TCS Test Paper (2019-2020-2021)

Question 1

A person starts writing all 4 digits numbers.how many times had he written the digit 2? (2 Marks)

A. 3700

B. 32000

C. 37000

D. 3200

Explanation :

Number of 2's at units place(1000 to 9999)=900.
Number of 2's at tenths place(1000 to 9999)=900.
Number of 2's at hundreds place(1000 to 9999)=900.
Number of 2's at thousands place(1000 to 9999)=1000.
Therefore, total number of 2's =(900+900+900+1000)=3700.

Question 2

2 workers ,one old and one young,live together and work at the same office.the old man takes 30 mins where as the young man takes only 20 mins to reach the office.when will the young man catch up the old man ,if the old man starts at 10.00am and the young man starts at 10.05am? (1 Marks)

A. 10:25 AM

B. 10:10 AM

C. 10:05 AM

D. 10:15 AM

Explanation :

Suppose the distance b/w the starting point to the office = 30 m.
so,in 15 min the old man covers 15 m because speed= 1m/min .
and in 10 min the young man covers 15 m because speed = 1.5m/min .
Thus 10:15 is the right answer.

Question 3

What is the next three numbers for the given series? 11 23 47 83 131 __ __ __ ? (1 Marks)

A. 181, 364, 478

B. 191, 263, 347

C. 171, 253, 214

D. 201, 312, 247

Explanation :

11 23 47 83 131
Each digit is having addition of 12 multiple
11+12=23
23+2*12=47
47+3*12=83
83+4*12=131

131+5*12=**191**
191+6*12=**263**
263+7*12=**347**

Question 4

What is the chance that a leap year selected at random contains 53 Fridays? (1 Marks)

A. 1/7

B. 2/7

C. 3/7

D. 4/7

Explanation :

A leap year has 366 days, therefore 52 weeks(i.e. 52 fridays) and 2 days.

The remaining 2 days may be any of the following :

(i) Sunday and Monday

(ii) Monday and Tuesday

(iii) Tuesday and Wednesday

(iv) Wednesday and Thursday

(v) Thursday and Friday

(vi) Friday and Saturday

(vii) Saturday and Sunday

For having 53 fridays in a year, one of the remaining 2 days must be a friday.

n(S) = 7

n(E) = 2

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

Question 5

A two digit number is 18 less than the square of the sum of its digits. How many such numbers are there? (1 Marks)

A. 1

B. 2

C. 3

D. 4

Explanation :

Take 63 and 82.
xy+18=(x+y)^2.
63+18=(6+3)^2.
82+18=(8+2)^2.

Question 6

A boy is cycling such that the wheel of the cycle are making 420 revolutions per minute. If the diameter of the wheel is 50 cm, find the speed of the boy. (1 Marks)

A. 39.6

B. 38.6

C. 37.6

D. 36.6

Explanation :

Diameter = 50 cm then radius(r) = 50/2 cm.

AS answer is given in (km) we have to convert (cm) in (km).
Now r= 50/2= 25 cm then (25/100) in meter then (25/100*1000) in km .

Circumference of cycle = 2*(22/7)*r .

Number of revolutions per minute = 420 .

we have to multiply 60 with circumference becoz it will be converted into hour as answer is given in hour only.

speed = 2*(22/7)*[25/(100*1000)]*60*420 km/hr .
= 396/10 km/hr .
= 39.6 km/hr.

Question 7

B moves by taking 3 steps forward and 1 step backward (each step in one second)
He walks up a stationary escalator in 118 sec.
However on moving escalator he takes 40 sec to reach top . Find speed of escalator. (2 Marks)

A. 1 step/sec

B. 2 step/sec

C. 3 step/sec

D. 4 step/sec

Explanation :

Lets find the no. of steps for escalator.
Since first B moves 3 steps forward and then 1 step backward so in total 4 seconds he moves only 2 steps forward .

So in 116 seconds he moves 58 steps forward.

Now in next 2 seconds, he moves 2 steps so in 118 seconds he moves total 60 steps forward.
So no. of steps required to reach the top of the escalator is 60.
Now let the escalator moves a steps per second so in 4 seconds B moves 2 steps (3 steps forward and 1 step backward) in these 4 sec. escalator moves 4a step so in 4 sec. B moves a total of 2+4a step.
So in 40 second total move=10*(2+4a) .
so, 10*(2+4a)=60.
Hence, a=1 step/sec.

Question 8

A and B completed a work together in 5 days. Had A worked at twice the speed and B at half the speed, it would have taken them four days to complete the job. How much time would it take for A alone to do the work? (1 Marks)

A. 10 days

B. 11 days

C. 12 days

D. 13 days

Explanation :

A and B's 1 day work together will be completed in A + B =1/5 days. ---------(i)
with twice the speed of A and (1/2) of B completes work in 4 days,
So, 2A +B/2 = 1/4. ----------(ii)
On solving both the eq. we get a=1/10.
So, A will complete the whole work in 10 days.

Question 9

If given equation is 137+276=435,how much is 731+672=.... find the result. (2 Marks)

A. 435

B. 537

C. 3261

D. 1623

Explanation :

1623 its simple addition in base 8

Question 10

A dealer buys a product at Rs.1920. he sells at a discount of 20% still he gets the profit of 20%. what is the selling price? (1 Marks)

A. 534

B. 2300

C. 2304

D. 2403

Explanation :

Cost price is 1920
Now discount part is to confuse you because the actual selling price will never depend on discount.
so 20% of 1920 is 384
and adding the profit to calculate selling price 1920+384=2304.

Question 11

How many 3-digit numbers can be formed from the digits 2,3,5,6,7 and 9 which are divisible by 5 and none of the digit is repeated. (1 Marks)

A. 5

B. 10

C. 15

D. 20

Explanation :

The key word here is divisible by 5 hence in units place we have to fill 5 only which is divisible by 5. (1 way).

For tenth place, we have a choice to fill among 5 numbers(5 ways)..

and last in hundredth place, we have to choose among any four number (4 ways)

Hence, (5*4*1)=20.

Question 12

A die is rolled and a coin is tossed .find the probability that the die shows an odd number and the coin shows a head.

A. 1/4

B. 1/2

C. 3/4

D. 2/3

Explanation :

Probability that the die shows an odd number is (1,3,5) 3/6 i.e 1/2.

Probability that the coin shows a head is 1 / 2.

Hence, the required probability is (1/2)*(1/2) = 1/4.

Question 13

Find last two digit of (1021^3921)+(3081^3921)? (2 Marks)

A. 32

B. 22

C. 12

D. 02

Explanation :

1021^3921=last 2 digit(21)
3081^3921=last 2 digit(81)
so, 21+81=102
Means last two digit will be 02.

Question 14

(40*40*40 - 31*31*31)/ (40*40+40*31+31*31) = ? (1 Marks)

A. 8

B. 71

C. 9

D. 51

Explanation :

Let a=40 & b=31.
Now, $(a^3-b^3)/(a^2+b^2+ab)$.
=> $\{(a-b)*(a^2+b^2+ab)\}/(a^2+b^2+ab)$.
=>(a-b).
=> 9.

Question 15

RAM GOES A TO B . IF HE TAKES 1/4 TIME LESS THAN TO COVER THE SAME DISTANCE WHEN RUN AT NORMAL SPEED BY WHAT % HE HAS INCREASED HIS SPEED ? (1 Marks)

A. 17.6

B. 33.3

C. 48.6

D. 66.6

Explanation :

Let distance =x
and time=t
=> s = x/t.
when he run at speed
=> t'=t-1/4t

=> t‘=3/4t
Distance remain same
=> s*t=s‘*3/4t
=> s‘=4/3s
Hence, required %increase in speed=33.3%.

Question 16

What is the remainder of (16937^30)/31 ? (1 Marks)

A. 1

B. 2

C. 3

D. 4

Explanation :

16937=16926+11,now 16926 is completely divisible.. So what remains is $(11^{30})/31$.
Which is $(11^6)^5/31$
11^6 gives 4 as remainder.

So $4^5/31$ is remaining which gives 1 as remainder.

Question 17

If meeting O is on Saturday, then meeting K must take place on ? (1 Marks)

A. Thursday

B. Wednesday

C. Tuesday

D. Monday

Explanation :

IJKLMNO if O is saturday then "I" will be sunday and "K" will be Tuesday.

- 1987

- 1449
- 538
- 72.92 %
- 4.7
- 37.23
- 0.0

Question 18

3 15 _ 51 53 159 161 (1 Marks)

A. 18

B. 17

C. 30

D. 33

Explanation :

15 + 2 = 17*3=51.
51 + 2 = 53*3=159.
159 + 2 = 161.

Question 19

55th word of SHUVANK in dictionary?? (1 Marks)

A. AHSNKUV

B. AHNKSVU

C. AHNKUSV

D. AHNKUVS

Explanation :

dictionary order 55th word will be AHSNKUV

Question 20

Mani sells vegetables and he marks up the prices at 5% above his cost price. Also the weighing stones used by him weigh only 90% of the correct weight. Find his effective percentage of mark-up.

A. 15%

B. 50/3 %

C. 49/2 %

D. 20 %

Explanation :

let the cost price be 100 of 1 kg.

Now he will sell 1 kg in 105 but due to error in weighing stones he will sell only 900 gram in 105 but he has paid 900*(100/1000)=90 rs for 900 grams.

Net profit=105-90=15 Rs.
Hence, required percentage=100*(15/90)=50 / 3% .

Question 21

Car A leaves city C at 5 pm and drives at a speed of 40 kmph. 2 hours later another car B leaves city C and drives in the same direction as car A. In how much time will car B be 9 km ahead of car A. Speed of car B is 60 kmph. (1 Marks)

A. 4.15hrs

B. 4.25 hrs

C. 4.35 hrs

D. 4.45 hrs

Explanation :

First we will calculate the distance travel by car A in two hours i.e. 80 km. now their relative speed is 20 kmph and distance will be 89 km.

So car B will be ahead of car A in (89/20) = 4.45 hrs.

Question 22

n is a natural number and n^3 has 16 factors then how many max factors can n^4 have? (2 Marks)

A. 21

B. 24

C. 25

D. 27

Explanation :

suppose $n^3 = a^3 * b^3$.

Therefore by using formula to know total factors (3+1)*(3+1)=4*4=16 as it was given in question only.

Now by using above concept we can write.
$=> n^4 = c^4 * d^4$.
So, we will get (4+1)*(4+1) = 25.

Question 23

6, 24, 60, 120, 210, ___ ? (1 Marks)

A. 420

B. 240

C. 363

D. 336

Explanation :

2^3-2=6
3^3-3=24
4^3-4=60
5^3-5=120
6^3-6=210,

so, 7^3-7=336.

Question 24

In how many ways 1.can we distribute 10 identical looking pencils to 4 students so that each student gets at least one pencil? (1 Marks)

A. 48

B. 84

C. 68

D. 86

Explanation :

Firstly give 1 pencil each to the 4, now we can distribute the remaining 6 pencils any way we like. using the "stars and bars" formula, ${}^{(6+4-1)}C_{(4-1)} = {}^{9}C_3 = 84$.

Question 25

Sum of three digit number is 17. sum of squared of digits of the given num is 109. If we subtract 495 from that num we will get a number written in square order. find the num ? (2 Marks)

A. 296

B. 863

C. 980

D. 179

Explanation :

Sum of the three digit is 17..hence a+b+c=17----(1)
Sum of squared of digits is 109 ..hence a^2+b^2+c^2=109----(2)
Also, 100a + 10b + c - 495 = 100c + 10b + a .
=> 99(a-c)=495 .
=> a-c=5.
The possible combinations are (6,1)(7,2)(8,3),(9,4)
out of these combinations 8,3 only satisfies both (1) and (2).
=> 8+b+3=17.
=> b=6.
Hence, 8+6+3=17.
=> 8^2+6^2+3^2=64+36+9=109 .
so,863 is ans.

Question 26

The least number that must be subtracted from 63520 to make the result a perfect square, is: (1 Marks)

A. 16

B. 20

C. 24

D. 30

Explanation :

option b & d is not possible.
option c also not possible.
option a is correct
because
63520-16 = 63504 which is divisible by 16.
63504/16 = 3969 which is the square root of 63.
So, option (a) is correct.

Question 27

Find the missing numbers in the series: 0,2,5,?,17,28,?, (1 Marks)

A. 11,31

B. 31,51

C. 10,41

D. 21,40

Explanation :

The difference between the numbers are prime. So 5+5=10, 28+13=41.

Question 28

A motor boat covers a certain distance downstream in 30 minutes, while it comes back in 45 minutes. If the speed of the stream is 5 kmph what is the speed of the boat in still water? (1 Marks)

A. 10 kmph

B. 15 kmph

C. 20 kmph

D. 25kmph

Explanation :

Let speed of boat is x in still water .
Then, (x+5)*30=(x-5)*45.
=> 2x+10=3x-15.
=> x=25 kmph.

Question 29

20 passengers are to traveled by a doubled decked bus which can accommodate 13 in the upper deck and 7 in the lower deck. The number of ways that they can be distributed if 5 refuse to sit in the upper deck and 8 refuse to sit in the lower deck is: (1 Marks)

A. 25

B. 21

C. 18

D. 15

Explanation :

Refused to sit on upper deck --->5
Refused to sit on lower deck --->8
total people remaining to arrange is = 20 - 13 = 7.
remaining place in upper deck = 5
therefore, no. of ways possible= $^{7}c_{5}$ = 21
remaining place in lower deck = 2
therefore, no. of ways possible= $^{7}c_{2}$ = 21, also
No. of ways possible is 21.

Question 30

Two merchants sell an article each for Rs.1000.one of them computes profit as a % of cost price, while the second calculates it incorrectly as a % of selling price. If both of them claim to have made a profit of 10%, who made more profit and by what amount? (1 Marks)

A. second and 9 rs

B. second and 10 rs

C. first and 9 rs

D. first and 10 rs

Explanation :

First merchant get profit of 10% from cp

=> (cp*110/100)=1000

=> cp=Rs.909.
so first merchant get profit of Rs.91.
second merchant get profit of 10% from sp

=> profit=1000*10/100 =Rs.100.
so the profit of second merchant is high and it is more than first merchant by 9Rs.

Paper-2

Question 1

What will be the reminder when (1234567890123456789)^24 is divided by 6561

A. 0

B. 1

C. 2

D. 3

Explanation :

The divisor 6561 can be represented as 9^4

Sum of digits of dividend : (1+2+3+4+.....+9) = 90 is divisible by 9

So $(1234567890123456789)^{24}$ will be divisible by 9^{24} and hence complete divisible by 9^4 therefore will produce 0 remainder when divided by 6571

Question 2

There is a 3*3 matrix . u have 2 colors red and blue. in how many ways u can fill the colors in the boxes so that if u rotate the matrix by 180 degree we get the same matrix?

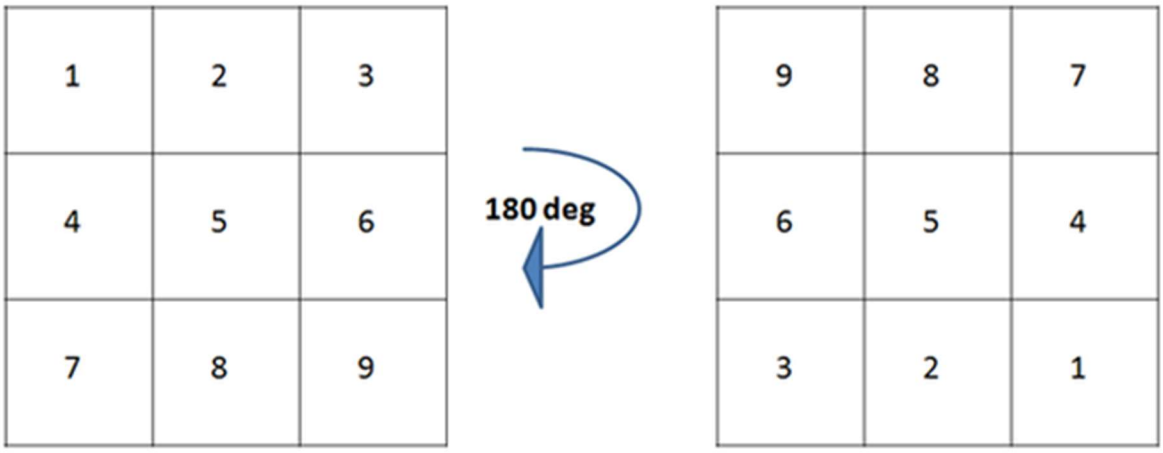
A. 8

B. 16

C. 32

D. 48

Explanation :



When we rotate the 3x3 matrix the resultant matrix will be as shown in fig 2:

So here (1&9), (2&8), (3&7). (4&6) will be filled with the same colors .

so total ways in which colors can be filled in (1&9), (2&8), (3&7). (4&6) and 5 are : 2*2*2*2*2 = 32 ways.

Question 3

A bag contains 6 balls of one or more colors. A ball is picked and is found to be red. What is the probability that the bag initially had exactly 6 red balls?

A. 2/7

B. 1/5

C. 3/5

D. 4/5

Explanation :

Use Baye's theorem :

Required formula : Expected probability/Total possible probability.

Here expected probability is 1 which is 6/6 i.e. all balls are red.

Possible possibility would be,
1. Picked one red ball from a bag with 1 red and 5 different color, probability : 1/6
2. Picked one red ball from a bag with 2 red and 4 different color, probability : 2/6
3. Picked one red ball from a bag with 3 red and 3 different color, probability : 3/6
4. Picked one red ball from a bag with 4 red and 2 different color, probability : 4/6

5. Picked one red ball from a bag with 5 red and 1 different color, probability : 5/6
6. Picked one red ball from a bag with 6 red and 0 different color, probability : 6/6

So required probability : 1 /(1/6+2/6+3/6+4/6+5/6+6/6) = 1/(21/6) = 2/7

Question 4

2 oranges, 3 bananas and 4 apples cost rs.15. 3 oranges,2 bananas and 1 apples cost rs.10. what is the cost of 3 oranges, 3 bananas and 3 apples?

A. 5

B. 10

C. 15

D. 20

Explanation :

2'O' + 3'B' + 4'A' = 15 .....(i)

3'O' + 2'B' + 1'A' = 10 .....(ii)

Adding eqn (i) & (ii)

5'O' + 5'B' + 5'A' = 25

or, 1'O' + 1'B' + 1'A' = 5

or, 3'O' + 3'B' + 3'A' = 15

Question 5

A number when successively divided by 5, 3, 2 gives remainder 0, 2, 1 respectively in that order. What will be the remainder when the same number is divided successively by 2, 3, 5 in that order

A. 1,2,0

B. 4,0,1

C. 2,1,0

D. 1,0,4

Explanation :

Start solving it from the end.

Let the quotient when the nos divided by 2 gives remainder 1 be x

Therefore the nos is: (2x+1)

This is the quotient of the nos which was divided by 3 and gives remainder 2.

So the nos which was divided by 3 is: 3(2x+1) + 2 = (6x+5)

Above is the quotient of the nos which was divided by 5 and gives remaonder 0.

So the orignal nos is: 5(6x+5) = (30x+25)

Now, when (30x+25) is divided by 2 , the quotient will be (15x+12) with a remainder 1

The above quotient (15x+12) when divided by 3 will gives (5x+4) as quotient and 0 remainder.

Again (5x+4) divided by 5 will give 4 as remainder.

So the remainders are: 1,0,4

Question 6

What is the sum(in base 7) having 1234 and 6534 in base 7

A. 11011

B. 11101

C. 111101

D. 11111

Explanation :

$(1234)_7 = 7^3x1 + 7^2x2 + 7x3 + 4 = 343 + 98 + 21 + 4 = (466)_{10}$

$(6534)_7 = 7^3x6 + 7^2x5 + 7x3 + 4 = 2058 + 245 + 21 + 4 = (2328)_{10}$

Therefore : $(466)_{10} + (2328)_{10} = (2794)_{10}$
$2794 = 7^4 + 7^3 + 7^2 + 7^1x0 + 7^0$

therefore; $(2794)_{10} = (11101)_7$

Question 7

Two trains for mumbai leave Delhi at 6 a.m. and 6:45 am and travel at 100 kmph and 136 kmph respectively.How many kilometers from Delhi will the two trains be together?

A. 83.33

B. 183.33

C. 283.33

D. 383.33

Explanation :

Let the distance be : D km

Time taken by Train 1(started at 6 Am) : D/100 Hr

Time taken by Train 2(started at 6:45 Am) : D/136 Hr

The difference in time taken by trains: 45min = 0.75 Hr

Therefore : D/100 - D/136 = 0.75

or D = 0.75x136x100/36 = 283.33 Hr

Question 8

Sehwag and Ganguly were sharing an apartment and cooked the food by themselves. One day Sehwag made 5 pizzas for himself and Ganguly made 3 for himself. At the time of lunch Tendulkar came in. So all three of them sat together and ate all the pizzas equally. After eating them Tendulkar gave them 8 expensive cricket bats and left. As Ganguly was running out of form he started quarrelling and asked for 4 bats which Sehwag refused to give. Finally David shepherd was called to give the right decision which he did. How many bats Sehwag and Ganguly were given finally?

A. 5,3

B. 7,1

C. 4,4

D. 3,5

Explanation :

Total nos of Pizza's = 5+3 = 8

Pizza's eaten by each of them : 8/3

So Sachin ate :(5 - 8/3) = 7/3 pizza which was cooked by Sehwag

and (3 - 8/3) = 1/3 pizza which was cooked by Ganguly

So the nos of bat should be proportional to the ratio of pizza eaten.

Hence 7 bat to Sehwag and 1 bat to ganguly

Question 9

Veena wants to make a cuboidal box with length 8cm, width 7 cm and height 6 cm, using 1 cubic cm cubes. What is the number of cubes she would require to make the box?

A. 49

B. 136

C. 236

D. 336

Explanation :

Total volume = 8cm x 7cm x 6cm = $336cm^3$

Required nos of cubes (1cm x 1cm x 1cm) = $336cm^3/1cm^3 = 336$

Question 10

5 printers can print 5 sheets in 5 seconds. If I need to print 20 sheets in 20 seconds, how many additional printers should I install in my office?

A. 0

B. 10

C. 15

D. 20

Explanation :

As 5 printers can print 5 sheets in 5 seconds

1 printer will print 1 sheets in 5 seconds.

Therefore in 20 sec (5x4) , 1 printer will print 4 sheets.

So for 20 sheets . nos of printers required = 20/4 = 5 printers.

As the office is already having 5 printers, no additional printers is required.

Question 11

A three digit number was divided successively in order by 4, 5 and 6 leaving out the remainders. The remainders were respectively 2, 3 and 4. How many such three digit numbers are possible?

A. 3

B. 5

C. 7

D. 9

Explanation :

Start from the last division,

As 4 is the remainder when the nos was divided by 6 , the nos can be represented in the form of : 6x + 4

this (6x+2) is the quotient when the nos was divided by 5 (and leaving 3 as remainder), so the nos can be : 5(6x + 4) + 3 = (30x + 23)

The above nos (30x + 23) is the quotient when the nos was divided by 4 (and leaves remainder 2), so original the nos is : 4(30x + 23) + 2 = 120x + 94

The number is represented in the form of : (120x + 94) and is a 3 digit nos.

so the values of x will lies from 1 to 7 (7 values)

Question 12

Jack, twenty one years old, is three times as old as his brother. How old will Jack be when he is twice as old as his brother?

A. 24

B. 28

C. 32

D. 36

Explanation :

Jack's age : 21 yrs

Thereofore his brothers age = 21/3 = 7 yrs.

Let after'x' yrs, Jacks will be twice as old as his brother.

thereofre ; A/c : (21 +x) = 2*(7+x)

or, x = 21-14 = 7 yrs.

Therefore Jack's age after 7 yrs = 28 years.

Question 13

If x and y are the two digits of the number 653xy such that this number is divisible by 80, then what is x + y = ?

A. 2 or 6

B. 4 or 6

C. 4

D. 8

Explanation :

Given Number : 653xy

For the nos to be divisble by 80

Y should be equal to "0".

And '3x0' should be divisble by 8

Therefore x can be either 2 or 6

Question 14

Three dice are rolled. What is the probability of sum of the numbers on the faces being 10?

A. 15/216

B. 10/216

C. 9/25

D. 1/8

Explanation :

Total nos of possible outcome : 6x6x6 = 216

For the sum to be 10 : x + y + z = 10

The following combinations are possible:

(6,3,1) : 3! ways = 6

(6,2,2) : 3!/2 ways = 3

(5,4,1) : 3! ways = 6

(5,3,2) : 3! ways = 6

(4,4,2) : 3!/2 ways = 3

(4,3,3) : 3!/2 ways = 3

So toatl ways : 27

Required probability : 27/216 = 1/8

Question 15

A man has three grand children.The age of the eldest grand child is four times the age of youngest grand child. The second grand child's age is half of the eldest grand child. The sum of the ages of all three grandchildren is 63. What is the age of eldest grand child?

A. 18

B. 24

C. 30

D. 36

Explanation :

Let the age of youngest be : x years

Therefore the age og oldest = 4x

and hence the age of the third one = 2x.

therefore A/c: (x + 2x + 4x) = 63

or 7x = 63 or x = 9

Therefore, age of eldest grandchild = 4x = 36.

