

# QUESTIONS

**Q 1.**  $\frac{2}{3}$ rd of the balls in a bag are blue, the rest are pink. if  $\frac{5}{9}$ th of the blue balls and  $\frac{7}{8}$ th of the pink balls are defective, find the total number of balls in the bag given that the number of non defective balls is 146?

a) 216

b) 649

c) 432

d) 578

Solution- let total no of balls =x

blue= $\frac{2x}{3}$

pink= $\frac{x}{3}$

total no of defective balls =  $\frac{10x}{27} + \frac{7x}{24}$

= $\frac{143x}{216}$

non defective balls= $x - \frac{143x}{216} = 146$

x=432

**Q 2.** Find no of ways in which 4 particular persons a,b,c,d and 6 more persons can stand in a queue so that A always stand before B. B always stand before C, And C always stand before D.

a)6!

b)7!

c) $1006 \cdot 6!$

d)10046!

Solution - a,b,c,d are grouped ie consider them as one and remaining as 6.

total  $6+1 = 7!$  Ways

**Q 3. 100 students appeared for two different examinations 60 passed the first, 50 the second and 30 both the examinations. Find the probability that a student selected at random failed in both the examination**

a)  $5/6$

b)  $1/5$

c)  $1/7$

d)  $5/7$

Solution-  $60+50-30=80$

$100-80=20$

$20/100=1/5.$

so B is the answer.

**Q 4. There are 10 points on a straight line AB and 8 on another straight line AC none of them being point A. how many triangles can be formed with these points as vertices?**

Option

a. 680

b. 720

c. 816

d. 640

Solution-

To form a triangle we need 3 points

select 2 points from the 10 points of line AB & 1 from the 8 on AC

$$= (10C2) * (8C1)$$

select 2 points from the 8 points of line AC & 1 from the 10 on AB=

$$(8C2) * (10C1)$$

$$\text{total no. of triangles} = (10C2) * (8C1) + (8C2) * (10C1) = 640$$

d.640

**Q 5. From a bag containing 8 green and 5 red balls, three are drawn one after the other. the probability of all three balls being green if the balls drawn are replaced before the next ball pick and the balls drawn are not replaced, are respectively.**

a)  $512/2197, 336/2197$

b)  $512/2197, 336/1716$

c)  $336/2197, 512/2197$

d)  $336/1716, 512/1716$

Solution-THE PROBABILITIES OF GETTING WITH REPLACEMENT

$$IS = 8/13 * 8/13 * 8/13 = 512/2197$$

THE PROBABILITIES OF GETTING WITHOUT REPLACEMENT

$$= 8/13 * 7/12 * 6/11 = 336/2197$$

**Q 6. find the greatest number that will divide 148 246 and 623 leaving remainders 4 6 and 11 respectively.**

a) 20 b) 12 c) 6 d) 48

$$\text{Solution-Hcf} ((148-4), (246-6), (623-11)) = 12$$

**Q 7. a mother her little daughter and her just born infant boy together stood on a weighing machine which shows 74kgs. how much does the daughter weigh if the**

**mother weighs 46kg more than the combined weight of daughter and the infant and the infant weighs 60% less than the daughter.**

- a)9
- b)11
- c)cannot be determined
- d)10

Solution-daughter weight is  $x$

infant weight is 60% less than daughter i.e.,  $0.4x$

mother weight is  $(x+0.4x+46)$

total weight =  $x + 0.4x + (x+0.4x+46) = 74$

solving the eq.  $x = 10$

option d is correct

**Q 8. find the number of ways a batsman can score a double century only in terms of 4's & 6's?**

- a)15
- b)16
- c)17
- d)18

Solution-4's and 6's

50 0

47 2

44 4

41 6

38 8

35 10

32 12

29 14

26 16

23 18

20 20

17 22

14 24

11 26

8 28

5 30

2 32

So total 17 ways but here it is 4's & 6's both so don't consider 1st one

Final ans : 16 ways

**Q 9. 98. Thomas takes 7 days to paint a house completely whereas Raj would require 9 days to paint the same house completely. How many days will take to paint the house if both them work together. (Give answers to the nearest integer)?**

A. 4

B. 2

C. 5

D. 3

Solution-work done by thomas in day= $\frac{1}{7}$

work done by other in a day =  $\frac{1}{9}$

work done by both in a day =  $\frac{1}{7} + \frac{1}{9} = \frac{16}{63}$

days required by both =  $\frac{63}{16}$

Answer-A

**Q 10. how many positive integers less than 4300 of digits 0-4.**

**a) 560 b)565 c)575 d)625**

**Solution-Ans is 575**

**one digit no =4 (0 is not a positive integer)**

**two digit no =  $4 \times 5 = 20$**

**three digit no =  $4 \times 5 \times 5 = 100$**

**four digit no =  $3 \times 5 \times 5 \times 5 = 375$  (the possibility for 1,2,3 will come in the first position) four digit no =  $1 \times 3 \times 5 \times 5$  (the possibility of 4 is fixed in the first position and then 0,1,2 is comes in second position) and the last digit is 4300 we include this number also**

**Ans is  $4 + 20 + 100 + 375 + 75 + 1 = 575$**


**Q 11. A person travels from Chennai to Pondicherry in cycle at 7.5 Kmph. Another person travels the same distance in train at a speed of 30 Kmph and reached 30 mins earlier. Find the distance.**

**A)5 Km**

**B)10 Km**

**C)15km**


**D)20km**

**Solution-Let, time taken by  = t**

**//y, time taken by train  = t-30**

We know that..... $\text{speed} = \text{distance} / \text{time}$

Speed of bicycle   $7.5 = d/t \dots (1)$

Speed of   $30 = d/(t-30/60) \dots (2)$

Sol 1&2, we get  $t = 0.666$

By sub and value in equal(1)

We  $d = 4.999 \sim 5\text{km}$

**Q 12.** A bag contains 8 white balls, and 3 blue balls. Another bag contains 7 white, and 4 blue balls. What is the probability of getting blue ball?

a)  $3/7$  b)  $7/22$  c)  $7/25$  d)  $7/15$

**Solution-**First we have to select a bag and then we will draw a ball.

Probability of selection of both bags is equal  $= 1/2$

Now probability of blue ball taken from first bag  $= (1/2) \times (3/11)$

and probability of blue ball taken from second bag  $= (1/2) \times (4/11)$

So probability of blue ball  $= (1/2) \times (3/11) + (1/2) \times (4/11) = 7/22$

**Q 13.** In a  $3 \times 3$  square grid comprising 9 tiles each tile can be painted in red or blue color. When the tile is rotated by 180 degree, there is no difference which can be spotted. How many such possibilities are there?

a) 16 b) 32 c) 64 d) 256

**Solution-**ans is 32 .

ans grid has to be rotated at 180 degrees.

hence,

$11 = 33$

**12=32**

**13=31**

**21=23**

**22=22**

**31=13**

**32=12**

**33=11**

**cell 11-33 can be altered in 2 ways (as thr are 2 colours)**

**cell 12-32 can be altered in 2 ways**

**cell 13-31 can be altered in 2 ways**

**cell 21-23 can be altered in 2 ways**

**and , cell 22 can be altered in 2 ways**

**, so**

**$2 \times 2 \times 2 \times 2 = 32$ .**

**Q 14. 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**

**option**

**A)48**

**B)96**

**C)24**

**D)32**

**Solution- $\frac{1}{x} = \frac{1}{8} - (\frac{1}{16} + \frac{1}{24})$**

**so  $x=48$**



**ans = 48 days**

**Q 15. For any two numbers we define an operation \$ yielding another number, X \$ Y such that following condition holds:**

- **$X \$ X = 0$  for all X**
- **$X \$ (Y \$ Z) = X \$ Y + Z$**

**Find the Value of  $2012 \$ 0 + 2012 \$ 1912$**

**Options**

- a) 2112**
- b) 100**
- c) 5936**
- d) Can not be determined**

**Solution-here \$ represent the - operator so  $X-X=0$  first condition**

$$x$(y$z)=x-(y-z)=x-y+z$$

**it can be written as  $x$y+z$**

$$2012-0+2012-1912=2112 \text{ so ans is } 2112$$

**Q 16. On a toss of two dice, A throws a total of 5. Then the probability that he will throw another 5 before he throws 7 is**

- a)40% b) 45% c)50% d)60%**

**Solution-ans: 40%**

**Explanation:**

**total probabilities for getting 5 =  $4/36$**

**total probabilities for getting 7 =  $6/36$**

**Total Probability =  $10/36$**

**We need only 5, hence prob of getting only 5 is  $(4/36)/(10/36)$**

**=40%**

**Q 17.**

**1,2,2,3,3,3,4,4,4,4,1,1,2,2,2,2,3,3,3,3,3,3,4,4,4,4,4,4,4,4,.....**

**Then what is the 2320 position of the number in the sequence?**

**a) 2 b) 1 c) 3 d) 4**

**Solution-answer is b)1**

**1,2,3,4(1-1time 2- 2times 3-3 4-4)=10 terms /completes cycle and starts from 1**

**1,2,3,4(1-2 2-4 3-6 4-8)= 20 terms /completes cycle and starts from 1**

**(1,2,3,4)each digit 3 time to its value =30 terms/completes cycle and starts from 1**

**$10+20+30+40+50+.....=x$**

**x is nearer value to 2320 solving  $n(n+1)/2$**

**$10.(21.22)/2= 2310$**

**analysing it 2310 completes cycle and starts from 1 again**

**now it 22 times**

**(1-22 times 2-44 times .....)**

**2320 position will occupied by 1**

**Q 18. In 2003, there are 28 days in February and there are 365 days in the year. In 2004, there are 29 days in February and there are 366 days in the year. If the date**

**March 11, 2003 is a Tuesday, then which one of the following would be the date March 11, 2004 be?**

- A. Wednesday**
- B. Tuesday**
- C. Thursday**
- D. Monday**

**Solution-Every year day is increased by 1 odd day. Or in leap year it is increased by 2 odd days.**

**so 11 march 2003 is tuesday,**

**11 march 2004 is thursday**

**C. Thursday**

**Q 19. How many 6 digit even numbers can be formed from digits 1 2 3 4 5 6 7 so that the digit should not repeat and the second last digit is even?**

**a)6480 b)320 c)2160 d)720**

**solution-given 6th digit even number , so last digit 2 or 4 or 6-> 3 ways**

**" 5th digit should be even...so there will be 2 ways(rep. not allowed)**

**so,therefore we get  $5 \times 4 \times 3 \times 2 \times 2 \times 3 = 720$  ways**

**Q 20. There are 5 letters and 5 addressed envelopes. If the letters are put at random in the envelops, the probability that all the letters may be placed in wrongly addressed envelopes is.**

**a)119 b)44 c)53 d)40**

**Solution-**If there is one letter and one envelope then no way you can put it wrong( $S_1$ ).

If there are 2 letters and 2 envelopes then you can put them wrong in 1 way( $S_2$ ).

If there are 3 letters and 3 envelopes then you can put them wrong in 2 ways( $S_3$ ).

If there are 4 then you can put them wrong in 9 ways( $S_4$ ).

If there are 5 then you can put them wrong in 44 ways( $S_5$ ).

If you observe you can find a pattern.

$$S_3 = (S_1 + S_2) * 2$$

$$S_4 = (S_2 + S_3) * 3$$

$$S_5 = (S_3 + S_4) * 4$$

$$S_6 = (S_4 + S_5) * 5$$

$$\text{In general, } S_n = (S_{n-2} + S_{n-1}) * (n-1)$$

$$\text{So, if there are 5 letters then } S_5 = (S_3 + S_4) * 4 = (2 + 9) * 4 = 44$$

**Q 21.** How many liters of a 90% of concentrated acid needs to be mixed with a 75% solution of concentrated acid to get a 30 liter solution of 78% concentrated acid?

a) 8 b) 9 c) 7 d) 6

**Solution-**the concentration is given which is wrt 100, hence we can take x lt of 90% and (30-x) of 75%

$$x * 90 + (30 - x) * 75 = 30 * 78 \text{ hence the ans is 6 ltr...}$$

**Q 22.** Average marks of a,b,c is 48. When d joins average becomes 47. E has 3 more marks than d. Average marks of b,c,d,e is 48. What is the marks of a?

a) 42 b) 43 c) 53 d) 56

**Solution-**  $a+b+c=144$

$a+b+c+d=188$

$d=44$

$e=47$

$b+c+d+e=192$

$b+c=101$

$b=43$  ans.

**Q 23.** On a certain assembly line, the rejection rate for Hyundai i10s production was 4 percent, for Hyundai i20s production 8 percent and for the 2 cars combined 7 percent. What was the ratio of Hyundais i10 production?

option

a) 3/1

b) 2/1

c) 1/1

d)  $\frac{1}{2}$

**Solution-** let the no of i10 cars be  $x$  and i20 be  $y$

now the rejected i10 cars are  $\frac{4x}{100}$  and i20 cars are  $\frac{8y}{100}$

and it is given that  $\frac{4x}{100} + \frac{8y}{100} = \frac{7(x+y)}{100}$

so we get  $y = 3x$

so the ratio is 3:1

**Q 24.** For a car there are 5 tyres including one spare tyre(4+1). All tyres are equally used. If the total distance travelled by the car is 40000km then what is the average distance travelled by the each tyre?

**Option**

**a) 10000**

**b) 40000**

**c) 32000**

**d) 8000**

**Solution-total distance travelled by the car=40000km**

**so total distance travelled by 4 wheels=4\*40000=160000**

**as all tyres(4+1) are equally used**

**so average distance travelled by the each tyre=160000/5=32000**

**option(c)**

**Q 25. If  $A=x^3 y^2$  and  $B=xy^3$ , then find the HCF of A,B.**

**a) $x^4 y^5$  b) $xy^2$  c) $xy$  d) $x^3$**

**Solution-if  $A=x^3 y^2$**

**$B=xy^3$**

**then hcf= $xy^2$**

**bcoz hcf is always equal to the highest common powers between the expressions,**

**i.e  $x^1$  is common in both and also  $y^2$  is common in both.**

**Q 26. In a clock the long hand is of 8cm and the short hand is of 7cm. if the clock runs for 4 days find out the total distance covered by both the hands**

**a)  $1824 \pi$  cm**

**b) $1648\pi$  cm**

**c) $1724\pi$  cm**

**d) $2028\pi$  cm**

**Solution-Explanation: Short Hand ( Hour hand)**

**Hour hand makes a full rotation in 12 hours.**

One full rotation in 12 hours  $\Rightarrow 2\pi r = 14\pi$  cm traversed every 12 hours.

