for(n=0;str[n]!='\0';n++);
    if(key<0){
        printf("INVALID INPUT");
        return;
    }
    else{
        for(i=0;i<n;i++){
            if(str[i]!=' '){
              if(str[i]>=65 && str[i]<=90){
                 if((int)(str[i]+key)<=90)
                    str[i] = (int) (str[i]+key);
                 else
                    str[i] = (int)(str[i]+key-90+65-1);
              }
              else if(str[i]>=97 && str[i]<=122){
                 if((int)(str[i]+key)<=122)
                    str[i] = (int) (str[i]+key);
                 else
                    str[i] = (int)(str[i]+key-122+97-1);
              }
              else if((str[i]>=48 && str[i]<=57)){
                 if((int)(str[i]+key)<=57)
                    str[i] = (int)(str[i]+key);
                 else
                    str[i] = (int)(str[i]+key-57+48-1);
              }
        }
    }
    printf("%s",str);
  }
}
```

Coding question 5

We want to estimate the cost of painting a property.Interior wall painting cost is Rs.18 per sq.ft. and exterior wall painting cost is Rs.12 per sq.ft.
Take input as

1. Number of Interior walls
2. Number of Exterior walls
3. Surface Area of each Interior Wall in units of square feet
4. Surface Area of each Exterior Wall in units of square feet

If a user enters zero as the number of walls then skip Surface area values as User may don‘t want to paint that wall.Calculate and display the total cost of painting the property

Example 1:

6

3

12.3

15.2

12.3

15.2

12.3

15.2

10.10

10.10

10.00

Total estimated Cost : 1847.4 INR

Solution using C:

```
#include<stdio.h>

int main()

{

    int ni,ne,i=0;

    float int_p=18,ext_p=12,cost=0,temp;

    scanf("%d %d",&ni,&ne);

    if(ni<0 || ne<0 )

    {

        printf("INVALID INPUT");
```

```
    }
    else if(ni==0 && ne==0)
    {
        printf("Total estimated Cost : 0.0");
    }
    else
    {
        for(i=0;i<ni;i++)
        {
            scanf("%f",&temp);
            cost+= int_p*temp;
        }
        for(i=0;i<ne;i++)
        {
            scanf("%f",&temp);
            cost+= ext_p*temp;
        }
        printf("Total estimated Cost : %.1f",cost);
    }
    return 0;
}
```

Solution in C++:

```
#include<iostream>
using namespace std;
```

```
int main()
{
    int ni,ne,i=0;
    float int_p=18,ext_p=12,cost=0,temp;
    scanf("%d %d",&ni,&ne);
    if(ni<0 || ne<0 )
    {
        cout<<"INVALID INPUT";
    }
    else if(ni==0 && ne==0)
    {
        cout<<"Total estimated Cost : 0.0";
    }
    else
    {
        for(i=0;i<ni;i++)
        {
            cin>>temp;
            cost+= int_p*temp;
        }
        for(i=0;i<ne;i++)
        {
            cin>>temp;

            cost+= ext_p*temp;
```

```
            }
            cout<<"Total estimated Cost : "<<cost;
        }
        return 0;
}
```

Solution in Java:

```
import java.util.Scanner;
class Main {
    public static void main(String[] args) {
            int ni, ne, i = 0;
            float intP = 18, extP = 12, cost = 0, temp;
            Scanner sc = new Scanner(System.in);
            ni = sc.nextInt();
            ne = sc.nextInt();
            if(ni < 0 || ne < 0) {
                    System.out.print("INVALID INPUT");
    } else if(ni == 0 && ne == 0)
     {
     System.out.print("Total estimated Cost : 0.0");
            }
            else {
                    for(i = 0; i < ni; i++) {
                            temp = sc.nextFloat();
                            cost += intP * temp;
                    }
                    for(i = 0; i < ne; i++) {
                            temp = sc.nextFloat();
```

```
                    cost += extP * temp;
                }
                System.out.printf("Total estimated Cost : %.1f", cost);
            }
        }
}
```

Solution in Python:

```
interior_walls = int(input())
exterior_walls = int(input())
if interior_walls:
    int_walls = []
    for i in range(interior_walls):
        int_walls.append(float(input()))
if exterior_walls:
    ext_walls = []
    for i in range(exterior_walls):
        ext_walls.append(float(input()))
if exterior_walls < 0 or interior_walls < 0:
    print(“Invalid Input”)
    exit()

if exterior_walls and interior_walls:
    print("Total estimated Cost : ",(sum(int_walls)*18+sum(ext_walls)*12),"INR")
else:
    if exterior_walls:
```