Question 16

The cost price of a cow and a horse is 3 lakhs. The cow is sold at 20% profit and horse at 10% loss. Overall gain is Rs.4200. What is the cost price of the cow?

A. 114000

B. 140000

C. 141000

D. 144000

Explanation :

Let the CP of cow = Rs X

therefore CP of horse = Rs (300000 - X)

Selling price of cow = Rs 1.2X

Selling price of horse = Rs 0.9(300000 - X)

As overall gain is : Rs 4200

Therefore: 1.2X + 0.9(300000 - X) = 300000 + 4200

or, 0.3X = 300000 - 270000 + 4200 = 34200

or, X = 34200/0.3 = Rs. 114000

Question 17

Vinod ordered for 6 blue toys and some green toys. The price of a blue toy is 2.5 times that of a green toy. While preparing the bill, the clerk interchanged the number of blue and green toys which increased the bill by 145%. Find the number of green toys.

A. 9

B. 12

C. 15

D. 18

Explanation :

Let price of green toy be Rs, x

Price of blue toy = Rs. 2.5x
Let the num of green toys purchased be n.
Actual price = 6*2.5x + nx = 15x + nx
Increased bill = 2.5nx + 6x
2.5nx + 6x = 145/100 * (15x + xn)
Cancelling x,
2.5n + 6 = 1.45*15 + 1.45n, Solving n= 15

Question 18

Mahesh spends 30% of his income on petrol. 1/4th of the remaining on house rent and the balance on food. If he spends Rs.300 on petrol then what is the expenditure on food?

A. 525

B. 450

C. 325

D. 175

Explanation :

Let total income be :Rs X

Expense on Petrol = 305 = 0.3x

A/c : 0.3x = rs 300 or x = Rs. 1000

House rent = 1/4 *(1000-300) = Rs. 175

Therefore Balance(expense on food) = Rs. (700 - 175) = Rs. 525

Question 19

60 men can complete a work in 40 days. 60 men start the work but after every 5 days, 5 men leave. In how many days the work will be completed?

A. 50

B. 60

C. 75

D. None of these

Explanation :

60 men can complete a work in 40 days

so total time required for the work : 60*40 = 2400 man-Days

So, work done in 1st 5 days (by 60 men) = 60*5 = 300 man-days

work done in (6th-10th) days (by 55 men) = 55*5 = 275 man-days

work done in (11th-15th) days (by 50 men) = 50*5 = 250 man-days

work done by 10 men (in 5 days) = 10*5 = 50 man-days

work done by by last 5 men (in 5 days) = 5*5 = 25 man-days

and then all the men men left.

So, total work done : 300 + 275 + 250 + ... + 50 + 25

= 12*(300+25)/2 = 1950 man-days

rset (2400-1950) = 550 man-days work is yet to be completed.

Hence: None of these

Question 20

Divide 50 into two parts so that sum of the reciprocal is 1/12 ?

A. 10,40

B. 15,35

C. 30,20

D. 22,28

Explanation :

Let numbers be x and (50-x).

solve:
1/x + 1/50-x = 1/12
12 (50-x + x) = (50x - x^2)
x^2 -50x + 600 = 0, solving x=20 or x=30.
Hence the numbers are 20,30.

Question 21

What is the maximum value of n such that 146! is perfect divisible by 5^n ?

A. 34

B. 35

C. 36

D. 37

Explanation :

For 146! to be divisible by 5^n, the max value of n will be equal to nos of multiples of 5 in 146!

Therefore exponent of 5 in 146! = [146/5] + [146/25] + [146/125] = 29 + 5 + 1 = 35

Question 22

Tim and Elan are 90 km from each other. They start to move towards each other simultaneously tim at speed 10kmph and elan 5kmph. If every hour they double their speed what is the distance that Tim will pass until he meet Elan.

A. 57

B. 60

C. 63

D. 66

Explanation :

As the ration of the speed of Tim & Elan are 2:1 ,

the ratio of distance covered by them will be 2:1 (distance is directly proportional to speed).

As total distance is 90 Km , the distance covered by tim will be : 2/3 * 90 = 60 Km

Question 23

3 persons A, B and C are standing in a queue. There are 5 persons between A and B and 8 persons between B and C. If there are 3 persons ahead of C and 21 persons behind A, what could be the minimum number of persons in the queue ?

A. 41

B. 40

C. 27

D. 28

Explanation :

As there are 3 persons ahead of C, C will be in 4th position

As there are 8 person between B&C, B's positon will be 4+8+1 = 13th

Now nos pf person between A & B : 5

CAse I: A is ahead of B, then A's position : 13 -5 -1 = 7th

CAse II: A is behind B, then A's position : 13 +5 +1 = 19th

Nos of person behind A: 21

So total possible nos of person's: Case I = 7 + 21 = 28

Case II = 19 + 21 = 40

As we have to find minimum number of persons, answer is 28

1: _

2: _

3: _

4: C

5: _

6: _

7: A

8: _

9: _

10: _

11: _

12: _

13: B

14: _

15: _

16: _

17: _

18: _

19: _

20: _

21: _

22: _

23: _

24: _

25: _

26: _

25: _

26: _

27: _

28: _

Question 24

In a hotel where rooms are numbered from 101 to 130, each room gives an earning of Rs. 3000 for the first fifteen days of a month and for the latter half, Rs. 2000 per room. Find the average earning per room per day over the month. (Assume 30 day month)

A. 2500

B. 2250

C. 2750

D. 3000

Explanation :

Earning from 1^{st} 15 days = Rs 15*3000

earning from last 15 days =Rs 15*2000

earning for the month = (15*3000 + 15*2000) = 75000

Therefore Average earning = 75000/30 = Rs 2500

Alternative solution:

As the nos of days (1st fifteen and last fifteen) are same, take the average of the two earning: Rs. (3000+2000)/2 = Rs 2500

Question 25

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?

A. Monday

B. Tuesday

C. Wednesday

D. Thursday

Explanation :

Day	Lion	Rat
Sun	Truth	Truth
Mon	Lie	Truth
Tue	Lie	Truth
Wed	Lie	Truth
Thr	Truth	Lie
Fri	Truth	Lie
Sat	Truth	Lie
Sun	Truth	Truth

From Lion Statement :"Yesterday was one of the days which I tell lying"

If the Lion's statement is true : Today is Thrusday

IF the Lion's statement is false: Today is Monday

From Rat statement: "Yesterday was one of the days which I tell lying"

If the Rat's statement is true : Today is Sunday

If the Rat's statement is false: Today is Thursday

From both the statement's it is concluded that Today is Thursday and hence yesterday was Wednesday.

Question 26

After allowing a discount of 11.11%, a trader still makes a gain of 14.28%. At how many per cent above the cost price does he mark on his goods?

A. 28.56%

B. 35%

C. 22%

D. None

Explanation :

Let the Cost price of goods be : Rs 100

Gain = 14.28% = Rs 14.28

therefore,Selling price = Rs.114.28

Let Marked price be : Rs X

Discount on Marked Price = 11.11% = Rs. 0.1111

Thus selling price = Rs (X - 0.1111x) =Rs 0.8889X

Therefore : 0.8899X = 114.28

or, X = 114.28/0.8889 = Rs 128.58

Therefore Marked price is 28.56% above Cost price.

Question 27

If ‘n‘ integers taken at random and multiplied together, then what is the probability that the last digit of the product is 1, 3, 7 or 9 ?

A. $(2/5)^n$

B. $(4/5)^n$

C. $(2/10)^n$

D. None

Explanation :

The product of n integer to be odd, all the n integers must be odd number.

If any one of the "n" odd integers ends with 5, the product will end with 5.

So, if the last digit of the product are : 1,3,5,7 , all the n numbers must end with either 1,3,7 or 9.

So, for 1 number the probability is : 4/10

For n numbers, probability = $(4/10)^n = (2/5)^n$

Question 28

Number of prime factors in $(216)^{3/5} \times (2500)^{2/5} \times (300)^{1/5}$ is :

A. 3

B. 4

C. 6

D. 7

Explanation :

$(216)^{3/5} \times (2500)^{2/5} \times (300)^{1/5}$

$= (2^3X3^3)^{3/5} \times (2^2x5^4)^{2/5} \times (2^2x3x5^2)^{1/5}$

$= (2^9X3^9)^{1/5} \times (2^4x5^8)^{1/5} \times (2^2x3x5^2)^{1/5}$

$= (2^{15} X 3^{10} X 5^{10})^{1/5} = (2^3 X 3^2 X 5^2)$

So there are 3 factors: (2,3 & 5)

Hint: No need to simplify the problem

Prime factors of 216 are : 2 & 3

Prime factors of 2500 are : 2 & 5

Prime factors of 300 are : 2 , 3 & 5

so, these 3 will be the prime factors.

Question 29

In June, a baseball team that played 60 games had won 30% of its game played. After a phenomenal winning streak, this team raised its average to 50%. How many games must the team have won in a row to attain this average?

A. 12

B. 20

C. 24

D. 30

Explanation :

In 60 Games the team won 30% i.e 18 Games and lose rest 42 Games

In order to raise the winning avg to 50%, the nos of win should be equal to the nos of loss.

So the nos of games he need to win (successive) = (42-18) = 24

Question 30

A grocer bought 24 kg coffee beans at price x per kg.after a while one third of stock got spoiled so he sold the rest for $200 per kg and made a total profit of twice the cost what must be the price of x

A. 44.44

B. 55.55

C. 66.66

D. 77.77

Explanation :

Cost price of 24kg Coffee : 24x $

The stock of fresh coffee : 2/3 of 24 kg i.e 16Kg

So the selling price of 16Kg Coffee : 16*200 = 3200 $

Therefore, Profit = 3200 - 24x

A/c to question , Profit is twice of C.P

Therefore, 3200 - 24x = 48x

or, 72x = 3200

or, x = 3200/72 = 44.44 $

PAPER-3

Question 1

Sum of the digits of a three digit number is 17 and sum of the squares of the digit is 109. Also when the number is subtracted by 495 the number gets reversed. Find the number ?

A. 863

B. 653

C. 783

D. none

Explanation :

Let the no. be abc

therefore, a+b+c=17

and a^2+b^2+c^2=109

A/c to question: (100a+10b+c)-495 = (100c+10b+a)

or, 99a -99c = 495

or, a = 5 + c

Therefore the possible values of (a,c) are: (6,1);(7,2);(8,3);(9,4) and corresponding value of 'b'(b = 17-a-c) are : 10,8,6 & 4 respectively.

Here the value : a=8, b=6 ,& c=3 satisfies the equation : a^2+b^2+c^2=109

Thus the number is: 863

Question 2

Car A leaves city C at 5pm and is driven at a speed of 40 kmph. Two hours later another car leaves city C and is driven in same direction as car A. In how much time car B be 9 km ahead of car A if the speed of car B is 60 kmph.

A. 4 hr

B. 4 hr 20min

C. 4 hr 37min

D. 4 hr 27min

Explanation :

car A speed = 40 kmph, car B speed 60 kmph

relative speed=60-40=20 kmph(same direction)

when car B started A has already covered 40*2=80m distance

time required for two car to be at same position = 80/20=4hr

additional distance is 9 km and the time required to cover this distance = (9/20)*60=27 min

so required time is 4hrs + 27 min

Question 3

N is a natural number and n^3 has 16 factors. Then how many factors can n^4 have?

A. 24

B. 26

C. 25

D. 21

Explanation :

Let n be the product of k prime nos.

So total factors of n3 = (3+1)^k = 16 or k =2

Therefore nos of factors of n^4 = (4+1)^2 = 25

Question 4

If a publication occurs every seven years and the sum of the years is 13524. Then find the first year if the nos of publication is 7.

A. 1611

B. 1711

C. 1811

D. 1911

Explanation :

Here a= ? , d=7 , s=13524 , n=7

Therefore sum of A.P: s = n/2 [2a + (n-1)d]

or, 7/2(2a+42) = 13524 or, 2a = (1932*2) – 42

therefore a = 1932 – 21 = 1911.

Question 5

3 mangoes and 4 apples costs Rs 85. 5 apples and 6 peaches costs Rs. 122. 6 mangoes and 2 peaches cost Rs.114. what is the combined price of 1 apple, 1 peach and 1 mango?

A. 37

B. 39

C. 35

D. 36

Explanation :

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

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

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

after solving (i) & (ii),we get the eqn in terms of m & p i.e

15m-24p=-63....(iv)

now, we solve eqn(iii) & eqn(iv),we get

m=15,a=10,p=12 so 37

Question 6

what is the remainder of (16937^30)/31 ?

A. 28

B. 0

C. 1

D. 6

Explanation :

$(16937^{30})/31 = (546*31 + 11)^{30}/31 = (11^{30})/31$

$= (121)^{15} \bmod 31 = (-3)^{15} \bmod 31 = (-27)^{5} \bmod 31 = 4^{5} \bmod 31 = 32^{2} \bmod 31 = 1$

Question 7

In how many ways can we form 6 digit number from 1,2,3,4,5,6,7 so that last and second last digit must be even.

A. 41

B. 720

C. 1000

D. 1440

Explanation :

_ _ _ _ _ X X

Even nos: 2,4,6 (total 3)

We can choose last two digit in 3c2 ways and its rearrangement in 2 ways and the rest 5 digits in 5! Ways.

So total possible ways = 3c2 * 2 * 5! = 3 * 2 * 120 = 720 ways.

Question 8

If A=2/3(B-C) and C=1/2(A+B) and A+B+C=3000, then find C ?

A. 4000

B. 3000

C. 2000

D. 1000

Explanation :

Given, C=1/2(A+B) or 2C=A+B

Therefore (A+B+C) = 3C = 3000 or C = 1000

Question 9

In a cricket match,two batsman scores are 96,96 respectively.They require only 5 runs in 3 balls,can both the batsman complete their centuries?

A. no

B. yes

C. insufficient data

D. none of these

Explanation :

Batsmen in crease hits a boundary and completes his century.

Now equation : 1run from 2balls

On the next ball he run for a single and crosses the half picth length and gets run out at bowling end. So the 2nd batsmen comes to crease and have to face the last ball.

As the equation is : 1 run from 1 ball, he can hit a 4 or 6 and can complete his century.

Question 10

In how many rearrangements of the word ERASED in the letter ‘A‘ positioned in between the 2 ‘E‘s?

A. 6!

B. 5!

C. 4!

D. 6!

Explanation :

Two E‘s can be arranged in 1 way only(because Identical letters: [2!/2!])

then A can be arranged in between E‘s is 1 way.

These (EAE) treated as one group(letter).

Remaining letters(RSD)& That group(letter) =4.

So Four Letters can be arranged in 4places can be done in 4! ways

Question 11

How many 4 are there in between numbers 11 and 100 ?

A. 10

B. 11

C. 19

D. 20

Explanation :

14,24,34,44,54,64,74,84,94 : 9

40,41,42,43,44,45,46,47,48,49 :10

So total : 9+10 = 19 (here in 44 one of the 4 is counted in upper series and another 4 in lower series)

Question 12

A drawer has 4 red hats and 4 blue hats. Find the probability of getting exactly 3 blue hats when taking out 4 hats randomly out of the drawer and immediately returning every hat to the drawer before taking out the next?

A. 1/2

B. 1/4

C. 1/8

D. 1/16

Explanation :

Total possible outcomes = 2*2*2*2 = 16

(RRRR)(RRRB)(RRBR)(RBRR)(BRRR)(BBBR)(BBRB)(BRBB)(RBBB)(RRBB)(BBRR)(RBBR)(BRRB)(RBRB)(BRBR)(BBBB)

Favourable outcome: (BBBR) , (BBRB), (BRBB) , (RBBB) i.e 4

so required probability = 4/16=1/4

Question 13

Find the sum of number between 200 and 300, which is multiple of 3?

A. 8217

B. 8317

C. 8417

D. 8517

Explanation :

Sequence: 201 + 204 + 207 + ...+ 297

So n=33,a=201,l=297

therefore s=n/2[a+l] = 33/2(201 + 297) = 33/2 * 498

=8217

Question 14

Kate wanted to buy 2 kgs of apples. The vendor kept the 2 kg weights on the right side and weighed 4 apples for that. She doubted on the correctness of balance and placed 2 kg weight on the left side and she could weigh 12 apples for 2 kgs. If the balance was correct how many apples she would have got ?

A. 4

B. 8

C. 16

D. cant determine

Explanation :

let weight of the apple be "a". then intially it would be x+4a=2. when she weighed the equation would be x+2= 12a . solving both equations, a= 1/4.

therefore for 2kg , no. of apples are 2/(1/4) = 8 apples.

Question 15

Find the remainder when 32^33^34 is divided by 11 ?

A. 0

B. 1

C. 10

D. 9

Explanation :

32^33^34 mod 11 = (33 - 1)^33^34 mod 11 = (-1)^33^34 = -1

So add 11 to it i.e (-1 +11) = 10

Question 16

There are several bags of same weights. A bag is 6 kg plus three fourth of weight of an another bag . What is the weight of the bag?

A. 12

B. 24

C. 36

D. 48

Explanation :

Let bags are a,b,c,d...

a=6+(3/4)b

but a=b=c=d(weights are same)

a=6+(3/4)a

so a=24

Question 17

Find the remainder when 6^50 is divided by 215 ?

A. 0

B. 1

C. 6

D. 36

Explanation :

6^50 mod 215 = (6^(48+2)) = (6^3)^16 * 6^2 mod 215

= (216)^16 * 36 mod 215 = 1^16 * 36 mod 215 = 36

Question 18

6 positive integers are taken at random and multiplied together. Then what is the probability that products ends in an odd digit other than 5?

A. (.4)^6

B. (.4)^5

C. (.4)^4

D. (.4)^3

Explanation :

For the product to be an odd numbers all the 6 nos must be odd.

As the nos should not end with 5 , none of the above 6 nos should end with 5.

So possible last digit for each of the 6 nos are (1,3,7 & 9)

So required probability = (4/10)^6 = (.4)^6

Question 19

There is a square field of side 10m. A man runs with different speed 10kmph, 15kmph, 20kmph, 25kmph on the four sides of the field. What is the average speed of man ?

A. 18.75

B. 16.00

C. 15.00

D. 15.58

Explanation :

avg speed =total distance /total time....

0.04/(0.01/10+0.01/15+0.01/20+0.01/25)=15.58kmph

Question 20

Arun wanted to find the largest number of 4 digits such that when added to 7249 generated a number that gave a remainder 0 when divided by 54, 12, 14, 21, 33. Find the number ?

A. 1067

B. 9383

C. 7249

D. 9999

Explanation :

Find the LCM {54,12,14,21,33} = 8316

Let the 4 digit nos which is to be added to 7249 be X.

Therefore (7249 + X) must be a multiple of 8316.

Therefore smalles value for X can be : (8316 - 7249) = 1067

As we have to find the largest 4 digit nos so again add the LCM to it i.e (1067 + 8316) = 9383

Question 21

On a certain internet polling, the rejection rate of Bru Exotic production was 4% , for Bru Classic production 8% and for both the coffee varities combined was 7%. What was the ratio of Bru exotic to Bru classic production ?

A. 1:3

B. 3:1

C. 2:3

D. 3:2

Explanation :

Let the production of bru exotic and bru classic be: 'x' & 'y' respectively

Rejection rate of Bru Exotic production = 4% of x= 4/100 *x

Rejection rate of Bru Classic production = 8% of y= 8/100 *y

Combined rate of rejection = 7% of (x+y)

Therefore; (4/100 *x + 8/100 *y) = 7/100 *(x+y)

Or 4x + 8y = 7x + 7y or y = 3x

Therefore x:y :: 1:3

Question 22

Three sides of a triangle PQ, QR, and RP contains 5, 6 and 3 points respectively. What is the max number of triangles can be made using these points.

A. 111

B. 222

C. 333

D. 444

Explanation :

As there are 5+6+3 =14 points , so any 3 points can be selected in 14c3 i.e 364 ways.

But 3 collinear points can not form a triangle.

So nos of such 3-collinear points are: 5c3 + 6c3 + 3c3 = 10 + 20 + 1 = 31

So total nos of triangle = (364 - 31) = 333

Question 23

There are two bottles A and B, each filled with milk and water in the ratio 5:3 and 1:2 respectively. A new mixture is formed by mixing the contents of A and B in the ratio 4:3.What is the ratio of composition of milk and water in the new mixture?

A. 1:1

B. 1:2

C. 2:1

D. 2:3

Explanation :

in first mixture : milk = 5/8 ; water=3/8

in second mixture : milk = 1/3 ; water=2/3

now in new mixture :

milk = (5/8*4/7) + (1/3*3/7) = 1/2

water = (3/8*4/7) + (2/3*3/7) = 1/2

so in new mixture milk : water = 1 : 1

Question 24

(a % of a)+ (b % of b)=2 % of ab, then what percentage of a is b?

A. 50

B. 75

C. 100

D. cant determine

Explanation :

(a % of a)+ (b % of b)=2 % of ab

or, a/100 *a + b/100 *b = 2/100 *ab

or, a2 + b2 = 2ab

or, (a-b)2 = 0

or, a=b (i.e a is 100% of b)

Question 25

Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in ?

A. 24

B. 36

C. 48

D. 72

Explanation :

As Jake , Paul and Hari can dig the well in 8 days,

Their work in a day ; jake+paul+hari=1/8

or, 1/16 + 1/24 + 1/x = 1/8

1/x=1/48

so paul take 48 days

Question 26

Find the last two digits of (1021^3921)+(3081^3921) ?

A. 02

B. 12

C. 22

D. 32

Explanation :

When a nos ends with 1 its last digit will be 1.

Now for the 2nd last digit the short cut is

1021-tenths place digit*unit place digit of the power= 2(1) = 2

similarly for the second no 3081 it is 8(1) = 8

so the last two digits are 21+81=102.

Therefore last 2 digit is: 02

Question 27

"LEADING" arrange it in such a way that atleast two vowels always together ?

A. 720

B. 2160

C. 3600

D. 5040

Explanation :

Total possible arrangement = 7! = 5040
total=7!
when no 2 vowel comes together : {_L_D_N_G_)

here 3 vowels can be placed in 5 positions and the vacant space will be removed so : 5p3 * 4! = 60*24 = 1440.

So required arrangements : (5040 - 1440) = 3600

Question 28

In a meeting between 2 countries each country has 12 delegates. All the delegates of one country shake hands with all delegates of other countries. Find the number of handshakes possible?

A. 72

B. 144

C. 288

D. none

Explanation :

As person from each country can be chosen in 12c1 ways, therefore total nos of handshake = 12c1*12c1 = 144.

Question 29

In a mixture of a, b, & c, if a and b are mixed in 3:5 ratio and b and c are mixed in 8:5 Ratio and if the final mixture is 35 liters, find the amount of b?

A. 15.73

B. 21.5

C. 17.56

D. 16.66

Explanation :

a:b = 3:5 and b:c = 8:5

therefore a:b:c = (3*8):(5*8):(5:5) = 24:40:25

so a:b:c::24:40:25

as total volume is 35 ltr, composition of each (a,b&c) will be ; 24/89 *35 lit, 40/89 *35 lit & 25/89 *35 lit respectively

Therefore amount of b = 40/89 *35 lit = 15.73 lit

Question 30

If m+n gives remainder 8 & m-n gives remainder 6 when divided by 12 , what is remainder when mn divided by 6?

A. 1

B. 2

C. 4

D. 7

Explanation :

As (m+n) gives remainder 8 when divided by 12

Therefore (m+n) = 12a + 8

Similarly, (m-n) = 12b + 6

Adding both eqns: m= (12(a+b)+14)/2 = 6(a+b)+7

And by subtracting eqns: n =(12(a-b)+2)/2 = 6(a-b)+1

Therefore ; m*n = 36(a2-b2) + 6(a+b) + 42(a-b) + 7

= 6[6(a2-b2) + 8a – 6b +1] + 1

So when m*n is divided by 6, the remainder will be 1.

PAPER-4

Question 1 of

A person starts writing all 4 digits numbers.how many times had he written the digit 2?

A. 3700

B. 32000

C. 37000

D. 3200

Explanation :

Number of 2‘s at units place (from 100-1 to 999-2) = 900

Number of 2‘s at tenths place(xy2z) xy will vary from 10 – 99 (90 nos) and z from 0-9 (10 nos) so total 90*10 = 900

Number of 2‘s at hundreds place(x2yz) x will vary from 1-9(9 ways) & yz from 00-99(100 ways) so total 9*100 =900

Number of 2‘s at thousands place(2xyz) xyz will vary from 000-999 so total = 1000

Therefore total number of 2‘s =(900+900+900+1000)=3700

Question 2 of

2 workers ,one old and one young,live together and work at the same office.the old man takes 30 mins where as the young man takes only 20 mins to reach the office.when will the young man catch up the old man ,if the old man starts at 10.00am and the young man starts at 10.05am?

A. 10:25 AM

B. 10:10 AM

C. 10:05 AM

D. 10:15 AM

Explanation :

Let the speed of old man be: x m/min and and that of young man be: y m/min

If the distance of the office be D metre, then A/c : D = 30x = 20y or y = 1.5x

Let young man catches old man after 't' mins.

