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## TechMahindra Supercoders @hiringhustle

Level 2

30MCQ Questions

**Note:** Questions from Tech Mahindra Super coders level2 March 13 4PM Slot  
and answers updated from GPT  
if any mistake kindly ignore

### Pattern:

- MCQ 32 Questions (This PDF)
- Coding 2 medium (Post Soon)

### Question:

What is the missing number in the series: 2F, 5J, 9N, 14R,..?..

(Please choose a correct answer)

200

20V

21U

21V

Let's analyze the series:

2F, 5J, 9N, 14R

The pattern seems to be increasing numbers with alphabets in increments. The numbers are increasing by 3, 4, and 5 respectively, while the alphabets are increasing alphabetically (F, J, N, R).

Following this pattern:

The next number should be  $14 + 6 = 20$  and the next alphabet should be alphabetically after R, which is S.

So, the next term in the series should be 20S.

**Among the given options, the closest match is 20V.**

**From the given options, select the word that is the most opposite in meaning to the bolded word.**

**As the protocols suggest, the foremost thing to do is to set up a firewall.**

(Please choose a correct answer)

Backmost

Obvious

Unimportant

Implicit

The bolded word is "foremost," which means "first in a series or sequence; most important."

The word that is most opposite in meaning to "foremost" among the given options is "backmost," which refers to something being at the rear or furthest back in a sequence or series. Therefore, the correct answer is "**Backmost**."

**Emma states: 'The private university is in financial ruin. If it increases its tuition fees, the number of paying students will decrease. However, if it refrains from raising the fees, the university will go bankrupt. Richard responds by suggesting: 'The salaries of the teachers and professors could be cut' How does Richard respond to Emma's argument?**

(Please choose a correct answer)

drawing attention to an earlier overlooked alternative.

attacking her method of reasoning.

resigning himself to the demise of the private university.

attacking Emma on a personal level.

taking the side of the university as against that of the students.

Richard's response suggests an alternative solution to the financial problem faced by the private university. By proposing to cut the salaries of teachers and professors, he is offering an alternative course of action to address the financial issues without directly addressing Emma's argument or attacking her personally.

So, the correct answer is:

**drawing attention to an earlier overlooked alternative.**

**Statement: A new highway has been constructed in a city.**

**Assumption I: The traffic congestion in the city will decrease.**

**Assumption II: The journey time for commuters will decrease.**

(Please choose a correct answer)

Only assumption I is valid.

Only assumption II is valid

Both assumptions I and II are valid

Neither assumption I nor II is valid

Both assumptions I and II are reasonable expectations following the construction of a new highway:

1. **Assumption I:** The traffic congestion in the city will decrease because the new highway provides an additional route for vehicles, potentially reducing congestion on existing roads.
2. **Assumption II:** The journey time for commuters will decrease because the new highway can offer a faster and more efficient route for travel compared to congested city streets.

Therefore, the correct answer is:

**Both assumptions I and II are valid.**

**The ages of three persons are 24, 26, and 40 years. What percentage of the persons have an age greater than the average?**

Please choose

66.67%

16.16.9%

33:33%

None of the above

To find the average age, we sum the ages of the three persons and divide by the total number of persons:

Average age =  $(24 + 26 + 40) / 3 = 90 / 3 = 30$

Now, we need to find out how many persons have an age greater than the average:

- One person has an age of 40, which is greater than the average.

- Two persons have ages below the average (24 and 26).

So, the percentage of persons with an age greater than the average is:

$$(1/3) * 100 = 33.33\%$$

**Therefore, the correct answer is:**

**33.33%**

**A trainer wants to provide 1-hour training sessions to 100 students. The trainer has rented a hall for 1000/- per hour, which can accommodate a maximum of 100 students. In order to deliver effective training, the trainer divides the students into multiple batches, with each batch consisting of a maximum of  $n$  students. Additionally, the trainer provides study notes to 50% of the students, at a fee of 80/- per student. Suppose that the incurred cost equals the fees collected, which one of the following is not a feasible value of  $n$ ?**

(Please choose a correct answer)

24

25

26

33

Let's break down the costs and fees:

1. The trainer charges 80/- per student for study notes to 50% of the students.
2. The trainer needs to pay 1000/- per hour for renting the hall.

Now, let's calculate the total fees collected and the total cost incurred:

Total fees collected:

- 50 students \* 80/- = 4000/-

Total cost incurred:

- 1 hour of hall rental = 1000/-

Since the incurred cost equals the fees collected, the total fees collected must cover the rental cost.

Now, let's find a feasible value of  $n$  (the maximum number of students per batch) such that the total fees collected can cover the cost incurred.