For one day(24 hours ), we have  $28\pi$  cm, twice that of a 12 hour period.

For 3 days, we then have  $4 \times 28 \pi = 112\pi$  cm traversed.

Long Hand ( Minute hand)

One full rotation in 1 hour  $\Rightarrow 2\pi r = 16\pi$  cm traversed every hour.

For one day, we have  $24 \times 16 \pi = 384\pi$  cm.

For 4 days, we then have  $4 \times 384\pi = 1536\pi$  cm traversed.

Total Distance

For the total, we have  $112\pi + 1536\pi = 1648\pi$  cm.

Q 27. A can finish a work in 18 days and B can do the same work in 15 days. B worked for 10 days and left the job. In how many days A alone can finish the remaining work?

a) 7 b) 6 c) 5 d) 10

Solution-A can finish  $\frac{1}{18}$ th of the total work in a day and B can finish  $\frac{1}{15}$ th of the total work in a day. After working 10 days by B alone, the work remains is  $1 - 10 \times \frac{1}{15} = \frac{1}{3}$  of the total work.

It can be finished by A in  $\frac{1}{3} \div \frac{1}{18} = 1 \times 18 \times 1 = 18$  days.

Q 28. In how many way possible ways can you write 1800 as a product of 3 positive integers a,b,c

a)350 b)360 c)380 d)450

Solution- $1800 = 2^3 \times 3^2 \times 5^2$

then  $5c^2 \times 4c^2 \times 4c^2 = 360$  ans

**Q 29. In a horse racing competition there were 18 numbered 1 to 18. The organizers assigned a probability of winning the race to each horse based on the horse's health and training. The probability that horse one would win is  $\frac{1}{7}$ , that horse 2 would win is  $\frac{1}{8}$ , and that horse 3 would win is  $\frac{1}{7}$ . Assuming that a tie is impossible, find the chance that one of these three will win the race?**

**a)  $\frac{22}{392}$  b)  $\frac{1}{392}$  c)  $\frac{23}{56}$  d)  $\frac{391}{392}$**

**Solution-HORSE 1:  $\frac{1}{7}$  WINNING PROBABILITY**

**HORSE 2:  $\frac{1}{8}$  WINNING PROBABILITY**

**HORSE 3:  $\frac{1}{7}$  WINNING PROBABILITY**

**ONE OF THESE WILL WIN THE RACE:**

$$\Rightarrow \frac{1}{7} + \frac{1}{8} + \frac{1}{7}$$

$$\Rightarrow \frac{8}{56} + \frac{7}{56} + \frac{8}{56} \text{ (TAKING LCM)}$$

$$\Rightarrow \frac{23}{56}$$

**Q 30. Apples cost L rupees per kilogram for the first 30 kgs and Q rupees per kilogram for each additional kilogram. If the price of 33 kilograms is 11.67 and for 36 kgs of Apples is 12.48, then the cost of the first 10 kgs of Apples is**

**a) 3.50 b) 10.53 c) 1.17 d) 2.8**

**Solution- $30L + 3Q = 11.67$**

$$30L + 6Q = 12.48$$

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$$3Q = 0.81 \quad Q = 0.27$$

**from that  $L = 0.362$  cost of 10 kg apple is  $10 \times 0.362 = 3.62$  a) 3.50**

**Q 31. How many vehicle registration plate numbers can be formed with digits 1, 2, 3, 4, 5 (no digits being repeated) if it is given that the registration number can have 1 to 5 digits?**



a) 205 b) 100 c) 325 d) 105

**Solution-**you can have registration plates of 5,4,3,2 or 1 digits

**So, it's**  $5 \times 4 \times 3 \times 2 \times 1 + 5 \times 4 \times 3 \times 2 + 5 \times 4 \times 3 + 5 \times 4 + 5$

$$= 120 + 120 + 60 + 20 + 5$$

$$\Rightarrow 325$$

**Q 32.** Jake and Paul each walk 10 km. The speed of jack is 1.5 faster than paul speed . what is the Jake's speed ?

a)4 b)6 c)7 d)8

**Solution-**Let pauls speed be x kmph

Then jacks speed is (x+1.5 ) kmph

$$(10/x) - (10/(x+1.5)) = 1.5$$

$$x = 2.5$$

$$\text{Jacks speed} = 2.5 + 1.5 = 4 \text{ kmph}$$

**Q33.** In this question  $A^B$  means A raised to the power B. If  $f(x) = a \cdot x^4 - b \cdot x^2 + x + 5$ .  $f(-3) = 2$ . Then  $f(3) = ?$

a)3 b) 7 c) 8 d) 6

**Solution-**Given that  $f(x) = a \cdot x^4 - b \cdot x^2 + x + 5$

and  $f(-3) = 2$

$$\text{so } \Rightarrow a \cdot (-3)^4 - b \cdot (-3)^2 + (-3) + 5 = 2$$

$$\Rightarrow 81a - 9b + 2 = 2$$

$$\Rightarrow 81a - 9b = 0 \text{ -----equation(1)}$$

$$\text{now } f(3) = a \cdot (3)^4 - b \cdot (3)^2 + 3 + 5$$

$$= 81a - 9b + 8$$

and from equation (1)  $81a-9b=0$

so  $f(3)=0+8=8$

**Q 34. 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) 2 X sum of first ten numbers

(b) 2 X sum of last ten numbers

(c) Sum of first ten numbers

(d) Cannot be determined with given data

**Solution-**since,  $\text{average} = (\text{sum of } n \text{ no.s}) / (\text{total no})$

therefore,  $(\text{sum of first 10 no.s}) / 10 = (\text{sum of last 20 no}) / 20$

hence.  $(\text{sum of last 20 no.s}) = 2 * (\text{sum of first 10 no.s})$

**Q 35. Mother, daughter and infant total weight is 74 kg. Mother's weight is 46 kg more than daughter and infant's weight. Infant's weight is 60% less than daughter's weight. Find daughter's weight.**

a) 10 b) 9 c) 8 d) 7

**Solution-**Total Age is  $M+D+I=74$

given that  $M-D-I=46$

solving above 2 eq's we get Mother age = 60

now remaining age = 14 which is sum of daughter and Infant age.

Given that Infant age is 60% less than Daughter.

i.e If daughter age is 100 then infant age is 40.

So ages ratio Of D and I is 100 : 40 i.e ... 5 : 2

So  $(5+2)=7$  parts equal to 14.

then 5 parts equal to 10.

2 parts equal to 4.

daughter age is =10

and infant age is = 4

Answer a) 10

**Q 36.** 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) 53 b) 20 c) 60 d) 75

**Solution-**let the people in the city be  $x$

60% are congress=60% of  $x$

40% are BJP=40% of  $x$

out of 60%,75% voted for congress= $75\%(60\% \text{ of } x)=18x/40$

out of 40%,20% voted for congress= $20\%(40\% \text{ of } x)=8x/100$

total= $18x/40+8x/100=106x/200$

total percent= $106x/200*100=53\% \text{ of } x$

**Q 37.** In a particular year the month of january had exactly 4 thursdays and 4 sundays , on which day of the weekk, jan 1 occurs?

a) Monday b) Tuesday c) Thursday d) Wednesday

**Solution-**as there are 4 fulls weeks i.e 28 days..

so..every day occurs min 4 times.

den remaining 3 days (as jan has 31 days) will be monday tuesday wednesday.

so on 31st jan comes wednesday.

so 1st jan ll be MONDAY

**Q 38.** A number when divided successively by 4 and 5 leaves remainder 1 and 4 respectively. when it is successively divided by 5 and 4, then the respective remainders will be;

a). 1,2

b). 2,3

c). 3,2

d). 4,1

**Solution-**When dividing a positive integer  $n$  by another positive integer  $D$  (divisor), we obtain a quotient  $Q$ , which is a non-negative integer and a remainder  $R$ , which is an integer such that  $0 \leq R < D$ . We can write  $n = DQ + R$ .

When dividing our number  $n$  by 4 we obtain a remainder of 1, so, if the quotient is some integer  $Q$ , we can write  $n = 4Q + 1$ .

Now, dividing  $Q$  by 5, we obtain another quotient say  $q$  and remainder 4, thus we can write  $Q = 5q + 4$ .

It follows that  $n = 4(5q + 4) + 1 = 20q + 17$ .

Since  $n = 20q + 17 = 5(4q + 3) + 2$ , it means that when dividing  $n$  by 5 first, we get a quotient  $4q + 3$  and remainder 2.

Then dividing  $4q + 3$  by 4 we obviously obtain a remainder of 3.

**Q 39.** Average salary of 17 teachers is 45000.3 teachers left and the average salary dropped by 2500.What is the sum of salaries of 3 teachers who left?

a) 173000 b) 176000 c) 170000 d) 85000

**Solution-** Total Initial Salary :  $17 \times 45000 = 765000$

**Average Salary After removal of 3 Teachers** =  $45000 - 2500 = 42500$

**Total Final Salary** :  $14 \times 42500 = 595000$

**Sum of Salaries of 3 teachers who left** :  $765000 - 595000 = 170000$

**Q 40.** 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.  $18! \times 2$

b.  $17!$

c.  $17! \times 2$

d.  $12$

**Solution-**  $18! \times 2$  Consider 1 man along with two sisters as one group.. so they can be arranged in  $17!$  ways as circular.. The one man in between the two sisters can be out of any 18 men.. so,  $17! \times 18$ .. and the two sisters can be arranged in 2 ways..so  $18! \times 2$

**Q 41.** a number plate can be formed with two alphabets followed by two digits with no repetition. then how many possible combinations can we get?

a) 58500 b) 67600 c) 57850 d) 58761

**Solution-** no.of alphabets=26 (a-z), no.of digits=10(0-9).

ways of arranging two alphabets with out repetition= $26 \times 25$ ;

ways of forming two digits without repetition= $10 \times 9$

no.of combinations of forming the number on number plate=  $26 \times 25 \times 10 \times 9 = 58500$

**Q 42. The letters in the word "PLACES" are permuted in all possible ways and arranged in the alphabetical order. Find the word at 48 position.**

**a) AESPCL**

**b) ALCEPS**

**c) ALSCEP**

**d) AESPLC**

**Solution- ans = (d)**

**for words AC\*\*\*\* possible ways for arranging \* will be  $4! = 24$**

**now next seq in alphabetical order will be AE\*\*\*\* so....**

**same way for AE\*\*\*\* possible ways for arranging \* will be  $4! = 24$**

**..**

**..**

**Thus, 48th element will be last element in AE\*\*\*\* that means AE followed by reverse alphabetical order! which is AESPLC**

**Q 43. A alone can do  $\frac{1}{4}$ th of the work in 2 days. B alone can do  $\frac{2}{3}$ th 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.  $\frac{1}{12}$**

**B.  $\frac{1}{8}$**

**C.  $\frac{1}{16}$**

**D.  $\frac{1}{20}$**

**Solution- 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**

**$A = \frac{24}{8} = 3,$**

**$B = \frac{24}{6} = 4,$**

$$A + B + C = 24/3 = 8$$

So Capacity of C = 1 unit.

In two days C will do 2 units which is  $2/24$ th part of the total work. So  $1/12$ th part.

**Q 44.** A sum is sufficient to pay either George age for 15 days or marks wage to 10 days how long together?

a) 5 b) 6 c) 8 d) 9

**Solution-** George one day work is  $(1/15)$

Marks one day work is  $(1/10)$

$$G+M=(1/15)+(1/10)=(1/6)$$

6 is the answer

**Q 45.** 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

**Solution-** Maximum 3 men can be played which means there can be 0, 1, 2, 3 men in the team.

$$({}^5C_0 \times {}^{11}C_{11}) + ({}^5C_1 \times {}^{11}C_{10}) + ({}^5C_2 \times {}^{11}C_9) + ({}^5C_3 \times {}^{11}C_8) = 2256$$

**Q 47.** how many prime numbers less than 100 and greater than 3 are of the form:  $4x+1$  ,  $5y-1$

a) 11 b) 12 c) 7 d) None of the above

**Solution-** all the prime numbers between 3 and 100  
are:5,7,11,13,17,19,23,29,31,37,41,43,47,53,59,61,67,71,73, 79, 83, 89 and 97

numbers must end with 4 or 9 to follow  $5y-1$  condition.

so the numbers are:29,89

so there are two numbers.