So distance travelled by young man is 't'min = ty = 1.5tx

And distance travelled by old man in 't+5'min = (t+5)x = tx + 5x

Therefore A/c: 1.5tx = tx + 5x or 0.5tx = 5x or t = 10min

So young man catches the old man at 10:05 AM + 10min i.e 10:15 min

Alternate method

Old man takes 30 min i.e he travels from 10:00 AM to 10:30 AM

Young man takes 20 min i.e he travels from 10:05 AM to 10:25 AM

From symmetry ; they will meet in mid way of the journey at 10:15 AM

Question 3

What is the next numbers for the given series? 11 23 47 83 131

A. 181

B. 191

C. 171

D. 201

Explanation :

Given series : 11, 23, 47, 83, 131

1st number : 11

2nd number : 11+12*1=23

3rd number : 23+12*2=47

4th number : 47+12*3=83

5th number : 83+12*5=131

6th number : 131+5*12=191

Question 4 of

What is the chance that a leap year selected at random contains 53 fridays?

A. 1/7

B. 2/7

C. 3/7

D. 4/7

Explanation :

A leap year has 366 days, therefore 52 weeks(i.e. 52 fridays) + 2 days.

So the probability of 53 Fridays = 2/7

Question 5

A two digit number is 18 less than the square of the sum of its digits. How many such numbers are there?

A. 1

B. 2

C. 3

D. 4

Explanation :

As the square of sum of digits is 18 more than that of the number, so the square of the sum of digit must be greater than or equal to 28 (18+10 as 10 is the smallest 2 digit number) and should be less than or equal to 117 (18+99 as 99 is the largest two digit number)

So the possible squares are :

36 and hence the possible number can be (36-18) =18 or $(1+8)^2$ = 81 =! 36 and hence not possible.

49 and hence the possible number can be (49-18) =31 or $(3+1)^2$ = 16 =! 49 and hence not possible.

64 and hence the possible number can be (64-18) =46 or $(4+6)^2$ = 100 = 81 =! 64 and hence not possible.

81 and hence the possible number can be (81-18) =63 or $(6+3)^2$ = 81 = 81 and hence possible.

100 and hence the possible number can be (100-18) =82 or $(8+2)^2$ = 100 = 100 and hence not possible.

So only 2 possible values i.e 63 and 82

Question 6

A boy is cycling such that the wheel of the cycle are making 420 revolutions per minute. If the diameter of the wheel is 50 cm, find the speed of the boy.

A. 39.6

B. 38.6

C. 37.6

D. 36.6

Explanation :

Diameter = 50 cm hence radius(r) = 50/2 cm

Therefore; Circumference of cycle = 2*22/7*r

As number of revolutions per minute = 420

Therefore; Speed = 2*(22/7)*[25/(100*1000)]*60*420 km/hr

= 396/10 km/hr

= 39.6 km/hr

Question 7

B moves by taking 3 steps forward and 1 step backward (each step in one second)
He walks up a stationary escalator in 118 sec.
However on moving escalator he takes 40 sec to reach top .Find speed of escalator.

A. 1 step/sec

B. 2 step/sec

C. 3 step/sec

D. 4 step/sec

Explanation :

As B moves 3 steps forward and then 1 step backward so in total 4 seconds he moves only 2 steps forward so in 116 seconds he moves 58 steps forward now in next 2 seconds he moves 2 steps so in 118 seconds he moves total 60 steps forward.

So no. of steps required to reach the top of the escalator is 60.

now let d escalator moves a steps per second so in 4 seconds B moves 2 steps(3steps forward nd 1 step backward)in these 4 sec. escalator moves 4a step so in 4 sec. B moves a total of 2+4a step.

so in 40 second total move=10*(2+4a)

so, 10*(2+4a)=60

hence a=1step/sec.

Question 8 of

A and B completed a work together in 5 days. Had A worked at twice the speed and B at half the speed, it would have taken them four days to complete the job. How much time would it take for A alone to do the work?

A. 10days

B. 11 days

C. 12 days

D. 13 days

Explanation :

As A and B completed a work together in 5 days

Work done by them in a day(A + B) , 1/5

with twice the speed of A and half the speed of B , they completes the work in 4 days,

so, their work per day(2A + B/2) = 1/4

by solving both the eqns: 2(2A+B/2) – (A+B) = 3A = 2*1/4 – 1/5 = 3/10

or 1 day work of A = 1/10

so A alone can complete the work in 10 days.

Question 9

If given equation is 137+276=435,how much is 731+672=.... find the result..

A. 435

B. 534

C. 3261

D. 1623

Explanation :

In decimal number system; 137 + 276 = 413 but here its 435 (> 413) so the base system should be less than 10 and as the highest digit in the sum is 7 so the base must be greater than 7.

Add the LSB ; 7+6 = 5 (there must be a carry)

So 7 + 6 = 5 + 8(1 carry is forwarded) and hence the it is in octal number system.

Therefore: 731 + 672 = 1623

Question 10

A dealer buys a product at Rs.1920. he sells at a discount of 20% still he gets teh profit of 20%. what is the selling price?

A. 534

B. 2300

C. 2304

D. 2403

Explanation :

Cost price : Rs 1920

Profir = 20% = Rs 1920 x 0.20 = 384

Therefore Selling Price = Rs 1920 + 384 = 2304

Question 11

How many 3-digit numbers can be formed from the digits 2,3,5,6,7 and 9 which are divisible by 5 and none of the digit is repeated.

A. 5

B. 10

C. 15

D. 20

Explanation :

As the number is divisible by 5 , the unit digit of 3 digit number must be 5.

Rest two digits can be selected in 5c1 * 4c1 = 20 ways.

Question 12

A die is rolled and a coin is tossed .find the probability that the die shows an odd number and the coin shows a head.

A. 1/4

B. 1/2

C. 3/4

D. 2/3

Explanation :

The probability of dice showing an odd nos = ½ and

the probability of coin showing head = ½ ;

so the overall probability is : ½ * ½ = ¼

Question Analytics

- 670 USERS

Question 13

Find last two digit of (1021^3921)+(3081^3921)?

A. 32

B. 22

C. 12

D. 02

Explanation :

When a nos ends with 1 its last digit will be 1.

Now for the 2nd last digit the short cut is

1021-tenths place digit*unit place digit of the power= 2(1) = 2

similarly for the second no 3081 it is 8(1) = 8

so the last two digits are 21+81=102.

Therefore last 2 digit is: 02

Question 14

(40*40*40 - 31*31*31)/(40*40+40*31+31*31)=?

A. 8

B. 71

C. 9

D. 51

Explanation :

The question is in the form of : $(a^3 – b^3)/(a^2 + ab + b^2)$

As (a3 - b3) = (a-b)($a^2 + ab + b^2$)

Therefore; $(a^3 – b^3)/(a^2 + ab + b^2) = (a - b)$

Therefore (40 – 31) = 9

Question 15

RAM GOES A TO B . IF HE TAKES 1/4 TIME LESS THAN TO COVER THE SAME DISTANCE WHEN RUN AT NORMAL SPEED BY WHAT % HE HAS INCREASED HIS SPEED ?

A. 17.6

B. 33.3

C. 48.6

D. 66.6

Explanation :

As distance = speed * time

Let initial speed be : s and time taken be t

As the speed is decresed by 1/4 i.e 3/4 s therefore time should be 4/3 t (inversely proportional)

bcoz , d = st = (3/4)s * (4/3)t

Therefore time must be increased by 1/3 i.e 33.3%

Question 16

How many prime numbers between 1 and 100 are factors of 7150?

A. 4

B. 7

C. 5

D. 9

Explanation :

Since, 7150 = 2×5^2×11×13.
So, there are 4 distinct prime numbers that are below 100.

Question Analytics

- 610 USERS

ATTEMPTED

Question 17

If meeting O is on Saturday, then meeting K must take place on ?

A. Thursday

B. Wednesday

C. Tuesday

D. Monday

Explanation :

IJKLMNO if O is saturday then I will be sunday and K will be Tuesday

Question 18

3 15 _ 51 53 159 161 (1 Marks)

A. 18

B. 17

C. 30

D. 33

Explanation :

Observe the sequence:

5 * 3 = 15

51 + 2 = 53; 53 * 3 = 159 ; 159 + 2 = 161

So _ will be 15 + 2 = 17 (also 51/3 = 17)

Question 19

55th word of SHUVANK in dictionary??

A. AHSNKUV

B. AHNKSVU

C. AHNKUSV

D. AHNKUVS

Explanation :

S H U V A N K (A H K N S U V)

Nos of words starting with A: 6! = 720

Nos of words starting with AH: 5! = 120

Nos of words starting with AHK: 4! = 24

Nos of words starting with AHN: 4! = 24

Nos of words starting with AHSK: 3! = 6

Nos of words starting with AHSN: 3! = 6

24+24+6 = 54 , so the next word (55th) will be the first word starting form AHSN and will be AHSNUV

Question 20

Mani sells vegetables and he marks up the prices at 5% above his cost price. Also the weighing stones used by him weigh only 90% of the correct weight. Find his effective percentage of mark-up.

A. 15%

B. 16.67%

C. 14.5%

D. 20%

Explanation :

Let the cost price be 100 per 1 kg

As he will sell 1 kg in 105 but due to error in weighing stones he will sell only 900 gram in 105 but he has paid 900*(100/1000)=90 rs for 900 grams.

Therefore net profit= Rs (105-90)= Rs 15
% percentage= (15/90)*100% =16.67%

Question 21

Car A leaves city C at 5 pm and drives at a speed of 40 kmph. 2 hours later another car B leaves city C and drives in the same direction as car A. In how much time will car B be 9 km ahead of car A. Speed of car B is 60 kmph.

A. 4.15hrs

B. 4.25 hrs

C. 4.35 hrs

D. 4.45 hrs

Explanation :

Let after t time two cars will met.

So A will travel distance of 40t with 40kmph

B will travel the distance of 60t with 60kmph

And also A is ahead 80 km(40*2=80) from B

=> 60t - 40t = 80 => t = 4hrs

Also time taken by B to cover 9kms more is 9/60 = 9mins

Additional distance is 9 min

For additional time= (9/20)*60=27 min

So correct answer = 4hrs 27 min

= 4 (27/60) hrs = 4.45 hrs

Question 22

The water from one outlet, flowing at a constant rate, can fill the swimming pool in 9 hours. The water from second outlet, flowing at a constant rate can fill up the same pool in approximately in 5 hours. If both the outlets are used at the same time, approximately what is the number of hours required to fill the pool?

A. 3.21 hrs

B. 2.50 hrs

C. 4.00 hrs

D. 3.35 hrs

Explanation :

Assume tank capacity is 45 Liters.
Given that the first pipe fills the tank in 9 hours. So its capacity is 45 / 9 = 5 Liters/ Hour.
Second pipe fills the tank in 5 hours. So its capacity is 45 / 5 = 9 Liters/Hour.
If both pipes are opened together, then combined capacity is 14 liters/hour.
To fill a tank of capacity 45 liters, Both pipes takes 45 / 14 = 3.21 Hours.

Question 23

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?

A. 40%

B. 55%

C. 45%

D. 50%

Explanation :

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%.
Now substituting in the formula we get $80\% = 75\% + 55\% - n(A \cap B) \Rightarrow n(A \cap B) = 50\%$.

Question 24

In how many ways 1.can we distribute 10 identical looking pencils to 4 students so that each student gets at least one pencil?

A. 48

B. 84

C. 68

D. 86

Explanation :

Number of ways in which n identical things can be distributed among r persons, each one of whom can receive 1,2 or more items (n-1)C(r-1).

Here n =10 & r = 4, therefore nos of ways = 9c3 = 84

Question 25 of

Sum of three digit number is 17. sum of squared of digits of the given num is 109. If we subtract 495 from that num we will get a number written in square order. find the num ?

A. 296

B. 863

C. 980

D. 179

Explanation :

Let the nos be : abc

As sum of the digit is 17. Therefore a+b+c=17----(1)

Also sum of square of digits is 109 i.e a^2+b^2+c^2=109----(2)

Also, (100a+10b+c) – 495 = (100c+10b+a)

or, (100a – a) + (10b – 10b) + (c – 100c) = 495

or, 99 (a-c)=495 or (a - c) = 495

The possible combinations are (6,1)(7,2)(8,3),(9,4)

For 1st combination (6,1) ; b = (17 – 6 - 1) = 10 which is not possible

For 2nd combination (7,2) ; b = (17 – 7 - 2) = 8 but a^2+b^2+c^2 =! 109 so not possible

For 3rd combination (8,3) ; b = (17 – 8 - 3) = 6 also a^2+b^2+c^2 = 109 so it is possible

so,863 is the answer.

Question 26

The least number that must be subtracted from 63520
to make the result a perfect square, is:

A. 16

B. 20

C. 24

D. 30

Explanation :

Find the square root of 63520. It will be 252. _ _ so the nearest perfect square is 252^2 = 63504

So the nos to be subtracted is : (63520 - 63504) = 16

Question 27

Find the missing numbers in the series: 0,2,5,?,17,28,?,

A. 11,31

B. 31,51

C. 10,41

D. 21,40

Explanation :

The difference between nos are: 2 , 3 , _ , _ ,11

The differences are prime nos i.e 2, 3, 5, 7, 11 so the next difference will be 13

Therefore nos are: (5 + 5) = 10 & (28 + 13) = 41

Question 28

A motor boat covers a certain distance downstream in 30 minutes, while it comes back in 45 minutes. If the speed of the stream is 5 kmph what is the speed of the boat in still water?

A. 10 kmph

B. 15 kmph

C. 20 kmph

D. 25kmph

Explanation :

Let the speed of boat in still water : x kmph

As distance is constant; (x+5)*30=(x-5)*45

or, 2x+10=3x-15

x = 25 kmph

Question 29

20 passengers are to travelled by a doubled decked bus which can accommodate 13 in the upper deck and 7 in the lower deck. The number of ways that they can be distributed if 5 refuse to sit in the upper deck and 8 refuse to sit in the lower deck is:

A. 25

B. 21

C. 15

D. 18

Explanation :

Those 5 who refuses to sit in the upper deck will sit in lower deck

So tolal lower deck remains : 2

Those 8 who refuses to sit in the lower deck will sit in upper deck

So tolal upper deck sit remains : 5

These 7 people can sit in 5 upper deck and 2 lower deck in : 7c5 * 2c2 ways i.e 21 ways.

Question 30

Two merchants sell an article each for Rs.1000.one of them computes profit as a % of cost price, while the second calculates it incorrectly as a % of selling price. If both of them claim to have made a profit of 10%, who made more profit and by what amount?

A. second and 9 rs

B. second and 10 rs

C. first and 9 rs

D. first and 10 rs

Explanation :

Selling Price of Article = Rs. 1000

For 1st merchant, 10% profit is on C.P or C.P + Profit = S.P

Therefore 1.1 * C.P = Rs.1000 or C.P = Rs. 909.1 and Profit = Rs. 90.9

For 2nd merchant, 10% profit is on S.P i.e Profit = 0.10 * Rs 1000 = Rs. 100

so the profit of 2nd merchant is higher than the 1st merchant by Rs. (100 – 90.9) = Rs. 9.1 (approx)

PAPER-5

Question 1

A man spends 1/3rd of his salary on food. he spends 1/4th on rent and 1/5th on cloths. If he is left with 1760, then how much salary does he earn ?

A. 1760

B. 8123

C. 7632

D. 8425

Explanation :

let total salary be x
According to the question,
=> x = (x/3)+(x/4)+(x/5)+ 1760
=> x - 47x/60 = 1760
=> 13x/60 = 1760
=> x = 1760*60/13
=> x = 8123(approax).

Question 2

The numbers 272738 and 232342, when divided by n, a two digit number, leave a remainder of 13 and 17 respectively. Find the sum of the digits of n?

A. 7

B. 8

C. 5

D. 4

Explanation :

From the given information, (272738 - 13232342 - 17) are exactly divisible by that two digit number.
We have to find the HCF of the given numbers 272725, 232325.
HCF = 25.
So sum of the digits = 7.

Question 3

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.

A. 150

B. 75

C. 90

D. 85

Explanation :

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=(10/7)*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

Question 4

In a vessel, there are 10 litres of alcohol. An operation is defined as taking out five litres of what is present in the vessel and adding 10 litres of pure water to it. What is the ratio of alcohol to water after two operations?

A. 1 : 5

B. 2 : 3

C. 1 : 6

D. 3 : 2

Explanation :

Final concentration = Initial concentration (1−replacement quantity/final volume)
Final concentration = =1×(1−10/15)=1/3.
Final concentration = 13×(1−10/20)=1/6.
So ratio of alcohol : water = 1 : 5

FASTEST SOLVING TIME

Question 5

The letters in the word ADOPTS are permuted in all possible ways and arranged in alphabetical order then find the word at position 42 in the permuted alphabetical order?

A. AOTDSP

B. AOTPDS

C. AOTDPS

D. AOSTPD

Explanation :

In alphabetical order : A D O P S T
A _ _ _ _ _ : the places filled in 5! ways = 120, But we need a rank less than 120. So the word starts with A.
A D _ _ _ _ : empty places can be filled in 4!=24
A O _ _ _ _ : the places filled with 4! ways = 24. If we add 24 + 24 this total crosses 42. So We should not consider all the words starting with AO.
A O D _ _ _ : 3!= 6
A O P _ _ _ : 3!=6
Till this 36 words are obtained, we need the 42nd word.
AOS _ _ _ : 3!= 6
Exactly we are getting the sum 42. So last 3 letters in the descending order are TPD.
So given word is AOSTPD.

Question 6

A farmer has a rose garden. Every day he picks either 7,6,24 or 23 roses. When he plucks these number of flowers the next day 37, 36, 9 or 18 new flowers bloom. On Monday he counts 189 roses. If he continues on his plan each day, after some days what can be the number of roses left behind? (Hint : Consider number of roses remaining every day)

A. 7

B. 4

C. 30

D. 37

Explanation :

Let us consider the case of 23. when he picks up 23 roses the next day there will be 18 new, so in this case., 5 flowers will be less every day. So when he counts 189, the next day 184, 179,174,169,…….. Finally the no. of roses left behind will be 4.

Question 7

A man is known to speak truth 3 out of 4 times. He throws die and reports that it is a 6. The probability that it is actually a 6 is

A. 5/8

B. 3/4

C. 3/8

D. 1/8

Explanation :

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.

Question 8

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

A. 348

B. 350

C. 324

D. 355

Explanation :

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.

Question 9

In how many different ways can the letters of the word "LEADING" be arranged in such a way that the vowels always come together.

A. 360

B. 720

C. 480

D. 5040

Explanation :

Given letters are A, E, I, D, L, N, G.
Of which AEI are vowels. Let us combine them into a single letter x. Now total letters are x, D, L, N, G
These letter are arranged in 5! ways. But 3 vowels can arrange themselves in 3! ways.
So total ways 5! x 3! = 720.

Question 10

Two decks of cards are there. Each deck contains 20 cards, with numbers from 1 to 20 written on them. A card is drawn of random from each deck, getting the numbers x and y What is the probability that log x + log y is a positive integer. Logs are taken to the base 10.

A. 3/200

B. 29/200

C. 7/400

D. 1/50

Explanation :

Log x + log y = log(xy)
log xy is integer when (x,y) = (1, 10), (10, 1), (10, 10), (5, 20), (20, 5), (2, 5), (5, 2)
So required probability = 7/400.

Question 11

In how many ways a team of 11 must be selected a team 5 men and 11 women such that the team must comprise of not more than 3 men.

A. 1565

B. 2256

C. 2456

D. 1243

Explanation :

Maximum 3 men can be played which means there can be 0, 1, 2, 3 men in the team.
$({}^5C_0 \times {}^{11}C_{11}) + ({}^5C_1 \times {}^{11}C_{10}) + ({}^5C_2 \times {}^{11}C_9) + ({}^5C_3 \times {}^{11}C_8) = 2256$.

Question 12

If the price of an item is decreased by 10% and then increased by 10%, the net effect on the price of the item is

A. A decrease of 99%

B. No change

C. A decrease of 1%

D. An increase of 1%

Explanation :

Initially assume 100 rupees.
10% discount in 100 gives price of 90 rupees
then 10% raise in 90 is only 9 rupees.
therefore total price = 99 rupees.
hence 1% is the loss.

Question 13

In a horticulture assignment, 200 seeds were planted in plot 1 and 300 were planted in plot 2. If 57% of the seeds are germinated for plot 1 and 42% from plot 2, what percentage of total seeds germinated?

A. 45.5

B. 46.5

C. 48

D. 49.5

Explanation :

Given,
In Plot 1 : 57% Of 200 = 114 seeds germinated
In Plot 2 : 42% of 300 = 126 seed germinated
Total seed germinated 240 out of 500.
So, the required percentage is (240/500)* 100 i,e 48%.

Question 14

A rectangular park 60 m long and 40 m wide has concrete crossroads running in the middle of the park and rest of the park has been used as a lawn.if the area of the lawn is 2109 sq.m,then what is the width of the road.

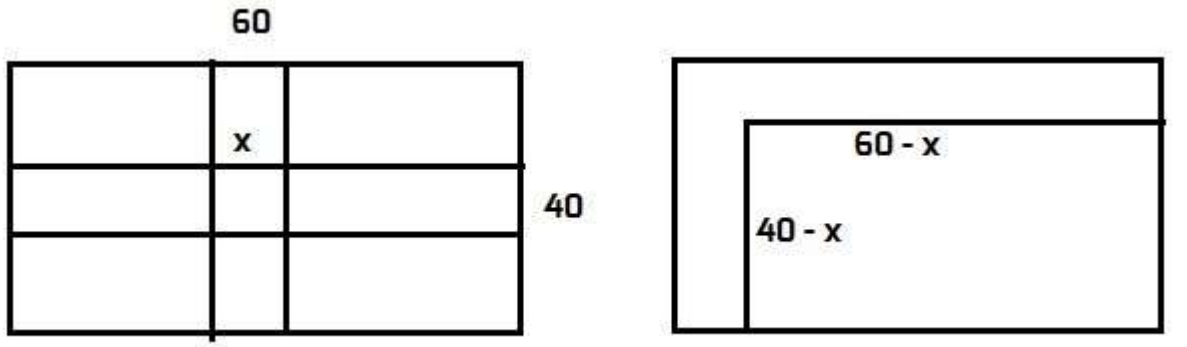
A. 2.91 m

B. 3 m

C. 5.82 m

D. none

Explanation :



Let's shift the path to the left hand side and top.

This does not change the area of the lawn.

Now lawn area = (60 - x) (40 - x)

for x = 3, we get lawn area = 2109.

Question 15

Joke is faster than Paul, Joke and Paul each walk 24 KM. The sum of their speed is 7 Km per hour. And the sum of times taken by them is 14 hours. Then, Joke speed is

A. 3 KM/Hr

B. 4 KM/Hr

C. 5 KM/Hr

D. 7 KM/Hr

Explanation :

Speed = Distance/ Time.

Let the speed of joke x then speed of paul will be 7-x

=> 24/x + 24/(7−x) = 14.

Try to put the values from the options. If Joke speed is 4 , the paul is 3.

Question 16

Kelly and Chris are moving into a new city. Both of them love books and thus packed several boxes with books. If Chris packed 60% of the total number of boxes, what was the ratio of the number of boxes Kelly packed to the number of boxes Chris packed?

A. 3:2

B. 2:3

C. 1:3

D. 3:4

Explanation :

If x is total number of boxes, then

Chris packed 60% of x = 3x/5

Kelly packed 40% of x = 2x/5

Ratio of no. of boxes kelly packed to chris is given by = 2x/5 : 3x/5 i.e 2 : 3

Question 17

If the numerator of a fraction is increased by 25% and denominator decreased by 20%, the new value is 5/4. What is the original value?

A. 3/5

B. 4/5

C. 7/8

D. 3/7

Explanation :

Let numerator is x and denominator is y.

If we increase x by 25% then it will be 125x /100 and if we decrease y by 20% then value will be 80y /100. then the new value is 125x /80y = 5/4 or x/y = 4/5.

Question 18

A train can travel 50% faster than car.Both start from point A and reach point B 75 km away from A at the same time. On the way,however,the train lost about 12.5 minutes while shopping at the stations. The speed of car is ?

A. 125 km/hr

B. 120 km/hr

C. 130 km/hr

D. 140 km/hr

Explanation :

Let speed of the car be x kmph

Speed of the train is (150/100)*x = 3/2*x kmph

so,

=> 75/x - 75/(3/2)*x = 125/(10*60)

Solving we get

=> x = 120 kmph

So speed of the car is 120 kmph.

Question 19

From the top of a 9 metres high building AB, the angle of elevation of the top of a tower CD is 30º and the angle of depression of the foot of the tower is 60º. What is the height of the tower?

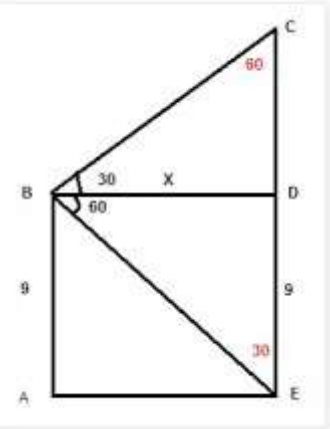
A. 10

B. 15

C. 12

D. 18

Explanation :



We have to find the value of CD. We use Sine rule to find the answer easily.

Sine rule is

a/SinA = b/SinB = c/ SinC.

In triangle BDE, 9/Sin60 = x/Sin30.

So, 9/(3√2) = x/(1/2)

=> x = 9/√3.