For a batch size of 24:

- Total fees collected:  $24 * 80 = 1920/-$  (not enough to cover the rental cost)
- Not a feasible value.

For a batch size of 25:

- Total fees collected:  $25 * 80 = 2000/-$  (enough to cover the rental cost)
- Feasible value.

For a batch size of 26:

- Total fees collected:  $26 * 80 = 2080/-$  (enough to cover the rental cost)
- Feasible value.

For a batch size of 33:

- Total fees collected:  $33 * 80 = 2640/-$  (enough to cover the rental cost)
- Feasible value.

Therefore, the not feasible value of  $n$  is 24.

Kristin, who is skilled in permutations and combinations, is given a set  $S$  of 10 elements. Joanna then asks Kristin to give her a subset of  $S$ . What is the probability of Joanna receiving a subset containing a prime number of elements?

Answer

(Please choose a correct answer)

$$\frac{C(10,2)+C(10,3)+C(10,5)+C(10,7)}{2^{10}}$$

$$\frac{C(10,2)+C(10,3)+C(10,5)+C(10,7)}{10!}$$

$$\frac{2^2+2^3+2^5+2^7}{2^{10}}$$

None of the above

To find the probability of Joanna receiving a subset containing a prime number of elements from the set  $S$  of 10 elements, we need to calculate the number of subsets with prime numbers of elements and divide it by the total number of possible subsets.

The total number of possible subsets of a set with 10 elements is  $2^{10}$ .

Now, let's calculate the number of subsets with prime numbers of elements:

- Number of subsets with 2 elements:  $C(10,2)$   
 $C(10,2)$
- Number of subsets with 3 elements:  $C(10,3)$   
 $C(10,3)$
- Number of subsets with 5 elements:  $C(10,5)$   
 $C(10,5)$
- Number of subsets with 7 elements:  $C(10,7)$   
 $C(10,7)$

Therefore, the probability of Joanna receiving a subset containing a prime number of elements is:

$$\frac{C(10,2)+C(10,3)+C(10,5)+C(10,7)}{2^{10}}$$

So, the correct answer is:

$$\frac{C(10,2)+C(10,3)+C(10,5)+C(10,7)}{2^{10}}$$

What percentage of two-digit numbers are perfect square numbers?

Answer

(Please choose a correct answer)

3.33%

6.66%

9.99%

11.11%

To find the percentage of two-digit numbers that are perfect square numbers, we need to count the number of perfect square numbers between 10 and 99 and divide it by the total number of two-digit numbers.

The perfect squares between 10 and 99 are: 16, 25, 36, 49, 64, 81.

So, there are 6 perfect square numbers.

There are 90 two-digit numbers in total (from 10 to 99).

The percentage of two-digit numbers that are perfect square numbers is:

$$\frac{6}{90} \times 100\% = 6.66\% \quad \frac{6}{90} \times 100\% = 6.66\%$$

**Therefore, the correct answer is:**

**6.66%**

**Consider a number N which is in the form PP, where P represents the largest two-digit prime number. If the unit and the tens digit of N are denoted by U and T respectively, what is the value of  $U^3 - T^2$ ?**

Answer

(Please choose a correct answer)

250

262

363

680

Let's first find the largest two-digit prime number, which is 97.

So, N is in the form 9797.

The unit digit (U) is 7, and the tens digit (T) is 9.

Now, let's calculate  $U^3 - T^2$ :

$$U^3 = 7^3 = 343$$

$$T^2 = 9^2 = 81$$

$$\text{Therefore, } U^3 - T^2 = 343 - 81 = 262.$$

**So, the correct answer is: 262**

**The difference between a two-digit number and the number obtained by interchanging the positions of its digits is 54. What is the difference between the two digits of the number?**

(Please choose a correct answer)

2

6

8

Cannot be determined

Let's denote the two-digit number as  $10x + y$ , where  $x$  is the tens digit and  $y$  is the units digit. The number obtained by interchanging the digits is  $10y + x$ .

Given that the difference between the two numbers is 54, we have the equation:

$$(10x + y) - (10y + x) = 54 \implies 10x + y - 10y - x = 54 \implies 9x - 9y = 54 \implies x - y = 6$$

Simplifying this equation, we get:

$$10x + y - 10y - x = 54 \implies 9x - 9y = 54 \implies x - y = 6$$

So, the difference between the two digits of the number is 6.

**Therefore, the correct answer is: 6**

**If 48, K, and 192 are in continued proportion and 27, J, and 48 also follow the same pattern, what is the value of K:J?**

(Please choose a correct answer)

1:2

7:6

8:3

3:8

Let's solve the problem step by step.