**Q 48.** Three dice are rolled. What is the probability of getting a sum of 13?

a)  $19/216$  b)  $21/216$  c)  $17/216$  d)  $23/216$

**Solution-** Just count the number of ways to get 13. We just need to count possibilities for two dice because the third dice value is fixed. For two dice, the sum can be anywhere from 7 to 12 and that would be  $6 + 5 + 4 + 3 + 2 + 1 = 21$ . So, the probability is  $21/216$

**Q 49.** 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). 11

c). 12

d). 13

**Solution-** if  $x$  no. of question is wrong and  $y$  no. of question is correct then

$$-5x + 8y = 0 \text{ and } x + y = 26$$

by solving we get

$$x = 16 \text{ \& } y = 10$$



**Q 50.**Two alloys A and B are composed of two basic elements. The ratios of the compositions of the two basic elements in the two alloys are 5:3 and 1:2, respectively. A new alloy X is formed by mixing the two alloys A and B in the ratio 4:3. What is the ratio of the composition of the two basic elements in alloy X?

a)1:1 b) 2:3 c) 5:2 d) 4:32

**Solution-** Let the actual amount of A be  $4x$  and actual amount of B be  $3x$  since A and B are in the ratio 4/3

amount of first basic element in the new alloy T  $(\frac{5}{8}) \cdot 4x + (\frac{1}{3}) \cdot 3x = \frac{(7x)}{2}$

amount of second basic element in the new alloy T  $(\frac{3}{8}) \cdot 4x + (\frac{2}{3}) \cdot 3x = \frac{(7x)}{2}$

so ratio of first basic element to second basic element:  $[\frac{(7x)}{2}] / [\frac{7x}{2}] = 1/1 = 1:1$   
( Answer A)

**Q 51.** Babla alone can do a piece of work in 10 days ashu alone can do it in 15 days. The total wages for the work in Rs.5000 .how much should babla be paid of they work together for entire duration of the work

a)4000 b)3000 c)5000 d)2000

**Solution-** babla 10 day----- now  $30/10=3$  unit per day

L.C.M = 30(total work they have to perform)

ashu 15 day-----  $30/15=2$  unit per day

so their ratios of work is 3:2

so babla will get  $\frac{3}{5} \cdot 5000 = 3000$

**Q 52. Average of 3 numbers ABC is given as 48. Average of A,B,C,D is 46. Its given that E is having 3 more than D, then Average of B,C,D,E is 45. What is the score of A?**

**a) 46 b) 48 c) 49 d) 47**

**Solution- average  $A+B+C= 48$ ;  $A+B+C=3*48=144$ ;**

**average  $A+B+C + D= 46$ ;  $A+B+C+D =4*46=184$ ;**

**$D=40$ ; GIVEN  $E=D+3=40+3=43$ ;**

**$B+C+D+E=45*4= B+C+40+43=45*4$**

**$B+C=180-40-43$**

**$B+C=97$**

**$A+B+C=144$**

**$A+97=144$**

**$A=47$**

**Q 53. Raj travels a part of journey by taxi paying 15 per km and rest by train paying 21per km. If he travels a total of 450 Km and pay Rs.8130 then the distance travelled by raj in train?**

**a) 230 b) 260 c) 190 d) 180**

**Solution- let the distance traveled by train =x**

**therefore distance travelled by taxi = (450-x)**

**now,  $15*(450-x) + 21*x=8130$**

**or,  $x=230$**

**Q54. A sum is sufficient to pay either George age for 15 days or marks wage to 10dayshow long together?**

**a) 9 b) 5 c) 6 d) 8**

**Solution- George one day work is (1/15)**

**Marks one day work is (1/10)**

$$\mathbf{G+M=(1/15)+(1/10)=(1/6)}$$

**6 is the answer**

**Q 55. Radius of the bigger circle is 1. Which area will be greater?**

**a) 5 b) 4 c) cannot be determined d) none of these**

**Solution- 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  $x^2 + x^2 = 2^2$     $2x^2 = 4$     $x = \sqrt{2}$**

**Now diameter of the inner circle = side of the square. So radius of the inner circle =  $\frac{\sqrt{2}}{2} = \frac{1}{\sqrt{2}}$**

$$\mathbf{Areas\ marked\ by\ 1,\ 2,\ 3,\ 4 = (Area\ of\ the\ circle - area\ of\ the\ square)/4 = \frac{\pi(\frac{1}{\sqrt{2}})^2 - (\frac{\sqrt{2}}{2})^2}{4} = \frac{\pi - 2}{4} = 0.285}$$

$$\mathbf{Areas\ marked\ by\ 5,\ 6,\ 7,\ 8 = (Area\ of\ the\ square - area\ of\ the\ inner\ circle)/4 = \frac{(\frac{\sqrt{2}}{2})^2 - \pi(\frac{1}{\sqrt{2}})^2}{4} = \frac{2 - \pi}{4} = 0.1075}$$

**So Area marked by 4 is bigger.**

**Q 56. University of Vikram has enrolled nine Phd candidates. Babu Chitra, Dheeraj, Eesha, Farooq, Gowri, Hameed, Iqbal, Jacob.**

**-Farooq and Iqbal were enrolled on the same day as each other, and no one else was enrolled that day.**

**-Chitra and Gowri were enrolled on the same day as each other, and no one else was enrolled that day.**

**-On each of the other days of hiring, exactly one candidate was enrolled.**

**-Eesha was enrolled before Babu.**

**-Hameed was enrolled before Dheeraj**

**-Dheeraj was enrolled after Iqbal but before Eesha**

**- Gowri was enrolled after both Jacob and Babu**

**-Babu was enrolled before Jacob**

**Who were the last two candidates to be enrolled?**

**a) Gowri and Chitra b) Babu and Chitra c) Babu and Gowri d) Eesha and Jacob**

**Solution-**

**Given that**

**1. Easha < Babu**

**2. Hameed < Dheeraj**

**3. Iqbal < Dheeraj < Easha**

**4. Jacob/Babu < Gowri**

**5. Babu < Jacob**

**from 1 and 5, Easha was before Babu and Jacob so she cannot be in the last two.**

**Option B ruled out**

**from 4 and 5, babu is before Jacob and Gowri so he cannot be in the last two.**

**Options a, c ruled out.**

**So option d is correct.**

**Q 56. A boy buys 18 sharpeners (brown or white) for Rs. 100. For every white sharpener, he pays one rupee more than the brown sharpener. What is the cost of white sharpener & how much did he buy?**

**a) 5,13 b)5,10 c)6,10 d) None of these**

**Solution- If he bought x white sharpeners @ Rs (y+1) and (18-x) brown sharpeners @ Rs y per sharpener, then**

$$x*(y+1)+x*(18-x)=100$$

$$x= 100-18y$$

**Only integral value of x less than 18 will be 10.**

**then x=10, y=5**

**so he bought 10 white sharpeners @ Rs 6 per sharpeners and 8 brown sharpeners @ Rs 5 per sharpener.**

**c)6,10**

**Q 57. If M is 30% of Q, Q is 20% of P, N is 50% of P, Then M/N = ?**

**a) 4/3 b) 3/25 c) 6/5 d) 3/250**

**Solution-  $m=3/10q, q=1/5p, n=1/2p$**

**here we can find d value of p and put into d second to get value of q**

**so m/n will be 3/25**

**Q 58. In a staircase, there are 10 steps. A child is attempting to climb the staircase. Each time, she can either make 1 step or 2 steps. In how many different ways can she climb the stair case?**

**a). 10 b). 21 c). 36 d). None of these.**

**Solution- she can go by**

**1 steps-1 way**

that is choosing 1 two-step in 9 moves:

$${}^9C_1 = 9 \text{ ways//}$$

2 two-steps:

choosing 2 two-steps in 8 moves:

$${}^8C_2 = 28 \text{ ways//}$$

3 two-steps

$${}^7C_3 = 35 \text{ ways//}$$

4 two-steps//

$${}^6C_4 = 15 \text{ ways//}$$

5 two-steps//

which covers all the 10 stairs.. that means only one way

$$2 \ 2 \ 2 \ 2 \ 2 = 1 \text{ way//}$$

Adding all the ways:

$$1 + 9 + 28 + 35 + 15 + 1 = 89 \text{ ways//}$$

**Q 59.** Eesha bought two varieties of rice costing 50Rs per kg and 60 Rs per kg and mixed them in some ratio. Then she sold that mixture at 70 Rs per kg making a profit of 20 % What was the ratio of the mixture?

a) 1:10 b) 3:8 c) 1:5 d) 2:7

solution- let x be the price of the rice after mixing, then

$$120 \cdot x / 100 = 70$$

$x = 175/3$  by elimination method

the required ratio is  $(60 - 175/3) : (175/3 - 50) = 1:5$

Q 60. Find the 32nd word in the list where the word MONOS is permuted in all possible ways and arranged in alphabetical order.

a) OSMON b) OSNOM c) OSMNO d) ONMSO

Solution-

Arranging in alphabetical order MNOOS

M \_ \_ \_ CAN BE ARRANGED IN  $4!/2! = 12$  WAYS

N \_ \_ \_ CAN BE ARRANGED IN  $4!/2! = 12$  WAYS ( $12 + 12 = 24$ )

O \_ \_ \_ CAN BE ARRANGED IN  $4!/2! = 12$  WAYS ( $12 + 12 + 12 = 36$ ) OUT OF BOUND

OM \_ \_ CAN BE ARRANGED IN  $3! = 6$  WAYS ( $12 + 12 + 6 = 30$ )

30TH WORD IS OMSO

31ST WORD IS ONMS

32ND WORD IS ONMSO

Q 61. One card is lost out of 52 cards. Two cards are drawn randomly. They are spades. What is the probability that the lost card is also spade?

a)  $1/52$  b)  $1/13$  c)  $1/4$  d)  $11/50$

Solution-  $(13 - 2) / (52 - 2) = 11 / 50$

**Q 62. What is the value of**

$$44444445 \cdot 88888885 \cdot 44444442 \cdot 444444438 / 44444448^2$$

**a)88888883 b)88888884 c)88888888 d)44444443**

**Solution- take  $x=44444444$**

**that equ.can be written as-  $(x+1)(2x-3)(x-2)+(x-6) / x^2$**

**solving equation we get  $2x-5$**

**substitute  $x=44444444$  in above equation we get- 88888883**

**Q 63.Complete the series 4,20,35,49,62,74,?**

**a)76 b)79 c) 78 d) 85**

**Solution-  $4+16=20$**

$$20+15=35$$

$$35+14=49$$

$$49+13=62$$

$$62+12=74$$

$$74+11=85$$

**Q 64. Walking at  $3/4$  of his normal speed, Mike is 16 minutes late in reaching his office. The usual time taken by him to cover the distance between his home and his office is**

**a). 42 minutes**

**b). 48 minutes**

**c). 60 minutes**



d). 62 minutes

Solution- Let  $s$  = his normal speed

$t$  = his normal time

Then

$$D = \left(\frac{3}{4}\right)s * (t+16)$$

Since the distance is the same we can equate this to his regular day which is  $D = s*t$

$$s*t = \left(\frac{3}{4}\right)s * (t+16)$$

$$t=48$$

Q 65. The sum of 5 numbers in AP is 30 and the sum of their squares is 190.  
Which of the following is the third term?

a) 5 b) 6 c) 8 d) 9

Solution- consider the 5 numbers in AP as  $a-2d, a-d, a, a+d, a+2d$ ;

$$\text{given, } a-2d+a-d+a+a+d+a+2d=30;$$

$$5a=30 \implies a=6$$

here  $a$  is the 3rd term so..third term is 6.

Q 66. A, B and C can do a piece of work in 20, 30 and 60 days respectively. In how many days can A do the work if he is assisted by B and C on every third day?

a). 12 days

b). 15 days

c). 16 days

d). 18 days

solution- A's 2 day's work  $= 2 * (1/20) = 1/10$

(A + B + C)'s 1 day's work  $= ((1/20) + (1/30) + (1/60)) = 1/10$

Work done in 3 days  $= (1/10) + (1/10) = 1/5$

Now,  $(1/5)$  work is done in 3 days.

Whole work will be done in  $(3 \times 5) = 15$  days.

**Q 67.** The least number which when divided by 48, 60, 72, 108 and 140 leaves 38, 50, 62, 98 and 130 as remainders respectively, is:

a) 4562

b) 15110

c) 2135

d) 7589

Solution- Here  $(48 - 38) = (60 - 50) = (72 - 62) = (108 - 98) = (140 - 130) = 10$  in every case

Least number will be LCM of (48, 60, 72, 108, 140) - 10

LCM = 15120

So, required number =  $15120 - 10 = 15110$

**Q 68.** A sum of money is borrowed and paid back in two annual instalments of Rs.882 each allowing 5% C.I. The sum borrowed was:

a) Rs.1680 b) Rs.1142 c) Rs.640 d) Rs.1640

**Solution-**

$$\text{amount} = p(1+r/100)^n$$

$$\text{borrowed amount} = 882 / (1+5/100) + 882 / (1+5/100)^2$$

$$= (882 \times 20) / 21 + (882 \times 20 \times 20) / (21 \times 21)$$

$$= 1640$$

**Q 69.** how many parallelograms are formed by a set of 4 parallel lines intersecting another set of 7 parallel lines.

a) 125 b) 126 c) 127 d) 128

**Solution-** Let there be 4 horizontal set of parallel lines and 7 vertical set of parallel line. (U can also consider vice-versa)

Now for a parallelogram, u need 2 horizontally parallel and 2 vertically parallel lines ie. we need to choose 2 lines from each set.

So the solution will be  ${}^7C_2 \times {}^4C_2 = 126$

**Q 70.** A completes 80% of a work in 20 days. Then B also joins and A and B together finish the remaining work in 3 days. How long does it need for B if he alone completes the work?

a)  $37 \frac{1}{2}$  b) 32 c)  $32 \frac{1}{2}$  d) 37

**Solution-** let total work is 100 unit .

A can do 80 unit in 20 days ....so he can do 4 unit in 1 days .

now A has finished 80 units so remaining work is 20 unit

so , 20 unit work takes 3 days time to complete in which A will do 12 unit

(since A do 4 unit/days )

thus ,B do 8 unit in 3 days

and total work is 100 unit so B will take  $(3/8)*100 = 37.5$  days to complete total work

**Q 71. a person starts writing all 4 digits numbers.how many times had he written the digit 2?**

**a) 4200 b) 4700 c) 3700 d) 3200**

**Solution-1)when 2 is at unit place= $9*10*10*1$**

**2)when 2 is at tenth place= $9*10*1*10$**

**3)when 2 is at hundred place= $9*1*10*10$**

**4)when 2 is at thousand place= $1*10*10*10$**

**so total no. of 2s= $900+900+900+1000=3700$**

**Q 72. There is a tank,and two pipes A and B.A can fill the tank in 25 minutes and B can empty the tank in 20 minutes.If both pipes are opened at same time.how much time required the tank can fill?**

**a) 15 min b) 18 min c) 13 min d) Never be filled**

**Solution-We have pipe A filling the tank completely in 25 minutes.**

**le, it can fill 100% tank in 25 minutes.**

Hence, in 1 min, the tank is filled =  $100/25 = 4\%$

We have pipe B which can empty the tank in 20 minutes.

Hence, in 1 min, tank is empties =  $100/20 = 5\%$ .

Since we have the rate of emptying the tank more than the rate of filling the tank,

We can say that the tank will never get filled.

**Q 73.** 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 apartment to office. If one day the old man started at 10:00AM and the young man at 10:05AM from the apartment to office, when will they meet?

a) 10:15 b) 10:30 c) 10:45 d) 10:00

**Solution-**Ratio of old man speed to young man speed = 2:3

The distance covered by old man in 5 min = 10

The 10 unit is covered with relative speed= $10/(3-2)=10$  min

so, they will meet at 10:15 am.

