1. The rupee/coin changing machine at a bank has a flaw. It gives 10 ten rupee notes if you put a 100 rupee note and 10 one rupee coins if you insert a 10 rupee note but gives 10 hundred rupee notes when you put a one rupee coin!
Sivaji, after being ruined by his rivals in business is left with a one rupee coin and discovers the flaw in the machine by accident. By using the machine repeatedly, which of the following amounts is a valid amount that Sivaji can have when he gets tired and stops at some stage (assume that the machine has an infinite supply of notes and coins):

a. 26975 b. 53947

c. 18980 d. 33966

Answer: B
Explanation:
The process works like this:
Rs.1 Coin $\Rightarrow 10 \times 100 = Rs.1000$
Rs.100 $\Rightarrow 10 \times 10$
Rs.10 $\Rightarrow 1 \times 10$
Sivaji gets more money when he inserts a rupee coin only. For each rupee coin he gets his money increased by 1000 times. Suppose he inserted 1 rupee coin and got 1000 rupees and again converted this into coins. So he ends up with 1000 coins. Now of this, he inserts one coin, he gets 1000. So he has 1999 with him. Now if he inserts another coin, he has 1998 + 1000 = 2998.

Now each of these numbers are in the form of 999n + 1. So option B can be written as $54 \times 999 + 1$.

2. Seven movie addicts- Guna, Isha, Leela, Madhu, Rinku, Viji and Yamini attend a film festival. Three films are shown, one directed by Rajkumar Hirani ,one by S.Shankar,and one by Mani Ratnam. Each of the film buffs sees only one of the three films. The films are shown only once, one film at a time. The following restrictions must apply :
- Exactly twice as many of the film buffs sees the S.shankar film as see the Rajkumar Hirani film.
- Guna and Rinku do not see the same film as each other.
- Isha and Madhu do not see same film as each other.
- Viji and Yamini see the same film as each other.
- Leela sees the S.Shankar film.
- Guna sees either the Rajkumar Hirani film or the Mani Ratnam film.
Which one of the following could be an accurate matching of the film buffs to films ?
(A) Guna: the S.Shankar film; Isha: the Mani Ratnam film; Madhu: the S.Shankar film
(B) Guna: the Mani Ratnam film; Isha: the Rajkumar Hirani film; Viji: the Rajkumar Hirani film
(C) Isha : the S.Shankar film; Rinku: the Mani Ratnam film; Viji: the Rajkumar Hirani film
(D) Madhu: the Mani Ratnam film; Rinku: the Mani Ratnam film; Viji: the Mani Ratnam film

a. A b. C

c. D d. B

Answer: Option C
Explanation:
Guna × Rinku
Isha × Madhu
(Viji + Yamini)
Leela - Film: Shankar
Guna = RKH/Mani Ratnam

The following options are possible:

RKH	Shankar	Mani Ratnam

1	2	4
2	4	1

We will take options and check them.
Option A: Guna should not watch Shankar's Film. So ruled out
Option B:

RKH	Shankar	Mani Ratnam
Isha	_	Guna
Viji	_	_

Now Yamini also watch RKH. Which is not possible.
Option C:

RKH	Shankar	Mani Ratnam
Viji	Isha	Rinku
Yamini	Leela	_

As Guna should not be watching Shankar's movie she should watch Mani ratnam's which is not possible.
Option D:

RKH	Shankar	Mani Ratnam
Guna	Leela	Madhu
_	Isha	Rinku
_	_	Viji and Yamini

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

a. 955 b. 980

c. 797 d. 618

Answer: C
Explanation:
5678 - 35 + (one of the answer option) should be divisible by 460. Only option C satisfies.

