GATE-2023 CRASH COURSE

GENERAL APTITUDE

LOGICAL VENN DIAGRAMS

Sets

Lecture no- 05

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LOGICAL VENN DIAGRAMS

In a class of 180 students, 65 speak English; 95 speak Hindi and 40 speak neither English nor Hindi.

- Q1. How many speak both English and Hindi?
- Q2. How many speak only Hindi?

Sol.

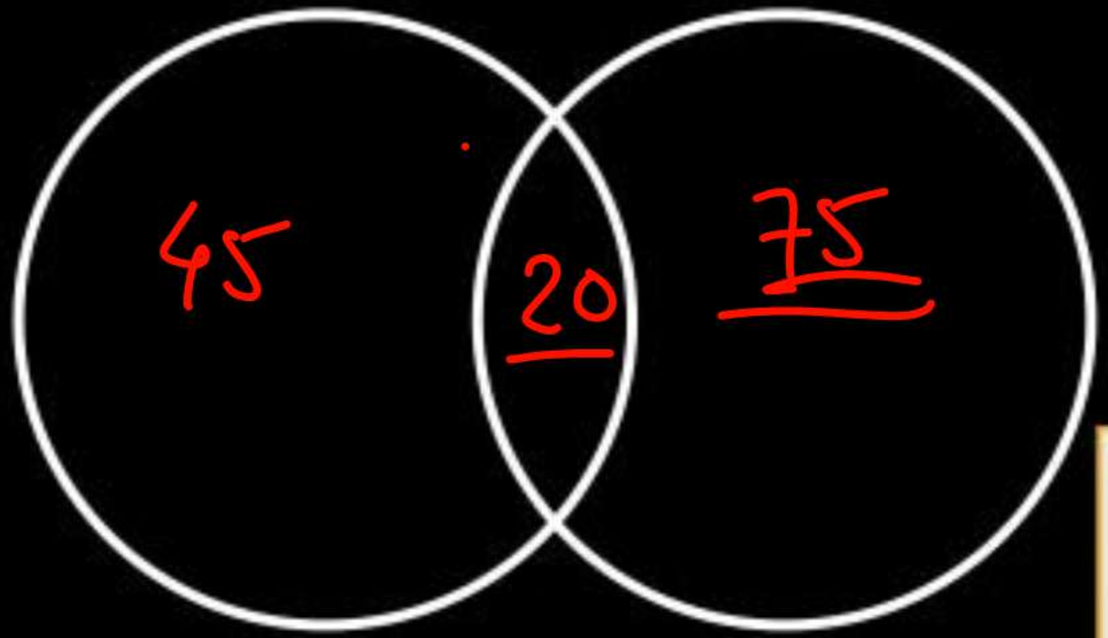
In a class of 180 students, 65 speak English; 95 speak Hindi and 40 speak neither English nor Hindi.