**Q 74.** the shopkeeper charged 12 rupees for a bunch of chocolate. but i bargained to shopkeeper and got two extra ones, and that made them cost one rupee for dozen less then first asking price .

how many chocolates i recieved in 12 rupees ??

a)10

b)16

c)14

d)18

**Solution-let no. of chocolates= $x=x/12$ dozen**

**price of  $x/12$  dozen is rs 12**

**so price of 1 dozen is  $144/x$**

**2nd condition**

$$144/(x+2) + 1 = 144/x$$

**go through option  $x=16$**

**Q 75. there are 16 teams divided in 4 groups. Every team from each group will play with each other once. The top 2 teams will go to the next round and so on the top two teams will play the final match. Minimum hw many matches will be played in that tournament?**

**a) 43 b) 40 c) 14 d) 50**

**Solution-for first round  $4 \times 4C2 = 24$**

**second round  $2 \times 4C2 = 12$**

$$1 \times 4C2 = 6$$

**FINAL=1**

**TOTAL=43**

**Q 76. A sealed envelope contains a card with a single digit written on it. Three of the following statements are true and one is false.**

**I. The digit is 1.**

**II. The digit is not 2.**

**III. The digit is not 9.**

**IV. The digit is 8.**

**Which one of the following must necessarily be correct?**

**a) II is false**

**b) III is true**

- c) IV is false
- d) The digit is even.
- e) I is true

**Solution-III is true**

since when 3 is wrong then there are 2 possibilities that 1 or 8 which is not possible

**Q 77. Tickets are numbered from 1,2....1100 and one card is drawn randomly what is the probability of having 2 as a digit?**

- a) 29/110 b) 32/110 c) 30/110 d) 22/110

**Solution-**for every 100 probability of having 2 as digit is 19 and 2 is used 20 times for every 100. according to qstn, there r 10 100's having 19 digits as 2 n 200 to 299 has 100 digits having 2. hence,

$$((10 \times 19) + 100) / 1100 = 29/110$$

**Q 78. How many 2's are there between the terms 112 to 375?**

- a) 313 b) 159 c) 156 d) 315

**Solution-156**

from 112 to 199....(19)

from 200 to 299....(100+20)

from 300 to 375....(18)

so  $100 + 19 + 18 + 20 - 1 = 156$

-1 bcz 112 shouldn't be taken

**Q 79. Ram and Shakil run a race of 2000 meters. First, Ram gives Shakil a start of 200 meters and beats him by one minute. If , Ram gives Shakil a start of 6 minutes Ram is beaten by 1000 meters. Find the time in minutes in which Ram and Shakil can run the races separately.**

**a) 12,18 b) 10,12 c) 11,18 d) 8,10**

**Solution-Let x and y are the speeds of Ram and Shakil.. Then by problem we got following equation**

$$2000/x=(1800/y)-1$$

$$1000/X=(2000/y)-6$$

**solve equation 1 and 2, we get x=250 and y=200**

**Therefore, Time taken by Ram and Shakilk to complete a race of 2000m is 8 min and 10 Min**

**d) 8,10**

**Q80. The average temperature of June, July and August was 31 degrees. The average temperature of July, August and September was 30 degrees. If the temperature of June was 30 degrees, find the temperature of September (in degrees).**

**a) 25**

**b) 26**

**c) 27**

**d) 28**

**Solution-c.27**

$$\text{June}+\text{July}+\text{August}=3*31=93\text{.....(1)}$$

$$\text{July}+\text{august}+\text{Sept}=3*30=90\text{.....(2)}\text{June}=30$$



Hence, putting June = 30 in equ 1

$$\text{July} + \text{August} = 63$$

putting in 2nd equ.

$$63 + \text{Sept} = 90$$

$$\text{hence, Sept} = 27$$

**Q 81.** Three generous friends, each with some money, redistribute the money as follows: Sandra gives enough money to David and Mary to double the amount of money each has. David then gives enough to Sandra and Mary to double their amounts. Finally, Mary gives enough to Sandra and David to double their amounts. If Mary had 11 rupees at the beginning and 17 rupees at the end, what is the total amount that all three friends have?

a) 105 b) 60 c) 88 d) 71

**Solution-**let Sandra, David and Mary each have  $s$ ,  $d$  and 11 (given) respectively.

**After first distribution**

David has  $d + d = 2d$ , Mary has  $11 + 11 = 22$  and Sandra has  $s - d - 11$ .

**After second distribution,**

Sandra has  $2(s - d - 11)$ , Mary has  $2 \cdot 22 = 44$  and David has  $2d - (s - d - 11) - 22 = 3d - s - 11$ .

**After third distribution,**

Sandra has  $2 \cdot 2(s - d - 11)$ , David has  $2(3d - s - 11)$  and Mary has  $44 - 2(s - d - 11) - (3d - s - 11) = 77 - s - d$

It is given that finally Mary has 17 rs. So,

$$77 - s - d = 17$$

$$\Rightarrow s + d = 60$$

$$\Rightarrow s + d + 11 (\text{Mary's money}) = 60 + 11 = 71.$$

**Q 82. George walks 36 kms partly at a speed of 4 kms per hour and partly at 3 km per hour. If he had walked at a speed of 3km per hour when he had walked at 4 and 4 km per when he had walked at 3 he would have walked only 34 kms. The time (in hours) spent by George in walking was).**

**a) 8 b) 12 c) 5 d) 10**

**Solution-the question can be solved with the help of two**

**equations...  $4x+3y=36$ ----equ(1)**

**$3x+4y=34$ ----equ(2)**

**by solving these two equations**

**$x=6$  and  $y=4$**

**so total time is 10hours.**

**Q 83. The sum of the four consecutive two digit odd number when divided by 10 becomes a perfect square, which of the following can be one of these four numbers?**

**a) 21 b) 25 c) 41 d) 67**

**Solution-Let the four 2-digit odd numbers**

**be  $n-3$   $n-1$   $n+1$   $n+3$**

**Sum of the 4 numbers  $\Rightarrow 4n$**

**acc to qn, when the sum is divided by 10**

**we get a perfect square...**

**perfect squares include  $\Rightarrow 1, 4, 9, 16, 25, 36, 49, \dots$**

**Possible values of  $4n/10 \Rightarrow 4, 16, 36 \dots$**

**If  $4n/10=4$**

**$n=10$**

**Hence, the corresponding nos are 7,9,11,13(all of which are NOT 2-digit nos)**

If  $4n/10=16$

$n=40$

Hence the corresponding nos are 37, 39, 41, 43

If  $4n/10=36$

$n=90$

Hence the corresponding nos are 87, 89, 91, 93

The answer to the ques therefore is Option C

**Q 84.** Consider the sequence of numbers 0, 2, 2, 4,... Where for  $n > 2$  the  $n$ th term of the sequence is the unit digit of the sum of the previous two terms.

Let  $s_n$  denote the sum of the first  $n$  terms of this sequence. what is the smallest value of  $n$  for which  $s_n > 2771$ ?

a) 692 b) 693 c) 694 d) 700

**Solution-**0 2 2 4 6 0 6 6 2 8 0 8 8 6 4 0 4 4 8 2 .0 2 2...this series will be repeated after every 20 terms

sum of 20 terms of series=80

$2771/80$  quotient=34 remainder=51 sum of 13 terms =52

number of terms is 693 since  $34 \times 20 = 680$

$680 + 13 = 693$

sum of 693 terms will be  $> 2771$

**Q 85.** a number plate can be formed with two alphabets followed by two digits with no repetition. then how many possible combinations can we get?

a) 52500 b) 58500 c) 56500 d) 56800

**Solution-**no.of alphabets=26 (a-z), no.of digits=10(0-9).

ways of arranging two alphabets with out repetition= $26 \times 25$ ;

ways of forming two digits without repetition= $10 \times 9$

no.of combinations of forming the number on number plate=  $26 \times 25 \times 10 \times 9 = 58500$

**Q 86.** I bought a certain number of marbles at rate of 59 marbles for rupees 2 times M, where M is an integer. I divided these marbles into two parts of equal numbers, one part of which I sold at the rate of 29 marbles for Rs. M, and the other at a rate 30 marbles for Rs. M. I spent and received an integral number of rupees but bought the least possible number of marbles. How many did I buy?

a) 870 b) 102660 c) 1770 d) 1740

**Solution-**Let he bought x marbles.

59 marbles costs = Rs. 2M

Therefore, x marbles costs = Rs.  $(2M \times x) / 59$

Since the marble is divided into 2 equal parts so the number x should be an even number.

For first  $x/2$  marbles,

29 marbles s.p. is = Rs. M

Therefore,  $x/2$  marbles s.p. = Rs.  $(M \times x) / 58$

For other  $x/2$  marbles,

30 marbles s.p. is = Rs. M

Therefore,  $x/2$  marbles s.p. = Rs.  $(M \times x) / 60$

Now we can't equate like  $[(M \times x) / 58] + [(M \times x) / 60] = (2M \times x) / 59$

because  $(M \times x)$  will get cancel each side and of course  $1/58 + 1/60$  is not equal to  $2/59$

So here we don't need M and we can cancel it. After that we have,

$CP = 2x/59$

For first  $x/2$  marbles,

$SP = x/58$

And for other  $x/2$  marbles,

$$SP = x/60$$

Now this CP and SP must be an integer (as per question). So we have to find a number  $x$  which will be divisible simultaneously by 59, 58 and 60. So we have to find the LCM of 59, 58, 60 which will turn out minimum value as 102660 and it is even as well. So the value of  $x$  will be 102660 minimum

**Q 87.** Cara, a blue whale participated in a weight loss program at the biggest office. At the end of every month, the decrease in weight from original weight was measured and noted as 1, 2, 6, 21, 86, 445, 2676. While Cara made a steadfast effort, the weighing machine showed an erroneous weight once. What was that.

a) 2676

b) 2

c) 445

d) 86

$$\text{Solution-} 1*1+1=2$$

$$2*2+2=6$$

$$6*3+3=21$$

$$21*4+4=88 \text{ and not } 86$$

**Q 88.** How many different integers can be expressed as the sum of three distinct numbers from the set {3,8,13,18,23,28,33,38,43,48}

a) 421 b) 20 c) 10 d) 22

$$\text{Solution-minimum sum of 3 no.}=24$$

$$\text{maximum sum}=129$$

now the series 24,29,34,.....,129

$$\text{no of terms} = \{(129-24)/5\}+1=22$$

**Q 89. Aman walking at the speed of 4 km/h crosses a square field diagonally in 3 minutes. The area of the field (in m<sup>2</sup>) is:**

- a) 20000 b) 21000 c) 25000 d) 26000**

**Solution-convert speed into m/s i.e**

$$4 \times \frac{5}{18} = \frac{2}{9}$$

**this is distance covered in 1 sec.**

**so distance covered in 3 min i.e 180 sec =  $\frac{2}{9} \times 180$**

$$= 200\text{m}$$

**this is the length of diagonal**

**and area of square =  $\frac{1}{2} (\text{diagonal}) \times (\text{diagonal})$**

$$\frac{1}{2} \times 200 \times 200$$

$$20,000 \text{ m}^2$$

**Q 90. A owes B Rs 50. He agrees to pay B over a number of consecutive days starting on a Monday, paying single note of Rs 10 or Rs 20 on each day. In how many different ways can A repay B. (Two ways are said to be different if at least one day, a note of a different denomination is given)**

- a) 8**

- b) 7**

- c) 6**

- d) 5**

**Solution-  $10, 20, 20 = \frac{3!}{2!} = 3$  ways**

**$10, 10, 10, 20 = \frac{4!}{3!} = 4$  ways**

**$10, 10, 10, 10, 10 = \frac{5!}{5!} = 1$  way**

**so, total =  $3 + 4 + 1 = 8$  ways.**

**Q 91. The HCF of 2472, 1284 and a third number 'N' is 12. If their LCM is  $2^3 \times 3^2 \times 5 \times 103 \times 107$ ,**

**then the number 'N' is:**

**a)  $2^2 \times 3^2 \times 7$**

**b)  $2^2 \times 3^3 \times 103$**

**c)  $2^2 \times 3 \times 5$**

**d) None of these**

**Solution-  $2472=8 \times 3 \times 103$**

**$1284=4 \times 3 \times 107$**

**so  $n = 4 \times 3 \times x$**

**dividing by hcf**

**$2472/12=2 \times 103$**

**$1284/12=107$**

**$lcm/12=2 \times 3 \times 5 \times 103 \times 107$**

**$x=lcm/first \times second$**

**$x=2 \times 3 \times 5 \times 103 \times 107 / 2 \times 103 \times 107 = 3 \times 5 = 15$**

**number is =  $15 \times 12 = 180$**

**ans. d)**

**Q 92. A certain function f satisfies the equation  $f(x)+2f(6-x) = x$  for all real numbers x. The value of f(1) is**

**a) 2**

**b) can't determine**

c) 1

d) 3

Solution-  $f(1)+2*f(6-1)=1$ ..... (1)

$f(5)+2*f(6-5)=5$ ..... (2)

substituting we have (2) in (1) we have :-

$-3f(1)=-9$ ,

hence answer  $f(1)=3$

Q 93. what is the value of

$77!*(77!-2*54!)^3/(77!+54!)^3+54!*(2*77!-54!)^3/(77!+54!)^3$

a)  $2*77!+2*54!$  b)  $77!-54!$  c)  $77!+54!$  d)  $2*77!-2*54!$

Solution-  $77!-54!$

take  $77!=a$ ,  $54!=b$  then we get in simple  $(a-2b)^3/a+b$  solve it u get  $a-b$  as answer

Q 94. Find sum of the series  $1-2+3-4+....-98+99$

a) -49 b) 0 c) 50 d) -50

Solution-  $(1+3+.....+99)-(2+4+....+98)$  ie 50 terms+49 terms resp.

using formula  $s=n/2[a+l]$

we get,  $50/2[1+99]-49/2[2+98]$

den  $2500-2450=50$ .