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

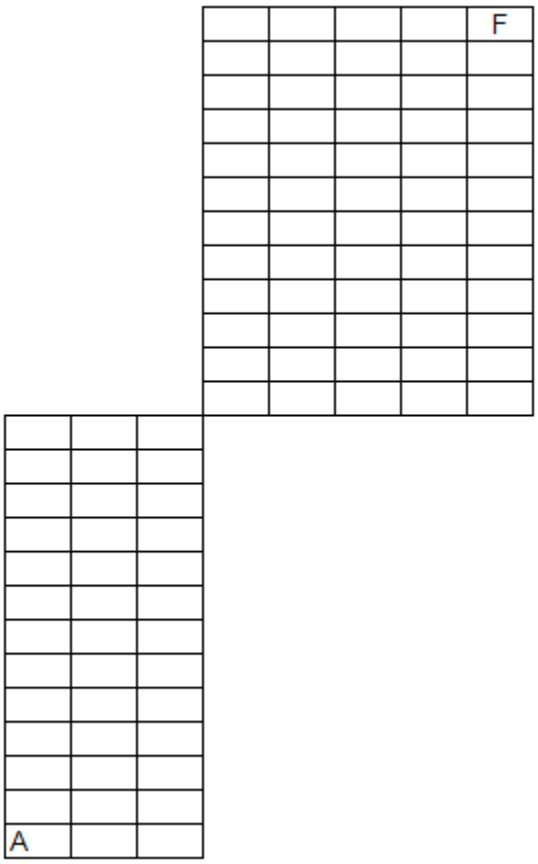
a. 1/7 b. 2/7

c. 1/49 d. 3/7

Answer: B
Explanation:
A leap year has 366 day which is 52 full weeks + 2 odd days. Now these two odd days may be (sun + mon), (mon + tue), ... (Sat + sun). Now there are total 7 ways. Of which Sunday appeared two times. So answer 2/7

5. An ant starts moving on the mesh shown below along the wires towards a food particle.If the ant is at

the bottom-left corner of cell A and the food is at the top-right corner of cell F, then find the number of optimal routes for the ant.



a. 13884156

b. 3465280

c. 4368

d. 6748

Answer: B
Explanation:
(Please read "Counting" to understand this question: Click here)
Total ways to move from A to the junction: There are 13 upward ways, 3 right side ways this Ant can move. Now these 16 ways may be in any order. So number of ways of arrangements
= $16!13!\times 3!16!13!\times 3!$ = 560
Similarly, from the junction to F, Total 12 upward ways and 5 right-side ways. These 17 ways can be in any order. So Total ways = $17!12!\times 5!17!12!\times 5!$ = 6188
Total ways to move from A to F = 560 × 6188 = 3465280

6. You have been given a physical balance and 7 weights of 52, 50, 48, 44, 45, 46 and 78 kgs. Keeping weights on one pan and object on the other, what is the maximum you can weigh less than 183 kgs.

a. 180

b. 181

c. 182

d. 178

Answer: A
Explanation:
52+50+78 = 180

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

a. 60 b. 81

c. 50 d. Cannot be determined

Answer: C
Explanation:
As the final average is 105/4, initial number of pages should be 2 more than a four multiple. So in the given options, we will check option C.
Total = $n(n+1)2=50\times512=1275n(n+1)2=50\times512=1275$
Final total = $48\times1054=126048\times1054=1260$
So sum of the pages = 15. The page numbers are 7, 8

8. You need a 18% acid solution for a certain test, but your supplier only ships a 13% solution and a 43% solution. You need 120 lts of the 18% acid solution. the 13% solution costs Rs 82 per ltr for the first 67 ltrs, and Rs 66 per ltr for any amount in access of 67 ltrs. What is the cost of the 13% solution you should buy?

a. 8002 b. 7012

c. 7672 d. 7342

Answer: C
Explanation:
Let us assume we need "a" liters of 13% acid solution and "b" liters of 43% acid solution. Now
$\Rightarrow18=a\times13+b\times43a+b\Rightarrow18=a\times13+b\times43a+b$
$\Rightarrow ab=51\Rightarrow ab=51$
So we need 100 liters of 13% acid solution, and 20 liters of 18% acid solution.
Final cost = 82 × 67 + 66 × 33 = 7672

9. A spherical solid ball of radius 58 mm is to be divided into eight equal parts by cutting it four times longitudinally along the same axis.Find the surface area of each of the final pieces thus obtained(in mm^2) ? (where pi= 22/7)

a. 3365pi b. 5046pi

c. 1682pi d. 3346pi

Answer: B
Explanation:
If a sphere is cut into 8 parts longitudinally, It something looks like below