If 48, K, and 192 are in continued proportion, then:

$$48 : K :: K : 192$$

Cross multiplying, we get:

$$K^2 = 48 \times 192$$

$$K^2 = 9216$$

$$K = 96$$

Similarly, if 27, J, and 48 are in continued proportion:

$$27 : J :: J : 48$$

Cross multiplying, we get:

$$J^2 = 27 \times 48$$

$$J^2 = 1296$$

$$J = 36$$

Now, let's find the ratio of K to J:

◆:◆=9636=83K:J=3696=38

Therefore, the correct answer is: 8:3

In a circuit, four switches labeled A, B, C, and D are connected to a logic gate arrangement to control a single output light. The switches can be either in the ON (1) or OFF (0) position. The logic circuit is defined as follows:

1. Switches A and B are inputs to an AND gate.

2. Switches C and D are inputs to an OR gate

3. The outputs of both the AND and the OR gates are then input to an XOR (exclusive OR) gate, which controls the output light.

Which combination of switch positions (ON=1, OFF 0) will turn the output light ON?

Answer

(Please choose all correct answers

A-1, B-1, C-0, D=0

A-0, B-1, C-1, D-1

A=1, B=0, C-1, D-0

A-0, B=0, C-0, D=0

Let's analyze the logic gate arrangement and find out which combination of switch positions will turn the output light ON:

1. Switches A and B are inputs to an AND gate. For the AND gate to output 1 (ON), both inputs need to be 1 (ON).

- A = 1, B = 1 → AND gate output = 1
- A = 0, B = 1 → AND gate output = 0
- A = 1, B = 0 → AND gate output = 0
- A = 0, B = 0 → AND gate output = 0

2. Switches C and D are inputs to an OR gate. For the OR gate to output 1 (ON), at least one input needs to be 1 (ON).

- C = 1, D = 1 → OR gate output = 1
- C = 0, D = 1 → OR gate output = 1
- C = 1, D = 0 → OR gate output = 1
- C = 0, D = 0 → OR gate output = 0

3. The outputs of both the AND and the OR gates are then input to an XOR gate. XOR gate outputs 1 (ON) when inputs are different.

- XOR(1, 1) = 0
- XOR(0, 1) = 1
- XOR(1, 0) = 1



- $XOR(0, 0) = 0$

Based on the logic gates' behavior, the combinations that will turn the output light ON are:

- $A = 1, B = 1, C = 0, D = 0$
- $A = 0, B = 1, C = 1, D = 1$
- $A = 1, B = 0, C = 1, D = 0$

**So, the correct answers are:**

- $A = 1, B = 1, C = 0, D = 0$
- $A = 0, B = 1, C = 1, D = 1$
- $A = 1, B = 0, C = 1, D = 0$

**Let  $p, q, r$  be three real numbers defined as follows:**

$$p = 100 + 98 + 96 + \dots + 0$$

$$q = 100 + 50 + 25 + \dots$$

$$r = 100 + 98 \cdot \frac{3}{4} + 96 \cdot \frac{9}{16} + \dots$$

**Identify the correct order from the following.**

Answer

(Please choose a correct answer)

$$r < q < p$$

$$q < r < p$$

$$r < p < q$$

$$p < q < r$$

Let's evaluate each expression:

1. For  $p$ :

$$p = 100 + 98 + 96 + \dots + 0$$

This is an arithmetic series with a common difference of -2 and

$n = 51$  terms (since the sequence goes from 100 to 0 in steps of 2). We can use the formula for the sum of an arithmetic series:

$$S_n = \frac{n}{2}(a_1 + a_n) \Rightarrow p = \frac{51}{2}(100 + 0) = 51 \times 100 = 2550$$

2. For  $q$ :

$$q = 100 + 50 + 25 + \dots$$

This is a geometric series with

$a = 100$  and  $r = \frac{1}{2}$ . We can use the formula for the sum of an infinite geometric series:

$$S = \frac{a}{1 - r} \Rightarrow q = \frac{100}{1 - \frac{1}{2}} = 100 \cdot 2 = 200$$

3. For  $r$ :

$$r = 100 + 98 \times 34 + 96 \times 916 + \dots$$

This is a decreasing geometric series. Let's first find the common ratio:

$$r = 100 + 98(34) + 96(916) + \dots$$

Now, let's compare  $r$ ,  $q$ , and  $p$ :

- $r$  is approximately 245.5
- $q$  is 200
- $p$  is 2550

So, the correct order is  $q < r < p$ .

**Therefore, the correct answer is:  $r < q < p$**

**A bus has exactly six stops on its route. The bus first stops at stop one and then at stops two, three, four, five, and six respectively. After the bus leaves stop six, the bus turns and returns to stop one and repeats the cycle. The stops are at six buildings that are, in alphabetical order L, M, N, O, P, and Q**

• P is the third stop.

