TCS latest pattern questions - 24

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

a. 6480　　　　　　　　　　　　　　b. 320

c. 2160　　　　　　　　　　　　　　d. 720

Answer: d

Explanation:

If the we have to form even numbers, units digit must be 2, 4, 6. i.e., 3 ways. Also 5th digit should be even. So it can be filled in 2 ways. Now remaining 5 digits can be filled in 5! ways. So total 5! × 3 × 2 = 720 ways.

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

a. 40000　　　　　　　　　　　　　b. 10000

c. 32000　　　　　　　　　　　　　d. 8000

Answer: c

Explanation:

Total kilometers travelled by 4 tyre = 40000 × 4 = 1,60,000.　This has to be share by 5 tyres. So each tyre capacity = 1,60,000 / 5 = 32, 000.　You have a doubt, after we travel 32,000 km, we are left with 4 worn tyes and one new tyre.　But If the tyres are rotated properly after each 8000 km, all the tyres are equally used.

3. In a group of five families, every family is expected to have a certain number of children, such that the number of children forms an arithmetic progression with a common difference of one, starting with two children in the first family. Despite the objection of their parents, every child in a family has as many pets to look after as the number of offsprings in the family. What is the total number of pets in the entire group of five families.

a. 99　　　　　　　　　　　　　　　b. 9

c. 55　　　　　　　　　　　　　　　d. 90

Answer: d

Explanation:

As the number of children are in arithmetic progression starting with 2, the five families have 2, 3, 4, 5, 6 kids respectively. As each children has kept the pets equal to the number of kids in the family, each family has n^2 pets.
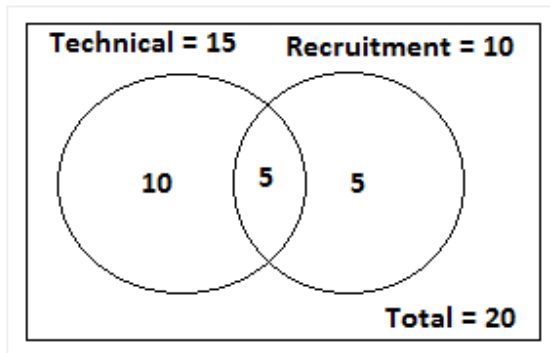
So total = $2^2 + 3^2 + 4^2 + 5^2 + 6^2$ = 90

4. According to the stock policy of a company, each employee in the technical division is given 15 shares of the company and each employee in the recruitment division is given 10 shares. Employees belonging to both committees get 25 shares each. There are 20 employees in the company, and each one belongs to at least one division. The cost of each share is $10. If the technical division has 15 employees and the recruitment division has

10 employees, then what is the total cost of the shares given by the company?

a. 2650

b. 3180

c. 3250

d. 3120

Answer: c

Explanation:

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

20 = 15 + 10 - x

x = 5

So total shares given to only technical = 10 × 15 = 150

Shares given to only Recruitment = 5 × 10 = 50

Share given to Technical as well as recruitment people = 5 × 25 = 125

Total shares = 150 + 50 + 125 = 325.

Total value = 325 × 10 = 3250

5. The average marks of 3 students A, B and C is 60. When another student D joins the group, the new average becomes 56 marks. If another student E, who has 3 marks more than D, joins the group, the average of the 4 students B, C, D and E becomes 55 marks. How many marks did A get in the exam?

a. 50

b. 54

c. 51

d. 53

Answer: c

Explanation:

Given that A + B + C = 60 × 3 = 180

A + B + C + D = 56 × 4 = 224

Therefore, D = 44

E = 44 + 3 = 47

Given, B + C + D + E = 55 × 4 = 220

B + C + 44 + 47 = 220

⇒ B + C = 220 - 91 = 129

So A + 129 = 180 ⇒ A = 51

6. What is the number of ways of expressing 3600 as a product of three ordered positive integers (abc, bca etc. are counted as distinct). For example, the number 12 can be expressed as a product of three ordered positive integers in 18 different ways.

a. 441   b. 540

c. 84   d. 2100

Answer: b

$3600 = 2^4 \times 3^2 \times 5^2$

Let abc $= 2^4 \times 3^2 \times 5^2$

We have to distribute four 2's to three numbers a, b, c in $^{4+3-1}C_{3-1} = {}^6C_2$ = 15 ways.

Now two 3's has to be distributed to three numbers in $^{2+3-1}C_{3-1} = {}^4C_2$ = 6 ways

Now two 5's has to be distributed to three numbers in $^{2+3-1}C_{3-1} = {}^4C_2$ = 6 ways

Total ways = 15 × 6 × 6 = 540

7. There is a 7-digit telephone number with all different digits. If the digit at extreme right and extreme left are 5 and 6 respectively, find how many such telephone numbers are possible?

a. 120   b. 30240

c. None of these   d. 6720

Answer: d

Explanation:

If left and right digits are fixed with 5 and 6, then the remaining 5 places can be filled by remaining 8 digits in $^8P_5$ = 6720 ways.

8. A certain sum of money is sufficient to pay either George's wages for 15 days or Mark's wages for 10 days. For how long will it suffice if both George and Mark work together?

a. 8   b. 6

c. 9   d. 5

Answer: b

Explanation:

Let the money to be paid = 30 rupees. Then George daily wage = 30/15 = 2, and Mark daily wage = 30/10 = 3.

If both are working, then 5 rupees to be paid. So given sum is sufficient for 30 / 5 = 6 days.

9. The remainder when m + n is divided by 12 is 8, and the remainder when m - n is divided by 12 is 6. If m > n, then what is the remainder when mn divided by 6?

a. 3   b. 4

c. 2   d. 1

Answer: b

Explanation:

m + n = 12a + 8 $\Rightarrow (m+n)^2 = 144a^2 + 192a + 64$ - - - (1)

m - n = 12b + 6 $\Rightarrow (m-n)^2 = 144b^2 + 144b + 36$ - - - (2)

(1) - (2) $\Rightarrow$ 4mn $= 144a^2 + 192a - 144b^2 - 144b + 28$

mn $= 36a^2 + 48a - 36b^2 - 36b + 7$

Now mn is divided by 6, all the terms except 7 gives 0. So 7 divided by 6, remainder = 1

10. There is a set of 36 distinct points on a plane with the following characteristics:

* There is a subset A consisting of fourteen collinear points.

* Any subset of three or more collinear points from the 36 are a subset of A.

How many distinct triangles with positive area can be formed with each of its vertices being one of the 36 points?

(Two triangles are said to be distinct if at least one of the vertices is different)

a. 7140

b. 4774

c. 1540

d. 6776

Answer: d

Explanation:

The given data indicates that 14 points are collinear and remaining 22 points are non collinear.

A triangle can be formed by taking 1 points from 14 and 2 points from 22 (or) 2 points from 14 and 1 points from 22

(or) 3 points from 22

$\Rightarrow {}^{14}C_1 \times {}^{22}C_2 + {}^{14}C_2 \times {}^{22}C_1 + {}^{22}C_3$ = 6776