Now We have to find the surface area of one piece. This is 18^{th}18th of the initial sphere + 2 × area of the half circle

= $18(4\pi r_2)+\pi\times r_2 18(4\pi r2)+\pi\times r2$
= $18(4\times\pi\times 58_2)+\pi\times 58_2 18(4\times\pi\times 582)+\pi\times 582$
= 5046pi

10. There is a lot of speculation that the economy of a country depends on how fast people spend their money in addition to how much they save. Auggie was very curious to test this theory.
Auggie spent all of his money in 5 stores. In each store, he spent Rs.4 more than one-half of what he had when he went in. How many rupees did Auggie have when he entered the first store?

a. 248

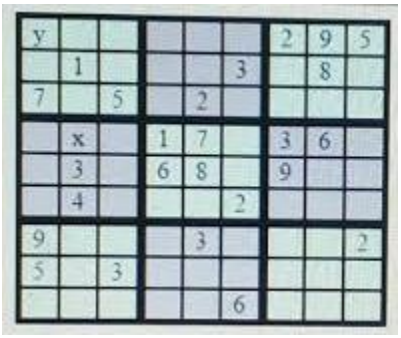
b. 120

c. 252

d. 250

Answer:
Explanation:
As he has spent all his money, He must spend Rs.8 in the final store.
a simple equation works like this. Amount left = $12x-412x-4$
For fifth store this is zero. So x = 8. That means he entered fifth store with 8.
Now for fourth store, amount left = 8 so $12x-4=8\Rightarrow 12x-4=8\Rightarrow$ x = 24
For third store, amount left = 24 so $12x-4=24\Rightarrow 12x-4=24\Rightarrow$ x = 56
For Second store, amount left = 56 so $12x-4=56\Rightarrow 12x-4=56\Rightarrow$ x = 120
For first store, amount left = 120 so $12x-4=120\Rightarrow 12x-4=120\Rightarrow$ x = 248
So he entered first store with 248.

11. A sudoku grid contains digits in such a manner that every row, every column, and every 3x3 box accommodates the digits 1 to 9, without repetition. In the following Sudoku grid, find the values at the cells denoted by x and y and determine the value of 6x + 15y.



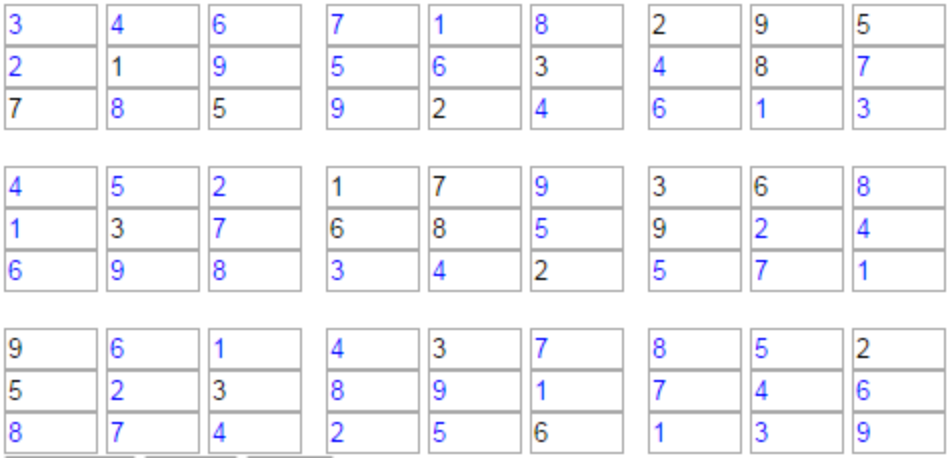
a. 87

b. 75

c. 66

d. 99

Answer: B
Explanation:



3	4	6	7	1	8	2	9	5
2	1	9	5	6	3	4	8	7
7	8	5	9	2	4	6	1	3

4	5	2	1	7	9	3	6	8
1	3	7	6	8	5	9	2	4
6	9	8	3	4	2	5	7	1

9	6	1	4	3	7	8	5	2
5	2	3	8	9	1	7	4	6
8	7	4	2	5	6	1	3	9

So x = 5, y = 3.
6x + 15y = 75

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

a. 24P7 * 2 * 18!
b. 36 * 24!
c. 24P7 * 2 * 20!
d. 18 * 24!

