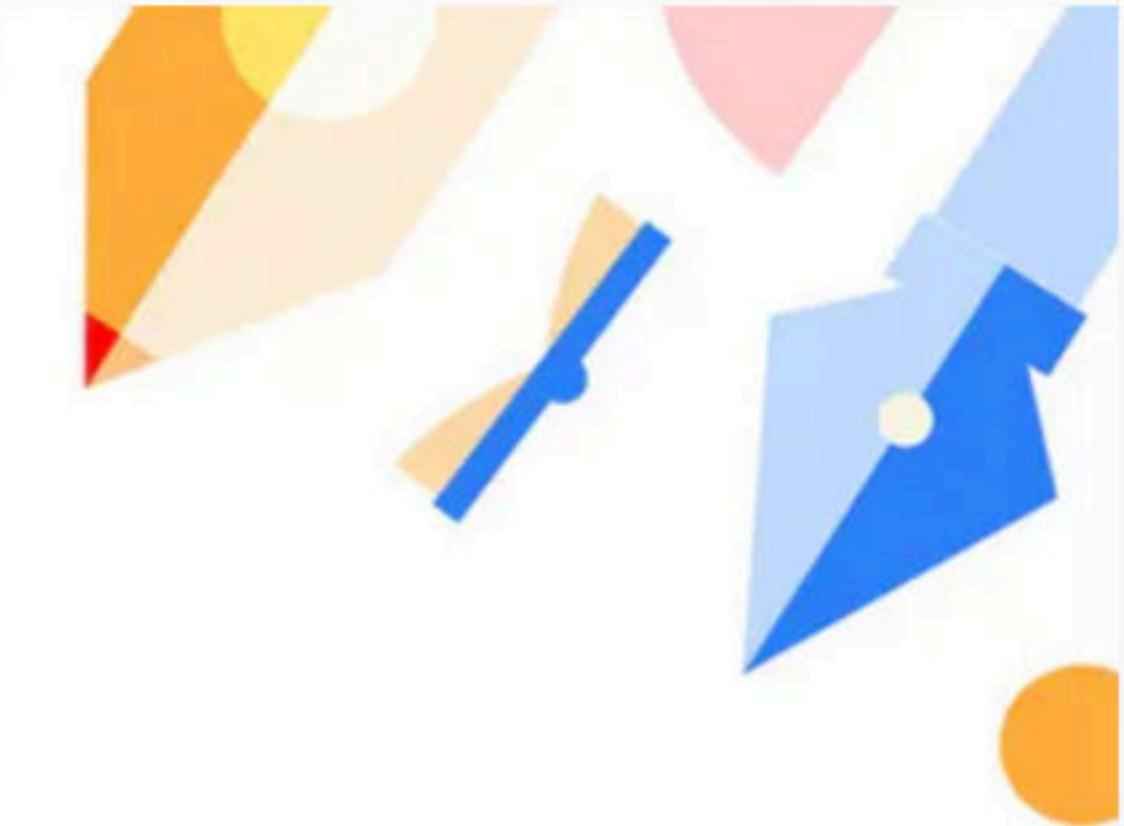


10:15 - 11:15 = Reasoning
11:15 → Quantitative Aptitude



Foundation Questions on Quantitative Aptitude - Part I

Course on General Aptitude and Engineering Mathematics for GATE
2023-24

General Aptitude

PYQ'S on Logical Reasoning -

V

Question 1

In the given diagram, teachers are represented in the triangle, researchers in the circle and administrators in the rectangle. Out of the total number of the people, the percentage of administrators shall be in the range of _____.