```
        print("Total estimated Cost : ",sum(ext_walls)*12,"INR")
    elif interior_walls:
        print("Total estimated Cost : ",sum(int_walls)*18,"INR")
    else:
        print("Total estimated Cost : 0.0 INR")
```

Coding question 6

A City Bus is a Ring Route Bus which runs in circular fashion.That is, Bus once starts at the Source Bus Stop, halts at each Bus Stop in its Route and at the end it reaches the Source Bus Stop again.

If there are n number of Stops and if the bus starts at Bus Stop 1, then after nth Bus Stop, the next stop in the Route will be Bus Stop number 1 always.

If there are n stops, there will be n paths.One path connects two stops. Distances (in meters) for all paths in Ring Route is given in array Path[] as given below:

Path = [800, 600, 750, 900, 1400, 1200, 1100, 1500]

Fare is determined based on the distance covered from source to destination stop as Distance between Input Source and Destination Stops can be measured by looking at values in array Path[] and fare can be calculated as per following criteria:

- If d =1000 metres, then fare=5 INR
- (When calculating fare for others, the calculated fare containing any fraction value should be ceiled. For example, for distance 900n when fare initially calculated is 4.5 which must be ceiled to 5)

Path is circular in function. Value at each index indicates distance till current stop from the previous one. And each index position can be mapped with values at same index in BusStops [] array, which is a string array holding abbreviation of names for all stops as-

“THANERAILWAYSTN” = ”TH”, “GAONDEVI” = “GA”, “ICEFACTROY” = “IC”, “HARINIWASCIRCLE” = “HA”, “TEENHATHNAKA” = “TE”, “LUISWADI” = “LU”, “NITINCOMPANYJUNCTION” = “NI”, “CADBURRYJUNCTION” = “CA”

Given, n=8, where n is number of total BusStops.

BusStops = [“TH”, ”GA”, ”IC”, ”HA”, ”TE”, ”LU”, ”NI”,”CA”]

Write a code with function getFare(String Source, String Destination) which take Input as source and destination stops(in the format containing first two characters of the Name of the Bus Stop) and calculate and return travel fare.

Example 1:

Input Values

ca

Ca

Output Values

INVALID OUTPUT

Example 2:

Input Values

NI

HA

Output Values

23.0 INR

Note: Input and Output should be in format given in example.

Input should not be case sensitive and output should be in the format INR

Solution in Python:

```
import math

def getFare(source,destination):

    route=[ [ "TH", "GA", "IC", "HA", "TE", "LU", "NI",
    "CA"], [800,600,750,900,1400,1200,1100,1500]

        ]
```

```
    fare = 0.0
    if not (source in route[0] and destination in route[0]):
        print("Invalid Input")
        exit()
    if route[0].index(source) < route[0].index(destination):
        for i in range(route[0].index(source),route[0].index(destination)+1):
            fare+=route[1][i]
elif route[0].index(destination) < route[0].index(source):
      for i in range(route[0].index(source)+1,len(route[0])):
            fare+=route[1][i]
        for i in range(0,route[0].index(destination)+1):
            fare+=route[1][i]
    return float(math.ceil(fare*0.005))
s = input()
dst = input()
fare = getFare(s,dst)
if fare == 0:
    print("Invalid Input")
else:
    print(fare)
```

Solution in C++:

```
#include <bits/stdc++.h>
using namespace std;
int main() {
string s , d;
```

```
cin>>s>>d;

 transform(s.begin(),s.end() , s.begin(),::toupper);
 transform(d.begin(),d.end() , d.begin(),::toupper);

 string arrs[8] = {"TH" , "GA", "IC" , "HA" , "TE", "LU"
 ,"NI","CA"}; float
 arr[8]={800,600,750,900,1400,1200,1100,1500}; float res=0;

 int st ,ed;

 for(int i=0;i<8;i++)

 {



        if(s==arrs[i])

        st=i;

        if(d==arrs[i])

        ed=i;

 }

 if(st==ed)

 {

        cout<<" INVALID INPUT";

        return 0;

 }

 else

 {

        int i=st+1;

        cout<<i;

          while(i!=ed+1)

          {

              res+=(arr[i]);
```

```
            i=(i+1)%8;
        }
        cout<<(ceil)(res*0.005);
        return 0;
  }
}
```

Programming MCQ's:

Q7. What will be printed when the sample code is executed.

