

PROBABILITY 2: QUIZ SOLUTIONS

Question 1

A company's telephone customer care service is set up so that the caller has six initial options. Each of these options leads to a menu with four options. For each of these four options, three more options are available. If a person calls for assistance, how many help options are possible?

- A. 13 B. 18 C. 36 D. 72

Solution

Each of the initial 6 options can be paired with each of the next 4 options, which in turn can be paired with each of the 3 further options.

$$\text{Number of help options} = 6 \times 4 \times 3 = 72$$

So, the correct answer is D.

Question 2

A test has 10 true-false questions. If a student decides to answer at random, in how many ways can the test be answered?

- A. 1 024 B. 512 C. 100 D. 20

Solution

Number of ways of answering each question is 2.

Number of ways of answering the first two questions is $2 \times 2 = 2^2$.

Number of ways of answering the first three questions is $2 \times 2 \times 2 = 2^3$.

$$\begin{aligned} \therefore \text{Number of ways of answering all ten questions} &= 2^{10} \\ &= 1\,024 \end{aligned}$$

So, the correct answer is A.

Question 3

How many code words of three letters can be formed from the 26 letters of the alphabet, if repetitions are allowed?

- A. 29 B. 78 C. 15 600 D. 17 576

Solution



Number of ways of choosing the first code letter = 26

Number of ways of choosing the second code letter = 26

Each of the first code letters can be paired with each of the second letters.

This means that there are 26×26 ways of choosing the first two code letters.

By extension, the number of code words = $26 \times 26 \times 26 = 17\,576$

So, the correct answer is D.

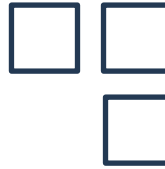
Question 4

There are three passenger seats in a car. In how many ways can three people seat themselves in the car?

- A. 3 B. 6 C. 9 D. 27

Solution

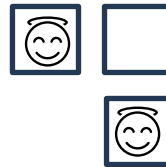
The first person has a choice of 3 seats.



The second person has a choice of 2 seats.



The third person has only one seat left.



$$\text{Number of ways} = 3 \times 2 \times 1 = 6$$

So, the correct answer is B.

Question 5

How many 4-digit numbers greater than 2 000 can be formed from the digits 0, 1, 2, 3, 4, if repetitions are allowed?

- A. 250 B. 300 C. 350 D. 625

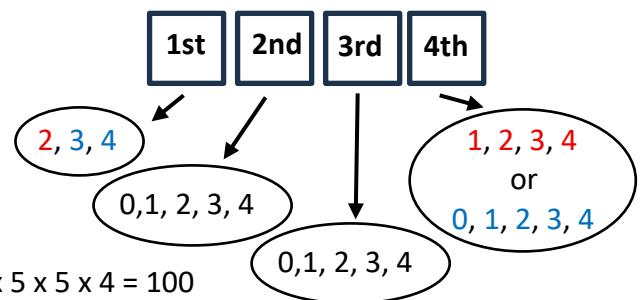
Solution

There are 5 digits and repetitions are allowed.

Numbers greater than 2 000 start at 2 001.

This means 1st digit can only be 2, 3, or 4

If first digit is 2, 4th digit cannot be 0.



If first digit is 2, then number of ways is $N = 1 \times 5 \times 5 \times 4 = 100$

If first digit is 3, then number of ways is $N = 1 \times 5 \times 5 \times 5 = 125$

If first digit is 4, then number of ways is $N = 1 \times 5 \times 5 \times 5 = 125$

Total of 4-digit numbers is $N = 100 + 125 + 125 = 350$

So, the correct answer is C.