180 STUDENTS

180
− 40
140

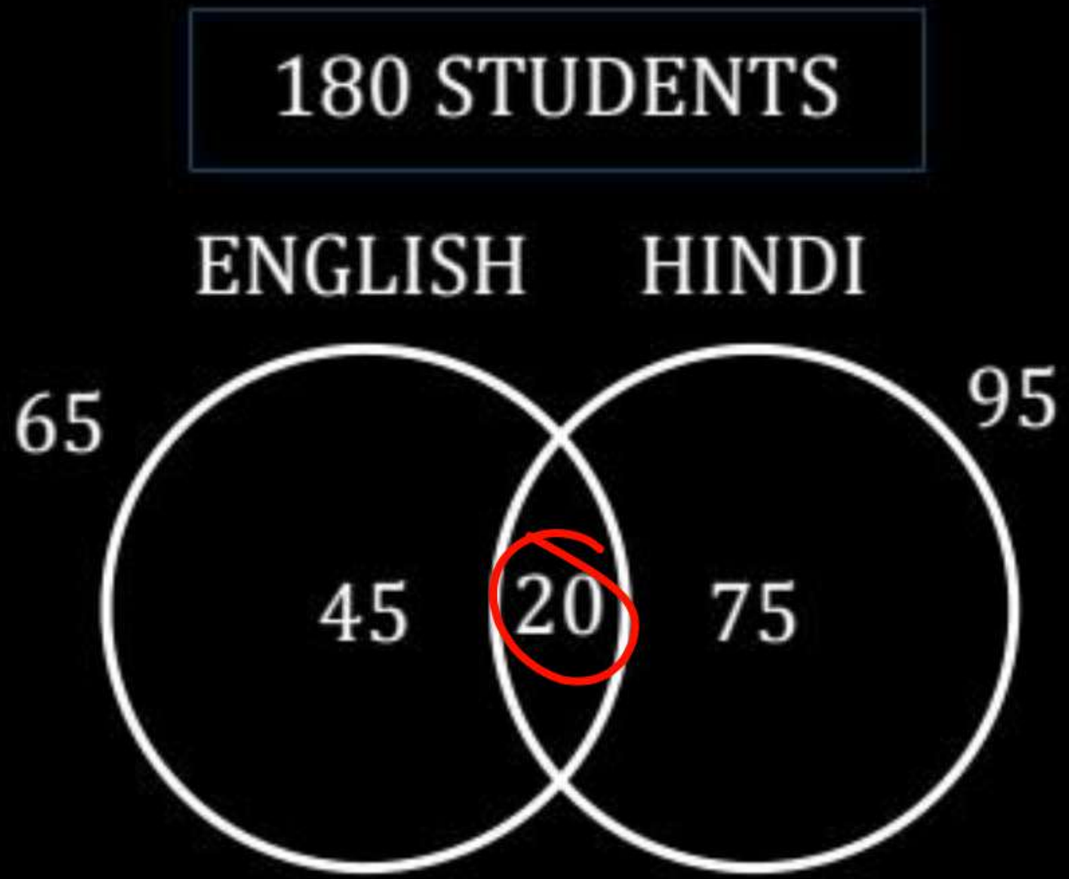
65 ← ENGLISH HINDI → 95

65
95
160



Q.1 How many speak both English and Hindi?

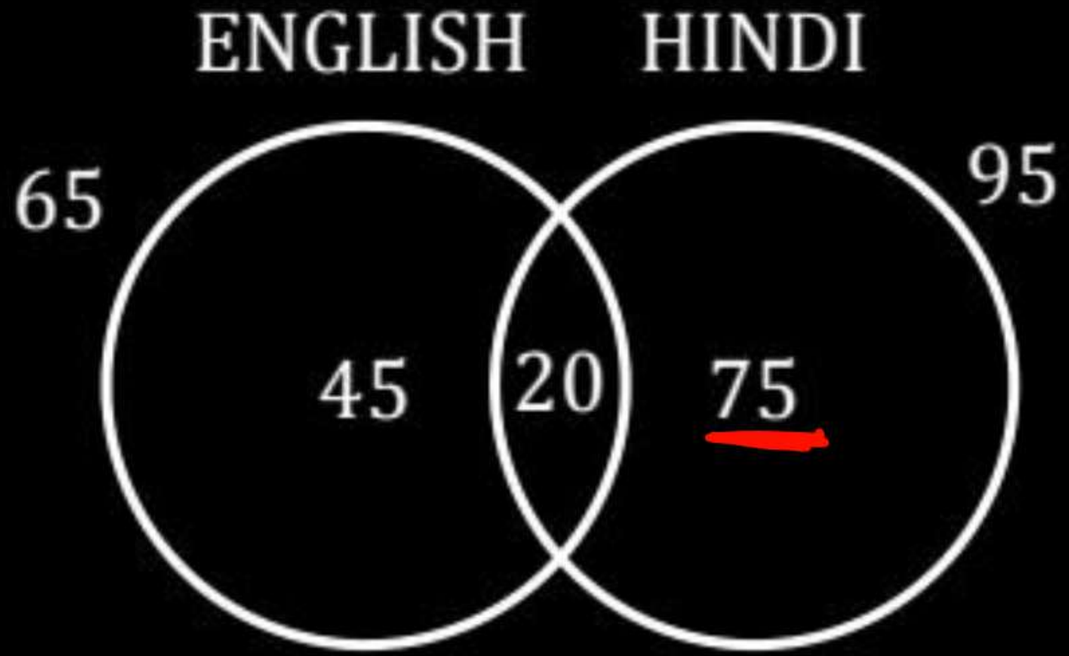
20



Q.2 How many speak only Hindi?

