1. Ray writes a two digit number.  He sees that the number exceeds 4 times the sum of its digits by 3.  If the number is increased by 18, the result is the same as the number formed by reversing the digits.  Find the number.
a) 35 b) 42 c) 49 d) 57

Solution: Let the two digit number be xy.
4(x + y) +3 = 10x + y .......(1)
10x + y + 18 = 10 y + x ....(2)
Solving 1st equation we get 2x - y = 1 .....(3)
Solving 2nd equation we get y - x = 2 .....(4)
Solving 3 and 4, we get x = 3 and y = 5

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

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

3. George can do a piece of work in 8 hours. Paul can do the same work in 10 hours, Hari can do the same work in 12 hours.  George, paul and hari start the same work at 9 am, while george stops at 11 am, the remaining two complete the work. What time will the work complete?
a) 11.30 am b) 12 noon c) 12.30 pm d) 1 pm

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

4. If x^y denotes x raised to the power y, Find last two digits of (1141^3843) + (1961^4181)
a) 02 b) 82 C) 42 d) 22

Remember 1 raised to any power will give 1 as unit digit.
To find the digit in the 10th place, we have to multiply, 10th digit in the base x unit digit in the power.



So the Last two digits of the given expression = 21 + 61 = 82

5. 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

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

6. If a lemon and apple together costs Rs.12, tomato and a lemon cost Rs.4 and an apple costs Rs.8 more than a  lemon.  What is the cost of lemon?

L + A = 12 ...(1)

T + L = 4 .....(2)

L + 8 = A

Taking 1 and 3, we get A = 10 and L = 2

7. 3 mangoes and 4 apples costs Rs.85. 5 apples and 6 peaches costs 122.  6 mangoes and 2 peaches costs Rs.144.  What is the combined price of 1 apple, 1 peach, and 1 mango.

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

Sol: Note: It is 114 not 144.

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

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

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

 (1) x 2 => 6m + 8a = 170

 (3) =>  6m + 2p = 114

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

(2) =>  5a + 6p = 122

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

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

So a + p + m = 37

8. 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

Sol:



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

9. There are 5 sweets - Jammun, kaju, Peda, Ladu, Jilebi which can be consumed in 5 consecutive days. Monday to Friday. A person eats one sweet a day, based on the following constraints.

(i) Ladu not eaten on monday

(ii) If Jamun is eaten on Monday, Ladu should be eaten on friday.

(iii) Peda is eaten the day following the day of eating Jilebi

(iv) If Ladu eaten on tuesday, kaju should be eaten on monday

based on above, peda can be eaten on any day except

a) tuesday  b) Monday c) Wednesday d) Friday

From the (iii) clue, peda must be eaten after jilebi. so Peda should not be eaten on monday.

10. If YWVSQ is 25 - 23 - 21 - 19 - 17, Then MKIGF

a) 13 - 11 - 8 - 7 – 6 b) 1 - 2-3-5-7 c) 9 - 8 - 7 - 6 – 5 d) 7 - 8 - 5 – 3

MKIGF = 13 - 11 - 9 - 7 - 6

Note: this is a dummy question. Dont answer these questions

11. Addition of 641 + 852 + 973 = 2456 is incorrect.  What is the largest digit that can be changed to make the addition correct?

a) 5  b) 6 c) 4  d) 7

Sol:

 641

 852

 9**6**3

------

2466

Largest among tens place is 7, so 7 should be replaced by 6 to get 2456

12. Value of a scooter depriciates 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

value of the scooter at the end of the year = 40000×(34)3 = 16875

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

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

In 1994, Assume the ages of GM  and R = 2k, k

then their birth years are 1994 - 2k, 1994 - k.

But given that sum of these years is 3844.