A) 46 to 60

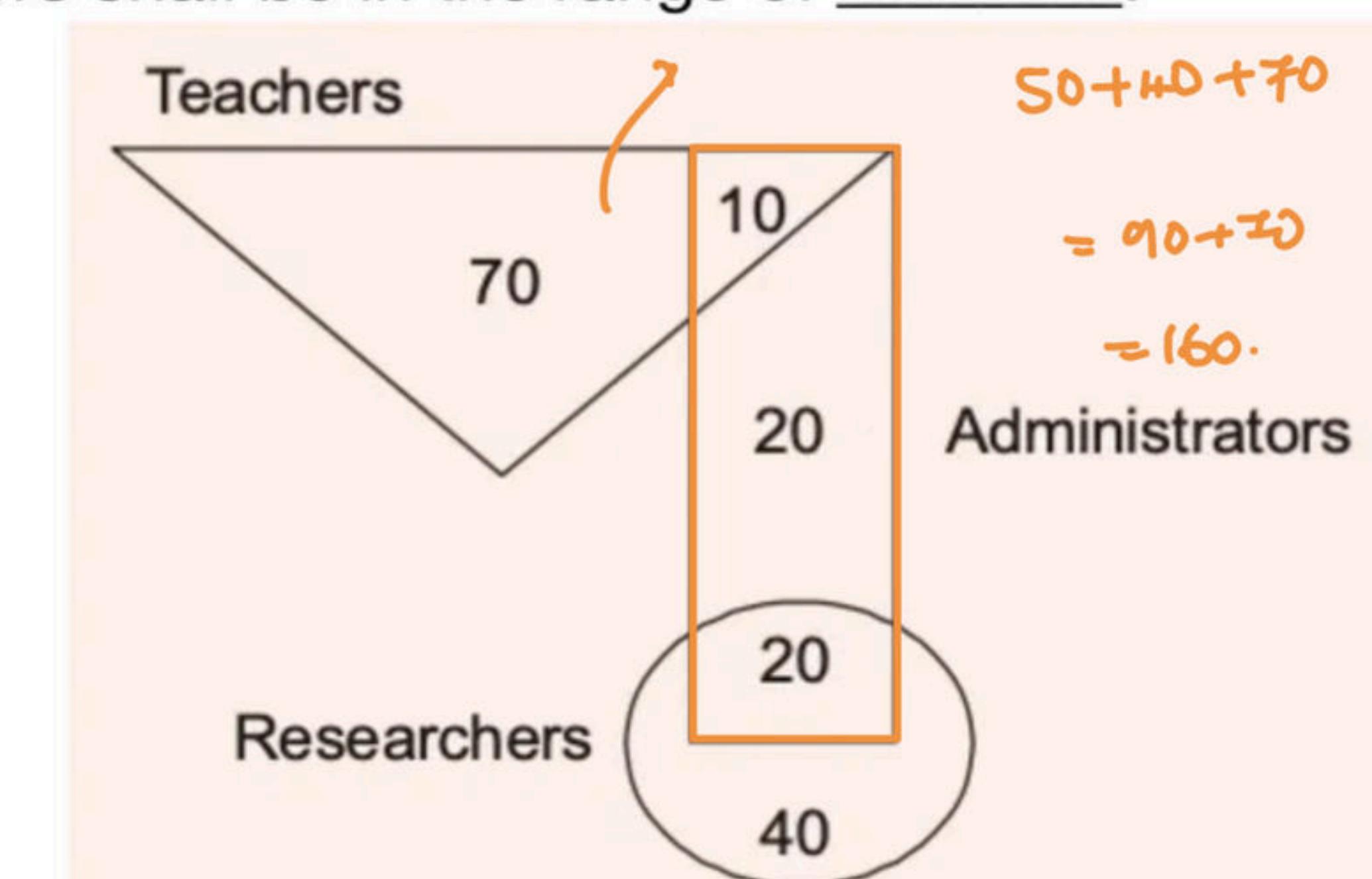
$$\frac{50}{160} \times 100$$

B) 0 to 15

$$\frac{560}{16} = 31.25$$

C) 31 to 45

D) 16 to 30



Answer

- Option C)

Question 2

"A recent High Court judgement has sought to dispel the idea of begging as a disease — which leads to its stigmatization and criminalization — and to regard it as a symptom. The underlying disease is the failure of the state to protect citizens who fall through the social security net". Which one of the following statements can be inferred from the given passage?

dismiss

- A) Begging is an offence that has to be dealt with firmly X
- B) Beggars are created because of the lack of social welfare schemes ✓
- C) Begging has to be banned because it adversely affects the welfare of the state X
- D) Beggars are lazy people who beg because they are unwilling to work X

Answer

- Option B)

Question 3

Find the missing group of letters in the following series:

1 DE IJK PQRS
BC, FGH, LMNO,

?
TUUVW X

A) UVWXY

B) TUVWX

C) STUVW

D) RSTUV

Answer

- Option B)

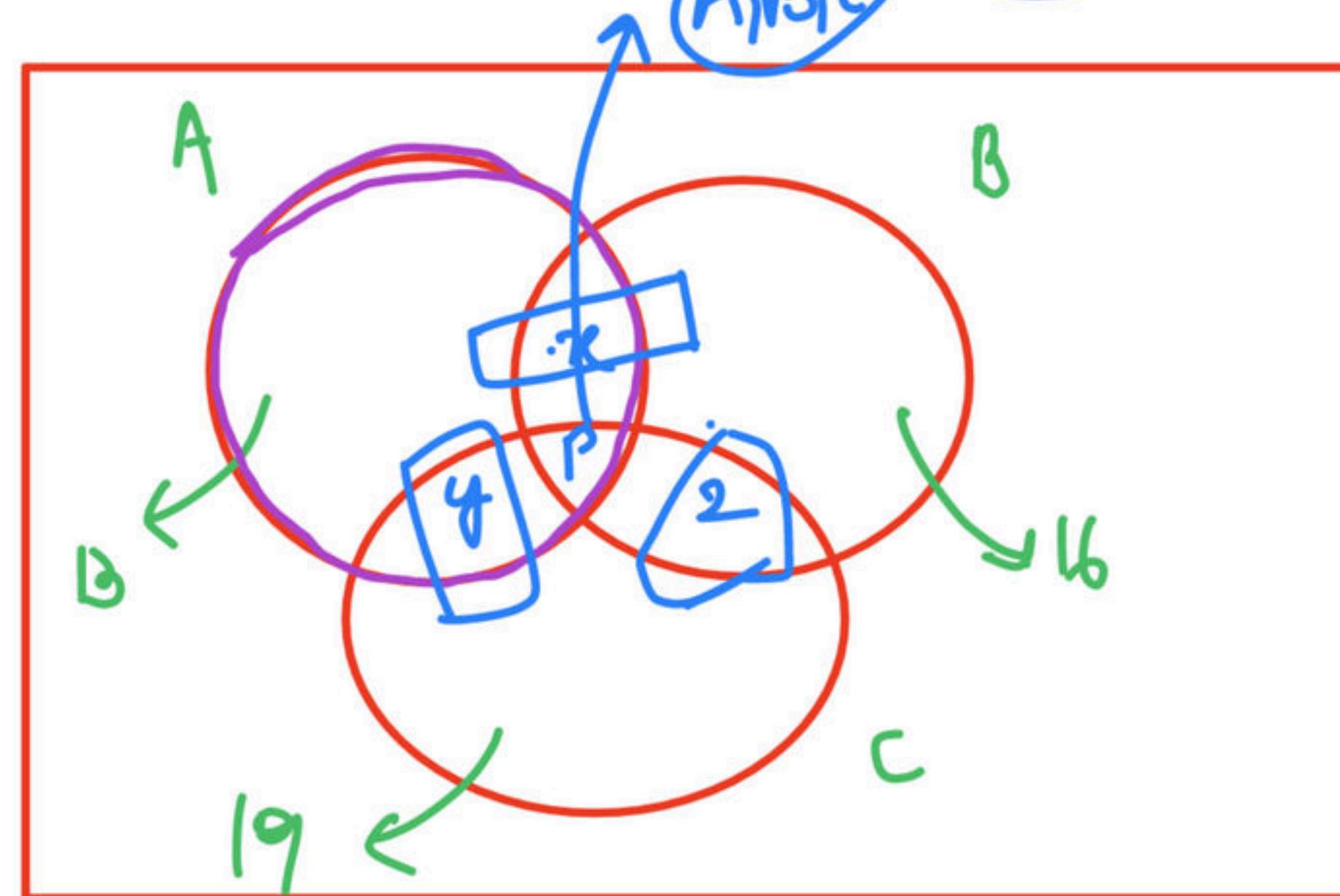
$$40 = T(A \cup B \cup C) - T(A \cap B \cap C)$$

$$19 + 16 + 13 = 48 - T(A \cap C) - T(B \cap C) + T(A \cap B \cap C)$$

$$\begin{aligned} 13 &= A + 0 + 0 + P. \quad (A+P) \\ 16 &= B + 0 + 0 + P. \quad (B+P) \\ 19 &= C + 0 + 0 + P. \quad (C+P) \end{aligned}$$