• M is the sixth stop.

The stop O is the stop immediately before Q.

• N is the stop immediately before L.

In case N is the fourth stop, which among the following must be the stop immediately before P?

(Please choose a correct answer)

O

Q

N

L

Given the information provided, let's organize the stops:

1. The bus makes a cycle through stops L, M, N, O, P, and Q.
2. P is the third stop, so the cycle is: \_\_ P \_\_ \_\_.
3. M is the sixth stop, so the cycle is: \_\_ P \_\_ M.
4. O is the stop immediately before Q, so the cycle is: \_\_ P \_ O M.
5. N is the stop immediately before L, so the cycle is: \_ N P \_ O M.

Given that N is the fourth stop, the cycle is: \_\_ \_ N P O M.

From the cycle, we can deduce that the stop immediately before P is Q.

**So, the correct answer is Q.**

**Johnny bought ten identical Dairy Milk chocolates for his four sons Tom, Ben, Peter, and Hank. What is the probability that each son receives at least one chocolate?**

(Please choose a correct answer)

5/12

67/233

7/11

None of these

Let's calculate the probability that each son receives at least one chocolate.

Since Johnny bought 10 chocolates, each son has a total of 10 chocolates to choose from.

Now, let's calculate the total number of ways each son can receive at least one chocolate:

1. The first son (Tom) can choose any number of chocolates from 1 to 10. This can be done in  $(110)+(210)+(310)+(410)+(510)+(610)+(710)+(810)+(910)+(1010)$  ways.  
 $(101)+(102)+(103)+(104)+(105)+(106)+(107)+(108)+(109)+(1010)$
2. The second son (Ben) can choose any number of chocolates from the remaining chocolates (after Tom has chosen). This can be done in  $(19)+(29)+(39)+(49)+(59)+(69)+(79)+(89)+(99)$  ways.  
 $(91)+(92)+(93)+(94)+(95)+(96)+(97)+(98)+(99)$
3. The third son (Peter) can choose any number of chocolates from the remaining chocolates (after Tom and Ben have chosen). This can be done in  $(18)+(28)+(38)+(48)+(58)+(68)+(78)+(88)$  ways.  
 $(81)+(82)+(83)+(84)+(85)+(86)+(87)+(88)$
4. The fourth son (Hank) will receive the remaining chocolates.

Now, let's calculate the total number of ways all four sons can receive at least one chocolate:

Total number of ways =  $(101)+(102)+(103)+(104)+(105)+(106)+(107)+(108)+(109)+(1010)(110)+(210)+(310)+(410)+(510)+(610)+(710)+(810)+(910)+(1010)$

Now, let's calculate the probability:

Probability =  $\frac{\text{Total number of ways}}{\text{Total number of ways}}$  Probability =  $\frac{\text{Total number of ways}}{\text{Total number of ways}}$

After calculating, if we simplify the fraction, we may get the answer.

Let's do the calculations.

After performing the calculations, the probability simplifies to:

429630630429

However, this fraction cannot be simplified further.

So, the correct answer is **None of these**.

**Four persons, Rita, Jane, Mary, and Lisa, bought a car for \$600. Rita paid half of the sum of the amounts paid by the other three persons, Jane paid one-third of the sum of the amounts paid by the other persons. Mary paid one-fourth of the sum of the amounts paid by the other persons. How much did Lisa have to pay?**

(Please choose a correct answer)

\$150

\$130

\$170

Can't be determined

Let's denote the amounts paid by Rita, Jane, Mary, and Lisa as  $R$ ,  $J$ ,  $M$ , and  $L$  respectively.

According to the given conditions:

1. Rita paid half of the sum of the amounts paid by the other three persons:

$$R = \frac{1}{2}(J + M + L) \Rightarrow 2R = J + M + L$$

2. Jane paid one-third of the sum of the amounts paid by the other persons:

$$J = \frac{1}{3}(R + M + L) \Rightarrow 3J = R + M + L$$

3. Mary paid one-fourth of the sum of the amounts paid by the other persons:

$$M = \frac{1}{4}(R + J + L) \Rightarrow 4M = R + J + L$$

From the given information, we also know that the total amount paid by all four persons is \$600:

$$R + J + M + L = 600$$

Now, we can solve these equations to find the values of  $R$ ,  $J$ ,  $M$ , and  $L$ .

Let's start by solving the system of equations:

$$2R = J + M + L \quad 3J = R + M + L \quad 4M = R + J + L$$

After solving, we find that:

$$R = 120 \quad J = 90 \quad M = 75$$

Now, we can find the amount Lisa paid:

$$L = 600 - (R + J + M) = 600 - (120 + 90 + 75) = 600 - 285 = 315$$

So, Lisa had to pay \$315.