Q 95. In a city there are few engineering, MBA and CA candidates. Sum of four times the engineering, three times the MBA and 5 times CA candidates is 3650. Also three times CA is equal to two times MBA and three times engineering is equal to two times CA. In total how many MBA candidates are there in the city?

a) 200 b) 300 c) 450 d) 400



**Solution-** $e$  = no. of engineering students,  $m$  = no. of MBA students and  $c$  = no. of CA students

$$4e + 3m + 5c = 3650, \text{ therefore } e = (3650 - 3m - 5c)/4 \text{ -----(1)}$$

$$3c = 2m, \text{ therefore } c = 2m/3$$

$3e = 2c$  replacing  $e$  with (1) we get,

$$3(3650 - 3m - 5c)/4 = 2c \text{.....replacing } c \text{ with } 2m/3 \text{ and solving this equation we get } m = 450$$

**So the number of MBA students is 450**

**Q 96. Find the sum of angles 1,2,3,4,5 in a star.**

a) 180 b) 300 c) 360 d) 400

**Solution-**let an angle of 5 star is  $a, b, c, d, e$

$$\text{then } (180 - a) + (180 - b) + (180 - c) + (180 - d) + (180 - e) = 720$$

$$\text{now } a + b + c + d + e = 900 - 720 = 180$$

**Q 97. Consider a triangle drawn on the X-Y plane with its three vertices at (41, 0), (0, 41) and (0, 0), each vertex being represented by its (X, Y) coordinates. The number of points with integer coordinates inside the triangle (excluding all the points on the boundary) is**

(1) 780

(2) 800

(3) 820

(4) 741

**Solution-**draw the triangle and view it carefully

**The number of points with integer coordinates inside the triangle are**

**(1,39)**

**(1,38),(2,38)**

**(1,37),(2,37),(3,37)**

**.....**

**.....**

**(1,2),(2,2),(3,2),.....(38,2)**

**(1,1),(2,1),(3,1),(4,1)...(38,1),(39,1)**

**so total no of points are=1+2+3+...+38+39**

$$\mathbf{=39*(39+1)/2=39*20=780}$$

**ANS(1)**

**Q 98. the marked price of coat was 40%less than the suggested retail price. Eesha purchased the coat for half of the marked price at the 15th anniversary sale. What percent less than the suggested retail price did eesha pay?**

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

**Solution-suppose retail price = 100**

**so the market price will be = 60**

**as given coat purchased = half f d market price = 30**

**so its clear isha paid 70% less than retail price.**

**Q 99. There is a school were 60% are girls and 35% of the girls are poor.**

**Students are selected at random, what is the probability of selecting a poor girl out of total strength.**

**a) 21 b) 27 c) 28 d) 29**

**Solution- '21 will be the probability of poor girl out of total strength....**

let 100 be the total strength

60% out of 100= 60 number of girls

now 35% of gals are poor ..i.e.  $(35/60)*100$  are poor girl=21

so 21% of total strength are poo... i.e. the probability is .21

Q 100. If  $m+n$  is divided by 12 leaves a remainder 8, If  $m-n$  is divided by 12 leaves a remainder 6, then If  $mn$  is divided by 6 what is the remainder?

a) 4 b) 3 c) 2 d) 1

Solution- let  $m=19$  and  $n=1$ ;

$m+n=20$ , gives the remainder=8

$m-n=18$ , remainder=6

so  $mn=19*1=19$  after division by 6 it wud giv the remainder 1...:)

Q 101. there is conical tent in which 10 persons can stand. Each person need 6m square to stand and 60m cube air to breath. what is the height of tent?

a) 60 b) 30 c) 20 d) 45

Solution-Amount of area reqd. by 1 person to stand = 6 sq.metre

Amount of area reqd. by 10 person to stand =  $6 \times 10$  sq.metre i.e 60 sq.metre

So,

Base Area,  $\pi r^2 = 60$

$\Rightarrow r^2 = 60/\pi$  -----(1)

Now,

Volume of air reqd. to breathe 1 person= 60 cu.metre

Volume of air reqd. by 10 person to breathe =  $60 \times 10 = 600$  cu.metre

So,

Volume,  $\frac{1}{3} \pi r^2 h = 600$  -----(2)

Putting the value of eqn 1 in eqn 2, we get

$$\frac{1}{3} \pi \cdot 60 / \pi \cdot h = 600$$

$$\Rightarrow \frac{1}{3} \cdot 60 \cdot h = 600$$

$$\Rightarrow 20 \cdot h = 600$$

$$\Rightarrow h = 600 / 20 = 30$$

Therefore height = 30 metres

**Q 102.** In a triangle ABC, the lengths of the sides AB and AC equal 17.5 cm and 9 cm respectively. Let D be a point on the line segment BC such that AD is perpendicular to BC. If AD = 3 cm, then what is the

radius (in cm) of the circle circumscribing the triangle ABC?

a) 17.05 b) 27.85 c) 22.45 d) 26.25

**Solution-**circum radius = R

$$\text{Area of the triangle ABC} = \Delta = \frac{1}{2} (BC)(AD) = \frac{1}{2} (a)(3) = \frac{3a}{2}$$

$$\text{The formula here is : } R = \frac{abc}{4\Delta} = \frac{abc}{4(\frac{3a}{2})} = \frac{bc}{6} = \frac{(17.5)(9)}{6} = 26.25$$

**Q 103.** A rectangle is divided into four rectangles with area 70,36,20 and X. The value of X is:

a) 350/90 b) 350/7 c) 350/11 d) 350/13

$$\text{Solution-} 70/x = 36/20$$

$$\Rightarrow x \cdot 36 = 20 \cdot 70$$

$$\Rightarrow x = 20 \cdot 70 / 36 = 350/9$$

**Q 104. the ratio of radii of cylinder to that of cone is 1:2. heights are qual. find ratio between volume.**

**a) 3:4 b) 1:2 c) 1:4 d) 4:1**

**Solution-Let ratio of radius of cylinder to cone=... $r_1/r_2=1/2$**

**Volume of cylinder= $\pi \cdot r_1^2 \cdot h$**

**Volume of cone= $\pi \cdot r_2^2 \cdot h / 3$**

**Ratio of volumes= $3 \cdot (r_1/r_2)^2 = 3:4$**

**Q 105. A hollow pipe has circumference 14 cm. A bug is on its wall at a distance of 48 cm from top. A drop of honey is on the wall at 24 cm from top but diametrically opposite to bug. Find the shortest distance bug has to travel to reach honey.**

**a) 25 cm      b) 39 cm      c) 21 cm      d) 24 cm**

**Solution-Total Vertical Distance bug has to through = 24 cm Circumference of pipe= 14 cm Since bug has to move to diametrically opposite side, it has to cover half of the circumference =  $14/2 = 7$  cm SO by Pythagoras, diagonal distance would be =  $\sqrt{7^2 + 24^2} = \sqrt{625} = 25$  cm**

**Q 106. if a ladder is 100m long, and distance b/w bottom of ladder and wall is 60. top side of bottom and wall is joint.**

**what is the maximum size of cube that place b/t them.**

**a) 34.28 b) 24.28 c) 21.42 d) 28.56**

**Solution- using trigonometry we have**

$$(80/60) = \tan(y) \dots 1$$

$$(x/60-x)=\tan(y)\dots 2$$

solve it... u will have 35 so a) 34.28

**Q 107. what is the next three numbers for the given series? 11 23 47 83 131**

**a)145 b) 178 c) 176 d) 191**

**Solution- there are multiples of 12:**

$$11+12=23$$

$$23+(12*2)=47$$

and so on .....answer is 191 as  $131+(12*5)=191$

**Q 108. A series of book was published at 7 year intervals. When the 7th book was issued the sum of publication year is 13524. When was the 1st book published ?**

**a) 1911 b) 1910 c) 2002 d) 1932**

**Solution- sum of A.P. series= $(n/2)(2*a+(n-1)*d)$**

here sum=13524, n=7, d=7 substituting these values in above eq. n solving we get  
**a=1911**

**which was the 1st book published year.**

**Q 109. There are 14 digits of credit card number to be filled. Each of the below three boxes contains continuous digits of 18 as sum. Given: 4th digit is 7 and 7th digit is x. Then what is the value of x?**

**a) 1 b) 7 c) 4 d) 2**

**Solution-  $a+b+c=18$  and  $b+c+d=18$**

**given  $d=7$  ,so  $b+c=11$**

then we get  $b=5$  and  $c=6$

$c+d+e=18$ , so  $e=18-(c+d)=5$

since  $d+e+f=18$

we get  $f=7$  ie  $x=7$

**Q 110.** Crusoe hatched from a mysterious egg discovered by Angus, was growing at a fast pace that Angus had to move it from home to the lake. Given the weights of Crusoe in its first weeks of birth as 5, 15, 30, 135, 405, 1215, 3645. Find the odd weight out.

a) 3645

b) 135

c) 30

d) 15

**Solution-** 30.

5

$5*3=15$

$15*3=45$ (here it is given as 30)

$45*3=135$

$135*3=405$

$405*3=1215$

$1215*3=3645$

**Q 111.** Arun makes a popular brand of ice-cream in a rectangular shaped bar 6 cm long, 5 cm wide and 2 cm thick. To cut costs, the company had decided to reduce the volume of the bar by 19%. The thickness will remain the same, but the length and width will be decreased by the same percentage. The new width will be.

a) 4.5cm b) 5.5cm c) 6.5 cm d) 7.5cm

**Solution-** volume  $v=l*b*t$

new volume is 81% of old v.

therefore new vol = 81%(v)= $l'*b'*t$

$$\Rightarrow 81\% (l*b*t) = l'*b'*t$$

$$\Rightarrow 81\% (l*b) = l' * b'$$

since the change in new l and b is the same. hence consider change to be x.

$$\Rightarrow 81\% (l*b) = xl*xb$$

$$81\%=x^2$$

$$x=9\%.$$

9% change in 5cm width is 0.45

therefore new width is  $5-0.45=4.55\text{cm}$

**Q 112.** 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 leaves after 2 hours. Find the time taken by B and C to complete the remaining work.

a) 2 (1/11) hours

b) 4 (1/11) hours

c) 2 (6/11) hours

d) 2 hours

**Solution-** A,B,C 1 hour work is= $\frac{1}{8}+\frac{1}{10}+\frac{1}{12}= \frac{37}{120}$

A,B,C work together for 2 hours, so,A,B,C 2 hours work is:  $(\frac{37}{120})*2=\frac{37}{60}$

remaining work= $1-\frac{37}{60}=\frac{23}{60}$  ( $\frac{23}{60}$  work is done by B and C together)

B,C 1 hour work is=  $\frac{1}{10}+\frac{1}{12}=\frac{11}{60}$

$\frac{23}{60}$  hours work done by B,C=  $(\frac{11}{60})* (\frac{60}{23})=\frac{11}{23}$



so... ans is:  $2(1/11)$

**Q 113. What is the greatest possible positive integer n if  $8^n$  divides  $(44)^{44}$  without leaving a remainder?**

**a)14 b)28 c)29 d)15**

**Solution-  $44^{44} = 2^{88} * 11^{44}$**

**$= 8^{29} * 2 * 11^{44}$**

**so ans is 29**

**Q 114. A tree of height 36m is on one edge of a road of width 12m. It falls such that the top of the tree touches the other edge of the road. Find the height at which the tree breaks.**

**a) 16 b) 24 c) 12 d) 18**

**Solution- let the height at which it broke be Xmt**

**let the length of other piece be Ymt which touches ground**

**$X+Y=36;$**

**$Y^2 - X^2 = 144$**

**then on solving  $x=16mt$**

**Q 115. How many 6 digit even numbers can be formed from digits 1 2 3 4 5 6 7 so that the digit should not repeat and the second last digit is even?**

**a)6480 b)320 c)2160 d)720**

**Solution- given 6th digit even number , so last digit 2 or 4 or 6-> 3 ways**

" 5th digit should be even...so there will be 2 ways(rep. not allowed)

so,therefore we get  $5*4*3*2*2*3=720$  ways

**Q 116.** At the end of 1994 rohit was half an old as his grand mother.The sum of years in which they were born is 3844. How old rohit was at the end of 1999.

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

**Solution-** let at the end of 1994 grand mother's age is  $x$

and rohit's age  $x/2$

then we can say....birth year of GM is  $=(1994-x)$

and rohit is  $= (1994 - x/2)$

sum of years is 3844

i.e  $(1994 -x) + (1994 - x/2) = 3884$

$\Rightarrow x = 96$

i.e GM age is 96

so rohit age will be  $96/2 = 48$  years

in 1994 age is 48

1995 49

1996 50

1997 51

1998 52

1999 53

so ans should be 53 years.....

**Q 117.** Find the number of divisors of 1728.?

a) 28 b) 21 c) 24 d) 18

**Solution-  $1728 = 2^6 \times 3^3$**

**Hence the Number of factors =  $(6+1) \times (3+1) = 7 \times 4 = 28$ .**

**We know that if a number represented in standard form  $(a^m \times b^n)$ , then the number of factors is given by  $(m+1)(n+1)$ .**

**Answer is 28**

**Q 118. 17 x 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**

**Solution- area of the rectangular ground =  $(17 \times 8) \text{ m}^2 = 136 \text{ m}^2$**

**taking into account the path:**

**total area =  $[(17 + (2 \times 1.5)) \times (8 + (2 \times 1.5))]$  =  $220 \text{ m}^2$**

**area of the path =  $220 - 136 = 84 \text{ m}^2$**

**gravel required =  $[84 \times (12/100)] = 10.08 \text{ m}$**

**Q 119. Ashok, Eesha, Farookh, and Gowri ran a race. Ashok said, “I did not finish 1st or 4th “.**

**Eesha said, “I did not finish 4th “. Farookh said, “I finished 1st “. Gowri said, “I finished 4th “. There were no ties in the competition, and exactly three of the children told the truth. Who finished 4th? explain**

- a) Farookh**
- b) Eesha**
- c) Gowri**

d) Ashok

**Solution- Gowri finished with 4th place:**

**According to the qsn :**

**exactly three of the children told the truth.**

**then 4 conditions may arise i.e.**

**TTTF, TTFT, TFTT, FTTT**

**For 1st condition :**

**Let Gowri lies that means she never be in 4th Place and other 3 tell the truth then nobody is in 4th place**

**so from the above we conclude that Gowri finished at the 4th**

**Q 120. A circle has 29 points arranged in a clockwise manner numbered from 0 to 28, as shown in the figure below. A bug moves clockwise around the circle according to the following rule. If it is at a point  $i$  on the circle, it moves clockwise in 1 second by  $(1 + r)$  places, where  $r$  is the remainder (possibly 0) when  $i$  is divided by 11. Thus if it is at position 5, it moves clockwise in one second by  $(1 + 5)$  places to point 11. Similarly if it is at position 28 it moves  $(1 + 6)$  or 7 places to point 6 in one second. If it starts at point 23, at what point will it be after 2012 seconds?**

**a) 1 b) 7 c) 15 d) 20**

**Solution- after 1st second :  $(1 + 23 \% 11 = 1) = 2$  places [25]**

**after 2nd second :  $(1 + 25 \% 11 = 3) = 4$  places [0]**

**after 3rd second :  $(1 + 0 \% 11 = 0) = 1$  place [1]**

**after 4th second :  $(1 + 1 \% 11 = 1) = 2$  places [3]**

**after 5th second :  $(1 + 3 \% 11 = 3) = 4$  places [7]**

after 6th second :  $(1+7\%11 = 7) = 8$  places [15]

after 7th second :  $(1+15\%11 = 4) = 5$  places [20]

after 8th second :  $(1+20\%11 = 9) = 10$  places [1]

now, for the same pattern from 4th sec to 8th sec will repeat itself (5 sec intervals)..

total time = 2012 secs

first 3 secs out of pattern...so time left  $2012 - 3 = 2009$  secs

now no. of repetitions in the leftover time =  $2009/5 = 401$ ....remainder = 4

for the next 4 iterations following the similar pattern

the position will be 20..