In triangle BCD,

=> CD/ Sin30 = 9√3/Sin60

=> CD/(1/2) = 9√3/ (√3/2)

=> CD=3

So height of the tower = 9 + 3 = 12.

Question 20

One day Eesha started 30 min late from home and reached her office 50 min late while driving 25% slower than her usual speed. How much time in min does eesha usually take to reach her office from home?

A. 50 min

B. 60 min

C. 45 min

D. 30 min

Explanation :

We know that Speed is inversely proportional to time.

While she drives 25% slower means she drove at (3/4)s.

We know that D = S x T.

When speed became (3/4)s then Time taken should be (4/3)T.

i.e, She has taken (4/3)T - T extra to cover the distance.

Extra Time = T/3 = 20 min (as 20 min late due to slow driving).

Actual time T = 60 Minutes.

Question 21

If the numerator of a fraction increases by 50% & subtracted by 1. The result is 1/4th of the original fraction. Find the fraction.

A. 5/4

B. 4/5

C. 3/5

D. 4/3

Explanation :

Let the fraction be x/1 (this is the simplest case,where numerator is 'x' & denominator is '1')

Now,

=> x*(150/100)-1 = x*1/4

=> (3*x/2) - (x/4) = 1

By solving,we get x=4/5.

So the fraction is 4/5.

Question 22

The sides of a triangular are in the ratio of 1/2: 1/3 : 1/4. If the perimeter is 52 cm. The length of the smallest side is

A. 9 cm

B. 10 cm

C. 16 cm

D. 24 cm

E. 12 cm

Explanation :

Given,

Ratio of 3 sides is 1/2:1/3:1/4.

On solving these we get the ratio as 6:4:3

So, the smallest side is= (3/13)*52 = 12.

Question 23

A merchant buys 20 kg of wheat of Rs.30 per kg and 40 kg wheat at Rs.25 per kg. He mixed them and sells one third of the mixture at Rs.26 per kg. The price at which the merchant should sell the remaining mixture, So that he may earn a profit of 25 % in his whole outlay is

A. Rs 30

B. Rs 36

C. Rs 40

D. Rs 37

Explanation :

Cost price of all the wheat=(20*30)+(40*25)=1600.

If he makes 25% profit then total selling price=1600*5/4=2000.

total mixture of wheat is 60 kg. one third of which is 20 kg.

now selling price of 20 kg of wheat=20*26=520

So 40 kg of wheat =(2000-520)/40=37.

Question 24

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

Explanation :

(Tues + Wed + Thurs)/3=37

Tues + Wed + Thurs=111 .....(1)

(Wed + Thurs + Fri)/3=38

(Wed + Thurs + Fri) =114 .....(2)

Given, friday is 39.

On subtracting eq(1) from eq(2) i.e

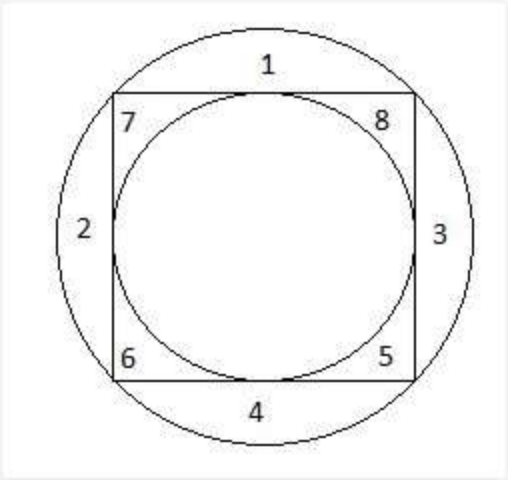
=> Fri - Tues = 3

So, 39 - Tues = 3.

Tuesday =36.

Question 25

Radius of the bigger circle is 1. Which area is greater?



A. 5

B. 4

C. Cannot be determined

D. None of these

Explanation :

If the radius of the bigger circle is 1, then diameter = 2 units.

Which in turn equals to diagonal of square.

Let the side of the square be x.

Then $x^2 + x^2 = 2^2$

=> $2x^2 = 4$

=> $x = 2\sqrt{2}$

Now diameter of the inner circle = side of the square.

So radius of the inner circle = $\sqrt{2}/2 = 1/\sqrt{2}$.

- Areas marked by 1, 2, 3, 4 = (Area of the circle - area of the square)/4

$= \pi(1)^2 - (\sqrt{2})^2 / 4.$

$=> (\pi - 2)/4 = 0.285.$

- Areas marked by 5, 6, 7, 8 = (Area of the square - area of the inner circle)/4

$=> (\sqrt{2})^2 - \pi(1/\sqrt{2})^2/4$
$=> (2 - \pi/2) / 4 = 0.1075.$

So, Area marked by 4 is bigger.

Question 26

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

Explanation :

Let the distance be 12 km.

So the old man speed = 12 km/ (1/2)hr = 24 kmph.

The young man speed = 12 km/(1/3)hr = 36 kmph

As the old man started 5 minutes earlier, he covers 24 × (5/60)= 2 km in 5 minutes.

Now the time taken to the young man to meets him = [2/ (36−24)] × 60= 10 min.

So the time at which young man meet the old man = 10.05 + 10 = 10. 15 min.

Question 27

A car manufacturer produces only red and blue TCS Models which come out of the final testing area at random. What are the odds that five consecutive cars of same color will come through the test area at any one time?

A. 1/16

B. 1/125

C. 1/32

D. 1/25

Explanation :

p(5 consecutive cars of same color)= p(5 red) + p(5 blue).

=>$1/2^5$+$1/2^5$.

=> 1/16.

Question 28

There are two bags. One bag contains 4 white and 2 black balls. Second bad contains 5 white and 4 black balls. 2 balls are transferred from first bag to second bag. Then one ball is taken from the second bag. The probability that the ball is white is ?

A. 42⁄33

B. 5⁄16

C. 48⁄13

D. 19⁄33

Explanation :

Required probability :-

=> (prob of trans 2 white ball and prob of taking 1 white ball from 2nd bag) or

(prob of trans 2 black ball and prob of taking 1 white ball from 2nd bag) or

(prob of trans 1 white ball & 1 black ball and prob of taking 1 white ball from 2nd bag)

=> (($^4c_2$ * $^7c_1$) + ($^2c_2$ * $^5c_1$) + ($^4C_1$ * $^2c_1$ * $^6c_1$)) / (6c2 * 11c1)

= 19/33

Question 29

A bag contain 3 black and 3 white boxes, second bag contains 5 black and 1 white boxes, and finally third bag contains 4 black and 5 white boxes. if a box is chosen at random from one of these bags, the probability that it is not a white box is ?

A. 2/15

B. 11/54

C. 16/27

D. 40/81

Explanation :

probability of chosing a bag=1/3

now probability of white box from bag1=3/6

similarly from bag 2=1/6

from bag 3=5/9

so final probablility of not getting a white box=1-p(getting white box)

=1-[1/3(3/6+1/6+5/9)]

=16/27.

Question 30

How many of the numbers x (x being integer) with 10<= x<= 99 are 18 more than the sum of their digits

A. 9

B. 12

C. 18

D. 10

Explanation :

Let the number be ab. So given that,

=> 10a + b = 18 + a + b

=> 9a = 18

=> a = 2

So 20, 21, ... upto 29 there are total 10 numbers possible.

Paper-6

Question 1

Of a set of 30 numbers, average of first 10 numbers = 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

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.

Question 2

There are 20 persons sitting in a circle.In that there are 18 men and 2 sisters.How many arrangements are possible in which the two sisters are always separated by a man?

A. 18! x 2

B. 17!

C. 17x2!

D. 12

Explanation :

Let the first sister name is A. Now she can sit any where in the 20 places (Symmetrical). Now her sister B can sit to her left or right in 2 ways. Now the remaining 18 persons can be sit in 18 places in 18! ways.
Hence, Total = 18! × 2.

Question 3

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

Explanation :

A can do the total work in 8 days, and B can do it in 6 days.
Let the total work be 24 units. Now capacities are
A = 24/8 = 3,
B = 24/6 = 4,
A + B + C = 24/3 = 8
So Capacity of C = 1 unit.
In two days C will do 2 units which is 2/24th part of the total work. So 1/12th part.

Question 4

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

Explanation :

If the 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.

Question 5

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

Explanation :

Given, that A + B + C = 60 × 3 = 180.
A + B + C + D = 56 × 4 = 224.
Therefore, D = 44.
E = 44 + 3 = 47
Given, B + C + D + E = 55 × 4 = 220
B + C + 44 + 47 = 220
⇒ B + C = 220 - 91 = 129
So A + 129 = 180
=> A = 51.

Question 6

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

Explanation :

She got late to the office 20 minutes late as she drove at 3/4 th of the speed.
Given, d/[(3/4)s]−(d/s) = 20.
=> (d/s)[(4/3)−1] = 20.
=> Time = d/s = 60.

Question 7

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

A. None

B. 5/18

C. 13/18

D. 1295/1296

Explanation :

The probability of at least two persons roll the same number = 1 – None of them rolls the same number.
= 1−[6/6 × 5/6 × 4/6 × 3/6] = 1− 5/18 = 13/18.

Question 8

100 students appeared for two examinations. 60 passed the first, 50 passed the second and 30 passed both. Find the probability that a student selected at random has failed in both the examinations?

A. 1/5

B. 5/6

C. 1/7

D. 5/7

Explanation :

$n(A \cup B) = n(A) + n(B) - n(A \cap B)$
$n(A \cup B) = 60 + 50 - 30 = 80$
So 80 passed in atleast one of the exams. 100 - 80 = 20 failed in both.
Probability = 20/100 = 1/5.

Question 9

Apples cost L rupees per kilogram for the first 30 kilograms and Q per kilogram for each additional kilogram. If the price paid for 33 kilograms of Apples is Rs.1167 and for 36 kilograms of apples if Rs.1284, then the cost of the first 10 kgs of apples is:

A. Rs.117

B. Rs.350

C. Rs.281

D. Rs.1053

Explanation :

Given that ,
30L + 3Q = 1167
30L + 6Q = 1284
Solving we get Q = 39, L = 35
So cost of first 10 kgs of apples = 35 × 10 = 350

Question 10

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

Explanation :

Each person needs 6 sq meter of space. So
$=>\pi r^2=6\times10=60.$
$=>\pi r^2= 60.$
Total volume of the tent = 30 × 10 = 300 .
So $13\pi r^2h=300$.
$=> 13\times60\times h=300$.
=> h = 15m .

Question 11

The number of multiples of 10 which are less than 1000, which can be written as a sum of four consecutive integers is

A. 50

B. 100

C. 150

D. 216

Explanation :

We can write 10 = 1 + 2 + 3 + 4.
So we have to find how many multiples of 10 can be written in this manner.
Let the first of the four numbers be n. So
=> n + (n+1) + (n+2) + (n+3) = 10k
=> 4n + 6 = 10k
=> 2n + 3 = 5k
=> n = 5k−32 = 2k – 1 + k–12
So n is intezer for k = an odd number.
So for k = 1, 3, 5, ... 99 we can write a number as a sum of four consecutive intezers.
So there are 50 numbers.

Question 12

Eesha has a wheat business.She purchases wheat from a local wholesaler of a particular cost per pound.The price of the wheat of her stores is $3 per kg.Her faulty spring balance reads 0.9 kg for a KG. Also in the festival season, she gives a 10% discount on the wheat. She found that she made neither a profit nor a loss in the festival season. At what price did Eesha purchase the wheat from the wholesaler ?

A. 3

B. 2.5

C. 2.43

D. 2.7

Explanation :

Faulty spring balance reads 0.9 kg for a kg" means that she sells 1 kg for the price of 0.9 kgs, so she looses 10% of the price because of the faulty spring balance.She looses another 10% because of the discount.
So, she actually sells 1 kg for $3×0.9×0.9=$2.43 and since at that price she made neither a profit nor a loss, then Eesha purchase the wheat from the wholesaler for $2.43.

Question 13

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

Explanation :

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.

Question 14

In a certain city, 60% of the registered voters are congress supporters and the rest are BJP supporters. In an assembly election, if 75% of the registered congress supporters and 20% of the registered BJP supporters are expected to vote for candidate A, what percent of the registered voters are expected to vote for candidate A?

A. 57%

B. 60%

C. 53%

D. 55%

Explanation :

Let the people in the city be 100.
Congress supporters = 60% of 100 = 60.
40% are BJP=40% of 100 = 40
out of 60,75% voted for congress=75%(60)=45.
out of 40%,20% voted for congress=20%(40)=8.
Total=45 + 8 = 53.
Total percent= 53%

Question 15

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

Explanation :

Let the work be 60 units. If venky leave 3 days before the work, Last 3 days must be worked by Ravi.
So the remaining days of work be x days, total days to complete the work be x + 3 days.
Now Capacities of Rajiv is 60/10 = 6, Venky is 5, Ravi is 4.
=> (6 + 5 + 4) 2 + (5 + 4) (x – 3) + 4 x 3 = 60.
=> 30 + 9x – 27 + 12 = 60
=> 9x – 15 =30
=> 9x = 45
=> x = 5
So, total days to complete the work = 2 + 5 = 7 days.

Question 16

In a vessel, there are 10 litres of alcohol. An operation is defined as taking out five litres of what is present in the vessel and adding 10 litres of pure water to it. What is the ratio of alcohol to water after two operations?

A. 1 : 5

B. 2 : 3

C. 1 : 6

D. 3 : 2

Explanation :

Final concentration = Initial concentration (1−replacement quantity/final volume)
Final concentration = =1×(1−10/15)=1/3.
Final concentration = 13×(1−10/20)=1/6.
So ratio of alcohol : water = 1 : 5

Question 17

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%

Explanation :

Given l:b:h=3:2:1
Let h=10, b = 20, and l = 30
Area = 2(l+b)h
Area= 2*(3x + 2x)* x = 2(30+20)*10 = 1000.
Now after those 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]×1000=30%.

Question 18

W, X, Y, Z are integers. The expression X - Y - Z is even and the expression Y - Z - W is odd. If X is even what must be true?

A. W must be odd

B. Y - Z must be odd

C. Z must be even

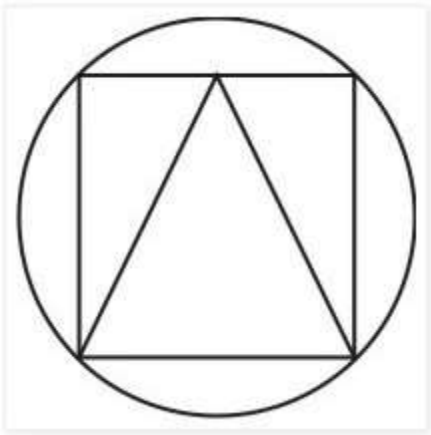
D. Z must be odd

Explanation :

X is even so Y, Z both are even or both are odd.
Now Y - Z in both cases even. So (Y - Z) - W = odd happens only when w is odd

Question 19

Find the ratio of the area of square to area of triangle.



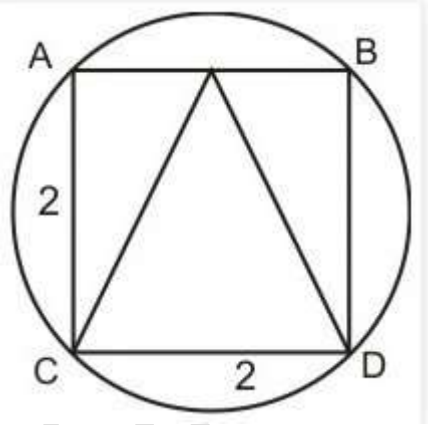
A. 1:2

B. 2:3

C. 3:2

D. 2:1

Explanation :



Let the side of the square = 2 units.
Now the area of the square = $2^2 = 4$.
Area of the triangle = $(1/2)\times2\times2=2$
Ratio = 4 : 2 = 2 : 1.

Question 20

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?

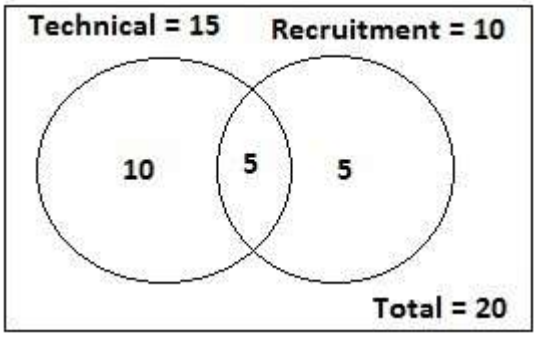
A. 2650

B. 3180

C. 3250

D. 3120

Explanation :



We have to use addition formula $n(A \cup B) = n(A)+n(B)-n(A \cap B)$

$\Rightarrow 20 = 15 + 10 - x$

$\Rightarrow x = 5$

So total shares given to only technical = $10 \times 15 = 150$

Shares given to only Recruitment = $5 \times 10 = 50$

Share given to Technical as well as recruitment people = $5 \times 25 = 125$

Total shares = 150 + 50 + 125 = 325.

Total value = $325 \times 10 = 3250$.

Question 21

Two cars start from the same point at the same time towards the same destination which is 420 km away. The first and second car travel at respective speeds of 60 kmph and 90 kmph. After travelling for sometime the speeds of the two cars get interchanged. Finally the second car reaches the destination one hour earlier than the first. Find the time after which the speeds get interchanged?

A. 10

B. 4

C. 5

D. 9

Explanation :

Let the total time taken by the cars be a and b.

Let the time after which the speed is interchanged be 't'.

For car A, 60t+90(a-t) = 420, 90a - 30t = 420 .....(1)

For car B, 90t + 60(b-t) = 420, 60b + 30t = 420 .....(2)

Using both (1) and (2), we get 90a + 60b = 840

But as a - b =1, 90a + 60(a-1) = 840.

Solving a = 6.

Substituting in equation 1, we get t = 4.

Question 22

The five tyres of a car (four road tyres and one spare) were used equally in a journey of 40,000 kms. The number of kms of use of each tyre was

A. 8000

B. 10000

C. 32000

D. 40000

Explanation :

Total kilometers travelled by 4 tyre = 40000 × 4 = 1,60,000.

This has to be share by 5 tyres.

So each tyre capacity = 1,60,000 / 5 = 32, 000.

You have a doubt, after we travel 32,000 km, we are left with 4 worn tyes and one new tyre.

But If the tyres are rotated properly after each 8000 km, all the tyres are equally used.

Question 23

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

Explanation :

Let the side of the equilateral triangle = a units and side of the regular hexagon is b units.

Given that, 3a=6b

=> a/b=2/1.

Now ratio of the areas of equilateral triangle and hexagon =(√3/4)a^2 : (3√3/2)b^2

=> (√3/4)2^2 : (3√3/2)1^2

=>2:3.

Question 24

17 × 8 m rectangular ground is surrounded by 1.5 m width path. Depth of the path is 12 cm. Gravel is filled and find the quantity of gravel required.

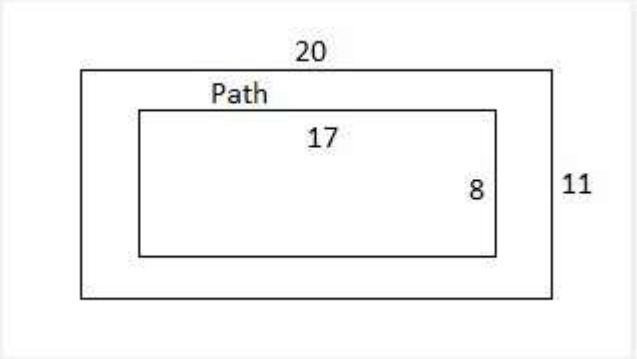
A. 5.5

B. 7.5

C. 6.05

D. 10.08

Explanation :



Area of the rectangular ground = $17 \times 8 = 136 m^2$

Area of the big rectangle considering the path width = $(17+2\times1.5)\times(8+2\times1.5) = 220 m^2$

Area of the path = $220 - 136 = 84 m^2$

Gravel required = $84 m^2 \times 12/100 m = 10.08 m^3$.

Question 25

A cow and a horse are bought for Rs 200000. The cow is sold at a profit of 20% and the horse is sold at a loss of 10% .The overall gain is Rs 4000. The cost price of the cow is:

A. 120000

B. 80000

C. 70000

D. 130000

Explanation :

Let CP of cow be x.

CP of horse= 200000-x

According to formula;

SP of Cow= 100+20/100*x = 6x/5

SP of Horse= 100-10/100*(200000-x) = 1800000-9x/10

Total SP= 6x/5 + 1800000-9x/10 = 3x+1800000/10

Total CP= 200000.

Gain= SP-CP.

= 3x + 1800000/10 - 200000

= 3x-200000.

In question,given; Gain= 4000

=> 3x-200000= 4000.

=> 3x= 240000.

=> x= 80000.

Question 26

A person buys a horse for 15 pounds. After one year, he sells it for 20 pounds. After one year, again he buys the same horse at 30 pounds and sells it for 40 pounds. What is the overall profit percent for that person over both the transactions?

A. 15%

B. 33.33%

C. 45%

D. 60%

Explanation :

Total c.p=45

Total s.p=60

Profit%=(15/45)*100=33.33%.

Question 27

If log 0.318=0.3364 and log 0.317=0.33320 then log 0.319 =?

A. 0.33365

B. 0.3368

C. 0.3396

D. 0.3369

Explanation :

log 0.318 / log 0.317 = log (0.318 - 0.317) = log 0.001 = 0.3364 / 0.33320 = 1.0096 .

Now,

log 0.318 * log 0.001 = log (0.318 + 0.001) = log 0.319 = 0.3364 * 1.0096 = 0.3396.

Question 28

Ajith sells a table to Ajay at 10% profit and Ajay sells it to Anoob at 10% loss. At what price did Ajith purchase the table if Anoob paid Rs.2178?

A. Rs 2100

B. Rs.2150

C. Rs.2200

D. Rs.2250

Explanation :

Increase by 10% & decrease by 10% means there is a loss of 1% totally.

That loss in 1% percent is added to Rs. 2178 to get actual price.

i.e 1% of 2178=21.78

=> 2178+21.78 = 2199.78(=2200 appro).

Question 29

A bought 100kg of rice for Rs 1100 and sold it at a loss of as much money as he received for 2o kg of rice. At what price did he sell the rice?

A. 880

B. 580

C. 980

D. 750

Explanation :

As the price of 100 kg of rice for Rs 1100.

Price of 20kg rice will be 1100*20/100=220.

The selling price will be 1100-220=Rs 880.

Question 30

A man buys a cycle for Rs. 1400 and sells it at a loss of 15%. What is the selling price of the cycle?

A. Rs. 1090

B. Rs. 1160

C. Rs. 1190

D. Rs. 1202

Explanation :

SP =(100 - Loss %)/100 x C.P.

=> (100 - 15)/100 x 1400.

=>(85/100) x 1400.

=> 1190.

PAPER-7

Question 1

In a class there are 60% of girls of which 25% poor. What is the probability that a poor girl is selected is leader?

A. 20%

B. 15%

C. 25%

D. 30%

Explanation :

Assume total students in the class = 100
Then Girls = 60% of (100) = 60
Poor girls = 25% of (60) = 15
So probability that a poor girls is selected leader = Poor girls / Total students = 15/100 = 15%.

Question 2

Of the following, which is the closest approximation of (50.2*0.49)/199.8 ?

A. 1

B. 0.125

C. 12.5

D. 012.5

Explanation :

For approximation (50.2×0.49)/199.8 can be taken as 50×0.5/200 = 25/200 = 1/8 = 0.125.

Question 3

In a mixture of a, b and c, if a and b are mixed in 3:5 ratio and b and c are mixed in 8:5 ratio and if the final mixture is 35 liters, find the amount of b?

A. 14.5

B. 15.73

C. 16.25

D. 10.4

Explanation :

As b is common in both ratios, we should equate b in both ratios by multiplying suitable numbers.
a:b = 3 : 5 = 24 : 40
b:c = 8 : 5 = 40 : 25
Now a : b : c = 24 : 40 : 25.
Amount of b in the mixture = 4089×35 = 15.73.

Question 4

A is twice efficient than B. A and B can both work together to complete a work in 7 days. Then find in how many days A alone can complete the work?

A. 10 days

B. 12 days

C. 11 days

D. 10.5 days

Explanation :

Let us assume A can do 2 units of work each day, then B can do only 1 unit a day. If both can complete the work in 7 days, total work done by these two togeter = (2 + 1) x 7 = 21 units
If these 21 units to be done by A alone, then he will take 21 / 2 = 10.5 days.

Question 5

The water from one outlet, flowing at a constant rate, can fill the swimming pool in 9 hours. The water from second outlet, flowing at a constant rate can fill up the same pool in approximately in 5 hours. If both the outlets are used at the same time, approximately what is the number of hours required to fill the pool?

A. 2 hrs

B. 3.2 hrs

C. 4 hrs

D. 5 hrs

Explanation :

Assume tank capacity is 45 Liters.
Given that the first pipe fills the tank in 9 hours.
So its capacity is 45 / 9 = 5 Liters/ Hour.
Second pipe fills the tank in 5 hours.
So its capacity is 45 / 5 = 9 Liters/Hour.
If both pipes are opened together, then combined capacity is 14 liters/hour.
To fill a tank of capacity 45 liters, Both pipes takes 45 / 14 = 3.21 Hours.

Question 6

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?

