

Math-n-Coding Tech Competition (MCTC) – 2021

Syllabus Group 3

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1. Areas & Volumes

The **area** refers to the region covered by the object. And **volume** refers to the quantity or capacity of the object. An **area** is a two-dimensional object whereas **volume** is a three-dimensional object. The **area** is a plain figure while **volume** is a solid figure.

Example 1

Question - The length and breadth of a rectangle are $(3a + 2)$ and $(2a - 1)$. Which of the following represents its perimeter?

- A) $2(5a - 1)$
- B) $(5a + 1)$
- C) $(5a - 1)$
- D) $2(5a + 1)$

Answer – D

$$\text{Perimeter} = 2[3a + 2 + 2a - 1] = 2[5a + 1]$$

Example 2

Question – If a cone is cut parallel to the base of it by a plane in two parts, then the shape of the top of the cone will be _____

- A) Sphere
- B) Cube
- C) Cone itself
- D) Cylinder

Answer – C

If we cut a cone into two parts parallel to the base, then the shape of the upper part remains the same.

2. Coding-Decoding

Coding is a process used to encrypt a word, a number in a particular code or pattern based on some set of rules. Decoding is a process to decrypt the pattern into its original form from the given codes.

Includes

Alpha-numeric sequence, ranking sequence, time sequence etc.

Example 1

Question – In a certain code, 'RATIONAL' is written as 'ARITNOLA'. How would 'TRIBAL' be written in that code?

- A) RTIALB
- B) TIRALB
- C) RTBILA
- D) TIRABL

Answer – C

'TRIBAL' is coded as TIRLBA in the same way as 'RATIONAL' is coded a 'RTANIOLA'.

Example 2

Question – If E = 5, PEN = 35, then PAGE = ?

- A) 27
- B) 28
- C) 36
- D) 29

Answer – D

Clearly, putting A=1, B=2, C=3, D=4 E=5..., M=13 ...X=24, Y=25, Z=26,

We have: PEN = P+E+N = 16+5+14 = 35. So, PAGE = P+A+G+E = 16+1+7+5 = 29

3. Profit and Loss

Profit (P): The amount gained by selling a product with more than its cost price.

Loss (L): The amount the seller incurs after selling the product less than its cost price, is mentioned as a loss.

Example 1

Question – If a man were to sell his chair for Rs. 720, he would lose 25%. To gain 25% he should sell it for: _____

- A) Rs. 1,200
- B) Rs. 1,000
- C) Rs. 960
- D) Rs. 900

Answer – A

CP of chair = $100 / 75 \times 720 = \text{Rs. } 960$

To gain 25%, SP = $125 / 100 \times 960 = \text{Rs. } 1,200$

Example 2

Question – A TV is purchased at Rs. 5000 and sold at Rs. 4000, find the lost percent.

- A) 10%
- B) 20%
- C) 25%
- D) 28%

Answer – B

We know, C.P. = 5000, S.P. = 4000

Loss = $5000 - 4000 = 1000$

Loss % = $(\text{Loss} / \text{Cost} * 100) \% = (1000 / 5000 * 100) \% = 20\%$

4. Statistic & Probability

Statistics is the study of the collection, analysis, interpretation, presentation, and organization of data. Probability denotes the possibility of the outcome of any random event.

Example 1

Question – A batsman hits boundaries for 6 times out of 30 balls. Find the probability that he did not hit the boundaries.

- A) $1/5$
- B) $2/5$
- C) $3/5$
- D) $4/5$

Answer – D

Explanation: No. of boundaries = 6

No. of balls = 30

No. of balls without boundaries = $30 - 6 = 24$

Probability of no boundary = $24/30 = \frac{4}{5}$

Example 2

Question – If AM of a , $a+3$, $a+6$, $a+9$ and $a+12$ is 10, then a is equal to _____

- A) 1
- B) 2
- C) 4
- D) 3

Answer – C

Solution: Mean of AM = 10

$$(a+a+3+a+6+a+9+a+12) / 5 = 10$$

$$5a + 30 = 50, 5a = 20, a = 4$$



5. Basics of Computer

A computer program is a series of instructions (also called code) given to the computer to perform some tasks. *Mathematics is a fundamental scholarly tool in computing.*

Example 1

Question – When a key is pressed on keyboard, which standard is used for converting the keystroke into the corresponding bits?

- A) ANSI
- B) ASCII
- C) EBCII
- D) KEYST

Answer – B

Example 2

Question – A computer is accurate, but if the result of a computation is false, what is the main reason for it?

- A) Power failure
- B) The computer circuits
- C) Incorrect data entry
- D) Technical glitch

Answer – C



Start Competing, Start Succeeding!

A complete MCTC program is designed with the technique that emphasizes on basic mathematics and light coding concepts, principles and real time scenarios.

We choose basic fundamental topics for this competition like general math, quantitative aptitude, logical reasoning and fundamentals of programming etc.

Most of the topics are from your regular syllabus, so you don't need to do separate preparation for this exam and that is the beauty of this competition...

Students know mathematics and computer science better than most adults. It has become the easiest way they learn, because it is such an integral part of their life.

The students of this generation are considered technological learners. They learn best being more interactive, and technology is what helps them do that.

In case of any query, please feel free to share your valuable inputs on events@fabsoftwarestock.com



Thank you!