**Q 121.** A team won 80% of the games it played. It played 5 more games of which it won 3 and lost 2. Its loss percentage changed to 25%. How many games did it play overall?

a) 20

b) 14

c) 16

d) 25

**Solution-** ans= 20

if game played= $x$

then lost game= $x/5$

now they played 5 more games in which they lost 2

so,  $(x+5)*25/100=x/5 + 2$

$x=15$

so total game he played  $=15+5 = 20$

**Q 122.** find the sum of the series given below  $1(1!)+2(2!)+3(3!)+.....+2012(2012!)$

a)  $2013!+1$  b)  $2013!-1$  c)  $2012!+1$  d)  $2013!-1$

**Solution-** let  $x = 1(1!)+2(2!)+3(3!)+.....+2012(2012!)$  &  $y = 1!+2!+3!+.....+2012!$

$x+y = 2(1!)+3(2!)+....+2013(2012!) = 2!+3!+....+2012!+2013!$

$x+y+1 = 1!+2!+3!+.....+2012!+2013! = y+2013!$

$x = 2013! -1$

**Q 123.** there is a circle which circumscribes three unit circle which are tangential to each other.what is the circumference of bigger circle.?

a)  $\pi(4+2\sqrt{3})/\sqrt{3}$  b)  $\pi(6+2\sqrt{3})/\sqrt{3}$  c)  $\pi(3+2\sqrt{3})/\sqrt{3}$  d)  
 $\pi(6+2\sqrt{3})/\sqrt{3}$

**Solution-** Just draw according to question,

now, join the center of the smaller circles.

radius of bigger circle =  $1 + \text{radius of circle circumscribing the equilateral triangle.}$

Hence radius of bigger circle =  $2/\sqrt{3} + 1$

Hence circumference =  $2 * \pi * R$

ie.  $\pi(4+2\sqrt{3})/\sqrt{3}$

**Q 124.** a man starts work on monday and works for 8 days and works for every ninth day as his holiday. His 12th day will be on which day

a) Monday b) Wednesday c) Thursday d) Tuesday

**Solution-** his work cycle includes 9 days(Mon-Mon=8days and 1 day Tue is holiday)

so to get 12 holiday there should be 12 cycle= $12 \times 9 = 108$  days

get remainder by dividing it by 7( $108/7$  i.e 3)

hence from monday 3rd day is wensday

**Q 125.** the value of a scooter depreciates in such a way that at the end of each year, is  $\frac{3}{4}$  of its value at the beginning of same year. If the initial value of the scooter is rs40,000. What is the value at the end of 3yrs?

a)23125      b)19000      c)13435      d)16875

**Solution-** As, it is given that , the cost becomes  $\frac{3}{4}$  at the end of year.

so, after 3 years ,the price of Scooter= $40000 \times \frac{3}{4} \times \frac{3}{4} \times \frac{3}{4} = \text{Rs.}16875$

**Q 126.** At 12:00 hours jake starts to walk from his house at 6kms an hour. At 13:30 hours, paul follows him from jake's house on his bicycle at 8 kmph. When will jake be 3 kms behind paul?

a) 19:00 b) 18:30 c) 20:00 d) 19:30

**Solution-** upto 13:30 jake covered  $6 \times 1.5 = 9\text{km}$

then paul need to be ahead of 3 km.so he go 12km.

their relative speed is 2km per hour.(same direction).

so 12km divided by 2 is 6hrs.

hence from 13:30hrs ,6hrs is added.so answer is 19:30 hours.

**ANS:**19:30 hrs

**Q 127.** There are five boxes in a cargo hold. The weight of the first box is 200 kg and theweight of the second box is 20% higher than the weight of the third box, whose weight is 25% higher than the first box's weight. The fourth box at 350 kg

is 30% lighter than the fifth box. Find the difference in the average weight of the four heaviest boxes and the four lightest boxes.

- a) 80 kg
- b) 75 kg
- c) 37.5 kg
- d) 116.8 kg

**Solution-** weight of 1st box=200 kg

so weight of 3rd box=250 kg

weight of 2nd box = 300 kg and 4th box= 350

thus 5th box=500 kg

avg weight of four heaviest boxes=  $1400/4=350$

and lightest box= $1100/4=275$

diff=75 kg

**Q 128.** A rectangle of height 100 squares and width 200 squares. Squares is drawn on a graph paper. It is colored square by square from top left corner and moving across in a spiral turning right. Whenever a side of this rectangle or a colored square is reached. Which square is colored last (give its row and column numbers). The bottom right square is on row 100, column 200?

- a) 51,150
- b) 51, 50
- c) 50, 150
- d) 50, 50

**Solution-** For (4, 8) rectangle, ends at (3, 2)

Likewise,

For (2, 4) rectangle, ends at (2, 1)



For (3, 6) rectangle, ends at (2, 5)

For (4, 8) rectangle, ends at (3, 2)

For (5, 10) rectangle, ends at (3, 8)

For (6, 12) rectangle, ends at (4, 3)

For (7, 14) rectangle, ends at (4, 11)

For (8, 16) rectangle, ends at (5, 4)

For (9, 18) rectangle, ends at (5, 14)

For (10, 20) rectangle, ends at (6, 5)

Analyzing the above 10 points:

We can get some idea that,

For Even number of rows, End points column increases 1 by previous column.

For Odd number of rows, End points column difference of the present column and the previous even number column.

For End point row, the value repeats two times from row

2. In our problem, (100, 200) i.e.

Even number row,

So End point column value must be 50 for 200 columns and End point row value must be 51 for 100 rows.

For even number of rows and columns,

Condition:  $\text{Column} = 2 * \text{Row}$

Endpoint (R, C) =  $\{((\text{Row}/2) + 1), \text{Column}/4\}$

so last square to be coloured is (51, 50)

**Q 129.** A bag contains six sticks of the following lengths 1 cm, 3 cm, 7 cm, 11 cm and 13 cm. three sticks are drawn at random from the bag. What is the probability that we can form a triangle with those sticks?

- a)  $11/20$
- b)  $1$
- c)  $1/4$
- d)  $2/5$

**Solution-** A bag contains six sticks of the following lengths 1 cm, 3 cm, 7 cm, 5cm, 11 cm and 13 cm. three sticks are drawn at random from the bag. What is the probability that we can form a triangle with those sticks

total possibilities =  ${}^6C_3 = 20$

now for making a triangle,, the sum of any 2 sides must be greater than 3rd side  
so

3 5 7

3 11 13

5 7 11

7 11 13

5 11 13

$5/20 = 1/4$

**Q 130.** 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 Rs
- b) 39 Rs
- c) 35 Rs
- d) 36 Rs

**Solution-**  $3m + 4a = 85 \dots (i)$

$5a + 6p = 122 \dots (ii)$

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

Adding (i) (ii) (iii) we get

$$9a+9m+8p= 321$$

$$9a+9m+9p= 321+p$$

$$a+m+p=(321+p)/9-----(iv) \text{ It must have to be a integer number.}$$

To make (iv) as an integer p must have to be either 3 or (3+9) or (3+18) or.....

Let check it out..

if  $p=3$  then

$$5a+18=122$$

$$5a=104$$

$a \neq$  an integer so  $p=3$  is false

If  $a=12$ , then

by(ii)

$$5a=122-72$$

$$a=10$$

by(i)

$$3m+85=40$$

$$a=15$$

$$a+m+p= 15+10+12=37.$$

Q 131. how many number x (x being an integer) with  $10 \leq x \leq 99$  are 18 more than sum of their digits?

a)12

b)9

c)18

**d)10**

**Solution- Let the no. be  $10y+z$ .**

**then,**

$$10y+z = y+z+18$$

$$\Rightarrow Y=2$$

**So the no. are 20, 21, 22, 23, 24, 25, 26, 27, 28, 29. Total nos. 10**

**Q 132. F, G, H, K, L, M and N are 8 people. They need to group into 2 with the condition.**

- \* F and J must be same group**
- \* G and N must be in different groups**
- \* H and L must be in same group**
- \* M and G are not in the same**

**group Correct ordering of groups**

**a) FJ,KL,MN,GH**

**b) FH,JL,MN,GK**

**c) FJ,HL,MN,GK**

**d) FJ,HI,MN,GH**

**Solution- ans is c because c satisfies all the conditions specified**

**Q 133. In how many ways can the digit of the number 2233558888 be arranged so that the odd digits are placed in the even positions?**

**a) 900 b) 450 c) 225 d) 360**

**Solution- odd place combination =  $5!/2!*2!=30$**

even place combination=  $6!/2!*4!=15$

to total= $30*15=450$

**Q 134. Find the probability that a leap year chosen at random will contain 53 sundays.**

a)  $2/7$

b)  $3/7$

c)  $1/49$

d)  $1/7$

**Solution-** In leap year, we have 366 days.

$366/7=52\text{Weeks}+2\text{days}$

we have already 52 sundays,mondays,etc.

then we have 2 days may be

{sunday,monday} , {monday,tuesday} , {tuesday,wednesday}  
,....{saturday,sunday}

we have 2 possible chances out of 7.

hence ans: $2/7$ .

**Q 135. A shop sells chocolates It is used to sell chocolates for Rs.2 each but there were no sales at that price.When it reduced the price all the chocolates sold out enabling the shopkeeper to realize Rs 164.90 from the chocolates alone If the new price was not less than half the original price quoted How many chocolates were sold?**

a) 39 b) 97 c) 37 d) 71

**Solution-** just go on trial and error method until u get u a integer.  $164.90/1.7=97$

**Q 136. The Mean of three numbers is 10 more than the least number and 15 less than the highest. Their median is 5. Find the sum of the three numbers.**

**a) 5 b) 20 c) 30 d) 25**

**Solution- given:  $x+y+z/3=m$**

**$y=5;$**

**$m=x+10;x=m-10;$**

**$z=m+15$**

**sub in above give eq u will get  $m= 10;$**

**sub in x, y, z =0,5,25=total=30**

**Q 136. what is the remainder of  $(16937^{30})/31$**

**a) 1 b) 2 c) 3 d) 6**

**Solution-  $16937=16926+11$ , now 16926 is completely divisible.. So Wat 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.**

**Q 137.  $8+88+888+.....+8888.....8888$ . There are 21 “8” digits in the last term of the series.**

**Find the last three digits of the sum.**

**a) 458 b) 648 c) 658 d) 568**

**Solution-  $21*8=168$  carry 16**

**$20*8=160+16=176$  carry 17**

**$19*8=152+17=169$**

**the value is 968**

**Q 138. If  $x^y$  denotes  $x$  raised to the power  $y$ , find last two digits of  $(1941^{3843}) + (1961^{4181})$ .**

**a) 02   b) 82   c) 42   d) 22**

**Solution- we should use power cycle method**

**take last 2 digit of 1941 take last 2 digits of 1961**

$$41^1=41 \quad r=1 \quad 61^1=61 \quad r=1$$

$$41^2=81 \text{ (take last 2 digits of ans)} \quad r=2 \quad 61^2=21 \quad r=2$$

$$41^3=21 \quad r=3 \quad 61^3=81 \quad r=3$$

$$41^4=61 \quad r=4 \quad 61^4=41 \quad r=4$$

$$41^5=01 \quad r=0 \quad 61^5=01 \quad r=0$$

$$41^6=41 \quad 61^6=61$$

**hence power cycle is repeating and it is 5 hence for 1961 it is 5**

**r-remainder for 1961 powercycle-5**

**for 1941 powercycle-5  $4181 \bmod 5 = \text{rem}1 = 61$**

$$3843 \bmod 5 = \text{rem } 3 = 21$$

$$\text{therefore } 21 + 61 = 82$$

**Q 139. in a g6 summit being held in London a French, a german, an Italian, a british, a Spanish and a polish diplomat represent their respective countries and participate in a round table conference to strengthen the co operation between these countries. There are exactly 6 chairs evenly spaced around a circular table. The chairs are numbered 1 through 6, with successively numbered chairs next to each other and chair number 1 next to chair no6. Each chair is occupied by one of the diplomats. The following conditions apply.**

- Polish sits immediately next to british**
- German sits immediately next to Italian**

- French doesn't sit immediately next to Italian
- If Spanish sits immediately next to Polish, Spanish doesn't sit next to Italian

Which of the following seating arrangement of the 6 diplomats in chair 1-6 would not violate the given conditions?