So 1994 - 2k + 1994 - k = 3844

K = 48

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

14. When numbers are written in base b, we have 12 x 25 = 333, the value of b is?

a) 8 b) 6 c) None d) 7

Let the base = b

So, (b+2)(2b+5) = (*b*+2)(2*b*+5)=3*b*2+3*b*+3

2*b*2+9*b*+10=3*b*2+3*b*+3

*b*2−6*b*−7=0

Solving we get b = 7 or -1

So b = 7

15. How many polynomials of degree >=1 satisfy *f*(*x*2)=[*f*(*x*)]2=*f*(*f*(*x*)

a) more than 2 b) 2 c) 0 d) 1

Sol:Let f(x) = *x*2

*f*(*x*2)=[*x*2]2=*x*4

(*f*(*x*))2=[*x*2]2=*x*4

*f*(*f*(*x*))=*f*(*x*2)=[*x*2]2=*x*4

Only 1

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

a) 120  b) 16 c) 23 d) 24



Sol:

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

17. In the question, A^B means, A raised to power B. If x\*y^2\*z < 0, then which one of the following statements must be true?

(i) xz < 0 (ii) z < 0  (iii) xyz < 0

a) (i) and (iii) b) (iii) only c) None d) (i) only

As y^2 is always positive,  x\*y^2\*z < 0 is possible only when xz < 0. Option d is correct.

18. The marked price of a coat was 40% less than the suggested retail price.  Eesha purchased the coat for half the marked price at the fiftieth anniversary sale.  What percentage less than the suggested retail price did Eesha pay?

a) 60 b) 20 c) 70 d) 30

Let the retail price is Rs.100. then market price is (100-40) % of 100 = 60.  Eesha purchased the coat for half of this price. ie., 30 only. which is 70 less than the retail price. So Option C is correct.

19. 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: a
Explanation: If you fold the above picture at the dotted lines, X and C are opposite to each other.

20. 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*1×11*C*10+5*C*2×11*C*9+5*C*3×11*C*8 = 2256

21. 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.

22. 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.

23.

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

24. 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

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. 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.

26. 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.

27. 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.

28. 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.

29. 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.

30. 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 *M*20−*M*30=2.  Check options.  Option D satisfies.

31. 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.

32. 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.

33. 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

34. 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 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.

35. 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.

36. 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.

37. 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 = *a* units and side of the regular hexagon is *b* units.
Given that,  3*a*=6*b* ⇒*ab*=21
Now ratio of the areas of equilateral triangle and hexagon = 3√4*a*2:33√2*b*2
⇒3√4(2)2:33√2(1)2
⇒2:3

38. 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](http://www.campusgate.co.in/2011/10/divisisbility-rules.html)
32313019 = 5313019
Euler totient theorem says that [*aϕ*(*n*)*n*]Re*m*=1
*ϕ*(*n*)=*n*(1−1*a*)(1−1*b*)... here *n*=*ap*.*bq*...
Now *ϕ*(9)=9(1−13)=6
Therefore, 56 when divided by 9 remainder 1.
Now 313016=1301=1
So 31301 can be written as 6k + 1
⇒531301=(56)*K*.51
5313019=(56)*K*.519=1*K*.59=5

39. 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 *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.

40. 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

Correct option: c
Explanation:
Given she bought *x* flowers for *y* dollars.
So 1 flower cost = *yx*
12 flowers or 1 dozen cost = 12*yx*
Again, *x*+10 cost = 2 dollars
1 flower cost = 210+*x*
12 flowers or 1 dozen cost = 2×1210+*x*=2410+*x*
Given that this new dozen cost is 80 cents or 4/5 dollar less than original cost.
⇒12*yx*−2410+*x*=45
From the given options, c satisfies this.

41. 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*′ be the given number.
*N*=357*k*+5 = 17×21*k*+5
If this number is divided by 17 remainder is 5 as 357k is exactly divided by 17.

42. 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*×*c*
We have to distribute three 2's to a, b, c in 3+3−1*C*3−1=5*C*2=10 ways
We have to distribute four 3's to a, b, c in 3+4−1*C*3−1=6*C*2=15 ways
We have to distribute one 5 to a, b, c in 3 ways.
Total ways = 10×15×3=450 ways.

43. On door A - It leads to freedom
On door B - It leads to Ghost house
On door C - door B leads to Ghost house
The 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.
44. 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.



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.
45. 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

46. 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

47. 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.

48. 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

49. 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)*d* to find nth term)
Sum = *Sn*=*n*2(2*a*+(*n*−1)*d*) = 72(2*n*+(7−1)7) = 13,524
⇒7*n*+147=13,524
⇒ n = 1911

50. 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