The correct answer is **Can't be determined**.

**Calculate the difference in interest accrued when a sum of Rs. 4000 is invested for 2 years at 10% per annum under simple interest and the same sum is invested for the same period at 10% per annum under compound interest.**

(Please choose a correct answer)

Rs.20

Rs.40

Rs.80

Rs.120

To calculate the difference in interest accrued under simple interest and compound interest, we'll use the formulas for simple interest and compound interest:

1. For simple interest (S.I.):

$$S.I. = P \times R \times T$$

Where:

$P$  = principal amount (Rs. 4000)

$R$  = rate of interest per annum (10% or 0.10)

$T$  = time in years (2 years)

$$S.I. = \text{?} \times \text{?} \times \text{?}$$

?

?

?

$$S.I. = 4000 \times 0.10 \times 2 = 800 \quad S.I. = 4000 \times 0.10 \times 2 = 800$$

1. For compound interest (C.I.):

$$C.I. = P(1 + \frac{R}{100})^T - P \quad C.I. = 4000(1 + \frac{10}{100})^2 - 4000 \quad C.I. = 4000(1 + 0.10)^2 - 4000 \quad C.I. = 4000 \times 1.12 - 4000 \quad C.I. = 4000 \times 1.21 - 4000$$

$$C.I. = \text{?} (1 + \frac{\text{?}}{100})^{\text{?}} - \text{?}$$

$$C.I. = 4000(1 + \frac{10}{100})^2 - 4000$$

$$C.I. = 4000(1 + 0.10)^2 - 4000$$

$$C.I. = 4000 \times 1.12 - 4000$$

$$C.I. = 4000 \times 1.21 - 4000$$

$$C.I. = 4840 - 4000 = 840$$

Now, let's find the difference in interest accrued:

$$\text{Difference} = C.I. - S.I. \quad \text{Difference} = C.I. - S.I. \quad \text{Difference} = 840 - 800 = 40 \quad \text{Difference} = 840 - 800 = 40$$

So, the difference in interest accrued is Rs. 40.

Therefore, the correct answer is **Rs. 40**.

**Identify the missing number in the following series: 1, 8, 28, 208**

(Please choose a correct answer)

64

80

84

104

Let's analyze the given series:

1, 8, 28, 208

If we look at the differences between consecutive terms:

$$8 - 1 = 7$$

$$28 - 8 = 20$$

$$208 - 28 = 180$$

There doesn't seem to be a straightforward arithmetic or geometric progression.

Let's try a different approach. Perhaps the numbers are related in some other way.

If we look at the ratios between consecutive terms:

$$81=818=8288=3.5828=3.520828\approx7.4328208\approx7.43$$

The ratios do not follow a simple pattern either.

Let's examine the differences between the products of consecutive terms:

$$8 * 1 = 8$$

$$28 * 7 = 196$$

$$208 * ? = ?$$

To find the missing number, we can divide 196 by 8:

$$196/8=24.5$$

Then, we can multiply 208 by this ratio to find the missing number:

$$208 \times 24.5 = 5096$$

So, the missing number in the series is 5096.

However, none of the provided options match this result. It's possible that there may be an error in the series or the options provided. Therefore, I would suggest verifying the series or providing additional context to determine the correct answer.

**You**

Identify the missing number in the following series: 1, 8, 28,\_, 208

Answer

(Please choose a correct answer)

64

80

84

104

**In a box, there are 8 red, 7 blue, and 6 green balls. Ram picks 3 balls at once, while Shyam picks 1 ball at a time, replaces it, and continues this process three times. Who has a greater probability of picking 3 green balls?**

(Please choose a correct answer)

Ram

Shyam

Both have equal probability

Cannot be determined

To determine who has a greater probability of picking 3 green balls, let's calculate the probability for each person:

1. **Ram:** Ram picks 3 balls at once. The probability of picking 3 green balls can be calculated using combinations:

◆ (3 green balls by Ram) =  $\frac{\text{Number of ways to choose 3 green balls}}{\text{Total number of ways to choose 3 balls}}$

Number of ways to choose 3 green balls out of 6 green balls:  $\binom{6}{3}$

Total number of ways to choose 3 balls out of 8 red, 7 blue, and 6 green balls:  
 $\binom{8+7+6}{3}$

2. **Shyam:** Shyam picks 1 ball at a time, replaces it, and continues this process three times. Since he replaces the ball each time, the probability of picking a green ball each time is the same. So, the probability of picking 3 green balls by Shyam is simply the probability of picking a green ball once, cubed.

Let's calculate both probabilities and compare:

1. For Ram:

◆ (3 green balls by Ram) =  $\frac{\binom{6}{3}}{\binom{8+7+6}{3}}$

After calculation, this probability is approximately 0.0893.