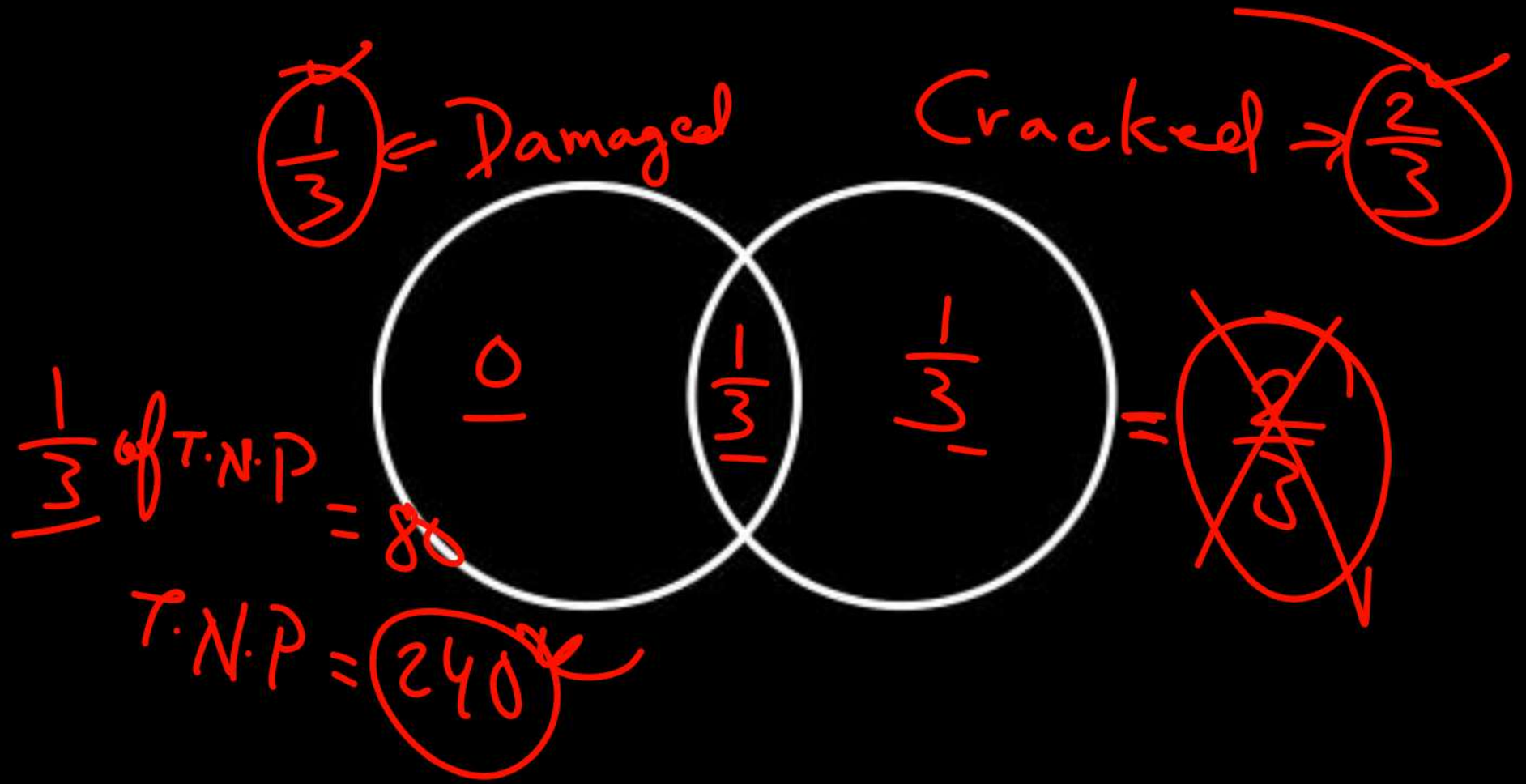
exactly

180 STUDENTS



Q.3

In the pack of plates, 1/3 plates are damaged, 2/3 plates are cracked and 1/3 of them are damaged and cracked. If 80 plates are not hampered, then what is the number of total plates?



Q.4-5