A. 60%

B. 40%

C. 50%

D. 55%

Explanation :

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%
Now substituting in the formula we get $80\% = 75\% + 55\% - n(A \cap B) \Rightarrow n(A \cap B) = 50\%$.

Question 7

A student's average (arithmetic mean) test score on 4 tests is 78. What must be the students score on a 5th test for the students average score on the 5th test to be 80?

A. 80

B. 78

C. 88

D. 60

Explanation :

We know that Average = (Sum of the observations) - (No of observations)
So, Sum of 4 test scores = $78 \times 4 = 312$.
Sum of 5 tests scores = $80 \times 5 = 400$.
Hence, 5th test score=400-312=88.

Question 8

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?

A. 50%

B. 40%

C. 55%

D. 48%

Explanation :

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 of the total seeds = 240500×100 = 48%.

Question 9

The price of lunch for 15 people was 207 pounds, including a 15 percent gratuity of service. What was the average price per person, EXCLUDING the gratuity?

A. 15 pounds

B. 12 pounds

C. 18 pounds

D. 20 pounds

Explanation :

Let the net price excluding the gratuity of service = x pounds
Then, total price including 15% gratuity of service = x*(100+15)/100 = 1.15 x pounds.
So, 1.15 x = 207 pounds.
=> x = 207 / 1.15 = 180 pounds.
Net price of lunch for each person = 180 / 15 = 12 pounds.

Question 10

Bhanu spends 30% of his income on petrol on scooter 20% of the remaining on house rent and the balance on food. If he spends Rs.300 on petrol then what is the expenditure on house rent?

A. Rs 100

B. Rs 110

C. Rs.150

D. Rs.140

Explanation :

Given, 30% of (Income) = 300.
=> Income = 1000.
After having spent Rs.300 on petrol, he left with Rs.700.
His spending on house rent = 20% of (700) = Rs.140.

Question 11

A Grocer bought 24 kg coffee beans at price X per kg. After a while one third of stock got spoiled so he sold the rest for $200 per kg and made a total profit of twice the cost. What must be the price of X?

A. Rs 44.44

B. Rs 45

C. Rs 24

D. Rs 50

Explanation :

Total Cost price = 24×X
As 1/3rd of the beans spoiled, remaining beans are (2/3)* 24 = 16 kgs.
Selling price = 200 × 16 = 3200.
Profit = Selling price - Cost price = 3200 - 24×X.
Given,
Profit = 2 × Cost price.

3200 - 24×X = 2 × (24×X).
Solving X = 44.44.

Question 12

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

Explanation :

According to the qurestion,
3m + 4a = 85 .....(1)
5a + 6p = 122 .....(2)
6m + 2p = 114 .....(3)

On multiplying eq(1) by 2, we get
=> 6m + 8a = 170 .....(4)

Now substracting (3) from (4), we get :-
=> 8a - 2p = 56 .....(5)

(2) => 5a + 6p = 122
From eq(2) and eq(5) * 3 ,
On Solving we get a = 10, p = 12, m = 15
So, a + p + m = 37.

Question 13

J can dig a well in 16 days. P can dig a well in 24 days. J, P, H dig in 8 days. H alone can dig the well in How many days?

A. 32

B. 48

C. 96

D. 24

Explanation :

Assume the total work = 48 units.
Capacity fo J = 48 / 16 = 3 units / day
Capacity of P = 48 / 24 = 2 units / day
Capacity of J, P, H = 48 / 8 = 6 units / day
From the above capacity of H = 6 - 2 - 3 = 1
So H takes 48 / 1 days = 48 days to dig the well.

Question 14

A dog taken four leaps for every five leaps of hare but three leaps of the dog is equal to four leaps of the hare. Compare speed?

A. 16:15

B. 15:16

C. 1:4

D. 5:4

Explanation :

In terms of number of leaps, the ratio of the Dog and hare speeds are 4 : 5
But Given that 3 leaps of dog = 4 leaps of hare,. i.e., Leap lengths = 4 : 3 (If Dog is covering in 3 leaps what hare as covered in 4 leaps then Leap lengths are inversely proportional)
So Dog speed = 4 x 4 = 16
Hare speed = 5 x 3 = 15
So speeds ratio = 16 : 15.

Question 15

etters in the word ABUSER are permuted in all possible ways and arranged in alphabetical order then find the word at position 49 in the permuted alphabetical order?

A. ARBSEU

B. ARBESU

C. ARBSUE

D. ARBEUS

Explanation :

The best way to solve this problems is Just ask how many words starts with A. If we fix A, then the remaining letters can be arranged in 5! ways = 120. So the asked word must start with A.
Arrange all the given letters in alphabetical order. ABERSU
Let us find all the words start with AB. AB**** = 4!= 24 ways
Now we find all the words start wit AE. AE****= 4!= 24 ways
So next word start with AR and remaining letters are BESU.

Question 16

An article manufactured by a company consists of two parts X and Y. In the process of manufacturing of part X, 9 out 100 parts many be defective. Similarly , 5 out of 100 are likely to be defective in the manufacturer of Y. Calculate the probability that the assembled product will not be defective?

A. 0.6485

B. 0.6565

C. 0.8645

D. none of these

Explanation :

Probability that the part X is nondefective is = 1 - 9/100=.91
Probablity that the part Y is nondefective is = 1 - 5/100=.95
so, Probablity of nondefective product=0.91×0.95=0.8645.

Question 17

3 friends A, B, C went for week end party to McDonald's restaurant and there they measure there weights in some order In 7 rounds. A, B, C, AB, BC, AC, ABC. Final round measure is 155kg then find the average weight of all the 7 rounds?

A. 80.5 kgs

B. 150 kgs

C. 90.5 kgs

D. 88.5 kgs

Explanation :

Average weight = [(a + b + c + (a+b) + (b+c) + (c+a)+(a+b+c)] / 7
= 4 *(a+b+c)/ 7
= 4 x 155/7
= 88.5 kgs.

Question 18

In a mixture of a, b and c, if a and b are mixed in 3:5 ratio and b and c are mixed in 8:5 ratio and if the final mixture is 35 liters, find the amount of b?

A. 15.73

B. 13.25

C. 16.0

D. 17.54

Explanation :

As b is common in both ratios, we should equate b in both ratios by multiplying suitable numbers.
a:b = 3 : 5 = 24 : 40
b:c = 8 : 5 = 40 : 25
Now a : b : c = 24 : 40 : 25.
Amount of b in the mixture = 4089×35 = 15.73.

Question 19

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

Explanation :

Let the two digit number be xy.
$4(x + y) + 3 = 10x + y$ .....(1)
$10x + y + 18 = 10y + x$ .....(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 $y = 5$.

Question 20

A and B are running around a circular track of length 120 meters with speeds 12 m/s and 6 m/s in the same direction. When will they meet for the first time?

A. 15 sec

B. 20 sec

C. 25 sec

D. 17 sec

Explanation :

A meets B when A covers one round more than B.
A's relative speed = (12 - 6) m/s. So he takes 120 / 6 seconds to gain one extra round.
So after 20 seconds A meets B.

Question 21

Among a group of 2500 people, 35 percent invest in municipal bonds, 18 percent invest in oil stocks, and 7 percent invest in both municipal bonds and oil stocks. If 1 person is to be randomly selected from 2500 people, what is the probability that the person selected will be one who invests in municipal bonds but not in oil stocks?

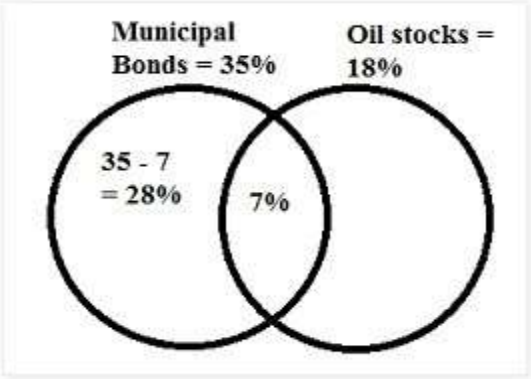
A. 7/25

B. 2/25

C. 11/25

D. 14/25

Explanation :



From the diagram we know that only ones who invested in municipal bonds are 28%.

Therefore, the probability is 28 / 100 = 7/25.

Question 22

The diagonal of a square is twice the side of equilateral triangle then the ratio of Area of the Triangle to the Area of Square is?

A. √3:8

B. √3:2

C. √3:4

D. √4:√3

Explanation :

Let the side of equilateral triangle = 1 unit.

We know that area of an equilateral triangle = $(\sqrt{3}/4)*a^2$

As side = 1 unit area of the equilateral triangle = √3/4.

Now Diagonal of the square = 2 (side of the equilateral triangle) = 2

We know that area of the square = $(1/2)*D^2$ where D = diagonal.

So area of the square = $(1/2)*(2^2)=2$

Ratio of the areas of equilateral triangle and square = √3/4 : 2 ⇒ √3:8

Question 23

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

A. 588

B. 488

C. 500

D. 458

Explanation :

The Hallow cube volume = $n^3-(n-2)^2$, Here n is the number of small cubes lie on the big cube edge.

Now n = 5 .

So Hallow cube volume = $5^3-(5-2)^2=125-27=98$.

So 98 small cubes required to make a hallow cube of size 5 cm.

Now total surfaces = 6 x 98 = 588.

Now if the bigger cube is painted 4 sides, total 4 x 25 small faces got paint.

So remaining small faces which does not have paint after cutting is 588 - 100 = 488.

Question 24

An organisation has 3 committees, only 2 persons are members of all 3 committee but every pair of committee has 3 members in common. what is the least possible number of members on any one committee?

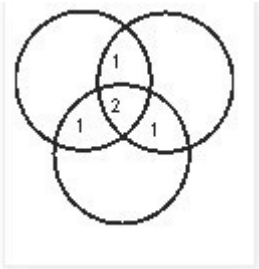
A. 4

B. 5

C. 6

D. 1

Explanation :



Total 4 members minimum required to serve only on one committee.

Question 25

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. 1/9

B. 4/9

C. 5/9

D. 2/3

Explanation :

The probability that Paul correctly picks the winner = (A's Chances of winning)x(Pauls picking the winner corectly) + (A's chances of loosing) x (Paul picks wrongly) = (2/3) × (2/3) + (1/3) ×(1/3) =5/9.

Question 26

Value of a scooter depreciates in such a way that its value at the end of each year is 3/4th of its value at the beginning of the same year. If the initial value of scooter is 40,000, what is the value of the scooter at the end of 3 years.

A. 23125

B. 19000

C. 13435

D. 16875

Explanation :

Value of the scooter at the end of the year = $40000\times(3/4)^3 = 16875$.

Question 27

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

Explanation :

Let the side of the equilateral triangle = a units and side of the regular hexagon is b units.

Given that, 3a=6b => a/b=2/1.

Now ratio of the areas of equilateral triangle and hexagon = $(\sqrt{3}/4)*a^2:(3\sqrt{3}/2)b^2$.

=> $(\sqrt{3}/4)*(2)^2:(3\sqrt{3}/2)(1)^2$

=> 2:3.

Question 28

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

A. 980

B. 797

C. 955

D. 618

Explanation :

Let x be the number to be added to 5678.

When you divide 5678 + x by 460 the remainder = 35.

Therefore, 5678 + x = 460k + 35 here k is some quotient.

=> 5643 + x should exactly divisible by 460.

Now from the given options x = 797.

Question 29

In how many possible ways can write 3240 as a product of 3 positive integers a,b and c.

A. 450

B. 420

C. 350

D. 320

Explanation :

$3450=2^3\times3^4\times5^1=a\times b\times c$.

We have to distribute three 2's to a, b, c in ${}^{3+3-1}C_{3-1}={}^5C_2=10$ ways

We have to distribute four 3's to a, b, c in ${}^{3+4-1}C_{3-1}={}^6C_2=15$ ways

We have to distribute one 5 to a, b, c in 3 ways.

Total ways = $10\times15\times3=450$ ways.

Question 30

A tree of height 36m is on one edge of a road broke at a certain height. It fell in such a way that the top of the tree touches the other edge of the road. If the breadth of the road is 12m, then what is the height at which the tree broke?

A. 16

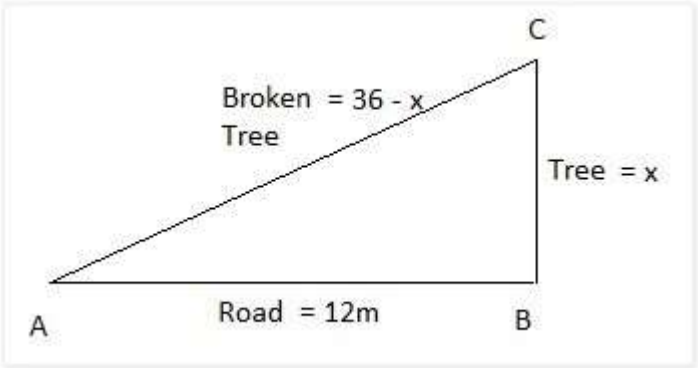
B. 24

C. 12

D. 18

Explanation :

Let the tree was broken at x meters height from the ground and 36 - x be the length of other part of the tree.



From the diagram,

=> $(36-x)^2 = x^2+12^2$

=> $1296 - 72x + x^2 = x^2 + 144$.

=> $72x = 1296 - 144$.

=> $x = 16$.

PAPER-8

Question 1

What will be the reminder when (1234567890123456789)^24 is divided by 6561 (1 Marks)

A. 0

B. 1

C. 2

D. 3

Explanation :

sum of digits of denominator 6+5+6+1=18 1+8=9
sum of digits of numerator =90= 9+0=9
both nemerator nd denominator will be divisble by 9 without any remainder i.e. 0 remainder

Question 2

There is a 3*3 matrix . u have 2 colors red and blue. in how many ways u can fill the colors in the boxes so that if u rotate the matrix by 180 degree we get the same matrix? (1 Marks)

A. 8

B. 16

C. 32

D. 48

Explanation :

2 2 2
2 2 1
1 1 1
(each element are represented no. of ways--hence 2^5=32.

Question 3

A bag contains 6 balls of one or more colors. A ball is picked and is found to be red. What is the probability that the bag initially had exactly 6 red balls? (1 Marks)

A. 2/7

B. 1/5

C. 3/5

D. 4/5

Explanation :

If we have 1 red ball then the probability of drawing 1 red ball out of 6 balls is 1/6 .

If there are 2 red balls then the probability of drawing 1 red ball out of them is $^2c_1/6$.

Similarly the other cases 3/6 4/6 5/6 6/6..

Now the probability of drawing 1 red ball when all the six are red
is [6/6]/[(1/6)+(2/6)+(3/6)+(4/6)+(5/6)+ 6/6)] = 6/21=2/7.

Question 4

2 oranges, 3 bananas and 4 apples cost rs.15. 3 oranges,2 bananas and 1 apples cost rs.10. what is the cost of 3 oranges, 3 bananas and 3 apples? (1 Marks)

A. 5

B. 10

C. 15

D. 20

Explanation :

Given ,

2 oranges + 3 bananas + 4 apples = Rs 15 ----------(i)

and ,

3 oranges + 2 bananas + 1 apples = Rs.10. ----------(ii)

Add both equations.which will be 5o + 5b + 5a=25. Now divide it by 5.
i.e o + b +a = 5.

So now multiply it by 3 i.e 3o+3b+3a=15 .

Hence, the required number is 15.

Question 5

Sehwag and Ganguly were sharing an apartment and cooked the food by themselves. One day Sehwag made 5 pizzas for himself and Ganguly made 3 for himself. At the time of lunch Tendulkar came in. So all three of them sat together and ate all the pizzas equally. After eating them Tendulkar gave them 8 expensive cricket bats and left. As Ganguly was running out of form he started quarrelling and asked for 4 bats which Sehwag refused to give. Finally David shepherd was called to give the right decision which he did. How many bats Sehwag and Ganguly were given finally? (2 Marks)

A. 5,3

B. 7,1

C. 4,4

D. 3,5

Explanation :

8 pizzas were equally divided...hence each gets 8/3 pizzas
so for sachin,

sehwag provided: 5 - 8/3 = 7/3 pizzas , and
sourav provided: 3 - 8/3 = 1/3 pizzas
Hence their ratio being 7:1, sehwag gets 7 bats and sourav gets 1 bat.

Question 6

Veena wants to make a cuboidal box with length 8cm, width 7 cm and height 6 cm, using 1 cubic cm cubes. What is the number of cubes she would require to make the box? (1 Marks)

A. 49

B. 136

C. 236

D. 336

Explanation :

The volume is (8*7*6) cm^3
The volume of one box is 1 cm^3
The no is (8*7*6)=336

Question 7

5 printers can print 5 sheets in 5 seconds. If I need to print 20 sheets in 20 seconds, how many additional printers should I install in my office? (1 Marks)

A. 0

B. 10

C. 15

D. 20

Explanation :

As 5 printers can print 20 pages in 20 second

Question 8

A three digit number was divided successively in order by 4, 5 and 6 leaving out the remainders. The
remainders were respectively 2, 3 and 4. How many such three digit numbers are possible? (1 Marks)

A. 3

B. 5

C. 7

D. 9

Explanation :

When a three digit number is divided by 4,5,6 successively, the final quotient will be a single digit (as 4*5*6 = 120 and the max three digit number 999 is not more than 9*120).
Let the number be x and the quotient after division by 4 be a and the quotient after division by 5 be b and the quotient after division by 6 be c.
Then, x = 4a+2,
=> a = 5b +3
=> b = 6c + 4.
Now, start with c=1, b=10, a=53, x=214.
when c=2, b=16, a=83, x=334,
c=3, b=22, a=113, x=454 and so on with an increment of 120.

Thus the 3 digit numbers possible are 214, 334, 454, 574, 694, 814, 934.
The answer is 7 such numbers are possible.

Question 9

Jack, twenty one years old, is three times as old as his brother. How old will Jack be when he is twice as old as his brother? (1 Marks)

A. 24

B. 28

C. 32

D. 36

Explanation :

Currently Jack‘s age =21, his brother‘s age=21/3=7.
Let x be years further when Jack is twice as old as his brother.
=> 21+x = 2 (7+x), solving x=7.
Hence Jack‘s age will be 21+7 = 28.

Question 10

If x and y are the two digits of the number 653xy such that this number is divisible by 80, then what is x + y = ? (1 Marks)

A. 2 or 6

B. 4 or 6

C. 4

D. 8

Explanation :

Since, 80 = 2 * 2 * 2 * 2 * 5, which means the number should be divisible by 2 and 5.
Hence y=0.
Now 653x0 should also be divisible by 8 (as 80 = 8 *10) which means 3x0 should be divisible by 8. (For a number to be divisible by 8 last 3 digits should be divisible by 8).
Thus x can be 2 or 6.
So x+y can be 2+0 = 2 or 6+0 = 6.
Answer is option A) 2 or 6.

Question 11

Three dice are rolled. What is the probability of sum of the numbers on the faces being 10? (1 Marks)

A. 15/216

B. 10/216

C. 9/25

D. 1/8

Explanation :

The combination of 10 can occur when we have (1,3,6) (1,4,5) (2,2,6) (2,3,5) (2,4,4) , (3,3,4) = 6 patterns.
(1,3,6) can be 1,3,6 or 1,6,3 or 3,1,6 or 3,6,1 or 6,1,3 or 6,3,1 that is in 3! ways .
Set having repeating digits like 2,2,6 can be ordered in 3!/2 ways = 3 ways (like 2,2,6 or 2,6,2 or 6,2,2)
Hence over all occurrences = 6 + 6 + 3 + 6 + 3 + 3 = 27 ways.
Probability = 27/216 = 3/24 = 1/8

Question 12

A man has three grand children.The age of the eldest grand child is four times the age of youngest grand child. The second grand child's age is half of the eldest grand child. The sum of the ages of all three grandchildren is 63. What is the age of eldest grand child? (1 Marks)

A. 18

B. 24

C. 30

D. 36

Explanation :

Let the age of youngest be x. Eldest =4x
and the other = 2x.
Now 7x=63, x=9.
Age of eldest grandchild = 4x = 36.

Question 13

The cost price of a cow and a horse is 3 lakhs. The cow is sold at 20% profit and horse at 10% loss. Overall gain is Rs.4200. What is the cost price of the cow? (1 Marks)

A. 114000

B. 140000

C. 141000

D. 144000

Explanation :

Let C.P of cow = c and horse =h.
=> c + h =300000 ---------- Eq1
=> 1.2c + 0.9h = 300000 + 4200,
Using Eq1, 1.2c + 0.9(300000-c) = 304200,
=> 0.3c = 304200 - 270000,
=> c=34200/0.3 = 342000/3

=> Rs. 114000

Question 14

Vinod ordered for 6 blue toys and some green toys. The price of a blue toy is 2.5 times that of a green toy. While preparing the bill, the clerk interchanged the number of blue and green toys which increased the bill by 145%. Find the number of green toys. (1 Marks)

A. 9

B. 12

C. 15

D. 18

Explanation :

Let price of green toy be a. Price of blue toy = 2.5a.
Let the number of green toys purchased be x.
Actual price = 6 * 2.5a + ax = 15a + ax
Increased bill = 2.5ax + 6a
=> 2.5ax + 6a = 145/100 * (15a + ax)

Cancelling a,
2.5x + 6 = 1.45*15 + 1.45x, on Solving we get x= 15.

Question 15

Magesh spends 30% of his income on petrol. 1/4th of the remaining on house rent and the balance on food. If he spends Rs.300 on petrol then what is the expenditure on food? (1 Marks)

A. 525

B. 450

C. 325

D. 175

Explanation :

Let income be x.
Petrol expense = 0.3x, House rent = 1/4 * 0.7x, food expense = 3/4 * 0.7x
As petrol expense = 300 = 0.3x, x=1000.
Hence food expense= 3/4 * 0.7 * 1000 = Rs.525

Question 16

60 men can complete a work in 40 days. 60 men start the work but after every 5 days, 5 men leave. In how many days the work will be completed? (2 Marks)

A. 50

B. 60

C. 75

D. None of these

Explanation :

Let the total work be 2400 (Product of 60 and 40) units of work.

Let us assume 1 man does 1 unit of work in a single day.
So in 5 days, 60 men do 5*60 = 300 units of work. Pending work = 2100 units .

From days 5-10, 55 men do 5*55 = 275 units of work. Pending work = 1825 units
From days 10-15, 50 men do 5*50 = 250 units of work. Pending work = 1575 units

In a similar fashion, after 20 days pending work = 1350 units, 25 days = 1150 units, 30 days = 975 units, 35 days = 825 units, 36 - 40 days (25 men) = 700 units, 41-45 days(20 men) = 725 units, 46-50 days (15 men) = 650 units, 51-55 days (10 men) = 600 units, 56-60 days (5 men) = 575 units.
Now as all men leave in the 60th day and still work is pending the work will never get completed.

Question 17

Divide 50 into two parts so that sum of the reciprocal is 1/12 ? (1 Marks)

A. 10,40

B. 15,35

C. 30,20

D. 22,28

Explanation :

Let numbers be x and y.
=> x+y = 50.

=> y=50-x.
According to the question,

=>1/x + 1/y = 1/12
=> 1/x + 1/50-x = 1/12
=> 12 (50-x + x) = (50x - x^2)
=> x^2 -50x + 600 = 0, solving x=20 or x=30.
Hence the numbers are 20,30 (or can also be 30,20).

Question 18

146!/5^n what is the maximum value of n? (1 Marks)

A. 34

B. 35

C. 36

D. 37

Explanation :

Exponent of 5 in 146! = [146/5]+[146/5^2]+[146/5^3]= 29+5+1 = 35 i.e. 146! has a factor 5^35.

=>146!/5^n

=> n(max)=35.

Question 19

Tim and Elan are 90 km from each other. They start to move towards each other simultaneously tim at
speed 10kmph and elan 5kmph. If every hour they double their speed what is the distance that Tim will pass until he meet Elan. (1 Marks)

A. 57

B. 60

C. 63

D. 66

Explanation :

0.....90
AFTER 1ST HR
10.....85
AFTER 2ND HR
30.....75
AFTER 2.30MIN
50.....65
AFTER 2.45MIN
60.....60

Question 20

3 persons A, B and C are standing in a queue. There are 5 persons between A and B and 8 persons between B and C. If there are 3 persons ahead of C and 21 persons behind A, what could be the minimum number of persons in the queue ? (1 Marks)

A. 40

B. 41

C. 27

D. 28

Explanation :

positions : ---c--a-----b----------
totally 28

Question 21

In a hotel where rooms are numbered from 101 to 130, each room gives an earning of Rs. 3000 for the first fifteen days of a month and for the latter half, Rs. 2000 per room. Find the average earning per room per day over the month. (Assume 30 day month) (1 Marks)

A. 2500

B. 2250

C. 2750

D. 3000

Explanation :

first 15 days = 15*3000
second 15 days = 15*2000
for a month= (15*3000 + 15*2000) = 75000
for a day = 75000/ 30 = 2500

Question 22

Lion tells lies on Mondays, 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 lyingÂ?, Rat also tells Yesterday was one of the days which I tell lying. What day was yesterday?

A. Monday

B. tuesday

C. wednesday

D. thursday

Explanation :

Wednesday
if yesterday was Wednesday then today is thursday. on thursays lion tells the truth whereas on thursdays rat tells lies. therefore, "Yesterday was one of the days which, I tell lyingÂ?" said by lion is true and "Yesterday was one of the days which I tell lying " said by rat is false.....

