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)
$10x + y + 18 = 10y + x$.... (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 $y = 5$

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
$28 \times 1 + 30 \times 4 + 31 \times 7 = 365$
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.

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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

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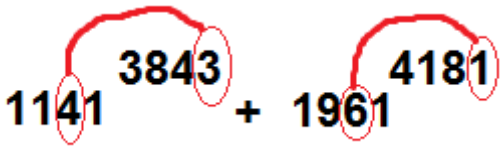
b) 82
c) 42
d) 22

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

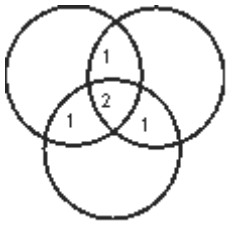
So a + p + m = 37

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



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

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

963

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)(2b+5)=3b2+3b+3

2b2+9b+10=3b2+3b+3

b2−6b−7=0

Solving we get b = 7 or -1

So b = 7

15. How many polynomials of degree >=1 satisfy f(x2)=[f(x)]2=f(f(x)

a) more than 2

b) 2

c) 0

d) 1

Sol:Let f(x) = x2

f(x2)=[x2]2=x4

(f(x))2=[x2]2=x4

f(f(x))=f(x2)=[x2]2=x4

Only 1

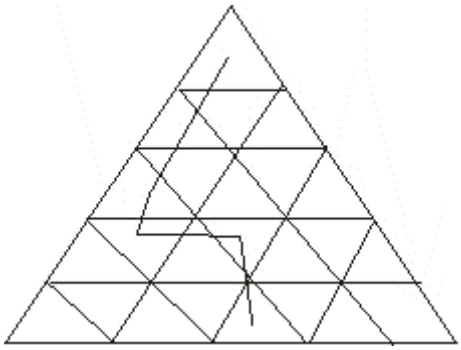
16. Figure shows an equilateral triangle of side of length 5 which is divided into several unit triangles. A valid path is a path from the triangle in the top row to the middle triangle in the bottom row such that the adjacent triangles in our path share a common edge and the path never travels up (from 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.