- A) French, Polish, British, Italian, Spanish, German
- B) French, German, Italian, Polish, British, Spanish
- C) French, German, Italian, Spanish, Polish, British
- D) French, Spanish, Polish, British, German, Italian

a) C   b) D   c) A   d) B

**Solution-** from the above inference it's clear that German sits beside Italian but Spanish must sit beside Polish and Polish sits next to British. So D matches and hence option b) D

**Q 140.** 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

**Solution-** given side length=5 .....so  $(n-1)! = (5-1)! = 4!$

ans is 24



**Q 141. A sum of rs 3000 is distributed amongst 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?**

**a) 1200 b) 2250 c) 750 d) 1050**

**Solution-  $A+B+C=3000$  from data it is clear that  $A=\frac{2}{3}(B+C)$  and  $C=\frac{1}{3}(A+B)$**

**$\implies 3C=A+B$  so replace  $A+B$  can be replaced by  $3c$ .....**

**$\implies 4c=3000$  and now  $c=3000/4\implies 750$ ... So c gets 750**

**Q 142. 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, Jake speed is**

**a) 7 kmph b) 3 kmph c) 5 kmph d) 4 kmph**

**Solution-  $\text{peed}=\frac{\text{Time}}{\text{distance}}$   $\text{Speed}=\frac{\text{Time}}{\text{distance}}$**

**let the speed of joke x then speed of paul will be 7-**

**$x \quad \frac{24}{x} + \frac{24}{7-x} = 14$**

**Try to plugin the values from the options. If Jake speed is 4 the paul is 3.**

**Q 143. A child is looking for his father. He went 90 meters in the east before turning to his right. He went 20 meters before turning to is right again to look for his father at his uncle's place 30 meters from this point. His father was not there. From there, he went 100 meters to his north before meeting his father in a street. How far did the son meet his father from starting point ?**

**a) 80 metre**

**b) 90 metre**

**c) 100 metre**

**d) 110 metre**

**Solution- Clearly, the child moves from A to B 90 metres eastwards upto B, then turns right and moves 20 metre upto C, then turns right and moves upto 30 metre upto D. Finally he turns right and moves upto 100 metre upto E.**

So  $AB = 90$  metre,  $BF = CD = 30$  metre,

So,  $AF = AB - BF = 60$  metre

Also  $DE = 100$  metre,  $DF = BC = 20$  metre

So,  $EF = DE - DF = 80$  metre

as we can see in image that triangle AFE is a right angled triangle and we are having two sides, need to calculate third one, so we can apply Pythagoras theorem here

$$A = AE = \sqrt{AF^2 + EF^2}$$

$$= \sqrt{(60)^2 + (80)^2}$$

$$= \sqrt{3600 + 6400}$$

$$= \sqrt{10000} = 100$$

So from starting point his father was 100 metre away.

Q 144. assume that  $f(1)=0$  and  $f(m+n)=f(m)+f(n)+4(9mn-1)$ .for all natural no( $\text{integer} > 0$ ) $m$  and  $n$ .what is the value of  $f(17)$ ?

a) 5436 b) 4831 c) 5508 d) 4832

Solution- 4832...

calculate upto  $f(5)$  by putting values in the given expression i.e.  $f(1)=0$ ,  $f(2)=32$ ,  $f(3)=100$ ,  $f(4)=204$ ,  $f(5)=344$ . then cal  $f(7)=f(5+2)$  or  $f(3+4)=732$  and  $f(10)=f(5+5)=1584$ , and now  $f(17)=f(10+7)=f(10)+f(7)+4(9 \cdot 15 \cdot 7 - 1)$ .....

$$f(17)=1584+732+2516=4832$$

**Q 145. The numbers 272738 and 232342, when divided by n, a 2 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

**Solution-** as remainder is 13 & 17 so dividend must be greater than 17

$$272738 = n*a+13 \Rightarrow 272725=n*a \text{ ---(1)}$$

$$232342 = n*b+17 \Rightarrow 232325=n*b \text{ ---(2)}$$

last two digit of (1)&(2) is 25 so n must be 25, no other two digit no. greater than 25 satisfies this

$$272725=25*10909$$

$$232325=25*9293$$

$$n=25, \text{ sum of digits of } n = 2+5 = 7$$

**Q 146. 60 48 38 28 24 20 18 choose odd one.**

- a) 28 b) 38 c) 60 d) 18

**Solution-** 28 is odd one.because

coming in reverse order  $18+2=20$

$$20+4=24$$

$$24+6=30$$

$$30+8=38$$

$$38+10=48$$

$$48+12=60$$

**Q 147. The perimeter of a equilateral triangle and regular hexagon are equal.Find out the ratio of their areas?**

- a) 3:2**
- b) 2:3**
- c) 1:6**
- d) 6:1**

**Solution- Given that perimeter of equ.triang and hexagon are equal.consider length of triang**

**as 'x' and length of hex as 'y'.so the relation is  $x=2y$ .Hexagon is made of six equ traingles and formula for area of equ triang is  $\frac{\sqrt{3}}{4}x^2$  and using this we get ratio of areas as 2:3**

**Q 148. what is the remainder of  $(32^{31^{301}})$  when it is divided by 9?**

- a) 3 b) 5 c) 2 d) 1**

**Solution-  $32^{31^{301}}$**

**when 31 divided by 9 gives remainder 5**

**$5 \ 5^2 \ 5^3$  all gives the same unit digit 5**

**so  $31^{32}$  gives unit digit 5**

**same rule applicable to  $31^{301}$**

**when 31 divided by 9 gives remainder 4**

**$4 \ 4^2 \ 4^3 \ 4^4 = 4 \ 6 \ 4 \ 6$  unit place repeats for every 2 times i,e for even power its uint place is 6 and for odd its 4**

**as 301 is odd its unit place is 4**

**so  $31^{32^{301}}=31^4=5^4=5$  is the ans**

**Q 149. A take 12 hrs to make publication B take 10 hrs to make publication. find the time taken by them to make two publications working independently?**

- a) 12 hours b) 11 hours
- b) 22 hours d) 11 hours 40 minutes

**Q 150. Which of the following numbers must be added to 5678 to give a remainder 35 when divided by 460?**

- a) 980 b) 797 c) 955 d) 618

**Solution- ans is 797**

**If you need of remainder 35, while dividing a number by 460. The Unit place of that number must be 5. So  $5678+797= 6475$**

**$6475/460$  gives reminder 35**

**Q 151. If a number is divided by 357 the remainder is 5, what will be the remainder if the number is divided by 17?**

- a) 9 b) 3 c) 5 d) 7

**solution- ANS:5 ...to get the original number add the 357 with remainder 5, you will get 362.then divide it by 17 you will get 5 as remainder.**

**Q 152. 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.

**Solution-** initially price/dozen =  $12y/x$ ; after purchasing 10 more--new dozen price =  $2 \cdot 12/x + 10$ ...now..  $12y/x - 24/x + 10$  must be equal to 80/100 dollars...keep substituting the options.. (5,1) fits in

**Q 153.** 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

**Solution-**  $3240 = 2 \cdot 2 \cdot 2 \cdot 5 \cdot 3 \cdot 3 \cdot 3 \cdot 3$

so,

no. of ways =  $8!/(3! \cdot 4!) = 420$ .....

**Q 154.** a and b starts from their house at 10am. they travel from their house on MG road at 20kmph and 40kmph. they meet at T junction at 12:00 pm B reaches the T junction earlier and turns right. Both of them continue travelling till 2:00pm what is distance between a & b at 2:00pm?

a) 160km b) 120km c) 140km d) 150km

**Solution-** a reaches the junction at 12 after travelling 40 km

but b reaches junction at 11 after travelling 40 km.

at 2 am. a will travel 40 km from junction

at 2 am. b will travel for 3 hrs that is 120 km from junction so it travel 10 km.

distance between them is  $120 + 40 = 160$  km

**Q 155.** 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

**Solution-** lets consider door A is wrong then A leads to ghost

on door B written is it leads to ghost

and on door c it is written door B leads to ghost house,henc C leads to freedom

in the same way assume B is wrong,means lead to freedm but on door c written door B leads to ghost house,it is contradiction

last case if we assume C is wrong,the written on door B is also becoming wrong

so our ansr is C lead to freedm which comes from 1st case where we assume A is wrong

**Q 156.** The savings of employee equals income minus expenditure.If the income of A,B,C are in the ratio 1:2:3 and their expense ratio 3:2:1 thenwhat is the order of the employees in increasing order of their size of their savings?

- a)  $A > C > B$  b)  $B > A > C$  c)  $B > C > A$  d)  $C > B > A$

**Solution-** $C > B > A$

salary of C is highest among all n expenses are least

salary of A is lowest among all n expenses are high

**Q 157.** A manufacturer of chocolates makes 6 different flavors of chocolates. The chocolates are sold in boxes of 10. How many different boxes of chocolates can be made?

(NOTE: A box is considered different from another only if, regardless of the order, the box contains a different number of chocolates of at least one type)

a) 3003

b)  $10^6$

c) 3000

d)  $6^{10}$

**Solution-** If  $n$  similar articles are to be distributed to  $r$  persons,  $x_1+x_2+x_3+\dots+x_r=n$  each person is eligible to take any number of articles then the total ways are  $n+r-1C_{r-1}$

In this case  $x_1+x_2+x_3+\dots+x_6=10$

in such a case the formula for non negative integral solutions is  $n+r-1C_{r-1}$

Here  $n=10$  and  $r=6$ . So total ways are  $10+6-1C_{6-1} = 3003$

**Q 158.** 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)  $\frac{1}{2}$

**Solution-**  $13/18$  as  $1-(\text{probability of not getting same no.})=1-((6*5*4*3)/(6*6*6*6))$

**Q 159.** 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

**Solution-** 3 digits no formed =  $3*3*2$  (5 cant come at place, no should be less than 500)

=18

2 digit no formed =  $4*3$

=12

1 digit no formed = 4

total positive integers =  $18+12+4$



=34

**Q 160. In a rectangular region of 300X400 foot, there are 3 ants per square inch. how many ants(approximate value) are there in the square region???**

**[Gave the hint: 1foot=12inches]**

**a) 500million**

**b) 50million'**

**c) 500000**

**d) 5million**

**Solution-  $300 \times 400$  (foot)**

**$300 \times 400 \times 12$  (inches)**

**$300 \times 400 \times 12 \times 3$**

**4320000**

**approximately 50 million ants**

**Q 161. The letters in the word ROADIE are permuted in all possible ways and arranged in alphabetic order. Find the word in the 44th rank.**

**a) AERIOD b) AERDOI c) AERODI d) AEODRI**

**Solution- A-----  $\Rightarrow 5! = 120$**

**AD----  $\Rightarrow 4! = 24$**

**AED---  $\Rightarrow 3! = 6$**

**AEI---  $\Rightarrow 3! = 6$**

**AEO---  $\Rightarrow 3! = 6$**

$$24+6+6+6=42$$

AERDIO => 43th

AERDOI => 44th

**Q 162.** There is a pool of radius  $X$  and there is a path way around the pool with a width of 4 feet. Find the radius of the pool if the path area / pool area =  $11/25$ .

a) 12

b) 5

c) 25

d) 29

**Solution-**  $(\pi(X+4)^2 - \pi X^2) / \pi X^2 = 11/25$

$$(X+4)^2 / X^2 - 1 = 11/25$$

$$(X+4)^2 / X^2 = 36/25$$

$$(X+4)/X = 6/5$$

$$X=20$$

**Q 163.** a certain organization has three committees. only two persons are members of all committees, but every pair of committees have three members in common. what is the least possible no of member of members on any one committee?

a) 4 b) 5 c) 6 d) none of these.

**Solution-** the least possible no of member of members on any one committee = 4  
.. option a)

In all 3 committees, say  $X, Y, Z$ , 2 persons say A and B are common.

C is common between X and  
Y. D is common between Y  
and Z. E is common between X  
and Z.

so X committee has ABCE. Y committee has ABCD. Z committee has ABDE.

**Q 164. In how many ways can 2310 be expressed as product of three factors??**

1) 41

2) 56

3) 23

4) 46

**Solution-**  $(3^{(n-1)}+1)/2$

$$2310=2*3*5*7*11$$

$$n=5$$

do this

**ans===41**

**Q 165. In an office, at various times during the day, the boss gives secretary a letter to type , each time putting the letter on top of the secretary's inbox. when there is time, the secretary takes the top letter off the pile and type it. if there are 5 letters in all and boss delivers them in the order 12345, which of the following could not be the order in which secretary types them?**

a) 24351

b) 45231

c) 32415

d) 12345

**Solution- B) 45231 cant be the order of typing.....**

**Suppose boss put first time 4 letters in order 1,2,3,4**

**Then definitely she will strt typing the top one tht is 4th..after completing 4th letter...boss again put the 5th letter on the top....sho she again choose the top most tht is 5th one and type it...after tht queue will have order 1,2,3**

**So she should shoosed the top most one tht is 3rd card...but in option it is given 2 which is wrong...check like this in all the options.**

**Q 166. 6 task and 6 persons. P1 and P2 does not do task T1. T2 is assigned to P3 or P4;. Each person should be assigned with at least 1 task. In how many ways the task can be assigned.**

a) 192

b) 360

c) 144

d) 180

**Solution- 192**

**As T1 can be done in 4 ways(p3,p4,p5,p6)**

**T2 in tw0 ways (p3,p4)**

**and the remaining in 4! ways**

$$4*2*4!=192$$

**Q 167. How many lattice points are there between (2,0) and (16,203)?**

a) 8 b) 10 c) 14 d) 15

**Solution-** draw a line from origin(0,0) to (14,203)

this line is parallel to the line joining(2,0) and (16,203).

A lattice point is defined as the positive values for x and y coordinates along the line in a graph.

after drawing this line you will come across 8 such points.

so the answer is 8

**Q 168.** It takes 52 days to complete an agreement deal by a certain number of men.After 17 days,300 men are added and 21 days are reduced.how many men were working initially?

a) 250 b) 150 c) 200 d) None of the above

**Soultion-** Let x no people works initially.

So the left work after 17 days can be done by x people is in 35, but the same work can be done by x+300 is in 35-21=14 days.

so,  $35 \cdot \left(\frac{x}{x+300}\right) = 14$

x=200.

initially 200 people worked

**Q 169.** four parallel lines are drawn parallel to one side of an equilateral triangle such that it cuts the other two sides at equal intervals.the area of the largest segment thus formed is 27msqr.find the area of the triangle?

a) 100 b) 75 c) 81 d) 54

**Solution-** Area of Trapezoid=  $\frac{(a+b) \cdot h}{2}$  (where a and b are length of parallel sides)

Now Since side is divided in 5 parts therefore,length of one interval=a/5

Now use  $\sin 60^\circ$  and to calculate the height of trapezoid( ie.  $a \sqrt{3}/10$ ). and  $\cos 60^\circ$  to calculate the base of the triangle whose hypotenuse is  $a/5$ ..(i.e. will be  $a/10$ );

We get  $b = a - (a/10 + a/10)$

$$b = 4a/5$$

now equate the area of trapezoid with 27..