Question 23

After allowing a discount of 11.11%, a trader still makes a gain of 14.28%. At how many per cent above the cost price does he mark on his goods?
(2 Marks)

A. 28.56%

B. 35%

C. 22%

D. None

Explanation :

Let us consider cost price to be Rs.100
Thus, S.P. will be Rs.114.28 (i.e. 100+14.28)
Now discount=11.11%
Let marked price be Rs.x

thus,(100-11.11)=88.89% of x =Rs.114.28
=> x=(114.28 * 100)/ 88.89 =128.56%
Thus marked price is 28.56% above original cost price.

Question 24

If ‘n‘ integers taken at random and multiplied together, then what is the probability that the last digit of the product is 1, 3, 7 or 9 ? (1 Marks)

A. 2n/5n

B. 4n/5n

C. 2n/10n

D. None

Explanation :

2n/5n
As number of digits at end can b 0 to 9 and here it is asked only for 4 digits.
so, 4/10 is equal to 2/5

Question 25

In June, a baseball team that played 60 games had won 30% of its game played. After a phenomenal winning streak, this team raised its average to 50%. How many games must the team have won in a row to attain this average? (1 Marks)

A. 12

B. 20

C. 24

D. 30

Explanation :

Let the number of games required be x.

According to the question,

=> (50/100)(60+x)=18+x .

=> x =24.

Question 26

A grocer bought 24 kg coffee beans at price x per kg.after a while one third of stock got spoiled so he sold the rest for $200 per kg and made a total profit of twice the cost what must be the price of x (1 Marks)

A. 44.44

B. 55.55

C. 66.66

D. 77.77

Explanation :

Given,

Spoiled eggs =24/3=8 and

Left eggs = 24-8=16.

Now 16*200$=3200$ which is sell price.

Now total cost=24*x and given that profit=2*total cost i.e profit=48*x.

Now we know that profit+cost=sell price.

So, 24X + 48X=3200.

Now 72X=3200 from here X=44.44$.

Question 27

In how many rearrangements of the word ERASED in the letter ‘A‘ positioned in between the 2 ‘E‘s? (2 Marks)

A. 6!

B. 5!

C. 4!

D. 2!

Explanation :

Two E‘s can be arranged in 1 way only(because Identical letters: [2!/2!])
then A can be arranged in between E‘s is oneway.
These (EAE) treated as one group(letter).
Remaining letters(RSD)& That group(letter) =4.
So Four Letters can be arranged in 4places can be done in 4! ways

Question 28

In how many ways a team of 11 must be selected from 5 men and 11 women such that the team must comprise of not more than 3 men? (1 Marks)

A. 1543

B. 2256

C. 2456

D. 1656

Explanation :

The team may consist of :-

0 men + 11 women,
1 men + 10 women,
2 men + 9 women,
or
3 men + 8 women.
So Number of ways are = $({}^{11}C_{11}) + ({}^{5}C_{1}x{}^{11}C_{10}) + ({}^{5}C_{2}x{}^{11}C_{9}) + ({}^{5}C_{3}x{}^{11}C_{8}) = 2256$.

Question 29

Eesha bought 18 sharpeners for Rs.100. She paid 1 rupee more for each white sharpener than for each brown sharpener. What is the price of a white sharpener and how many white sharpener did she buy ?

(1 Marks)

A. Rs.5, 10

B. Rs.6, 10

C. Rs.5, 8

D. Rs.6, 8

Explanation :

This question can be solved easily by going through options (Hit & Trial).
A. White sharpener total cost: Rs.5 x 10 = Rs.50. Brown sharpeners cost = Rs.4 x 8 = 32. Total cost is only Rs.82. Wrong option.

B. White sharpener total cost: Rs.6 x 10 = Rs.60. Brown sharpeners cost = Rs.5 x 8 = 40.Total cost is Rs.100. Correct option.

Question 30

In how many different ways can the letters of the word 'LEADING' be arranged in such a way that the vowels always come together?

A. 360

B. 480

C. 720

D. 5040

E. none of these

Explanation :

The word 'LEADING' has 7 different letters.

When the vowels EAI are always together, they can be supposed to form one letter.

Then, we have to arrange the letters LNDG (EAI).

Now, 5 (4 + 1 = 5) letters can be arranged in 5! = 120 ways.

The vowels (EAI) can be arranged among themselves in 3! = 6 ways.

Hence, Required number of ways = (120 x 6) = 720.

PAPER-9

Question 1

Sum of the digits of a three digit number is 17 and sum of the squares of the digit is 109. Also when the number is subtracted by 495 the number gets reversed. Find the number ? (1 Marks)

A. 863

B. 653

C. 783

D. None of these

Explanation :

Let the no. be abc.
Now, a+b+c=17
=> a^2+b^2+c^2=109
and 100a+10b+c-495=100c+10b+a
i.e. a - c = 5.
considering the cases for a and c(9,4..,8,3....,7,2....6,1)
we get value of a and c as 8,3 therefore b=6..i.e. no=863.

Question 2

Car A leaves city C at 5pm and is driven at a speed of 40 kmph. Two hours later another car leaves city C and is driven in same direction as car A. In how much time car B be 9 km ahead of car A if the speed of car B is 60 kmph. (1 Marks)

A. 4 hr

B. 4 hr 20min

C. 4 hr 37min

D. 4 hr 27min

Explanation :

car A speed = 40 kmph, car B speed 60 kmph
relative speed=60-40=20 kmph(same direction)
when car B stated A has already covered 40*2=80m distance
time required for two car to be at same position = 80/20=4hr
Additional distance is 9 min to additional time= (9/20)*60=27 min
Hence, the answer is 4hrs 27 min.

Question 3

N is a natural number and n^3 has 16 factors. Then how many factors can n^4have? (1 Marks)

A. 21

B. 24

C. 25

D. 26

Explanation :

solve by using prime factorization consider a term 6.
6^3 -> can be written as -> 2^3 * 3^3
Then by factor rule , (3+1)*(3+1)=16
therefore,
6^4=(2^4)*(3^4) ---> (4+1)*(4+1) = 25.

Question 4

3 mangoes and 4 apples costs Rs 85. 5 apples and 6 peaches costs Rs. 122. 6 mangoes and 2 peaches cost Rs.114. what is the combined price of 1 apple, 1 peach and 1 mango? (1 Marks)

A. 35

B. 36

C. 37

D. 39

Explanation :

3m+4a=85 ...(i)
5a+6p=122 ....(ii)
6m+2p=114 ....(iii)
After solving (i) & (ii),we get the eqn in terms of m & p i.e
15m-24p=-63 ....(iv)
Now, we solve eqn(iii) & eqn(iv),we get
m=15,a=10,p=12

so, the required price 37.

Question 5

what is the remainder of (16937^30)/31 ?

A. 28

B. 0

C. 1

D. 6

Explanation :

= ((16937%31)^30)%31 i.e (11^30)%31 (by remainder theorem)
= (121^15)%31
=(28^15)%31 =28(784^7)%31
=28(9^7)%31
=28*9*(19^3)%31
=1728468%31=1.

Question 6

In how many ways can we form 6 digit number from 1,2,3,4,5,6,7 so that last and second last digit must be even.(1 Marks)

A. 41

B. 720

C. 1000

D. 1440

Explanation :

The required number of ways is $3*2*{}^{5}p_{4} = 720$.

Question 7

If A=2/3(B-C) and c=1/2(A+B) and A+B+C=3000, then find C ? (1 Marks)

A. 4000

B. 3000

C. 2000

D. 1000

Explanation :

we know that , c=1/2(a+b)

=> 2c=a+b

=> c=3000-2c

=> c=1000.

Question 8

In a cricket match,two batsman scores are 96,96 respectively.They require only 5 runs in 3 balls,can both the batsman complete their centuries? (1 Marks)

A. no

B. yes

C. Insufficient data

D. none of these

Explanation :

Batsmen in crease hits a boundary then he completes 100, now equation be 1run from 2balls then next ball he tries to hit six then it will be in air,the other batsmen crosses the middle of the pitch.1st batsmen gets out.now other batsmen comes to crease..now equation be 1run 1ball then the other 96 runs scorer hits a boundary.

Question 9

In how many rearrangements of the word ERASED in the letter 'A' positioned in between the 2 'E's? (2 Marks)

A. 6!

B. 5!

C. 4!

D. 2!

Explanation :

Two E's can be arranged in 1 way only(because Identical letters: [2!/2!])
then A can be arranged in between E's is oneway.
These (EAE) treated as one group(letter).
Remaining letters(RSD)& That group(letter) =4.
So Four Letters can be arranged in 4places can be done in 4! ways

Question 10

How many 4 are there in between numbers 11 and 100 ? (1 Marks)

A. 10

B. 11

C. 19

D. 20

Explanation :

bcoz in 11-20 21-30 51-60 61-70 71-80 81-90 91-100 there would be 7 and between 31-40 there would be 2 , in 41-50 there would 10.
Hence, the total = 7+2+10 = 19.

Question 11

A drawer has 4 red hats and 4 blue hats.find the probability of getting exactly 3 blue hats when taking out 4 hats randomly out of the drawer and immediately returning every hat to the drawer before taking out the next? (2 Marks)

A. 1/2

B. 1/4

C. 1/8

D. 1/16

Explanation :

possible outcomes=
(RRRR)(RRRB)(RRBR)(RBRR)(BRRR)(BBBR)(BBRB)(BRBB)(RBBB)(RRBB)(BBRR)(RBBR)(BRRB)(RBRB)(BRBR)(BBBB)

So total 16 and we want exactly 3 blue hats .
So, 4/16=1/4 ans.

Question 12

Find the sum of number between 200 and 300, which is multiple of 3? (1 Marks)

A. 8217

B. 8317

C. 8417

D. 8517

Explanation :

n=33,a=201, l=297.
Therefore, according to the formula,

=> s=n/2[2a+(n-1)d].
=> 8217.

Question 13

Kate wanted to buy 2 kgs of apples. The vendor kept the 2 kg weights on the right side and weighed 4 apples for that. She doubted on the correctness of balance and placed 2 kg weight on the left side and she could weigh 12 apples for 2 kgs. If the balance was correct how many apples she would have got ?

(1 Marks)

A. 4

B. 8

C. 16

D. can't be determined

Explanation :

Let weight of the apple be "a".

Then initially it would be x+4a=2.

when she weighed the equation would be x+2= 12a .

solving both equations, a= 1/4.
therefore for 2kg , no. of apples are 2/(1/4) = 8 apples.

Question 14

Find the remainder when 32^33^34 is divided by 11 ? (1 Marks)

A. 0

B. 1

C. 10

D. 9

Explanation :

we can use remainder theorem when consecutive no. are there.

so here we consider it as 32*33*34 but as 33 divisible its not required so 32*34 so taking -ve and +ve remainder i.e. (-1)*(1) = -1.

Now the remainder is 11-1 = 10.(because when the remainder is -ve we subtract it from no. dividing)

so ans is 10.

Question 15

There are several bags of same weights. A bag is 6 kg plus three fourth of weight of an another bag . What is the weight of the bag? (1 Marks)

A. 12

B. 24

C. 36

D. 48

Explanation :

Let bags are a,b,c,d...
=> a = 6+(3/4)b.
but a=b=c=d(weights are same)
=> a=6+(3/4)a
so, a=24.

Question 16

Find the remainder when 6^50 is divided by 215 ? (1 Marks)

A. 0

B. 1

C. 6

D. 36

Explanation :

6%215=6.
36%215=36.
216%215=1.
1296%215=6 and hence the pattern gets repeated..thus 50%3=2
which means...the answer is 36.

Question 17

6 positive integers are taken at random and multiplied together. Then what is the probability that products ends in an odd digit other than 5? (1 Marks)

A. (.4)^6

B. (.4)^5

C. (.4)^4

D. (.4)^3

Explanation :

possible digits at the end of each no is 1,3,7,9. thus probability for one is (4/10) we have 6 numbers so probability will be (4/10)^6.

Question 18

There is a square field of side 10m. A man runs with different speed 10kmph, 15kmph, 20kmph, 25kmph on the four sides of the field. What is the average speed of man ? (1 Marks)

A. 18.75

B. 16.00

C. 15.00

D. 15.58

Explanation :

Avg speed = total distance /total time.

= 0.04/(0.01/10+0.01/15+0.01/20+0.01/25)

=15.58 kmph.

Question 19

Arun wanted to find the largest number of 4 digits such that when added to 7249 generated a number that gave a remainder 0 when devided by 54, 12, 14, 21, 33. Find the number ? (2 Marks)

A. 1067

B. 9383

C. 4256

D. 7200

Explanation :

9383 bcause its the largest 4 digit no.
First we have to find the LCM of all the given numbers which is 8316
Now twice the LCM is 16632..and thus 16632-7249 gives 9383.

Question 20

On a certain internet polling, the rejection rate of Bru Exotic production was 4% , for Bru Classic production 8% and for both the coffee varieties combined was 7%. What was the ratio of Bru exotic to Bru classic production ? (1 Marks)

A. 1:3

B. 3:1

C. 2:3

D. 3:2

Explanation :

Let x be production of bru exotic,y be production of bru classic.
=> rejection of x+rejection of y =rejection of (x+y)
=> 4*x/100+8*y/100=7*(x+y)/100
=>x/y=1/3

Question 21

Three sides of a triangle PQ, QR, and RP contains 5, 6 and 3 points respectively. What is the max number of triangles can be made using these points. (1 Marks)

A. 111

B. 222

C. 333

D. 444

Explanation :

Here there are 5+6+3 =14 points from which triangle can be made. there for number of triangles made out of it is $^{14}C_3$.
But as triangle cannot be made out of collinear points therefore total number of triangle would be
$^{14}C_3$-$^{3}C_3$-$^{6}C_3$-$^{5}C_3$ =333

Question 22

There are two bottles A and B, each filled with milk and water in the ratio 5:3 and 1:2 respectively. A new mixture is formed by mixing the contents of A and B in the ratio 4:3.What is the ratio of composition of milk and water in the new mixture? (1 Marks)

A. 1:1

B. 1:2

C. 2:1

D. 2:3

Explanation :

In first mixture : milk = 5/8 ; water=3/8

In second mixture : milk = 1/3 ; water=2/3

Now in new mixture :

milk = (5/8*4/7) + (1/3*3/7) = 1/2
water = (3/8*4/7) + (2/3*3/7) = 1/2

So in new mixture milk : water = 1 : 1

Question 23

(a % of a)+ (b % of b)=2 % of ab, then what percentage of a is b? (1 Marks)

A. 50

B. 70

C. 100

D. can't be determined

Explanation :

Given ,

=> (a % of a)+ (b % of b)=2 % of ab,

=> a^2/100+b^2/100=2*a*b/100.

So, a-b=0.
a = b so 100%.

Question 24

Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in ? (1 Marks)

A. 24

B. 36

C. 48

D. 72

Explanation :

Given,

=>jake + paul + hari = 1/8 .
=> 1/48 + 1/24 + 1/x =1/8.
=> 1/x=1/48
So, paul take 48 days.

Question 25

Find the last two digits of (1021^3921)+(3081^3921) ? (1 Marks)

A. 02

B. 12

C. 22

D. 32

Explanation :

When a no ends with 1 the last digit is 1.
For last 2nd digit the short cut is
1021-tenths place digit*unit place digit of the power=2(1)=2
similarly for the second no 3081 it is 8(1)=8
so the last two digits are 21+81=102.
so answer is 02.

Question 26

"LEADING" arrange it in such a way that atleast two vowels always together ? (2 Marks)

A. 720

B. 2160

C. 3600

D. 5040

Explanation :

There are 2 possiblities i.e.
1) Either all the three vowels will come together
2) Or 2 vowels will comes together

for 1st condition LONG "EAI" = LONG with "EAI" can arrange in !5 ways and then "EAI" can arrange in !3 ways therefore !5 * !3 = 120*6=720.

Now same for the second 1 LONGI "EA" can arrange in !6 possible ways but "EA" only can arrange in !2 ways and therefore !6 * !2 = 720* 2= 1440 .

Now the total no. of ways of arranging these 2 = 1440 + 720 = "2160" .

Question 27

In a meeting between 2 countries each country has 12 delegates. All the delegates of one country shake hands with all delegates of other countries. Find the number of handshakes possible? (1 Marks)

A. 72

B. 144

C. 288

D. none

Explanation :

One person can shake 12 hands.
hence 12person
12*12=144
ans is 144

Question 28

In a mixture of a, b, & c, if a and b are mixed in 3:5 ratio and b and c are mixed in 8:5 Ratio and if the final mixture is 35 liters, find the amount of b? (1 Marks)

A. 51.73

B. 21.5

C. 17.56

D. 16.66

Explanation :

Given ,

a : b = 3:5 and b : c = 8:5.

i.e a : b = 24:40 and b:c = 40:25.

So a:b:c :: 24:40:25.

So b=35*40/89=15.73 ans.

Question 29

If m+n gives remainder 8 & m-n gives remainder 6 when divided by 12 , what is remainder when mn divided by 6? (2 Marks)

A. 1

B. 2

C. 4

D. 7

Explanation :

According to the question,

m + n = 12x + 8 , and
m - n=12y - 6 .

i.e m = (12(x+y)+14)/2 = 6(x+y)+7 .
n = (12(x-y)+2)/2 = 6(x-y)+1.
Hence, mn/6 produces a remainder of 1 i.e (7*1)/6.

FASTEST SOLVING TIME

Question 30

A, B and C jointly thought of engaging themselves in a business venture. It was agreed that A would invest Rs. 6500 for 6 months, B, Rs. 8400 for 5 months and C, Rs. 10,000 for 3 months. A wants to be the working member for which, he was to receive 5% of the profits. The profit earned was Rs. 7400. Calculate the share of B in the profit.

A. Rs 1900

B. Rs 2660

C. Rs 2800

D. Rs 2840

Explanation :

For managing, A received = 5% of Rs. 7400 = Rs. 370.

Balance = Rs. (7400 - 370) = Rs. 7030.

Ratio of their investments = (6500 x 6) : (8400 x 5) : (10000 x 3)

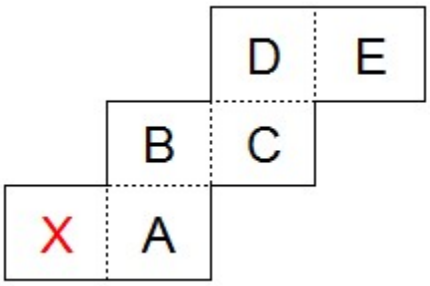
= 39000 : 42000 : 30000

= 13 : 14 : 10

B's share = Rs. 7030 x (14 / 37) = Rs. 2660.

Miscellaneous Questions

1. The figure shown can be folded into the shape of a cube. In the resulting cube, which of the lettered faces is opposite the face marked x?



a. c

b. a

c. d

d. b

Ans: C

Explanation: If you fold the above picture at the dotted lines, X and C are opposite to each other.

2. In how many ways a team of 11 must be selected from 5 men and 11 women such that the team must comprise of not more than 3 men?

a. 1565

b. 1243

c. 2256

d. 2456

Ans: C

Explanation;

The team may consist of 0 men + 11 women, 1 men + 10 women, 2 men + 9 women, or 3 men + 8 women.

So Number of ways are = $^{11}C_{11}+{}^{5}C_{1}\times{}^{11}C_{10}+{}^{5}C_{2}\times{}^{11}C_{9}+{}^{5}C_{3}\times{}^{11}C_{8} = 2256$

3. 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.$(b+d) / (a+c)$

Sol: A

Explanation: Take $a = 1, b = 2, c = 3, d = 4$. option A is clearly true.

4. Eesha bought 18 sharpeners for Rs.100. She paid 1 rupee more for each white sharpener than for each brown sharpener. What is the price of a white sharpener and how many white sharpener did she buy ?

a. Rs.5, 10

b. Rs.6, 10

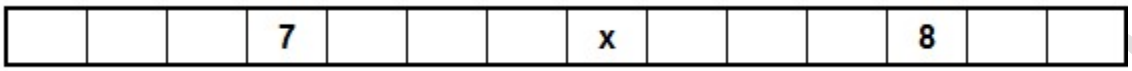
c. Rs.5, 8

d. Rs.6, 8

Sol: B

Explanation: Just check the options. If she bought 10 white sharpeners at Rs.6 per piece, She has spent Rs.60 already. And with the remaining Rs.40, she bought 8 brown sharpeners at 40/8 = Rs.5 which is Rs.1 less than White sharpener.

5.



The fourteen digits of a credit card are to be written in the boxes shown above. If the sum of every three consecutive digits is 18, then the value of x is :

a. 3

b. cannot be determined from the given information.

c. 2

d. 1

Sol : A

Explanation:

Let us assume right most two squares are a , b

Then Sum of all the squares = 18 x 4 + a + b ..... (1)

Also Sum of the squares before 7 = 18

Sum of the squares between 7, x = 18

and sum of the squares between x , 8 = 18

So Sum of the 14 squares = 18 + 7 + 18 + x + 18 + 8 + a + b (2)

Equating 1 and 2 we get x = 3

6. Four people each roll a four die 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

Sol: B

Explanation:

The number of ways of rolling a dice where no two numbers probability that no one rolls the same number = 6 x 5 x 4 x 3

Now total possibilities of rolling a dice = 64

The probability that a no one gets the same number = 6×5×4×364=518

So the probability that at least two people gets same number = 1−518=1318

7. Jake can dig a well in 16 days. Paul can dig the same well in 24 days. Jake, Paul and Hari together dig the well in 8 days. Hari alone can dig the well in

a. 96 days

b. 48 days

c. 32 days

d. 24 days

Sol:

Explanation: Simple one. Let the total work to be done is 48 meters. Now Jake can dig 3 mts, Paul can dig 2 mts a day. Now all of them combined dug in 8 days so per day they dug 48/8 = 6 mts. So Of these 8 mts, Hari capacity is 1 mt.

So he takes 48 /1 = 48 days to complete the digging job.

Updated :

8. Eesha bought 18 sharpeners for Rs.100. She paid 1 rupee more for each white sharpener than for each brown sharpener. What is the price of a white sharpener and how many white sharpener did she buy ?

a. Rs.5, 10

b. Rs.6, 10

c. Rs.5, 8

d. Rs.6, 8

Ans:

Explanation: This question can be solved easily by going through options.

A. White sharpener total cost: Rs.5 x 10 = Rs.50. Brown sharpeners cost = Rs.4 x 8 = 32. Total cost is only Rs.82. Wrong option.

B. White sharpener total cost: Rs.6 x 10 = Rs.60. Brown sharpeners cost = Rs.5 x 8 = 40. Total cost is Rs.100. Correct option.

9. The sum of the digits of a three digit number is 17, and the sum of the squares of its digits is 109. If we subtract 495 from the number, we shall get a number consisting of the same digits written in the reverse order. Find the number.

a. 773

b. 683

c. 944

d. 863

Ans: D

Explanation: Check options. Sum of the squares should be equal to 109. Only Options B and D satisfying. When we subtract 495, only 863 becomes 368.

10. Mark told John "If you give me half your money I will have Rs.75. John said, "if you give me one third of your money, I will have Rs.75/- How much money did John have ?

a. 45

b. 60

c. 48

d. 37.5

Ans: B

Explanation: Let the money with Mark and John are M and J respectively.

Now

M + J/2 = 75

M/3 + J = 75

Solving we get M = 45, and J = 60.

11. Eesha has a wheat business. She purchases wheat from a local wholesaler of a particular cost per pound. The price of the wheat of her stores is $3 per kg. Her faulty spring balance reads 0.9 kg for a KG. Also in the festival season, she gives a 10% discount on the wheat. She found that she made neither a profit nor a loss in the festival season. At what price did Eesha purchase the wheat from the wholesaler ?

a. 3

b. 2.5

c. 2.43

d. 2.7

Ans: C

Explanation: Faulty spring balance reads 0.9 kg for a kg" means that she sells 1 kg for the price of 0.9 kgs, so she looses 10% of the price because of the faulty spring balance. She looses another 10% because of the discount.

So, she actually sells 1 kg for $3×0.9×0.9=$2.43 and since at that price she made neither a profit nor a loss, then Eesha purchase the wheat from the wholesaler for $2.43.

12. Raj goes to market to buy oranges. If he can bargain and reduce the price per orange by Rs.2, he can buy 30 oranges instead of 20 oranges with the money he has. How much money does he have ?

a. Rs.100

b. Rs.50

c. Rs.150

d. Rs.120

Ans: D

Explanation: Let the money with Raj is M. So M20−M30=2. Check options. Option D satisfies.

13. A city in the US has a basketball league with three basketball teams, the Aziecs, the Braves and the Celtics. A sports writer notices that the tallest player of the Aziecs is shorter than the shortest player of the Braves. The shortest of the Celtics is shorter than the shortest of the Aziecs, while the tallest of the Braves is shorter than the tallest of the Celtics. The tallest of the Braves is taller than the tallest of the Aziecs.

Which of the following can be judged with certainty ?

X) Paul, a Brave is taller than David, an Aziec

Y) David, a Celtic, is shorter than Edward, an Aziec

a. Both X and Y

b. X only

c. Y only

d. Neither X nor Y

Ans: B

Sol: We solve this problem by taking numbers. Let the shortest of Braves is 4 feet. Then tallest of Aziecs is less than 4. So let it be 3 feet.