- Forty students watches films A, B, C over a week. Each student watched either only one film or all three. Thirteen students watched film A, sixteen students watched film B and nineteen students watched film C. How many students watched all the three films?%

- A) 0
B) 2
C) 4
D) 8



$$A + B + C + x + y + z = 0.$$

$$13 = A + x + y + P.$$

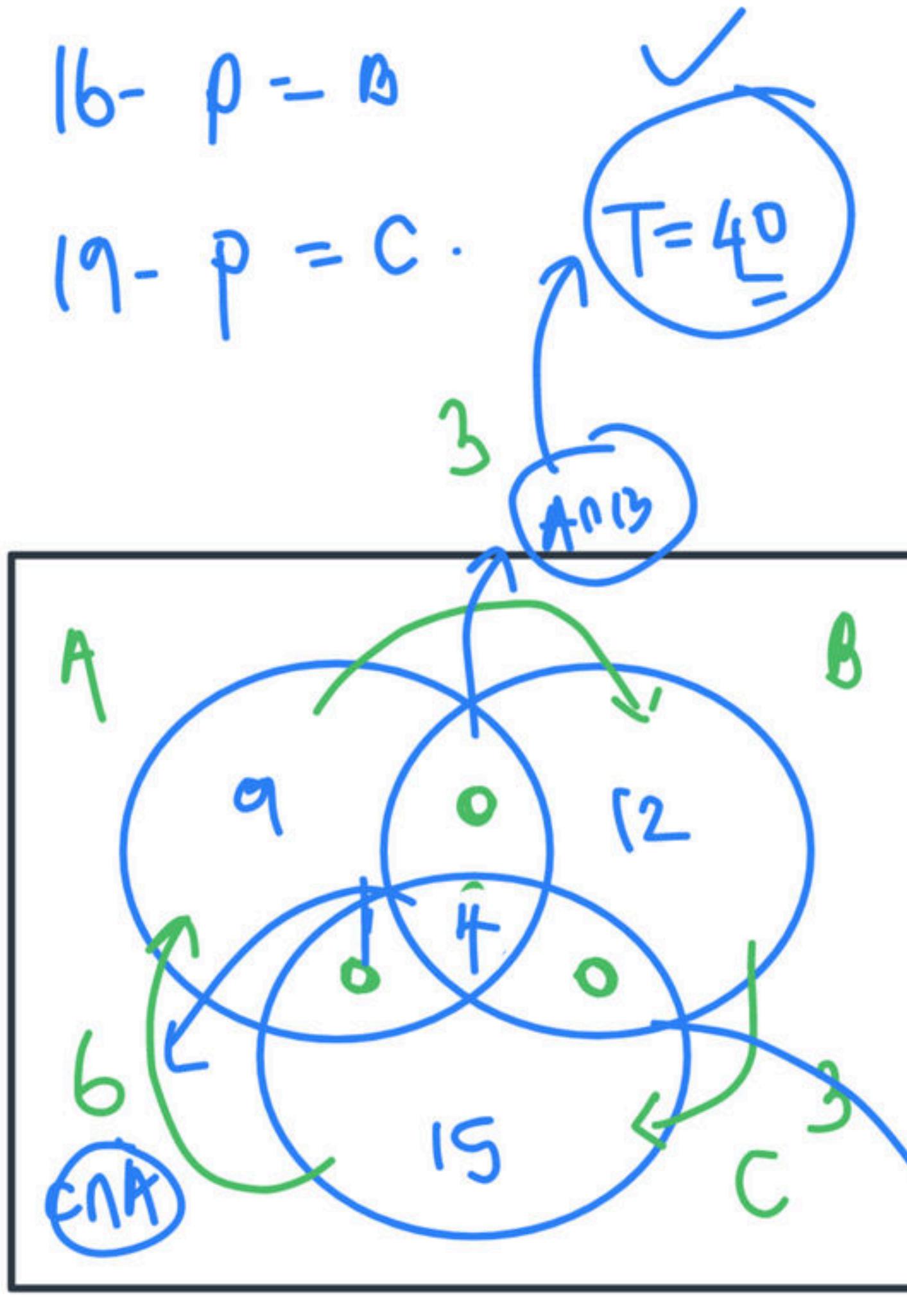
$$16 = B + x + z + P$$

$$19 = C + y + z + P$$

$$13 - p = A$$

$$16 - p = B$$

$$19 - p = C.$$



$$FO = A + B + C + \boxed{x + y + z} + P \cdot \rightarrow (A \cap B \cap C)$$

$$FO = A + B + C + P.$$

$$FO = (13 - p) + (16 - p) + (19 - p) + P.$$

$$FO = 48 - 2P.$$

$$2P = 8$$

$$P = 8 / 2 = 4$$

Answer

- Option C)

Question 5

- A house has a number which needs to be identified. The following three statements are given that can help in identifying the house number.