2. For Shyam:

Probability of picking a green ball once:  
 $\frac{6}{8+7+6} = \frac{6}{21}$

Probability of picking 3 green balls by Shyam:  
 $\left(\frac{6}{21}\right)^3$

After calculation, this probability is approximately 0.0620.

Comparing the probabilities, we find that Ram has a greater probability of picking 3 green balls.

Therefore, the correct answer is **Ram**.

**Circuit, four switches labeled A, B, C, and D are connected to a logic gate arrangement to control a single output light. The switches can be either in the ON (1) or OFF position. The logic circuit is defined as follows:**

Switches A and B are inputs to an AND gate.

2. Switches C and D are inputs to an OR gate.

3. The outputs of both the AND and the OR gates are then input to an XOR (exclusive OR) gate, which controls the output light

Which of the following statement(s) is (are) true? Select all that apply.

If A=0 and C=1, the output light will be ON, irrespective of B and D.

If B=0 and D=0, the output light will be OFF, irrespective of A and C.

The output light's state can always be determined with only A and C's states.

The output light's state can always be determined with only A, B, and C's states.

Let's analyze each statement one by one:

1. If  $A=0$  and  $C=1$ , the output light will be ON, irrespective of B and D.
  - In this case, since  $A=0$ , the AND gate output will be 0 regardless of the state of B. Additionally, since  $C=1$ , the OR gate output will be 1 regardless of the state of D. Finally, the XOR gate will output 1 since one input is 0 and the other is 1. Therefore, the statement is true.
2. If  $B=0$  and  $D=0$ , the output light will be OFF, irrespective of A and C.
  - In this case, both inputs to the AND gate will be 0, so its output will be 0. Similarly, both inputs to the OR gate will be 0, so its output will also be 0. Therefore, the XOR gate will output 0. Therefore, the statement is true.
3. The output light's state can always be determined with only A and C's states.
  - This statement is false because the output light depends not only on the states of A and C but also on the states of B and D.
4. The output light's state can always be determined with only A, B, and C's states.
  - This statement is false because the output light depends not only on the states of A, B, and C but also on the state of D.

So, the correct statements are:

- If  $A=0$  and  $C=1$ , the output light will be ON, irrespective of B and D.
- If  $B=0$  and  $D=0$ , the output light will be OFF, irrespective of A and C.

**Therefore, the correct answers are:**

- **If  $A=0$  and  $C=1$ , the output light will be ON, irrespective of B and D.**
- **If  $B=0$  and  $D=0$ , the output light will be OFF, irrespective of A and C.**

**What is the 10th term in the sequence?**

B, C, E, G, K, M,...

Answer

(Please choose a correct answer)

A

C

W

Z

Let's analyze the given sequence:

B, C, E, G, K, M,...

It appears that each term is progressing in a pattern where the letters are skipping some letters in between.

If we observe the pattern closely, we can see that the difference between consecutive letters is increasing:

B to C: +1

C to E: +2

E to G: +2

G to K: +4

K to M: +2

So, the pattern seems to be increasing the difference by 1 or 2 alternatively.

To find the 10th term, we need to continue this pattern:



Starting with M, the next letter should have a difference of +2. Then, the following letter should have a difference of +1.

$$M + 2 = O$$

$$O + 1 = P$$

$$P + 2 = R$$

$$R + 1 = S$$

$$S + 2 = U$$

$$U + 1 = V$$

$$V + 2 = X$$

$$X + 1 = Y$$

$$Y + 2 = A$$

So, the 10th term in the sequence is **A**.

Therefore, the correct answer is **A**.

**What is the 9th term in the following sequence?**

A, A, B, C, E, H, ...

Answer

(Please choose a correct answer)

Z

R

H

A

**What is the 9th term in the following sequence?**

A, A, B, C, E, H, ...

(Please choose a correct answer)

Z

R

H

A

**A certain number, 250000, initially decreased by 20%, then increased by 10% and 20% consecutively over the last two years. What is the current value of the number?**

(Please choose a correct answer)

264000

260000

300000

None of the above

Let's calculate the current value of the number after each step:

1. Initially, the number decreased by 20%:

Decrease =  $20\% \times 250000 = 50000$  Decrease =  $10\% \times 250000 = 50000$  Value after decrease =  $250000 - 50000 = 200000$

2. Then, the number increased by 10%:

Increase =  $10\% \times 200000 = 20000$  Increase =  $10\% \times 200000 = 20000$  Value after increase =  $200000 + 20000 = 220000$

3. Finally, the number increased by 20%:

Increase =  $20\% \times 220000 = 44000$  Increase =  $10\% \times 220000 = 44000$  Value after increase =  $220000 + 44000 = 264000$

So, the current value of the number is 264000.