A -> 2 - 3

B -> 4 - 6

C -> 1 - 7

From the above we can safely conclude X is correct. but Y cannot be determined.

14. There are 3 classes having 20, 24 and 30 students respectively having average marks in

an examination as 20,25 and 30 respectively. The three classes are represented by A, B and C and you have the following information about the three classes.

a. In class A highest score is 22 and lowest score is 18

b. In class B highest score is 31 and lowest score is 23

c. In class C highest score is 33 and lowest score is 26.

If five students are transferred from A to B, what can be said about the average score of A; and what will happen to the average score of C in a transfer of 5 students from B to C ?

a. definite decrease in both cases

b. can't be determined in both cases

c. definite increase in both cases

d. will remain constant in both cases

Ans: B

Explanation:

Class A average is 20. And their range is 18 to 22

Class B average is 25. And their range is 23 to 31

Class A average is 30. And their range is 26 to 33

If 5 students transferred from A to B, A's average cannot be determined but B's average comes down as the highest score of A is less than lowest score of B.

If 5 students transferred from B to C, C's average cannot be determined the B's range fo marks and C's range of marks are overlapping.

15. The value of a scooter depreciates in such a way that its value of the end of each year is 3/4 of its value of the beginning of the same year. If the initial value of the scooter is Rs.40,000, what is the value at the end of 3 years ?

a. Rs.13435

b. Rs.23125

c. Rs.19000

d. Rs.16875

Ans: D

Explanation: 40,000(34)3=16875

16. 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

Ans: D

Explanation: Let the work be 60 units. If venky worked for 3 days, and the remaining days of work be x days, total days to complete the work be x + 3 days.

Now Capacities of Rajiv is 60/10 = 6, Venky is 5, Ravi is 4.

(6 + 5 + 4) 2 + (5 + 4) (x - 3) + 5 x 3 = 60.

Solving we get x = 4. So total days to complete the work is 7 days.

17. A man has a job, which requires him to work 8 straight days and rest on the ninth day. If he started work on Monday, find the day of the week on which he gets his 12th rest day.

a. Thursday

b. Wednesday

c. Tuesday

d. Friday

Ans: B

Explanation:

He works for 8 days and takes rest on the 9th day. So On the 12th rest day, there are 9 x 12 = 108 days passed. Number of odd days = (108 - 1) / 7 = 107 / 7 = 2. So the 12th rest day is wednesday.

18. 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

Ans: A

Explanation:

Take options and check. If 10 are correct, his score is 10 x 8 = 80. But 16 are wrong. So total negative marking is 16 x 5 = 80. So final score is zero.

1. 11, 23, 47, 83, 131, . What is the next number?

a. 145
b. 178
c. 176
d. 191
Explanation:
11,23,47,83,131
23–11 = 12
47–23 = 24
83–47 = 36
131–83 = 48
Therefore, 131+60=191

2. 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
Answer:
Explanation:
Let the years be n, n+7, n+14, ..., n+42. (∵∵ use formula Tn=a+(n−1)dTn=a+(n−1)d to find nth term)
Sum = Sn=n2(2a+(n−1)d)Sn=n2(2a+(n−1)d) = 72(2n+(7−1)7)72(2n+(7−1)7) = 13,524
⇒7n+147=13,524⇒7n+147=13,524
⇒⇒ n = 1911

3. 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

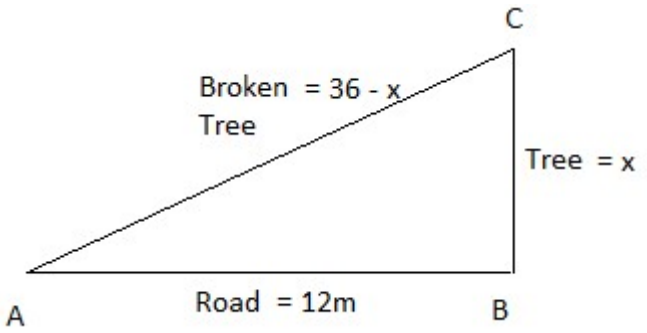
c) 30
d) 15
Answer: c
Explanation:
5×3 = 15
15×3 = 45 ⇒⇒ Given as 30
45×3 = 135
135×3 = 405
405×3 = 1215
1215×3 = 3645

4. 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
Explanation:
A,B,C's 1 hour work is = 18+110+11218+110+112 = 15+12+10120=3712015+12+10120=37120
A,B,C worked together for 2 hours, Therefore, 2 hours work is = 37120×2=376037120×2=3760
Remaining work = 1−3760=23601−3760=2360
(23/60 work is done by B and C together)
B, C's 1 hour work = 110+112=6+560=1160110+112=6+560=1160
(2360)th(2360)th part of the work done by B, C in = (2360)1160(2360)1160 = 21112111 hours.

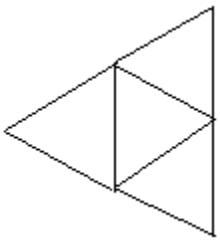
5. A tree of height 36m is on one edge of a road broke at a certain height. It fell in such a way that the top of the tree touches the other edge of the road. If the breadth of the road is 12m, then what is the height at which the tree broke?

a. 16
b. 24
c. 12
d. 18
Explanation:
Let the tree was broken at x meters height from the ground and 36 - x be the length of other part of the tree.



From the diagram, $(36-x)2=x2+122(36-x)2=x2+122$
$\Rightarrow 1296-72x+x2=x2+144\Rightarrow 1296-72x+x2=x2+144$
$\Rightarrow 72x=1296-144\Rightarrow 72x=1296-144$
$\Rightarrow x=16\Rightarrow x=16$

6. The sticks of same length are used to form a triangle as shown below.If 87 such sticks are used then how many triangles can be formed?

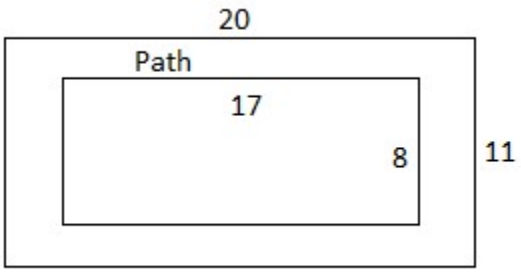


Explanation:
First triangle is formed by using 3 sticks, but any subsequent triangle may be formed by using 2 sticks. Therefore, If 1st triangles uses 3 sticks, Remaining sticks = 87 - 3 = 84. With these 84, we can form 42 triangles. So total = 42 + 1 = 43
Shortcut:
To solve questions like these, use formula, 2n + 1 = k. Here n = triangles, k = sticks
$2n+1 = 87 \Rightarrow\Rightarrow n = 43.$

7. 17 × 8 m rectangular ground is surrounded by 1.5 m width path. Depth of the path is 12 cm. Gravel is filled and find the quantity of gravel required.

a. 5.5
b. 7.5
c. 6.05

d. 10.08
Explanation:



Area of the rectangular ground = 17×8=136m217×8=136m2
Area of the big rectangle considering the path width
= (17+2×1.5)×(8+2×1.5)=220m2(17+2×1.5)×(8+2×1.5)=220m2
Area of the path = 220−136=84m2220−136=84m2
Gravel required = 84m2×12100m=10.08m384m2×12100m=10.08m3

8. A sum of Rs.3000 is distributed among A, B, and C. A gets 2/3 of what B and C got together and c gets 1/3 of what A and B got together, C's share is?

Explanation:
Let B+C together got 3 units, then A get 2 units. or B+CA=32B+CA=32 - - - (1)
Let A+B together got 3 units, then B get 1 units. or A+BC=31A+BC=31 - - - (2)
By using Componendo and Dividendo, we can re-write equations (1) and (2), A+B+CA=3+22=52=208A+B+CA=3+22=52=208 and A+B+CC=3+11=41=205A+B+CC=3+11=41=205
So A = 8, B = 7, C = 5
C's share = 5(8+5+7)×3000=7505(8+5+7)×3000=750

9. The numbers 272738 and 232342, when divided by n, a two digit number, leave a remainder of 13 and 17 respectively. Find the sum of the digits of n?

a. 7
b. 8
c. 5
d. 4
Explanation:
From the given information, (272738 - 13, 232342 - 17) are exactly divisible by that two digit number.
We have to find the HCF of the given numbers 272725, 232325.

HCF = 25.
So sum of the digits = 7.

10. Assume that f(1)=0 and f(m+n)=f(m)+f(n)+4(9mn-1). For all natural numbers (Integers>0)m and n. What is the value of f(17)?

a. 5436
b. 4831
c. 5508
d. 4832
Explanation:
f(1) = 0
f(2) = f(1+1) = f(1)+f(1)+4(9×1×1 – 1) = 0+0+4×8 = 32
f(4) = f(2+2) = f(2)+f(2)+4(9×2×2 – 1) = 32+32+4×35 = 204
f(8) = f(4+4) = f(4)+f(4)+4(9×4×4 – 1) = 204+204+4×143 = 980
f(16) = f(8+8) = f(8)+f(8)+4(9×8×8 – 1) = 980+980+4×575 = 4260

f(17) = f(1+16) = f(16)+f(1)+4(9×16×1 –1) = 4260+0+ 4×143 = 4832

1. 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

Correct Option: b

Explanation:
Let the side of the equilateral triangle = aa units and side of the regular hexagon is bb units.
Given that, 3a=6b3a=6b ⇒ab=21⇒ab=21
Now ratio of the areas of equilateral triangle and hexagon = 3¯√4a2:33¯√2b234a2:332b2
⇒3¯√4(2)2:33¯√2(1)2⇒34(2)2:332(1)2
⇒2:3⇒2:3

2. What is the remainder of (32^31^301) when it is divided by 9?

a. 3

b. 5

c. 2

d. 1

Correct option: b
Explanation:
See solved example 6 here
3231301932313019 = 53130195313019
Euler totient theorem says that [aφ(n)n]Rem=1[aφ(n)n]Rem=1
φ(n)=n(1−1a)(1−1b)...φ(n)=n(1−1a)(1−1b)... here n=ap.bq...n=ap.bq...
Now φ(9)=9(1−13)=6φ(9)=9(1−13)=6
Therefore, 5656 when divided by 9 remainder 1.
Now 313016=1301=1313016=1301=1
So 3130131301 can be written as 6k + 1
⇒531301=(56)K.51⇒531301=(56)K.51
5313019=(56)K.519=1K.59=55313019=(56)K.519=1K.59=5

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

a. 980
b. 797
c. 955
d. 618
Correct option: b
Explanation:
Let xx be the number to be added to 5678.
When you divide 5678 + xx by 460 the remainder = 35.
Therefore, 5678 + xx = 460k + 35 here kk is some quotient.
⇒⇒ 5643 + xx should exactly divisible by 460.
Now from the given options x = 797.

4. A girl entered a store and bought x flowers for y dollars (x and y are integers). When she was about to leave, the clerk said, “If you buy 10 more flowers I will give you all for $$2, and you will save 80 cents a dozen”. The values of x and y are:

a. (15,1)
b. (10,1)
c. (5,1)
d. Cannot be determined from the given information.
Correct option: c

Explanation:
Given she bought xx flowers for yy dollars.
So 1 flower cost = yxyx
12 flowers or 1 dozen cost = 12yx12yx
Again, xx+10 cost = 2 dollars
1 flower cost = 210+x210+x
12 flowers or 1 dozen cost = 2×1210+x=2410+x2×1210+x=2410+x
Given that this new dozen cost is 80 cents or 4/5 dollar less than original cost.
⇒12yx−2410+x=45⇒12yx−2410+x=45
From the given options, c satisfies this.

5. 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
Correct option: c
Explanation:
Let 'N''N' be the given number.
N=357k+5N=357k+5 = 17×21k+517×21k+5
If this number is divided by 17 remainder is 5 as 357k is exactly divided by 17.

6. In how many possible ways can write 3240 as a product of 3 positive integers a,b and c.

a. 450
b. 420
c. 350
d. 320
Correct option:
Explanation:
3450=23×34×51=a×b×c3450=23×34×51=a×b×c
We have to distribute three 2's to a, b, c in 3+3−1C3−1=5C2=103+3−1C3−1=5C2=10 ways
We have to distribute four 3's to a, b, c in 3+4−1C3−1=6C2=153+4−1C3−1=6C2=15 ways
We have to distribute one 5 to a, b, c in 3 ways.
Total ways = 10×15×3=45010×15×3=450 ways.

7. On door A - It leads to freedomOn door B - It leads to Ghost houseOn door C - door B leads to Ghost houseThe statement written on one of the doors is wrong.Identify which door leads to freedom.

a. A
b. B

c. C
d. None
Correct option: c
Explanation:
Case 1: A, B are true. In this case, Statement C also correct. So contradiction.
Case 2: B, C are true. In this case, B leads to ghost house and C confirms it. Now A is wrong. So door A does not lead to freedom. So Door C leads to freedom.

8. In the given figure, If the sum of the values along each side is equal. Find the possible values a, b, c, d, e, and f.

32	a	b	10
e			f
15	c	d	5

a. 9, 7, 20, 16, 6, 38
b. 4, 9, 10, 13, 16, 38
c. 4, 7, 20, 13, 6, 38
d. 4, 7, 20, 16, 6, 33
Correct option: c
Explanation:
From the above table, 42 + a + b = 47 + e. Therefore, a + b = 5 + e. Option a, b ruled out.
47 + e = 15 + f. Therefore, 32 + e = f. Option d ruled out.
4 men throw a die each simultaneously. Find the probability that at least 2 people get the same number
a. 5/18
b. 13/18
c. 1/36
d. 1/2

9. 70, 54, 45, 41……. What is the next number in the given series?

a. 35
b. 36
c. 38
d. 40
Correct option: d
Explanation:
Consecutive squares are subtracted from the numbers.
70 - 54 = 16
54 - 45 = 9

45 - 41 = 4
So next we have to subtract 1. So answer = 41 - 1 = 40

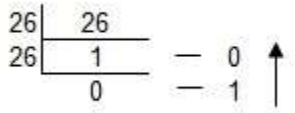
10. How many positive integers less than 500 can be formed using the numbers 1,2,3,and 5 for digits, each digit being used only once.

a. 52
b. 68
c. 66
d. 34
Correct option:
Explanation:
Single digit number = 4
Double digit number = 4××3 = 12
Three digit numbers = 3××3××2= 18 (∵∵ If Hundred's place is 5, then the number is greater than 500)
Total = 34.

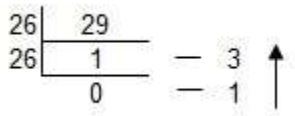
Star mark question:

1. In particular language if A=0, B=1, C=2,…….. .. , Y=24, Z=25 then what is the value of ONE+ONE (in the form of alphabets only)

a. BDAI
b. ABDI
c. DABI
d. CIDA
Answer: a
Explanation:
This problem is based on Base 26 rather than regular base 10 (decimal system) that we normally use. In base 10 there are 10 digits 0 to 9 exist. In base 26 there are 26 digits 0 to 25 exist. To convert any number into base 26, we have to divide the number with 26 and find the remainder. (Study this Base system chapter).
Here, ONE + ONE =
E has value of 4. So E + E = 8 which is equal to I.
Now N + N = 13 + 13 = 26. But in base 26, there is no 26. So (26)10=(10)26(26)10=(10)26



So we put 0 and 1 carry over. But 0 in this system is A.
Now O + O + 1 = 14 + 14 + 1 = 29



Therefore, (29)10=(13)26(29)10=(13)26
But 1 = B and 3 = D in that system. So ONE + ONE = BDAI

2. 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
Answer: a
Explanation:
The given series is an AP with common difference of 7. So the terms in the above series are in the form of 2013 + 7k. We have to find the perfect squares in this format in the given series.
Given that 44^2 = 1936.
Shortcut: To find the next perfect square, add 45th odd number to 44^2.
So 45^2 = 1936 + (2 x 45 -1) = 2025
46^2 = 2025 + (2 x 46 - 1) = 2116
47^2 = 2116 + (2 x 47 - 1) = 2209
Now subtract 2013 from the above numbers and divide by 7. Only 2209 is in the format of 2013 + 7k. One number satisfies.

3. What is in the 200th position of 1234 12344 123444 1234444....?

Answer: 4
Explanation:
The given series is 1234, 12344, 123444, 1234444, ...
So the number of digits in each term are 4, 5, 6, ... or (3 + 1), (3 + 2), (3 + 3), ...upto n terms
= 3n+n(n+1)23n+n(n+1)2
So 3n+n(n+1)2≤2003n+n(n+1)2≤200
For n = 16, We get 184 in the left hand side. So after 16 terms the number of digits equal to 184. And 16 them contains 16 + 3 = 19 digits.
Now 17 term contains 20 digits and 123444.....4□□□17times123444.....4␣17times. So last digit is 4 and last two digits are 44.

4. 2345 23455 234555 234555..... what was last 2 numbers at 200th digit?

Answer: 55
Explanation:
Proceed as above. The last two digits in the 200th place is 55.

5. There are equal number of boys and girls in a class. If 12 girls entered out, twice the boys as girls remain. What was the total number of students in a class?

Answer: 48
Explanation:
Let the boys = b and girls = g
Given bg−12=21bg−12=21
Substitute b = g in the above equation. g = 24. So total students = 24 + 24 = 48

6. a bb ccc dddd eeeee .....What is the 120th letter?

Answer: O
Explanation:
Number of letters in each term are in AP. 1, 2, 3, ...
So n(n+1)2≤120n(n+1)2≤120
For n = 15, we get LHS = 120. So 15th letter in the alphabet is O. So 15th term contains 15 O's.

7. There are 120 male and 100 female in a society. Out of 25% male and 20% female are rural. 20% of male and 25% of female rural people passed in the exam. What % of rural students have passed the exam?

Answer: 22%
Explanation:

	Male	Female	
	120	100	
Rural	30	20	= 50
Passed	6	5	= 11

From the above data, Rural male = 25%(120) = 30, Rural female = 20%(100) = 20.
Passed students from rural: male = 20%(30) = 6, female = 25%(20) = 5
Required percentage = 1150×100=22%1150×100=22%

8. 1/7 th of the tank contains fuel. If 22 litres of fuel is poured into the tank the indicator rests at 1/5th mark. What is the quantity of the tank?

Answer: 385
Explanation:
Let the tank capacity = vv liters.

Given, v7+22=v5v7+22=v5
v5−v7=22⇒v=385v5−v7=22⇒v=385

9. What is the probability of getting sum 3 or 4 when 2 dice are rolled

Answer: 5/36
Explanation:
Required number of ways = (2, 1), (1, 2), (1, 3), (3, 1), (2, 2) = 5
Total ways = 62=3662=36
Probability = 536536

10. On the fabled Island of Knights and Knaves, we meet three people, A, B, and C, one of whom is a knight, one a knave, and one a spy. The knight always tells the truth, the knave always lies, and the spy can either lie or tell the truth.A says: "C is a knave."B says: "A is a knight."C says: "I am the spy."Who is the knight, who the knave, and who the spy?

Answer:
Explanation: A= Knight, B= Spy, C = Knave
Let us say A is Knight and speaks truth. So C is Knave and B is spy. So C's statement is false and B's statement is true. This case is possible.
Let us say B is Knight. This is not possible as A also becomes Knight as B speaks truth.
Let us say C is Knight. This is clearly contradicted by C's statement itself.

1. 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

Correct Option: b

Explanation:
Let the side of the equilateral triangle = aa units and side of the regular hexagon is bb units.
Given that, 3a=6b3a=6b ⇒ab=21⇒ab=21
Now ratio of the areas of equilateral triangle and hexagon = 3¯√4a2:33¯√2b234a2:332b2
⇒3¯√4(2)2:33¯√2(1)2⇒34(2)2:332(1)2
⇒2:3⇒2:3

2. What is the remainder of (32^31^301) when it is divided by 9?

a. 3

b. 5

c. 2

d. 1

Correct option: b
Explanation:
See solved example 6 here
3231301932313019 = 53130195313019
Euler totient theorem says that [aφ(n)n]Rem=1[aφ(n)n]Rem=1
φ(n)=n(1−1a)(1−1b)...φ(n)=n(1−1a)(1−1b)... here n=ap.bq...n=ap.bq...
Now φ(9)=9(1−13)=6φ(9)=9(1−13)=6
Therefore, 5656 when divided by 9 remainder 1.
Now 313016=1301=1313016=1301=1
So 3130131301 can be written as 6k + 1
⇒531301=(56)K.51⇒531301=(56)K.51
5313019=(56)K.519=1K.59=55313019=(56)K.519=1K.59=5

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

a. 980
b. 797
c. 955
d. 618
Correct option: b
Explanation:
Let xx be the number to be added to 5678.
When you divide 5678 + xx by 460 the remainder = 35.
Therefore, 5678 + xx = 460k + 35 here kk is some quotient.
⇒⇒ 5643 + xx should exactly divisible by 460.
Now from the given options x = 797.

4. A girl entered a store and bought x flowers for y dollars (x and y are integers). When she was about to leave, the clerk said, “If you buy 10 more flowers I will give you all for $$2, and you will save 80 cents a dozen”. The values of x and y are:

a. (15,1)
b. (10,1)

c. (5,1)
d. Cannot be determined from the given information.
Correct option: c
Explanation:
Given she bought xx flowers for yy dollars.
So 1 flower cost = yxyx
12 flowers or 1 dozen cost = 12yx12yx
Again, xx+10 cost = 2 dollars
1 flower cost = 210+x210+x
12 flowers or 1 dozen cost = 2×1210+x=2410+x2×1210+x=2410+x
Given that this new dozen cost is 80 cents or 4/5 dollar less than original cost.
⇒12yx−2410+x=45⇒12yx−2410+x=45
From the given options, c satisfies this.

5. 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
Correct option: c
Explanation:
Let 'N''N' be the given number.
N=357k+5N=357k+5 = 17×21k+517×21k+5
If this number is divided by 17 remainder is 5 as 357k is exactly divided by 17.

6. In how many possible ways can write 3240 as a product of 3 positive integers a,b and c.

a. 450
b. 420
c. 350
d. 320
Correct option:
Explanation:
3450=23×34×51=a×b×c3450=23×34×51=a×b×c
We have to distribute three 2's to a, b, c in 3+3−1C3−1=5C2=103+3−1C3−1=5C2=10 ways
We have to distribute four 3's to a, b, c in 3+4−1C3−1=6C2=153+4−1C3−1=6C2=15 ways
We have to distribute one 5 to a, b, c in 3 ways.
Total ways = 10×15×3=45010×15×3=450 ways.

7. On door A - It leads to freedomOn door B - It leads to Ghost houseOn door C - door B leads to Ghost houseThe statement written on one of the doors is wrong.Identify which door leads to freedom.

a. A
b. B
c. C
d. None
Correct option: c
Explanation:
Case 1: A, B are true. In this case, Statement C also correct. So contradiction.
Case 2: B, C are true. In this case, B leads to ghost house and C confirms it. Now A is wrong. So door A does not lead to freedom. So Door C leads to freedom.

8. In the given figure, If the sum of the values along each side is equal. Find the possible values a, b, c, d, e, and f.

32	a	b	10
e			f
15	c	d	5

a. 9, 7, 20, 16, 6, 38
b. 4, 9, 10, 13, 16, 38
c. 4, 7, 20, 13, 6, 38
d. 4, 7, 20, 16, 6, 33
Correct option: c
Explanation:
From the above table, 42 + a + b = 47 + e. Therefore, a + b = 5 + e. Option a, b ruled out.
47 + e = 15 + f. Therefore, 32 + e = f. Option d ruled out.
4 men throw a die each simultaneously. Find the probability that at least 2 people get the same number
a. 5/18
b. 13/18
c. 1/36
d. 1/2

9. 70, 54, 45, 41……. What is the next number in the given series?

a. 35
b. 36
c. 38
d. 40

Correct option: d
Explanation:
Consecutive squares are subtracted from the numbers.
70 - 54 = 16
54 - 45 = 9
45 - 41 = 4
So next we have to subtract 1. So answer = 41 - 1 = 40

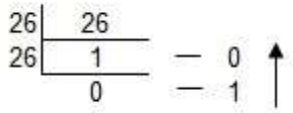
10. How many positive integers less than 500 can be formed using the numbers 1,2,3,and 5 for digits, each digit being used only once.

a. 52
b. 68
c. 66
d. 34
Correct option:
Explanation:
Single digit number = 4
Double digit number = 4××3 = 12
Three digit numbers = 3××3××2= 18 (∵∵ If Hundred's place is 5, then the number is greater than 500)
Total = 34.