1. If the house number is a multiple of 3, then it is a number from 50 to 59.

2. If the house number is NOT a multiple of 4, then it is a number from ~~60 to 69~~.

3. If the house number is a NOT a multiple of 6, then it is a number from 70 to 79. Which is the house number?

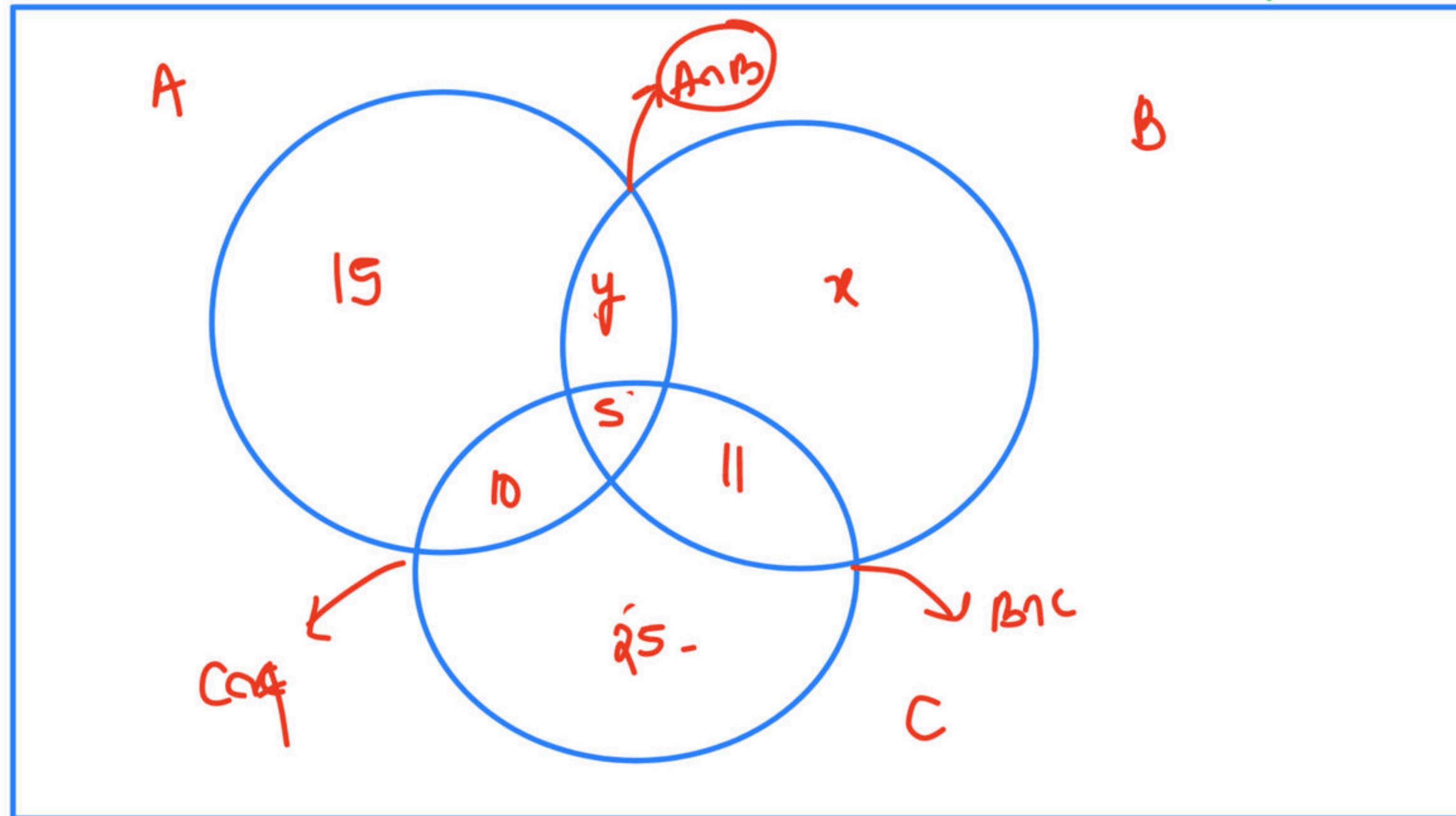
- A) 54 → $\frac{54}{3}$ ✓ $\frac{54}{6}$ ✓ $\frac{54}{4} = \text{Not a multiple}$
- B) 65 → $\frac{65}{3}$ ✗ $\frac{65}{4}$ ✗ $\frac{65}{6}$,
- C) 66 → $\frac{66}{3}$ ✓ $\frac{66}{4}$ ✓ $\frac{66}{6}$ ✗ not 6.
- D) 76 → $\frac{76}{3}$ ✗ $\frac{76}{4}$ ✓

$$\text{only } B + A \cap B = 73$$

$$B = 24$$

$$x + y + s = 73.$$

$$x + y = 68$$



$$x + y + s + 11 = 2(30 + 4)$$

$$84 = 60 + 2y =$$

$$24 = 2y =$$

$$y = \frac{24}{2} = 12$$

51, 7
40, 5.

Answer

- Option D)

Statement

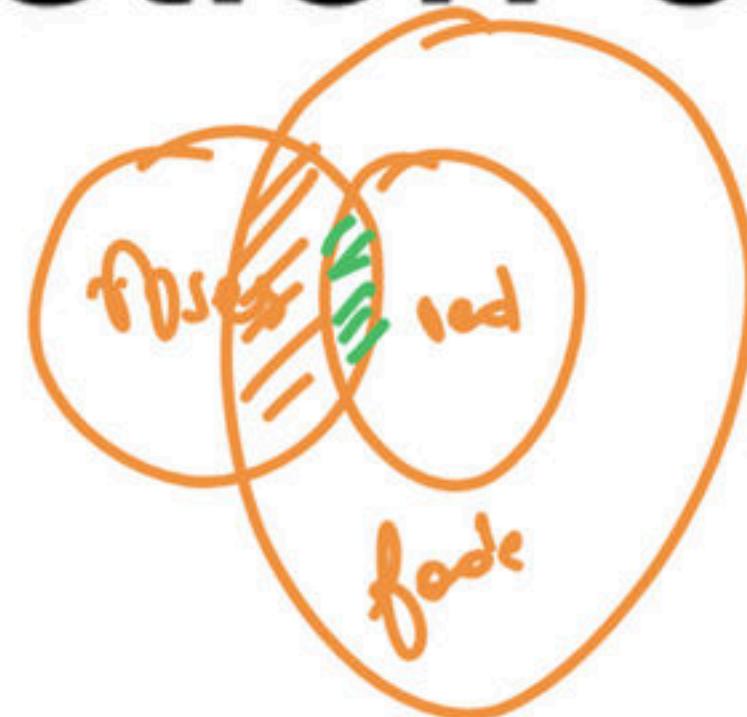
Question 6

Consider the following three statements:

1. Some roses are red \rightarrow True

2. All red flowers fade quickly \rightarrow True .

3. Some roses fade quickly \rightarrow True .



Which of the following statements can be logically inferred from the above statements?