```
class Main
{
public static void main(String args[])
{
int i,j,x=0;
for(i=0;i<5;i++)
for (j=0;j<5;j++){
x=(i+j-1);
System.out.print(x);
break;
}
System.out.print(x);
}
}
```

Answer- -101233

Q8. Which of the following options best suits for Memory Leak Occurred

1. Resource allocation pending while debugging the code
2. Program releases resources allocated in the memory
3. Program does not free the memory which is allocated dynamically
4. Occurs due to address assignment failure.

Answer- Program does not free the memory which is allocated dynamically.

Q9. What among the following is a server based paradigm

1. Request for Information(RFI)
2. Data Validation Routine
3. Cloud computing
4. Total cost of Ownership.

Answer- Request for information

Q.10 When we declare constant pointer to integer, we CANNOT change:
1. Value pointed by pointer
2. Either addressing pointer variable or value at that address
3. Changes are not permitted
4. Address in pointer variable.
Answer- Address in the pointer variable.

Q.11 Write the name of library of functions which is used to perform arithmetic operations on BigInteger and BigDecimal
Answer- MathContext

Q.12 Which argument is passed to fflush()?
A.no parameters
B.stdin
C.stdout
D.stderr
Answer: Option B

Q.13 What will be the output for the below?
Enter your answer only as Numeral

```
public Class Main {
public static void main(string[]) {
int x=1/2;
if(x==0.5)
System.out.println(x+1);
else System.out.println(x*2);
}}
```

Answer: 0

Q.14 Which argument is passed to fflush()?
A.no parameters
B.stdin
C.stdout
D.stderr
Answer: Option B

Q.16 What is the name of the method that examines a particular data entity and determines what data elements need to be associated?
A. Entity relationship diagram
B. Logic Data modeling
C. Customer Entities
D. Functional Primitive
Answer: Option A

Q.17 What will be the output of the below code?

```
public class Main { static int num=30;
static class inner
{
void msg()
{
System.out.Println(_Num: num++);
}
}
public static void main(string args[])
{
Main.Inner tw=new Main.Inner();
tw.msg()
}
}
```

Answer: 30

Q.18 The function ____ obtains block of memory dynamically.
a) calloc
b) malloc
c) Both calloc & malloc
d) free
Answer : Both calloc & malloc

Q.19 We cannot overload operator
A. : :
B. []
C. ()

D. +
Answer: Option A

Q.20 Which data structure is used to convert expression from one form to another form?
A. Graph
B. Stack
C. LinkedList
D. Queue
Answer: Option B

Q.21 What is the mathematical function used to round off 6.23 to 7?
A. floor(6.23)
B. ceil(6.23,7)
C. floor(6.23,7)
D. ceil(6.23)
Answer: Option D

Q.22 Which combination of the integer variables a, b and c makes the variable m get the value 4 in the following expression?
m = (a > b) ? ((a > c) ? a : c) : ((b > c) ? b : c)
A. a=6, b=3, c=5
B. a=6, b=5, c=3
C. a=5, b=4, c=5
D. a=3, b=4, c=2
Answer: Option D

Q.23 Which of the following options best suits for Memory Leak Occurred
A. Resource allocation pending while debugging the code
B. Program releases resources allocated in the memory
C. Program does not free the memory which is allocated dynamically
D. Occurs due to address assignment failure.
Answer- Option C

Q.24 Which of the following functions is used to accept strings with white spaces?

A.getWhiteSpaceString();
B.scanf();
C.gets();
D.getstrings();
Answer: Option C

Q.25
What will be the output of the below code?

```
import java.util.ArrayList;
import java.util.Collections;
import java.util.Iterator;
class MainClass
{
public void sort()
{
ArrayList arrayList= new ArrayList();
arrayList.add("mango");
arrayList.add("grapes");
Iterator iterator = arrayList.iterator();
while(iterator.hasNext())
{ System.out.print(iterator.next() +" ");
}
Collections.sort(arrayList);
}
}
public class Main { public static void main(String[] args)
{
MainClass mainclass = new MainClass();
mainclass.sort();
}
}
```

A. mango grapes
B. Compilation error
C. Collection.sort() throws Concurrent Modification Exception
D. Grapes mango
Answer: Option A

Q.26 Memory allocation using malloc() is done in?
a) Static area
b) Stack area
c) Heap area
d) Both Stack & Heap area
Answer: Option C

Q.27 .What is the function used to describe the situation, when a function in base class is redefined in inherited class?
a.Inheritance
b.Overriding
c.Overloading
d.Encapsulation
Answer:b

Q.28 What will be the output
```
public class Main {
public static void main(String[] args)
{
int $ = 5;
}
}
```
1. Nothing will print
2. Symbol not found Error.
3. Runtime Error
4. Compile time error
Answer- Nothing will print

Q.29 Given here is a scenario. Consider the graph algorithm and answer the given question. John wants to go to different locations of the city in which he is. He has listed all of them down. However he wants to visit one location before visiting some other location. What application of graphs can he use to determine that location?
1. DFS
2. Dijsktra‘s
3. BFS
4. Topological Sorting

Answer- Dijkstra’s

Q.30 Which of the following correctly describes overloading of functions?
a.Virtual polymorphism
b.Transient polymorphism
c.Ad-hoc polymorphism
d.Pseudo polymorphism
Answer: c