Answer: B. Option A also correct.
Explanation:
We can fix A and B in two ways with 7 letters in between them. Now 7 letters can be selected and arranged in between A and B in $^{24}P_7$24P7 ways. Now Consider these 9 letters as a string. So now we have 26 - 9 + 1 = 18 letters
These 18 letters are arranged in 18! ways. So Answer is 2 x $^{24}P_7$24P7 x 18!
Infact, 2 x $^{24}P_7$24P7 x 18! = 36 x 24!. So go for Option B as it was given as OA.

13. A certain function f satisfies the equation f(x)+2*f(6-x)=x for all real numbers x. The value of f(1) is

a. 1
b. 2
c. 3
d. Cannot be determined

Answer: C
Explanation:
Put x =1 ⇒ f(1)+2*f(6-1) = 1 ⇒ f(1) + 2*f(5) = 1
Put x = 5 ⇒ f(5)+2*f(6-5) = 5 ⇒ f(5) + 2*f(1) = 5
Put f(5) = 5 - 2*f(1) in the first equation
⇒ f(1) + 2*(5 - 2*f(1)) = 1
⇒ f(1) + 10 - 4f(1) = 1
⇒ f(1) = 3

14. Professor absentminded has a very peculiar problem, in that he cannot remember numbers larger than 15. However, he tells his wife, I can remember any number up to 100 by remembering the three numbers obtained as remainders when the number is divided by 3, 5 and 7 respectively. For example (2,2,3) is 17. Professor remembers that he had (1,1,6) rupees in the purse, and he paid (2,0,6) rupees to the servant. How much money is left in the purse?
option
A. 59
B. 61
C. 49

D. 56
Answer: D
Explanation:
Let the money with the professor = N
Then N = 3a +1 = 5b + 1 = 7c + 6.
Solving the above we get N = 181
(Explanation: See LCM formula 1 and 2: Click here)
When a number is divided by several numbers and we got same remainder in each case, then the general format of the number is LCM (divisors).x + remainder.
In this case 3, 5 are divisors. So N = 15x + 1. Now we will find the number which satisfies 15x + 1 and 7c + 6.
⇒ 15x + 1 = 7c + 6 ⇒ c = 15x−5715x−57 ⇒ c = 2x+x−572x+x−57
Here x = 5 satisfies. So least number satisfies the condition is 5(15)+1 = 76.
(x = 12 also satisfies condition. So substituting in 15x + 1 we get, 181 which satisfies all the three equations but this is greater than 100)
Similarly Money given to servant = M = 3x + 2 = 5y = 7z + 6
Solving we get M = 25.
(125 also satisfies but this is next number)
Now N - M = 56

15. The sum of three from the four numbers A, B, C, D are 4024, 4087, 4524 and 4573. What is the largest of the numbers A, B, C, D?
a. 1712
b. 1650
c. 1164
d. 1211
Answer: a
Explanation:
a+b+c=4024
b+c+d= 4087
a+c+d=4524
a+b+d=4573
Combining all we get 3(a+b+c+d) = 17208
⇒ a + b + c +d = 3736
Now we find individual values. a = 1649, b = 1212, c = 1163, d = 1712. So maximum value is 1712.

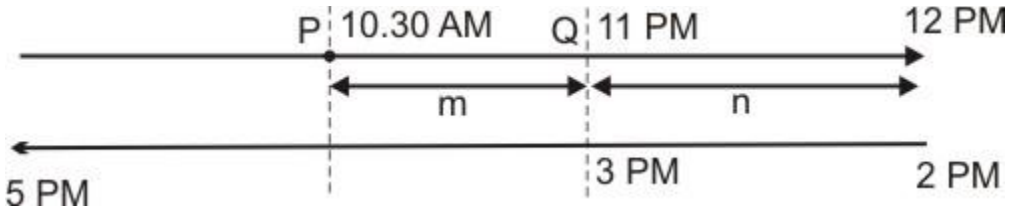
16. Anand packs 304 marbles into packets of 9 or 11 so that no marble is left. Anand wants to maximize the number of bags with 9 marbles. How many bags does he need if there should be atleast one bag with 11 marbles
a. 33
b. 32
c. 31
d. 30
Answer: B
Explanation:
Given 9x + 11y = 304.
x = 304−11y9304−11y9 = 33+7−2y9−y33+7−2y9−y
So y = - 1 satisfies. Now x = 35. But y cannot be negative.
Now other solutions of this equation will be like this. Increase or decrease x by 11, decrease or increase y by 9. So we have to maximise x. next solution is x = 24 and y = 8. So bags required are 32.