A) If 1 is true and 2 is false, then 3 is false X

B) If 1 is true and 2 is false, then 3 is true. X

C) If 1 and 2 are true, the 3 is true ✓

D) If 1 and 2 are false, the 3 is false X

Answer

- Option C)

addictive

Vulnerable

Question 7

An award-winning study by a group of researchers suggests that men are as prone to buying on impulse as women but women feel more guilty about shopping.

Which one of the following statements can be inferred from the given text?

A. Some men and women indulge in buying on impulse

B. All men and women indulge in buying on impulse

C. Few men and women indulge in buying on impulse

D. Many men and women indulge in buying on impulse

All

them

No Money

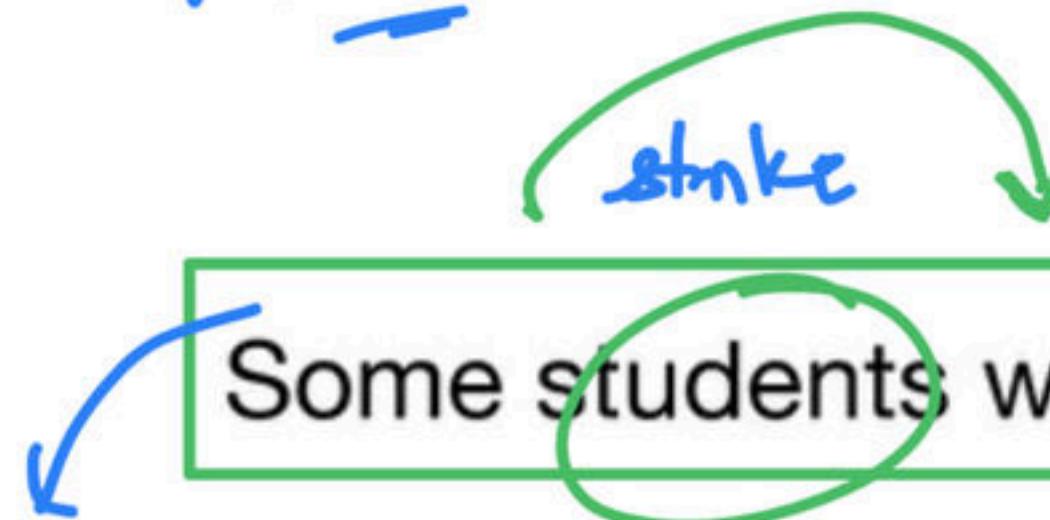
Not too much

Few

Answer

- Option A)

number = Statement



Question 8

student



Some were students

No were students

Some students were not involved in the strike.

If the above statement is true, which of the following conclusions is/are logically necessary?

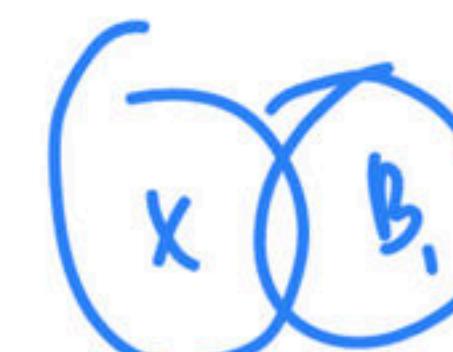
1. Some who were involved in the strike were students.

2. No student was involved in the strike.

Some $x \neq y = \text{Some } p \neq x$

3. At least one student was involved in the strike.

4. Some who were not involved in the strike were students.



A) 1 and 2

B) 3

C) 4

D) 2 and 3

$$6 \times \frac{7}{1} \quad 5 \times \frac{7}{1}$$

$$42 \quad (49) \quad 55$$

Diagram showing a flow from 42 to 49 to 55. Arrows indicate a clockwise cycle between 42 and 49, and between 49 and 55.

$$27 \times 3 \quad 27 \times 2$$

$$8 \frac{7}{1} (36) 8 \frac{1}{1}$$

$$6^2$$

Diagram showing a flow from 27x3 to 27x2. Arrows indicate a clockwise cycle between 27x3 and 27x2, and between 27x2 and 8 7/1 (36) 8 1/1. A blue arrow points from 8 7/1 (36) 8 1/1 down to 6^2.

$$6 \frac{7}{1} (A) 58 \frac{1}{1}$$

$$15^2$$

$$67 - 58 =$$

$$1^2 = 81$$

Diagram showing a flow from 27 to 26. Arrows indicate a clockwise cycle between 27 and 26, and between 26 and 9. A blue arrow points from 9 down to 7. From 7, a blue arrow points to 16 1/2. From 16 1/2, a blue arrow points to 7^2 = 49.

Answer

- Option C)

Question 9

Since the last one year after a 125 basis point reduction in repo rate by the Reserve Bank of India, banking institutions have been making a demand to reduce interest rates on small saving schemes. Finally, the government announced yesterday a reduction in interest rates on small saving schemes to bring them on par with fixed deposit interest rates.

Which one of the following statements can be inferred from the given passage?