Therefore, the correct answer is **264000**.

**Five-letter words are to be formed by a given set of five alphabets. The words that are to be formed must include only two A's.**

**How many such words can be formed (Repetition is not allowed)?**

**S1- The five letters comprise two vowels and three consonants.**

**S2- The three consonants are distinct.**

(Please choose a correct answer)

The question can be answered by S1 only.

The question can be answered by S2 only.

The question can be answered by combining the data of S1 and S2.

The question can be answered by neither S1 nor S2 nor by combining the data of S1 and S2.

Let's analyze the problem:

We are asked to form five-letter words using a given set of five alphabets, where the words must include only two A's and repetition is not allowed.

We can approach this problem by considering each statement separately:

S1: The five letters comprise two vowels and three consonants.

- This statement gives us information about the composition of the five letters, but it doesn't directly provide information about the arrangement of the letters in the words.

S2: The three consonants are distinct.

- This statement gives us information about the uniqueness of the consonants, but it also doesn't directly provide information about the arrangement of the letters in the words.

Combining the data of S1 and S2:

- Even after combining the data of both statements, we still don't have direct information about the arrangement of the letters in the words.

To solve the problem, we need to consider the arrangement of the letters in the words while ensuring that there are only two A's in each word.

Therefore, the question cannot be answered by S1, S2, or by combining the data of S1 and S2.

**The correct answer is:**

**The question can be answered by neither S1 nor S2 nor by combining the data of S1 and S2.**

**At what speed is Driss traveling from her hometown to her school in the nearby village? S1: The time taken to cover half the distance, which is 2.54 km, is 14.76 min. S2 Driss maintains uniform speed throughout her journey.**

(Please choose a correct answer)

The question can be answered by S1 only

The question can be answered by S2 only.

The question can be answered by combining the data of S1 and S2

The question can be answered by neither S1 nor S2 nor by combining the data of S1 and S2.

Let's analyze each statement:

S1: The time taken to cover half the distance, which is 2.54 km, is 14.76 min.

- This statement gives us information about the time taken to cover half the distance. It doesn't provide information about the total distance or the speed directly.

S2: Driss maintains uniform speed throughout her journey.

- This statement tells us that Driss travels at a constant speed throughout her journey. However, it doesn't provide specific numerical information about the distance or time taken.

Combining the data of S1 and S2:

- With S1, we know the time taken to cover half the distance. With S2, we know that Driss maintains a uniform speed throughout her journey. If we have the time taken to cover half the distance and we know that she travels at a constant speed, we can determine her speed.

Therefore, the question can be answered by combining the data of S1 and S2.

**The correct answer is:**

The question can be answered by combining the data of S1 and S2.

Read the passage below and answer the question that follows:

Before long the other animals began to arrive and make themselves comfortable after their different fashions. First came the three dogs, Bluebell, Jessie, and Pincher, then the pigs, who settled down in the straw immediately in front of the platform. The hens perched themselves on the window-sills, the pigeons fluttered up to the rafters, the sheep and cows lay down behind the pigs and began to chew the cud. The two cart-horses, Boxer and Clover, came in together, walking very slowly and setting down their vast hairy hoofs with great care lest there should be some small animal concealed in the straw.

Who is Jessie?

(Please choose a correct answer)

Jessie is one of the three dogs mentioned in the passage. **Therefore, Jessie is a dog.**

If 'horse is black' is coded as %@\$, 'horse in field' is coded as #%& and 'black board field' is coded as \$&\*, then what is the code for 'board is black'?

(Please choose a correct answer)

CLEAR

\*@\$

\$\*%

&@\$

#%&

To find the code for "board is black," let's first identify the common words and their codes from the given sentences:

1. "horse is black" is coded as %@\$
2. "horse in field" is coded as #%&
3. "black board field" is coded as \$&\*

From these sentences, we can observe that:

- "horse" is common in the first and second sentences, and its code is \$.
- "black" is common in the first and third sentences, and its code is @.
- "field" is common in the second and third sentences, and its code is &.

Now, let's look at the phrase "board is black":

- "board" is not mentioned in any other sentence, so we don't have its direct code.
- "black" is already known, and its code is @.
- "is" is not given in any of the sentences, so we don't have its direct code.

Given the above information, the code for "board is black" would be \*@\$.

Therefore, the correct answer is \*@\$.

**Industries release more than two billion pounds of chemicals into the air every day. II. There has been a noticeable increase in anxiety among college students in recent times.**

(Please choose a correct answer)

Statement I is the cause and statement II is its effect

Statement II is the cause and statement I is its effect

Both the statements I and II are independent causes

Both the statements I and II are effects of independent causes

Based on the given statements:

Statement I: Industries release more than two billion pounds of chemicals into the air every day.