17. When Usha was thrice as old as Nisha, her sister Asha was 25, When Nisha was half as old as Asha, then sister Usha was 34. their ages add to 100. How old is Usha?
a. 37
b. 44
c. 45

d. 40
Answer: D
Explanation:
Let the age of Usha is 3x then Nisha is x and Asha is 25
Also Usha 34, Nisha y, and Asha 2y.
We know that 3x - 34 = x - 2y = 25 - 2y
Solving above three equations we get x = 9, y = 16
Their ages are 34, 16, 32. whose sum = 82. So after 18 years their ages will be equal to 100. So Usha age is 34 + 6 = 40

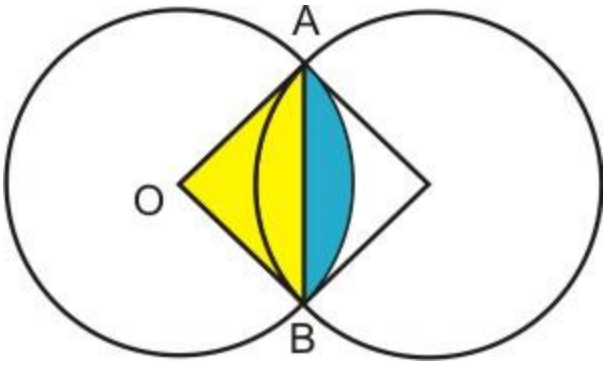
18. Find the number of zeroes in the expression 15*32*25*22*40*75*98*112*125
a. 12
b. 9
c. 14
d. 7
Answer: B
Explanation:
Maximum power of 5 in the above expression can be calculated like this. Count all the powers of 5 in the above expression. So number of zeroes are 9. (Read this chapter)

19. Two vehicles A and B leaves from city Y to X. A overtakes B at 10:30 am and reaches city X at 12:00 pm. It waits for 2 hrs and return to city Y. On its way it meets B at 3:00 pm and reaches city Y at 5:00 pm. B reaches city X, waits for 1hr and returns to city Y. Afer how many hours will B reach city Y from the time A overtook him fro the first time?
a. 50 hrs
b. 49.5 hrs
c. 41.5 hrs
d. 37.5 hrs
Answer: C
Explanation:



Let us understand the diagram. Vehicle A overtaken B at 10.30 am and reached X at 12 pm. It started at 2 pm and met B at 3 pm at Q. It means, Vehicle A took one hour to cover distance 'n', So it should be at Q at 11 pm. It is clear that Vehicle A takes 0.5 hour to cover distance 'm'. Now vehicle B travelled from 10.30 am to 3 pm to meet A. So it took 4.5 hours to cover m. So Speeds ratio = 4.5 : 0.5 = 9 : 1.
Now Vehicle A took a total of 1.5 + 3 = 4.5 hours to travel fro P to Y. So It must take 4.5 × 9 + 1 = 41.5 hours

20. Two identical circles intersect so that their centres, and the points at which they intersect, form a square of side 1 cm. The area in sq. cm of the portion that is common to the two circles is:
a. (π/2) – 1
b. 4
c. √2 – 1
d. √5
Answer:
Explanation:



We have to find the area of the blue shaded one and double it to get the area common to the both. Now this can be calculated as Area of the sector OAB - Area of the Triangle OAB.

As OA and OB are perpendicular, area of the sector OAB = $90360\pi(1)^2$90360π(1)2 = π4π4

Area of the triangle OAB = $12\times1\times112\times1\times1$ = 1212

Area common to both = $2(\pi4-12)=\pi2-12$(π4−12)=π2−1