- A. Whenever the Reserve Bank of India reduces the repo rate, the interest rates on small saving schemes are also reduced
- B. Interest rates on small saving schemes are always maintained on par with fixed deposit interest rates
- C. The government sometimes takes into consideration the demands of banking institutions before reducing the interest rates on small saving scheme
- D. A reduction in interest rates on small savings scheme follow only after a reduction in repo rate by the Reserve Bank Of India

Answer

- Option C)

forgot to offer

Question 10

The nomenclature of Hindustani music has changed over the centuries. Since the medieval period, dhrupad styles were identified as baanis. Terms like gayaki and baaj were used to refer to vocal and instrumental styles, respectively. With the institutionalisation of music education, the term gharana became acceptable. Gharana originally referred to hereditary musicians from a particular lineage, including disciples and grand disciples.

Which one of the following pairings is NOT correct?

- A. dhrupad, baani ✗
- B. gayaki, vocal ✗
- C. baaj, institution ✗
- D. gharana, lineage ✗

General Aptitude

PYQ'S on Quantitative Aptitude

- I

$$nCr = nC_{n-r} \\ = 10C_6 \\ = 10C_4$$

Question 1

Binomial probability

Shaquille O'Neal is a 60% career free throw shooter, meaning that he successfully makes 60 free throws out of 100 attempts on average. What is the probability that he will successfully make exactly 6 free throws in 10 attempts?

A. 0.2508

B. 0.2816

C. 0.2934

D. 0.6000

Total Attempts = 100

= 60

P = 0.6

q = 0.4

$$= 10C_6 \times p^6 \times q^4$$

$$= \frac{10 \times 9 \times 8 \times 7}{1 \times 2 \times 3 \times 4} \times 0.6^6 \times 0.4^4 \\ = 210 \times 0.0456 \times 0.0256 \\ = 0.2508$$

Answer

- Option A)

Unit digit:

(A) 9

$$4 = \text{odd digit} = 4^1, 4^3, 4^5 = 4$$

$$4 = \text{even digit} = 4^2, 4^4, 4^6 = 6$$

$$9 = \text{odd digit} = 9^1, 9^3, 9^5 = 9$$

$$9 = \text{even digit} = 9^2, 9^4, 9^6 = 1$$



Question 2

H

(2, 3, 7, 8) =

$$R=1 = x^1$$

$$R=2 = x^2$$

$$R=3 = x^3$$

$$R=6 = x^4$$

2 digits

(0, 6, 5, 1)

The unit digit remains same
as the number.

The numeral in the units position of $211^{870} + 146^{127} \times 3^{124}$ is _____

A) 7

$$211^{870} + 146^{127} \times 3^{124}$$

Q4

$$1 + 6 \times 3^4$$

$$1 + 6 \times 9 \times 9$$

$$1 + \overbrace{6 \times 81} =$$

$$1 + 6 = 7,$$

$$1 + \underline{486} =$$

$$= 7,$$

B) 2

C) 1

D) 0

Answer

$$\frac{15}{100} = \frac{3}{20}$$

$$\frac{85}{100} = \frac{17}{20}$$

Question 3

$$209 = 5692000.$$
$$29 = 569200.$$
$$119 = 284600.$$

- In a huge pile of apples and oranges, both ripe and unripe mixed together, 15% are unripe fruits, of the unripe fruits, 45% are apples, of the ripe ones, 66% are oranges. If the pile contains a total of 5692000 fruits, how many of them are apples?

A. 2029198

$$15\% = \text{unripe} \quad 85\% = \text{ripe}$$

B. 2467482

$$45\% \quad 55\%$$

C. 2789080

$$34\% \quad 66\%$$

D. 3577422

$$\frac{45}{100} = \frac{9}{20}$$

$$209 = 853800 \quad = 1R - 12690$$

$$5692 = 4838200$$

$$119 = 96764$$



$$\frac{3}{20} \rightarrow \text{unripe}$$

$$\frac{3 \times 284600}{853800} = \text{unripe}$$

$$\begin{array}{r} 17 \rightarrow \text{unripe} \\ \hline 20 \rightarrow \text{Total} \\ \hline 17 \times 284600 \\ \hline 4838200 \\ \hline \end{array}$$

$$(9 \times 42690 + 17 \times 96764)$$

$$= 384210 + 1644988$$
$$= 2029198$$

15% of 45% + 85% of 34%.

$$\frac{15}{100} \times \frac{45}{100} + \frac{85}{100} \times \frac{34}{100}$$

$$\frac{3}{20} \times \frac{9}{20} + \frac{17}{20} \times \frac{17}{50}.$$

$$\frac{27}{400} + \frac{289}{1000} =$$

$$\frac{27 \times 5 + 289 \times 2}{2000} =$$

$$\frac{135 + 578}{2000} =$$

$$\begin{array}{r}
 100 \\
 2 \\
 2 \\
 5 \\
 \hline
 1014 \\
 52 \\
 \hline
 511 \\
 \hline
 13 \times 2846 \\
 \hline
 2029198
 \end{array}$$

$\frac{13}{2000}$ ^{Amount} =
 \downarrow Total

Answer

Option A)