In a class, there are 100 students. Out of those 65 students take English and 20 students take both English and French. If every student takes either English or French or both, then

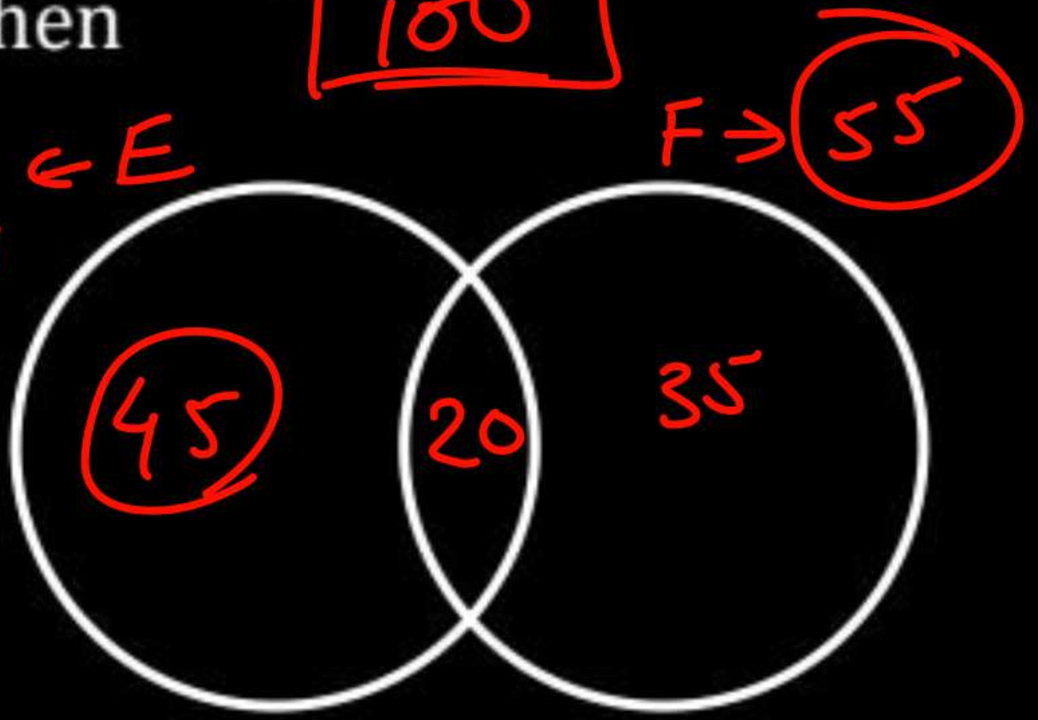
100

- What is the number of students who take French?

55

- Find the number of students who takes only English.