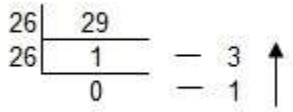
Star mark question:

1. In particular language if A=0, B=1, C=2,…….. .. , Y=24, Z=25 then what is the value of ONE+ONE (in the form of alphabets only)

a. BDAI
b. ABDI
c. DABI
d. CIDA
Answer: a
Explanation:
This problem is based on Base 26 rather than regular base 10 (decimal system) that we normally use. In base 10 there are 10 digits 0 to 9 exist. In base 26 there are 26 digits 0 to 25 exist. To convert any number into base 26, we have to divide the number with 26 and find the remainder.
Here, ONE + ONE =
E has value of 4. So E + E = 8 which is equal to I.
Now N + N = 13 + 13 = 26. But in base 26, there is no 26. So (26)10=(10)26(26)10=(10)26



So we put 0 and 1 carry over. But 0 in this system is A.
Now O + O + 1 = 14 + 14 + 1 = 29



Therefore, (29)10=(13)26(29)10=(13)26
But 1 = B and 3 = D in that system. So ONE + ONE = BDAI

2. 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
Answer: a
Explanation:
The given series is an AP with common difference of 7. So the terms in the above series are in the form of 2013 + 7k. We have to find the perfect squares in this format in the given series.
Given that 44^2 = 1936.
Shortcut: To find the next perfect square, add 45th odd number to 44^2.
So 45^2 = 1936 + (2 x 45 -1) = 2025
46^2 = 2025 + (2 x 46 - 1) = 2116
47^2 = 2116 + (2 x 47 - 1) = 2209
Now subtract 2013 from the above numbers and divide by 7. Only 2209 is in the format of 2013 + 7k. One number satisfies.

3. What is in the 200th position of 1234 12344 123444 1234444....?

Answer: 4
Explanation:
The given series is 1234, 12344, 123444, 1234444, ...
So the number of digits in each term are 4, 5, 6, ... or (3 + 1), (3 + 2), (3 + 3), ...upto n terms
= 3n+n(n+1)23n+n(n+1)2
So 3n+n(n+1)2≤2003n+n(n+1)2≤200
For n = 16, We get 184 in the left hand side. So after 16 terms the number of digits equal to

184. And 16 them contains 16 + 3 = 19 digits.
Now 17 term contains 20 digits and 123444.....4□□□17times123444.....4␣17times. So last digit is 4 and last two digits are 44.

4. 2345 23455 234555 234555..... what was last 2 numbers at 200th digit?

Answer: 55
Explanation:
Proceed as above. The last two digits in the 200th place is 55.

5. There are equal number of boys and girls in a class. If 12 girls entered out, twice the boys as girls remain. What was the total number of students in a class?

Answer: 48
Explanation:
Let the boys = b and girls = g
Given bg−12=21bg−12=21
Substitute b = g in the above equation. g = 24. So total students = 24 + 24 = 48

6. a bb ccc dddd eeeee .....What is the 120th letter?

Answer: O
Explanation:
Number of letters in each term are in AP. 1, 2, 3, ...
So n(n+1)2≤120n(n+1)2≤120
For n = 15, we get LHS = 120. So 15th letter in the alphabet is O. So 15th term contains 15 O's.

7. There are 120 male and 100 female in a society. Out of 25% male and 20% female are rural. 20% of male and 25% of female rural people passed in the exam. What % of rural students have passed the exam?

Answer: 22%
Explanation:

	Male	Female	
	120	100	
Rural	30	20	= 50
Passed	6	5	= 11

From the above data, Rural male = 25%(120) = 30, Rural female = 20%(100) = 20.
Passed students from rural: male = 20%(30) = 6, female = 25%(20) = 5
Required percentage = 1150×100=22%1150×100=22%

8. 1/7 th of the tank contains fuel. If 22 litres of fuel is poured into the tank the indicator rests at 1/5th mark. What is the quantity of the tank?

Answer: 385
Explanation:
Let the tank capacity = vv liters.
Given, v7+22=v5v7+22=v5
v5−v7=22⇒v=385v5−v7=22⇒v=385

9. What is the probability of getting sum 3 or 4 when 2 dice are rolled

Answer: 5/36
Explanation:
Required number of ways = (2, 1), (1, 2), (1, 3), (3, 1), (2, 2) = 5
Total ways = 62=3662=36
Probability = 536536

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Answer:
Explanation:A=Knight,B=Spy, C = Knave
Let us say A is Knight and speaks truth. So C is Knave and B is spy. So C's statement is false and B's statement is true. This case is possible.
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d. 1

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Explanation:
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From the given options, c satisfies this.

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Explanation:
Let ‘N’’N’ be the given number.
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b. 4, 9, 10, 13, 16, 38
c. 4, 7, 20, 13, 6, 38
d. 4, 7, 20, 16, 6, 33
Correct option: c
Explanation:
From the above table, 42 + a + b = 47 + e. Therefore, a + b = 5 + e. Option a, b ruled out.
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4 men throw a die each simultaneously. Find the probability that at least 2 people get the same number
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b. ABDI
c. DABI
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Explanation:
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Here, ONE + ONE =
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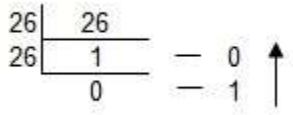
Now N + N = 13 + 13 = 26. But in base 26, there is no 26. So (26)10=(10)26(26)10=(10)26



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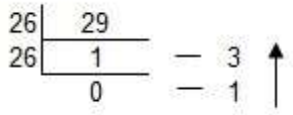

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Explanation:
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Total ways = 62=3662=36
Probability = 536536

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Answer:
Explanation: A= Knight, B= Spy, C = Knave
Let us say A is Knight and speaks truth. So C is Knave and B is spy. So C's statement is false and B's statement is true. This case is possible.
Let us say B is Knight. This is not possible as A also becomes Knight as B speaks truth.
Let us say C is Knight. This is clearly contradicted by C's statement itself.

Most Commonly Asked Programming Questions in TCS-

1.To find GCD of two numbers

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int a,b,small,i;
a=atoi(argv[1]);
b=atoi(argv[2]);
if(a>b)
small=b;
else
small=a;
for(i=small;i>=1;i--)
{
if((a%i)==0&&(b%i)==0)
{
printf("%d",i);
break;
}
}
return 0;
}
```

2. To find the lcm of two numbers

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int a,b,large;
a=atoi(argv[1]);
b=atoi(argv[2]);
if(a>b)
large=a;
else
large=b;
while(1)
{
if((large%a)==0&&(large%b)==0)
{
printf("%d",large);
break;
}
```

```
large++;
}
return 0;
}
```

3. To find the Factorial of a non negative number

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int n,fact=1,i;
n=atoi(argv[1]);
for(i=1;i<=n;i++)
{
fact=fact*i;
}
printf("%d",fact);
return 0;
}
```

4. To find the area of a circle (area=3.14*r*r), when diameter is given.

```
#include <stdio.h>
#define PI 3.14
int main(int argc,char *argv[])
{
float dia,radius,area=0;
dia=atoi(argv[1]);
radius=0.5*dia;
area=PI*radius*radius;
printf("%.2f",area);
return 0;
}
```

5.To check whether the given year is Leap year or not.

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int year;
year=atoi(argv[1]);
if(year%100==0)
{
if(year%400==0)
printf("Leap year");
else
printf("not leap year");
}
else
```

```
if(year%4==0)
printf("leap year");
else
printf("not leap year");
return 0;
}
```

6.To find the area of triangle when base and height is given.

```
#include <stdio.h>
int main(int argc,char *argv[])
{
float height,base,area;
height=atoi(argv[1]);
base=atoi(argv[2]);
area=0.5*base*height;
printf("%.2f",area);
return 0;
}
```

7. To print the Fibonacci series.

Input=6 Output=1 1 2 3 5 8

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int n,first=1,sec=1,next,i;
n=atoi(argv[1]);
for (i=0;i<n;i++)
{
if (i<=1)
next=1;
else
{
next=first+sec;
first=sec;
sec=next;
}
printf("%d ",next);
}
return 0;
}
```

8.To check whether the given number is prime or not.

```
#include <stdio.h>
int main(int argc,char *argv[])
{
```

```
int n,i,count=0;
n=atoi(argv[1]);
for(i=1;i<=n;i++)
{
if(n%i==0)
{
count++;
}
}
if(count==2)
printf("prime number");
else
printf("not prime number ");
return 0;
}
```

9.To check whether given number is strong number or not.

```
#include<stdio.h>
int fact(int);
int main(int argc, char *argv[])
{
int num,d,n,res=0,i,count=0,x;
n=atoi(argv[1]);
num=n;
x=num;
while(n!=0)
{
n=n/10;
count++;
}
for(i=0;i<count;i++){
if(x>0)
{
d=x%10;
res=res+fact(d);
x=x/10;
}
}
if(res==num)
{
printf("strong number");
}
else printf("not strong number");
return 0;
}
```

```
int fact(int x)
{
if(x==0)
return 1;
else
return x*fact(x-1);
}
```

10. To check whether number is palindrome or not.

```
#include <stdio.h>
int main(int argc,char *argv[])
{
int num,rev=0,digit,orig;
num=atoi(argv[1]);
orig=num;
while(num>0){
digit=num%10;
rev=rev*10+digit;
num=num/10;
}
if(orig==rev)
{
printf("palindrome");
}
else
printf("not palindrome");
return 0;
}
```

Other commonly asked Basic Coding Test Questions – TCS 2018-2019

Please Note: Search Using given program name on Google, to find the solution in your known programming language as they are very common.)

- Reverse a String.
- Reverse a Number.
- Palindrome.
- Prime Number.
- Leap Year.
- Greatest among 10 numbers.
- Fibonacci Series.
- HCF / GCD.
- Factorial.
- Decimal to Binary & vice versa
- Armstrong Number.
- Area.
- Swap 2 numbers.
- Concatenate 2 strings.
- LCM of Two Number using CLP.
- Average of Two Numbers.
- Sum of Digits of a number.
- Binary to Decimal.
- Decimal to Binary.
- Factorial of a Number.
- Square Root of Prime Number.
- Square Root without square root.
- Armstrong Number.
- Odd-Even Number.
- Binary to Octal.
- Decimal to Octal.

- Check Leap Year.
- Area of Circle.
- Checking Palindrome (Number).
- Area of Triangle.
- Checking Palindrome (String).
- Reverse Digits of a Number.
- Checking Prime or Not.

TCS Technical Interview Questions and Answers

1. **What is your strongest programming language (Java, ASP, C, C++, VB, HTML, C#, etc.)?**

Point to remember: Before interview You should decide your Favorite programming language and be prepared based on that question.

2.Differences between C and Java?

1.JAVA is Object-Oriented while C is procedural.

2.Java is an Interpreted language while C is a compiled language.

3.C is a low-level language while JAVA is a high-level language.

4.C uses the top-down approach while JAVA uses the bottom-up approach.

5.Pointer go backstage in JAVA while C requires explicit handling of pointers.

6.The Behind-the-scenes Memory Management with JAVA & The User-Based Memory Management in C.

7.JAVA supports Method Overloading while C does not support overloading at all.

8.Unlike C, JAVA does not support Preprocessors, & does not really them.

9.The standard Input & Output Functions--C uses the printf & scanf functions as its standard input & output while JAVA uses the System.out.print & System.in.read functions.

10.Exception Handling in JAVA And the errors & crashes in C.

3.In header files whether functions are declared or defined?

Functions are declared within header file. That is function prototypes exist in a header file,not function bodies. They are defined in library (lib).

4.What are the different storage classes in C ?

There are four types of storage classes in C. They are extern, register, auto and static

5.What does static variable mean?

Static is an access qualifier. If a variable is declared as static inside a function, the scope is limited to the function,but it will exists for the life time of the program. Values will be persisted between successive calls to a function

6.How do you print an address ?

Use %p in printf to print the address.

7.What are macros? what are its advantages and disadvantages?

Macros are processor directive which will be replaced at compile time.
The disadvantage with macros is that they just replace the code they are not function calls. similarly the advantage is they can reduce time for replacing the same values.

8.**Difference between pass by reference and pass by value?**

Pass by value just passes the value from caller to calling function so the called function cannot modify the values in caller function. But Pass by reference will pass the address to the caller function instead of value if called function requires to modify any value it can directly modify.

9.**What is an object?**

Object is a software bundle of variables and related methods. Objects have state and behavior

10.What is a class?

Class is a user-defined data type in C++. It can be created to solve a particular kind of problem. After creation the user need not know the specifics of the working of a class.

11.What is the difference between class and structure?

Structure: Initially (in C) a structure was used to bundle different type of data types together to perform a particular functionality. But C++ extended the structure to contain functions also.
The major difference is that all declarations inside a structure are by default public.
Class: Class is a successor of Structure. By default all the members inside the class are private.

12. What is ponter?

Pointer is a variable in a program is something with a name, the value of which can vary. The way the compiler and linker handles this is that it assigns
a specific block of memory within the computer to hold the value of that variable.

13.What is the difference between null and void pointer?

A Null pointer has the value 0. void pointer is a generic pointer introduced by ANSI. Generic pointer can hold the address of any data type.

14.what is function overloading

Function overloading is a feature of C++ that allows us to create multiple functions with the same name, so long as they have different parameters.Consider the following function:

```
int Add(int nX, int nY)
{
  return nX + nY;
}
```

15.What is function overloading and operator overloading?

Function overloading: C++ enables several functions of the same name to be defined, as long as these functions have different sets of parameters (at least as far as their types are concerned). This capability is called function overloading. When an overloaded function is called, the C++ compiler selects the proper function by examining the number, types and order of the arguments in the call. Function overloading is commonly used to create several functions of the same name that perform similar tasks but on different data types.
Operator overloading allows existing C++ operators to be redefined so that they work on objects of user-defined classes. Overloaded operators are syntactic sugar for equivalent function calls. They form a pleasant facade that doesn't add anything fundamental to the language (but they can improve understandability and reduce maintenance costs).

16.what is friend function?

A friend function for a class is used in object-oriented programming to allow access to public, private, or protected data in the class from the outside.
Normally, a function that is not a member of a class cannot access such information; neither can an external class. Occasionally, such access will be advantageous for the programmer. Under these

circumstances, the function or external class can be declared as a friend of the class using the friend keyword.

17.What do you mean by inline function?

The idea behind inline functions is to insert the code of a called function at the point where the function is called. If done carefully, this can improve the application's performance in exchange for increased compile time and possibly (but not always) an increase in the size of the generated binary executables.

18. **Tell me something about abstract classes?**

An abstract class is a class which does not fully represent an object. Instead, it represents a broad range of different classes of objects. However, this representation extends only to the features that those classes of objects have in common. Thus, an abstract class provides only a partial description of its objects.

19.What is the difference between realloc() and free()?

The free subroutine frees a block of memory previously allocated by the malloc subroutine. Undefined results occur if the Pointer parameter is not a valid pointer. If the Pointer parameter is a null value, no action will occur. The realloc subroutine changes the size of the block of memory pointed to by the Pointer parameter to the number of bytes specified by the Size parameter and returns a new pointer to the block. The pointer specified by the Pointer parameter must have been created with the malloc, calloc, or realloc subroutines and not been deallocated with the free or realloc subroutines. Undefined results occur if the Pointer parameter is not a valid pointer.

20.What is the difference between an array and a list?

Array is collection of homogeneous elements. List is collection of heterogeneous elements.
For Array memory allocated is static and continuous. For List memory allocated is dynamic and Random.
Array: User need not have to keep in track of next memory allocation.
List: User has to keep in Track of next location where memory is allocated.
Array uses direct access of stored members, list uses sequential access for members.

21.What are the differences between structures and arrays?

Arrays is a group of similar data types but Structures can be group of different data types

22.**What is data structure?**

A data structure is a way of organizing data that considers not only the items stored, but also

their relationship to each other. Advance knowledge about the relationship between data items allows designing of efficient algorithms for the manipulation of data.

23. Can you list out the areas in which data structures are applied extensively?

Compiler Design,

Operating System,

Database Management System,

Statistical analysis package,

Numerical Analysis,

Graphics,

Artificial Intelligence,

Simulation

24.What are the advantages of inheritance?

It permits code reusability. Reusability saves time in program development. It encourages the reuse of proven and debugged high-quality software, thus reducing problem after a system becomes functional.

25. what are the two integrity rules used in DBMS?

The two types of integrity rules are referential integrity rules and entity integrity rules. Referential integrity rules dictate that a database does not contain orphan foreign key values. This means that
A primary key value cannot be modified if the value is used as a foreign key in a child table. Entity integrity dictates that the primary key value cannot be Null.

26. Tell something about deadlock and how can we prevent dead lock?

In an operating system, a deadlock is a situation which occurs when a process enters a waiting state because a resource requested by it is being held by another waiting process, which in turn is waiting for another resource. If a process is unable to change its state indefinitely because the resources requested by it are being used by other waiting process, then the system is said to be in a deadlock.

Mutual Exclusion: At least one resource must be non-shareable.[1] Only one process can use the resource at any given instant of time.
Hold and Wait or Resource Holding: A process is currently holding at least one resource and requesting additional resources which are being held by other processes.
No Preemption: The operating system must not de-allocate resources once they have been allocated; they must be released by the holding process voluntarily.
Circular Wait: A process must be waiting for a resource which is being held by another process, which in turn is waiting for the first process to release the resource. In general, there is a set of waiting processes, P

= {P1, P2, ..., PN}, such that P1 is waiting for a resource held by P2, P2 is waiting for a resource held by P3 and so on till PN is waiting for a resource held by P1.[1][7]

Thus prevention of deadlock is possible by ensuring that at least one of the four conditions cannot hold.

27. What is Insertion sort, selection sort, bubble sort(basic differences among the functionality of the three sorts and not the exact algorithms)

28. What is Doubly link list?

A doubly linked list is a linked data structure that consists of a set of sequentially linked records called nodes. Each node contains two fields, called links, that are references to the previous and to the next node in the sequence of nodes. The beginning and ending nodes' previous and next links, respectively, point to some kind of terminator, typically a sentinel node or null, to facilitate traversal of the list. If there is only one sentinel node, then the list is circularly linked via the sentinel node. It can be conceptualized as two singly linked lists formed from the same data items, but in opposite sequential orders.

29.What is data abstraction? what are the three levels of data abstraction with Example?

Abstraction is the process of recognizing and focusing on important characteristics of a situation or object and leaving/filtering out the un-wanted characteristics of that situation or object.

Lets take a person as example and see how that person is abstracted in various situations

A doctor sees (abstracts) the person as patient. The doctor is interested in name, height, weight, age, blood group, previous or existing diseases etc of a person
An employer sees (abstracts) a person as Employee. The employer is interested in name, age, health, degree of study, work experience etc of a person.

Abstraction is the basis for software development. Its through abstraction we define the essential aspects of a system. The process of identifying the abstractions for a given system is called as Modeling (or object modeling).

Three levels of data abstraction are:
1. Physical level : how the data is stored physically and where it is stored in database.
2. Logical level : what information or data is stored in the database. eg: Database administrator
3.View level : end users work on view level. if any amendment is made it can be saved by other name.

30.What is command line argument?

Getting the arguments from command prompt in c is known as command line arguments. In c main function has three arguments.They are:

Argument counter
Argument vector
Environment vector

31.**Advantages of a macro over a function?**

Macro gets to see the Compilation environment, so it can expand #defines. It is expanded by the preprocessor.

32.**What are the different storage classes in C?**

Auto,register,static,extern

33.Which header file should you include if you are to develop a function which can accept variable number of arguments?

stdarg.h

34.**What is cache memory ?**

Cache Memory is used by the central processing unit of a computer to reduce the average time to access memory. The cache is a smaller, faster memory

which stores copies of the data from the most frequently used main memory locations. As long as most memory accesses are cached memory locations, the average
latency of memory accesses will be closer to the cache latency than to the latency of main memory.

35.What is debugger?
A debugger or debugging tool is a computer program that is used to test and debug other programs

36. Const char *p , char const *p What is the difference between the above two?

1) const char *p - Pointer to a Constant char ('p' isn't modifiable but the pointer is)
2) char const *p - Also pointer to a constant Char

However if you had something like:
char * const p - This declares 'p' to be a constant pointer to an char. (Char p is modifiable but the pointer isn't)

37. What is Memory Alignment?

Data structure alignment is the way data is arranged and accessed in computer memory. It consists of two separate but related issues: data alignment and data structure padding.

38.Explain the difference between 'operator new' and the 'new' operator?

The difference between the two is that operator new just allocates raw memory, nothing else. The new operator starts by using operator new to allocate memory, but then it invokes the constructor for the right type of object, so the result is a real live object created in that memory. If that object contains any other objects (either embedded or as base classes) those constructors as invoked as well.

39. Difference between delete and delete[]?

The keyword delete is used to destroy the single variable memory created dynamically which is pointed by single pointer variable.

Eg: int *r=new(int)
the memory pointed by r can be deleted by delete r.
delete [] is used to destroy array of memory pointed by single pointer variable.
Eg:int *r=new(int a[10])
The memory pointed by r can be deleted by delete []r.

40. What is conversion constructor?

A conversion constructor is a single-parameter constructor that is declared without the function specifier 'explicit'. The compiler uses conversion constructors to convert objects from the type of the first parameter to the type of the conversion constructor's class.To define implicit conversions, C++ uses conversion constructors, constructors that accept a single parameter and initialize an object to be a copy of that parameter.

41.What is a spanning Tree?

A spanning tree is a tree associated with a network. All the nodes of the graph appear on the tree once. A minimum spanning tree is a spanning tree organized so that the total edge weight between nodes is minimized.

42. Why should we use data ware housing and how can you extract data for analysis with example?

If you want to get information on all the techniques of designing, maintaining, building and retrieving data, Data warehousing is the ideal method. A data warehouse is premeditated and generated for supporting the decision making process within an organization.

Here are some of the benefits of a data warehouse:

o With data warehousing, you can provide a common data model for different interest areas regardless of data's source. In this way, it becomes easier to report and analyze information.

o Many inconsistencies are identified and resolved before loading of information in data warehousing. This makes the reporting and analyzing process simpler.

o The best part of data warehousing is that the information is under the control of users, so that in case the system gets purged over time, information can be easily and safely stored for longer time period.

o Because of being different from operational systems, a data warehouse helps in retrieving data without slowing down the operational system.

o Data warehousing enhances the value of operational business applications and customer relationship management systems.

o Data warehousing also leads to proper functioning of support system applications like trend reports, exception reports and the actual performance analyzing reports.

Data mining is a powerful new technology to extract data for analysis.

43.Explain recursive function & what is the data structures used to perform recursion?

a) A recursive function is a function which calls itself.

b) The speed of a recursive program is slower because of stack overheads. (This attribute is evident if you run above C program.)
c) A recursive function must have recursive conditions, terminating conditions, and recursive expressions.

Stack data structure . Because of its LIFO (Last In First Out) property it remembers its caller so knows whom to return when the function has to return. Recursion makes use of system stack for storing the return addresses of the function calls. Every recursive function has its equivalent iterative (non-recursive) function. Even when such equivalent iterative procedures are written, explicit stack is to be used.

44.**Differentiate between Complier and Interpreter?**
An interpreter reads one instruction at a time and carries out the actions implied by that instruction. It does not perform any translation. But a compiler translates the entire instructions

45.What is scope of a variable?
Scope refers to the visibility of variables. It is very useful to be able to limit a variable's scope to a single function. In other words, the variable wil have a limited scope

46.What is an interrupt?
Interrupt is an asynchronous signal informing a program that an event has occurred. When a program receives an interrupt signal, it takes a specified action.

47.What is user defined exception in Java?

The keywords used in java application are try, catch and finally are used in implementing used-defined exceptions. This Exception class inherits all the method from Throwable class.

48.What is java Applet?

Applet is java program that can be embedded into HTML pages. Java applets runs on the java enables web browsers such as mozila and internet explorer. Applet is designed to run remotely on the client browser, so there are some restrictions on it. Applet can't access system resources on the local computer. Applets are used to make the web site more dynamic and entertaining.

49.What do you know about the garbage collector?

Garbage collection is the systematic recovery of pooled computer storage that is being used by a program when that program no longer needs the storage. This frees the storage for use by other programs (or processes within a program). It also ensures that a program using increasing amounts of pooled storage does not reach its quota (in which case it may no longer be able to function).

Garbage collection is an automatic memory management feature in many modern programming languages, such as Java and languages in the .NET framework. Languages that use garbage collection are often interpreted or run within a virtual machine like the JVM. In each case, the environment that runs the code is also responsible for garbage collection.

50.Write a Binary Search program

```
int binarySearch(int arr[],int size, int item)
{
int left, right, middle;
left = 0;
right = size-1;

while(left <= right)
{
middle = ((left + right)/2);

if(item == arr[middle])
{
return(middle);
}

if(item > arr[middle])
{
left = middle+1;
```

```
}
else
{
right = middle-1;
}
}

return(-1);
}
```

51.What are enumerations?

An enumeration is a data type, used to declare variable that store list of names. It is act like a database, which will store list of items in the variable. example: enum shapes{triangle, rectangle,...

52.What is static identifier?

The static identifier is used for initializing only once, and the value retains during the life time of the program / application. A separate memory is allocated for 'static' variables. This value can be used between function calls. The default value of an uninitialized static variable is zero. A function can also be defined as a static function, which has the same scope of the static variable.

53.What is Cryptography?

Cryptography is the science of enabling secure communications between a sender and one or more recipients. This is achieved by the sender scrambling a message (with a computer program and a secret key) and leaving the recipient to unscramble the message (with the same computer program and a key, which may or may not be the same as the sender's key).
There are two types of cryptography: Secret/Symmetric Key Cryptography and Public Key Cryptography

54.What is encryption?

Encryption is the transformation of information from readable form into some unreadable form.

55.What is decryption?

Decryption is the reverse of encryption; it's the transformation of encrypted data back into some intelligible form.

56.What exactly is a digital signature?

Just as a handwritten signature is affixed to a printed letter for verification that the letter originated from its purported sender, digital signature performs the same task for an electronic message. A digital signature is an encrypted version of a message digest, attached together with a message.