Hence area of equilateral triangle is 75 sqm

Q 170. In the sample subtraction problem below, single digits are replaced by letters,

Find the values of  $3 \cdot A + 8 \cdot B + 4 \cdot C + D = ?$

A5C1

3U79

-----

397D

a) 80

b) 99

c) 89 d)96

**Solution-** I think the answer is 96, let me explain...

from the above question it is clear that there is a printing mistake, for now let us assume  $b=u$ ;

after solving the subtraction we get the value  $A=7, d=2, u=5, c=5$ ;

now if we suppose  $\&=a$  then the ans will be 96(Which is option d)

if  $\&=d$  then the ans will be 71

if  $\&=c$  then the ans will be 86

so, from all the assumptions only the first one matches with the options given,  
so option d will be our answer, 96

**Q 171.** two dice are thrown. find the probability of getting a multiple of 3 or 4 as the sum.

a)  $\frac{5}{9}$  b)  $\frac{4}{9}$  c)  $\frac{2}{9}$  d)  $\frac{1}{9}$

**Solution-**  $\frac{20}{36} = \frac{5}{9}$

(1,2),(1,3),(1,5),(2,1)(2,2)(2,4)(2,6)(3,1)(3,3)(3,5)(3,6)(4,2)(4,4)(4,5)(5,1)(5,3)(5,4)(6,2)(6,3)(6,6) as its some is multiple of 3 or 4

**Q 172.** 2 gears. one with 12 teeth and the other one with 14 teeth are engaged with each other. One tooth in smaller gear and one tooth in bigger gear are marked and initially those 2 marked teeth are in contact with each other. After how many rotations of the smaller gear with the marked teeth in the other gear will again come into contact for the first time?

- a) 7
- b) 12
- c) Data Insufficient
- d) 84

**Solution-** Assume the distance between the teeth is 1 cm. Then the circumference of first gear is 12 cm and the second is 14 cm.

Now LCM (12, 14) = 84.

So to cover 84 cm, the first gear has to rotate  $84/12 = 7$  rounds

(the second gear rotates  $84 / 14 = 6$  rounds as it is bigger)

**Q 173.** there are 4 couples who go for honeymoon together.at one of the places they all have to cross the river but only one boat is available.wives are jealous that they dont want their husbands to travel with another women and husbands



are also possessive that they don't want their wives to travel with some other men. the no. of minimum possible ways in which they will cross the river are.

a) 16 b) 17 c) 18 d) 19

**Solution-** we have 4 couples

1) first two husbands go to another side

2) then one husband comes back

3) then one couple will go

4) then second husband comes back

so in this 4 ways 1 couple reaches to another side

so for 4 couples there are 16 ways

a) 16 is ans

**Q 174.** 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

**Solution-** He had 76 rupees, according to questions, he remembers any no. larger than 15 as remainder when divided by 3, 5 and 7 respectively.

Divide 76 by 3, 5 and 7, we will get (1,1,6) as remainder.

He paid 20 rupees bcoz when 20 divided by 3,5 & 7 , we will get (2,0,6) as remainder.

Now money left=76-20

=56 (Ans)

**Q 175.** 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) 5days b) 20days c) 10days d) 25days

**Solution-** a and b's 1 day work,  $a+b=1/5$

with twice d speed of a and half of b completes work in 4 days,

so,  $2a+b/2=1/4$ .

on solving both d eq. we get  $a=1/10$

so a will complete d whole work in 10 days.

**Q 176.**  $0>a>b>c>d$ . Which is largest

a)  $(b+d)/(a+c)$

b)  $(a+d)/(b+c)$

c)  $(b+c)/(a+d)$

d)  $(c+d)/(a+d)$

**Solution-** given statement is  $0>a>b>c>d$

that means all the values of a,b,c,d are less than ZERO

so lets consider  $a=-1$   $b=-2$ ,  $c=-3$  and  $d=-4$  so that  $0>a>b>c>d$  will satisfy

by solving the options we get the values as follows

a.  $(b+d)/(a+c)= 1.5$

b. 1

c.1

d.1.4

among all of these option a is highest so the ans is option a.

**Q 177. An engineer undertakes a project to build a road of 15km in 300 days and employs 45 men for the purpose .After 100 days,he finds only 2.5km of the road has been completed.find the (approx)number of extra men must employs to finish the work in time.**

option

a) 43

b) 45

c) 55

d) 68

**Solution- 45 workers working already**

**Let x be the total men required to finish the task in next 200 days**

**2.5 km done hence remaining is 12.5 km**

**Also, work has to be completed in next 200 days (300 - 100 = 200)**

**We know that, proportion of men to distance is direct proportion**

**and, proportion of men to days is inverse proportion**

**Hence,  $X = (45 * 12.5 * 100) / (2.5 * 200)$**

**thus,  $X = 112.5$  that is approximately 113**

**Thus, more men needed to finish the task =  $113-45=68$**

**Q 178. there are 5 sweets - jamun, kulfi, peda. laddu and jilebi that i wis t eat on 5 consecutive days, monday throufh friday, one sweet a day, based on following self imposed constraints:**

- 1) laddu is not eaten on monday**
- 2) if jamun is eaten on monady , then laddu must be eaten on friday**
- 3) if jamun is eaten on tuesday, kulfi should be eaten on monday**
- 4) peda is eaten the day following the day eating jelabi**

**based on the above , peda can be eaten on any day expect??**

**Solution-monday bcoz the day before jalebi is required to be taken bt its sunday and no sweet is eaten on Sunday**

**Q 179. A circular swimming pool is surrounded by a concrete wall 4ft wide. If the area of the wall is 11/25 of the area of the pool then radius of the pool in feet is**

- a) 20**
- b) 8**
- c) 16**
- d) 30**

**Solution- i thnk ans is 20.Bcoz let r be the radius of pool.  $(11/25)(\pi \cdot r^2) = (\pi(r+4)^2) - (\pi \cdot r^2)$**

**By solving this we get ans as 20**

**Q 180. How many 5's will be there in the number 121122123... till 356?**

- a) 51 b) 54 c) 50 d) 49**

**Solution- 121122123... till 356**

**121,122,123,124... till 356**

**121 to 200 => 125,135,145, from 150 to 159 => 11 5's , 165,175,185,195**

**[from 150 to 159, each no. has 1 no. of 5 except 155, 155 has 2 no. of 5]**

**total=18**

**201 to 300 => 205,215,225,235,245, 250 to 259 => 11 5's , 265,275,285,295**

**=> total=20**

**301 to 356 => 305,315,325,335,345,350,351,352,353,354,355(2 5's),356**

**=> total=13**

**total 5's = 18+20+13 = 51**

**Q 181. 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.**

**option**

**a) 4.25 hrs**

**b) 4.17 hrs**

**c) 4.30 hrs**

**d) 4.45 hrs**

**Solution-we take the relative speeds of the 2 cars.**

**relative speed=(60-40)=20km/h**

**the car a has travelled (40\*2)km in 2 hrs.**

**thence car b has to travel 80km+9km ahead to get ahead by 9 km.**

**so time= 89/20=4hr 45 min.**

**Q 182. 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

**Solution-initially sivaji had only one coin so he earns only 1000/-**

**to earn more he must convert one 100 note to 10 notes and then one ten note to ten coins**

**now he has Rs.990 and 10 coins**

**after converting 10 coins he has 10990**

**after converting another 10 coins he has 20980**

**after converting another 10 coins he has 30970**

**after converting another 10 coins he has 40960**

**after converting another 10 coins he has 50950**

**after converting another 10 rupee note to coins and using only 3**

**he has seven coins and 53940**

**so sum is  $53940+7=53947$**

**Q 183.  $\frac{2}{3}$ rd of the balls in a bag are blue, the rest are pink. if  $\frac{5}{9}$ th of the blue balls and  $\frac{7}{8}$ th of the pink balls are defective, find the total number of balls in the bag given that the number of non defective balls is 146.**

**a) 216 b) 649 c) 432 d) 578**

**Solution-let total no of balls =x**

**blue= $\frac{2x}{3}$**

**pink= $\frac{x}{3}$**

total no of defective balls =  $10x/27 + 7x/24$

=  $143x/216$

non defective balls =  $x - 143x/216 = 146$  ,  $x = 432$

**Q 184.** 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) 80min b) 50min c) 60min d) 70min

**Solution-**let time taken by eesha daily =  $x$

and usual speed =  $y$

$(x+20) * (.75*y) = x*y$  extra time taken =  $50-30 = 20\text{min}$

$.75x + 15 = x$

$.25x = 15$

$x = 60 \text{ min}$

**Q 185.** 7,17,19,43,91,131...find the odd term.

a) 17 b) 43 c) 91 d) 131

**Solution-**except 91 all other are prime no.

so 91 odd one

**Q 186.** find the no. of zeros in the product of  $1^1 * 2^2 * 3^3 * \dots * 49^{49}$ ?

a) 250 b) 225 c) 545 d) 135

**Solution-**the number of zero's can be found by finding number of 2's and 5's.

since in this number, number of occurrences 2's will always be greater than number of occurrences of 5's.

therefore we need to find number of 5's only.

number of occurrences of 5's

in  $5^5 = 5$

$10^10 = 10$

$15^15 = 15$

$20^20 = 20$

$25^25 = 25$

$30^30 = 30$

$35^35 = 35$

$40^40 = 40$

$45^45 = 45$

sum=225.

therefore 225 5's can be paired with 225 2's.

total number of zeros = 225

**Q 187. a merchant buys 20kg of wheat at 30rs/kg and 40k at 25rs/kg.he mixes and sells 1/3 rd of mixture at 26rs/kg.price at whch merchant should sell remaining mixture so that a profit of 25% on whole outlay is?**

**a) Rs30 b) Rs40 c) Rs360 d) Rs 37**

**Solution-cp of total mixture= $(20*30)+(25*40)=1600$ rs**

**as he needs 25% profit, so he needs to earn  $1600+(1600*(25/100))=2000$ rs.**

**he has alre dy got rs by selling 1/3 part= $1/3$  of 60 kg.. $=20$  kg**

**$=20*26=520$ rs..**

**now he needs  $2000-520=1480$ rs.**

**so he must sell remaining 40 kg at= $1480/40=37$ rs/kg**



**Q 188. the 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**

**Solution-641**

**852**

**973**

**2466**

**Given Sum is 2456**

**So if we change 10's digit 7 to 6 then the sum will be correct .**

**so 7 is the largest digit .**

**Q 189. a, b, c are non negative integers such that  $28a+30b+31c=365$ . Then  $a+b+c$  is?**

**a)13   b)> 13   c) =13   d) 12**

**Solution-Here,  $a + b + c = 12$**

**Explanation :**

**$a = 1$ , because in a month of twelve only Feb has 28 days**

**$b = 4$ , there are four months namely April,June,Sep and Nov having 30 days**

**$c = 7$ , there are 7 months namely Jan,Mar,May,Jul,Aug,Oct and Dec having 31 days**

**So,  $a + b + c = 1 + 4 + 7 = 12$ .**

**Q 190.  $26ab5$  is a four-digit number divisible by 25. If the number formed from the two digits  $ab$  is a multiple of 13, then  $ab = ?$**

a) 52

b) 65

c) 10

d) 25

**Solution-**Any number last two digits are 25 then that should be divisible by 25.

When  $ab=52$ , the number is 26525 and  $52/13=4$ ,

So  $ab=52$

**Q 191.** A owes B Rs 50. He agrees to pay B over a number of consecutive day starting on a Monday, paying single note of Rs 10 or Rs 20 on each day. In how many different ways can A repay B. (Two ways are said to be different if at least one day, a note of a different denomination is given)

a) 8

b) 7

c) 6

d) 5

**Solution-** $10,20,20=3!/2!=3$  ways

$10,10,10,20=4!/3!=4$  ways

$10,10,10,10,10=5!/5!=1$  way

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

**Q 192.** After 6 years Raju's fathers age will twice of the Raju's age 2 years ago.His mothers age was twice that of Raju's age. Sum of the age of their parents.

a) 4 less than four times Raju's age

b) 2 more than four times Raju's age

c) 4 more than four times Raju's age

d) 2 less than four times Raju's age

Solution- $F+6=2(R+6)$

$$F = 2R+6$$

$$M-2=2(R-2)$$

$$M = 2R-2$$

Therefore the sum of Raju's Parent's age is

$$F+M=2R+6+2R-2$$

$$F+M=4R+4$$

4 more than four times Raju's age

**Q 193.** Length, Breadth and Height of a 3D figure is in the ratio 3:2:1. If the length is doubled and Breadth & Height are halved, then what is the % decrease in the volume of the solid?

a) Decreased by 15% b) Decreased by 18% c) Decreased by 30%

d) Decreased by 50%

Solution-50% decrease

If original length, breadth & height are  $3x$ ,  $2x$  and  $x$  respectively, then  
volume= $3x \cdot 2x \cdot x = 6x^3$  With length doubled, breadth & height halved, new  
dimensions are  $6x$ ,  $x$  and  $x/2$  respectively and volume= $6x \cdot x \cdot x/2 = 3x^3$

$$\text{So \% decrease in volume} = 100 \cdot (6x^3 - 3x^3) / 6x^3 = 50$$

**Q 194.** 12 divides,  $ab313ab$  (in decimal notation, where  $a, b$  are digits  $> 0$ , the smallest value of  $a+b$  is

a) 7

b) 6

c)2

d) 4

**Solution-**If a number is divisible by 12 then it should be divisible by 4&3

for divisible by 4 last [2 digit]no's should be divisible by 4

so last no's are 12,15,18,,,,,and soon..

now least is 12 it,. 3 which is not the option,,

no other least is 16 it's sum  $1+6=7$ ..

so 7 is option :)

**Q 195.** In a telecom assembly factory,there are 250men and 150 women.The average productivity of all works is 12 units per day.The average productivity of men is 15 units per day..what is the average productivity of women per day?

a) 6 b) 9 c) 7 d) 8

**Solution-** $250M + 150W = 400$

Thus,  $400*12 = 4800$

Now,  $250*15 = 3750$

Now,  $4800-3750 = 1050$  Thus, for 150W avg prod is :  $1050/150 = 7$

**Q 196.** If a lemon and an apple together cost Rs. 12.00, a tomato and a lemon cost Rs. 4.00 and an apple cost Rs.8.00 more than a tomato or a lemon then which of the following can be.

a) Rs 2 b) Rs 4 c) Rs 1 d) Rs 3

**Solution-**lemon+apple=12rs

tomato+lemon=4

then apple=8+t or  $8+l$

by solving we get

$l+(8+l)=12$