45



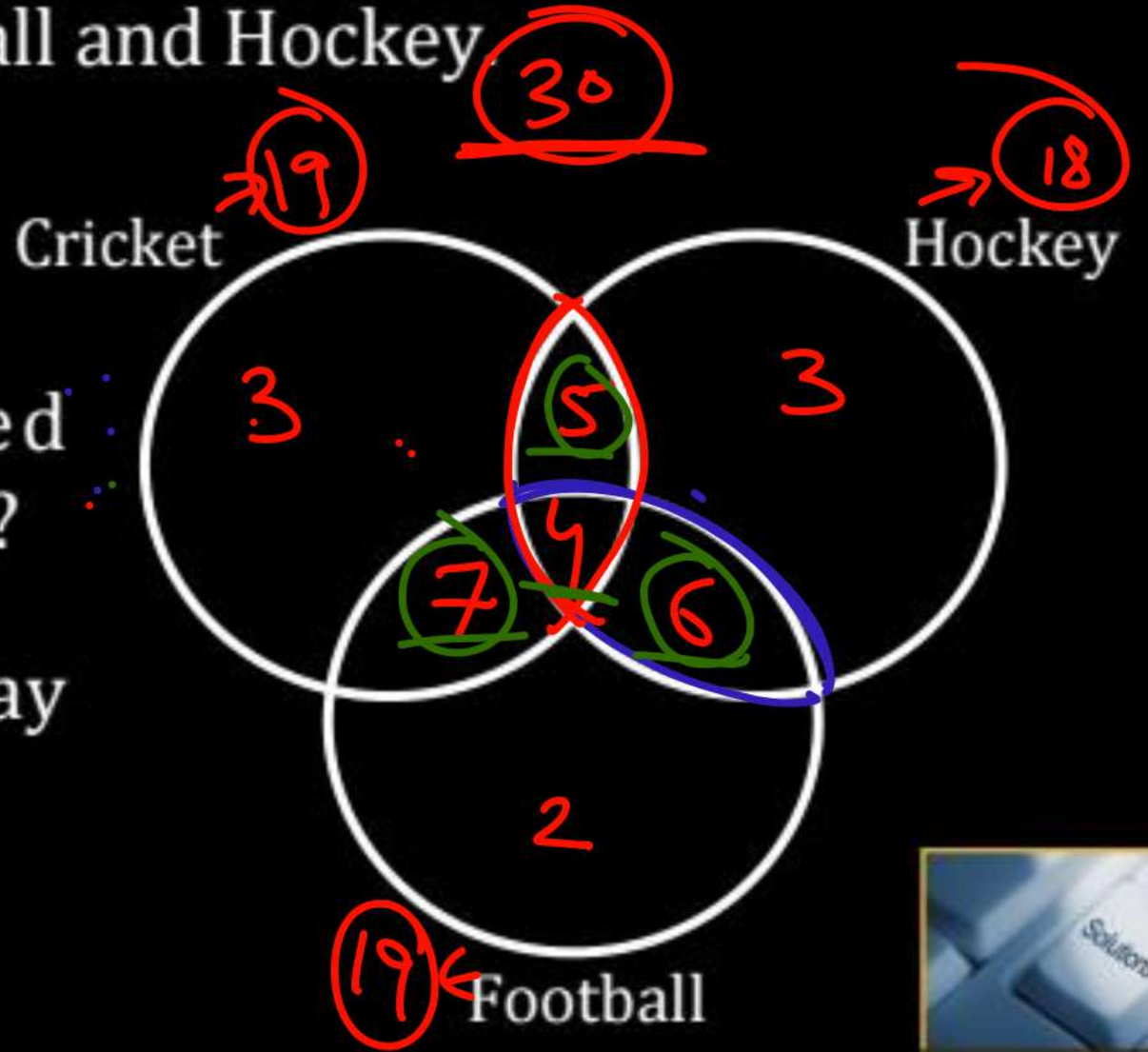
Brainstorming 1:

A class of 30 students comprises boys who can play Cricket, Hockey and Football. 3 boys play only cricket, 3 boys play only Hockey and 2 play only football. 4 boys could play all three games, while 11 could play Football and Cricket, and 10 boys could play Football and Hockey.

Q1. How may boys played Cricket and Hockey both?

Q2. How many boys can play at lest two games?

Sol. 3 boys play only cricket, 3 boys play only Hockey and 2 play only football. 4 boys could play all three games, while 11 could play Football and Cricket, and 10 boys could play Football and Hockey.