$$\frac{70}{100} = \frac{14}{20}$$

Question 4

$$\frac{1}{20} = 5\% =$$

$$\frac{5}{100} = \frac{1}{20}$$

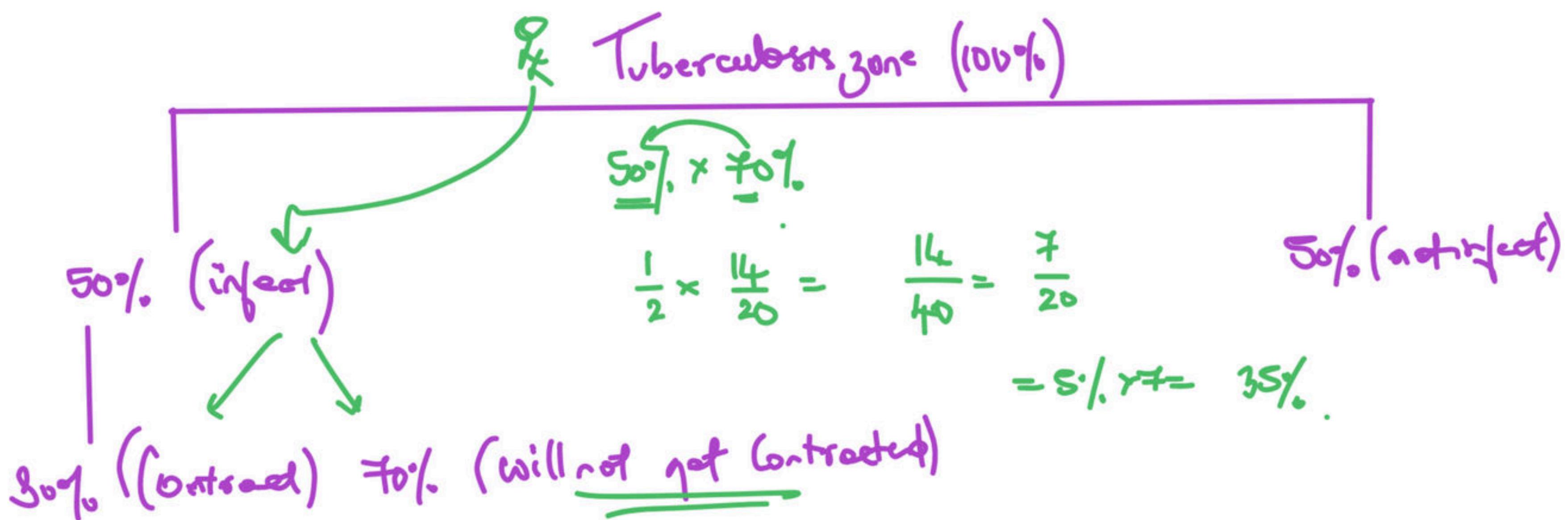
A person moving through a tuberculosis prone zone has a 50% probability of becoming infected. However, only 30% of infected people develop the disease. What percentage of people moving through a tuberculosis prone zone remains infected but does not show symptoms of disease?

A. 15

B. 33

C. 35

D. 37



Answer

Option C)

$$\frac{\log r}{\log q} \times \frac{\log s}{\log r} \times \frac{\log t}{\log s} = 1$$

IInd

Question 5

$$b=5 \\ c=3 \\ n=1$$

$$abc =$$

$$q^n = r$$

$$s \log q = r$$

If $q^{-a} = 1/r$, $r^{-b} = 1/s$, $s^{-c} = 1/q$, the value of abc is =

A. $(rqs)^{-1}$ 15 $q^{-a} = \frac{1}{r}$.

B. 0

C. 1

D. $r+q+s$

$$q^n = r \quad , \quad r^b = s \quad , \quad s^c = q.$$

$$(s^c)^n = r$$

$$(r^b)^c = r \quad = \quad x^{bcn} = r$$

$$bcn = 1$$

$$abc = 1$$

Answer

- Option C)

$$\text{Work done} = \frac{\text{Eff}}{\text{Time}}$$

Question 6

Time \rightarrow Work done
Eff.

P,Q,R and S are working on a project. Q can finish the task in [25 days], working alone for [12 hours a day]. R can finish the task in [50 days, working alone for 12 hours per day. Q worked [12 hours a day but took sick leave in the beginning for two days. R worked 18 hours a day on all days. What is the ratio of work done by Q and R after 7 days from the start of the project?

$\frac{7}{5}$

A. 10:11

$$Q = 25 \times 12 = 300 \rightarrow \text{Eff.}$$

$$R = 50 \times 12 = 600 \rightarrow \text{Eff.}$$

B. 11:10

C. 20:21

$$Q = 12 \times 5 = 60 \text{ Unwk}$$

$$R = 18 \times 7 = 126 \text{ Unwk}$$

D. 21:20

$$\frac{60}{300} : \frac{126}{600}$$

$$\left(\frac{1}{3}, \frac{1}{3} \right) \frac{6}{30} : \frac{21}{100}$$

$$20\% : 21\%$$

$$300 : 600$$

$$\begin{array}{r} 60 : 126 \\ \hline \end{array}$$

$$\begin{array}{r} 1 : 2 \\ \cancel{10 : 21} \end{array}$$

$$\begin{array}{r} \checkmark \quad \hline \\ 20 : 21 \end{array}$$

Answer

- Option C)

Question 7

S, M, E and F are working in shifts in a team to finish a project. M works with twice the efficiency of others but for half as many days as E worked. S and M have 6 hour shifts in a day, whereas E and F have 12 hours shifts. What is the ratio of contribution of M to contribution of E in the project?

A. 1:1

B. 1:2

C. 1:4

D. 2:1

Answer

- Option B)

Question 8

Two and a quarter hours back, when seen in a mirror, the reflection of a wall clock without number markings seemed to show 1:30. What is the actual current time shown by the clock?

- A. 8:15
- B. 11:15
- C. 12:15
- D. 12:45

Answer

- Option D)

Question 9

M and N start from the same location. M travels 10 km East and then 10 km North- East. N travels 5 km South and then 4 km South-East. What is the shortest distance (in km) between M and N at the end of their travel?

- A. 18.60
- B. 22.50
- C. 20.61
- D. 25.00

Answer

Option C)

Question 10

A wire of length 340 mm is to be cut into two parts. One of the parts is to be made into a square and the other into a rectangle where sides are in the ratio of 1:2. What is the length of the side of the square (in mm) such that the combined area of the square and the rectangle is a MINIMUM?

- A. 30
- B. 40
- C. 120
- D. 180

Answer

- Option B)

Question 11

- The number that least fits this set: (324, 441, 97 and 64) is _____.
A. 324
B. 441
C. 97
D. 64

Answer

- Option C)

Question 12

- It takes 10s and 15s, respectively, for two trains travelling at different constant speeds to completely pass a telegraph post. The length of the first train is 120 m and that of the second train is 150 m. The magnitude of the difference in the speeds of the two trains (in m/s) is ____.
- A. 2.0
- B. 10.0
- C. 12.0
- D. 22.0

Answer

- Option A)

Question 13

A straight line is fit to a data set ($\ln x$, y). This line intercepts the abscissa at $\ln x = 0.1$ and has a slope of -0.02 . What is the value of y at $x = 5$ from the fit?