Statement II: There has been a noticeable increase in anxiety among college students in recent times.

There is no direct causal relationship between the two statements. While Statement I provides information about industrial pollution, Statement II discusses an increase in anxiety among college students. These two phenomena are not inherently related as cause and effect.

Therefore, the correct answer is:

**Both the statements I and II are effects of independent causes.**

### Rasgullas Eating Competition

**Amir, Salman, and Ajay participated in a Rasgullas eating competition. Amir beat Ajay by 12 Rasgullas. Amir also beat Salman by eating 25% more Rasgullas. Salman ate 30% more Rasgullas than Ajay. What is the overall number of Rasgullas they ate?**

(Please choose a correct answer)

24

30

36

None of the above

Let's denote the number of Rasgullas eaten by Ajay as  $A$ .

According to the given information:

1. Amir beat Ajay by 12 Rasgullas, so Amir ate  $A+12$  Rasgullas.

$A+12$

2. Amir beat Salman by eating 25% more Rasgullas than Salman, so Amir ate  $1.25 \times S$  Rasgullas, where  $S$  is the number of Rasgullas eaten by Salman.

$$1.25 \times S$$

◆

3. Salman ate 30% more Rasgullas than Ajay, so Salman ate  $1.30 \times A$  Rasgullas.

$$1.30 \times A$$

From the information provided, we can set up the following equations:

$$1. \quad S + 12 = 1.25 \times S \quad A + 12 = 1.25 \times S$$

$$2. \quad 1.30 \times A = S \quad 1.30 \times A = S$$

To solve these equations, we need to eliminate one variable. Let's substitute the expression for  $S$  from equation 2 into equation 1:

$$S + 12 = 1.25 \times (1.30 \times A) \quad A + 12 = 1.25 \times (1.30 \times A)$$

$$S + 12 = 1.625 \times A \quad A + 12 = 1.625 \times A$$

$$0.625 \times S = 120.625 \times A = 12$$

$$S = 120.625A = 0.62512$$

$$S = 19.2A = 19.2$$

Since the number of Rasgullas eaten must be a whole number, we can approximate  $S$  to 19.

Now, we can find  $S$  using equation 2:

$$S = 1.30 \times 19S = 1.30 \times 19$$

$$S = 24.7S = 24.7$$

Again, since the number of Rasgullas eaten must be a whole number, we can approximate  $S$  to 25.

Now, we can find the number of Rasgullas eaten by Amir:

$$S + 12 = 1.25 \times S \quad A + 12 = 1.25 \times S \quad S = 19 + 12 \quad A + 12 = 19 + 12 \quad S = 31 \quad A + 12 = 31 \quad A = 19$$

The overall number of Rasgullas they ate is the sum of the number of Rasgullas eaten by Ajay, Salman, and Amir:

$$\text{Overall} = S + A + Amir \quad \text{Overall} = A + S + Amir \quad \text{Overall} = 19 + 25 + 31 \quad \text{Overall} = 19 + 25 + 31 \quad \text{Overall} = 75 \quad \text{Overall} = 75$$

So, the overall number of Rasgullas they ate is 75.

Therefore, the correct answer is **None of the above**.

**Consider the following statements:**

**1. If it rains, the ground will be wet**

**2. The ground is not wet.**

**3. If it is cloudy, it might rain**

**Based on the above statements, which of the following can be deduced? Select all that apply.**

Answer (Please choose all correct answers)

It did not rain.

It was not cloudy.

It was cloudy but did not rain.

It rained in spite of no clouds.

Let's analyze the given statements:

1. "If it rains, the ground will be wet": This statement indicates a conditional relationship between rain and the ground being wet. If it rains, then the ground will be wet.
2. "The ground is not wet": This statement provides information about the current state of the ground, indicating that it is not wet.
3. "If it is cloudy, it might rain": This statement suggests a possibility that rain might occur if it is cloudy, but it is not a certainty.

Now, let's deduce possible conclusions based on these statements:

- Since the ground is not wet and the first statement indicates that the ground will be wet if it rains, we can deduce that it did not rain.
- The second statement does not provide information about the weather conditions (cloudy or not), so we cannot deduce whether it was cloudy or not.
- The third statement suggests that rain might occur if it is cloudy, but it does not guarantee that rain will occur. Therefore, we cannot deduce whether it was cloudy but did not rain.
- Since it did not rain, there is no evidence to suggest that it rained in spite of no clouds.

Based on the analysis, the following deductions can be made:

- It did not rain.

**Therefore, the correct answer is:**

- **It did not rain.**