- A. -0.030
- B. -0.014
- C. 0.014
- D. 0.030

Answer

- Option A)

Question 14

- A window is made up of a square portion and an equilateral triangle portion above it. The base of the triangular portion coincides with the upper side of the square. If the perimeter of the window is 6 m, the area of the window in m² is _____.

A. 1.43
B. 2.06
C. 2.68
D. 2.88

Answer

- Option B)

Question 15

The binary operation $\boxed{?}$ is defined as $a \boxed{?} b = a b + (a+b)$, where a and b are any two real numbers. The value of the identity element of this operation, defined as the number x such that $a \boxed{?} x = a$, for any a , is.

- A. 0
- B. 1
- C. 2
- D. 10

Answer

- Option A)

Question 16

The sum of the digits of a two digit number is 12. If the new number formed by reversing the digits is greater than the original number by 54, find the original number.

A. 39

B. 57

C. 66

D. 93

Answer

- Option A)

Question 17

A square pyramid has a base perimeter x , and the slant height is half of the perimeter. What is the lateral surface area of the pyramid?

- A. x^2
- B. $0.75x^2$
- C. $0.50x^2$
- D. $0.25x^2$

Answer

- Option A)

Question 18

Ananth takes 6 hours and Bharath takes 4 hours to read a book. Both started reading copies of the book at the same time. After how many hours is the number of pages to be read by Ananth, twice that to be read by Bharath? Assume Ananth and Bharath read all the pages with constant pace.

A. 1

B. 2

C. 3

D. 4

Answer

- Option C)

Question 19

- In a 2×4 rectangle grid shown below, each cell is a rectangle. How many rectangles can be observed in the grid?
- A. 21
- B. 27
- C. 30
- D. 36



Answer

- Option C)

Question 20

Four cards are randomly selected from a pack of 52 cards. If the first two cards are kings, what is the probability that the third card is a king?

- A. $4/52$
- B. $2/50$
- C. $1/52 * 1/52$
- D. $1/52 * 1/52 * 1/52$

Answer

- Option B)



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Networks

A circular profile picture of a young man with dark hair and a beard, wearing a black t-shirt. The background is a light purple gradient with a white circle behind his head. In the bottom left corner of the circle, there is a small button with a play icon and the word "PREVIEW". In the bottom right corner, there is a Unacademy logo.

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Updates

About

Week 1

Aug 3 - 9 • 3 lessons

AUG Introduction to English Language and Grammar

4 Lesson 1 • 10:30 PM

AUG Tenses in English Language - Part I

6 Lesson 2 • 10:30 PM

AUG Tenses in English Language - Part II

8 Lesson 3 • 10:30 PM



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Syllabus

Linear Algebra

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Updates

About

Resume

Lesson 1 from 96:15 mins



Introduction and Solution of Systems of Linear Equations

Lesson 1 • Aug 13 • 1 h 36 m

:

Week 1

Aug 10 - 16 • 2 lessons



Introduction and Solution of Systems of Linear Equations

Lesson 1 • Aug 13 • 1 h 36 m

:



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See you in the next session :)

Answer

- Option C)



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General Aptitude

A circular profile picture of a young man with dark hair and a beard, wearing a black t-shirt. He is smiling at the camera. The background is a blurred green and yellow gradient.

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Updates

About

Week 1

Sep 21 - 27 • 5 lessons

SEP Translation of an Image - Part I

21 Lesson 1 • 10:30 PM

SEP Translation of an Image - Part II

22 Lesson 2 • 10:30 PM

SEP Translation of an Image - Part III

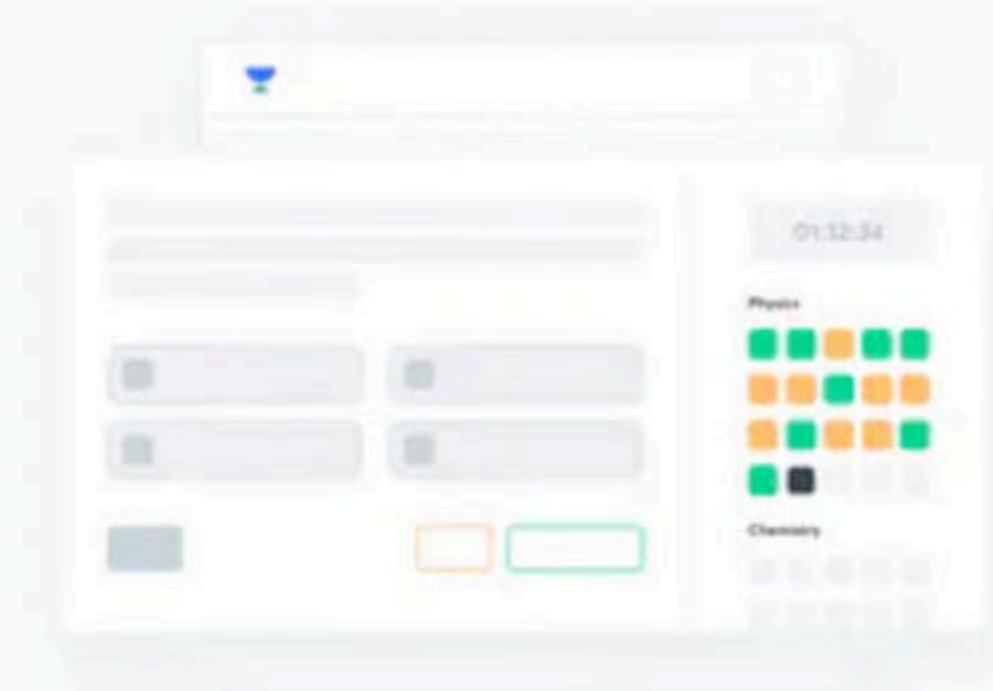
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