Q1. How may boys played Cricket and Hockey both? → 9

Q2. How many boys can play at least two games? → 22

Brainstorming 2:

In a survey of 150 readers it has been found that 75 read Dainik Bhaskar, 90 read Prabhat Khabar and 70 read Dainik Jagaran. 40 read Dainik Bhaskar and Prabhat Khabar; 35 read Prabhat Khabar and Dainik Jagaran; 30 read Dainik Bhaskar and Dainik Jagaran and 10 read all the three.

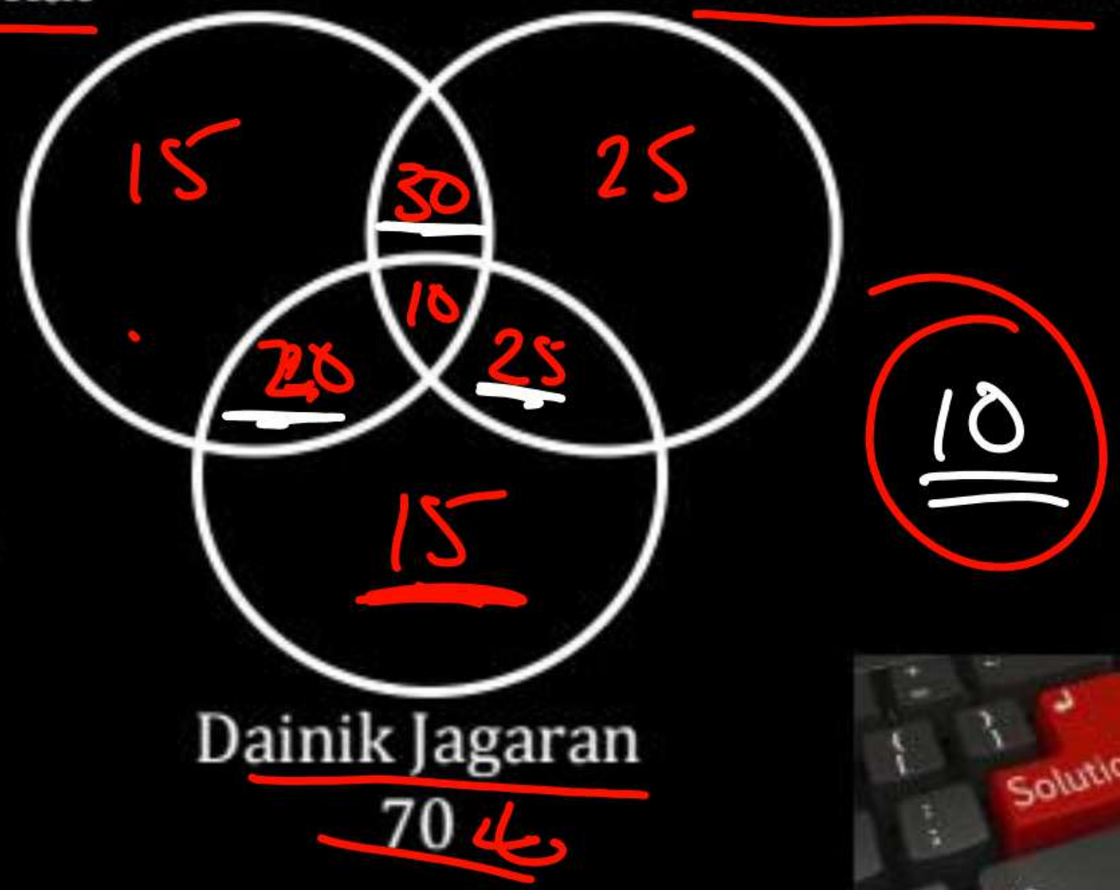
Q1. How many read exactly two newspapers?

Q2. How many read neither Dainik Bhaskar nor Prabhat Khabar?

Sol.

40 read Dainik Bhaskar and Prabhat Khabar; 35 read Prabhat Khabar and Dainik Jagaran; 30 read Dainik Bhaskar and Dainik Jagaran and 10 read all the three.

150 READERS



Q1. How many read exactly two newspapers?

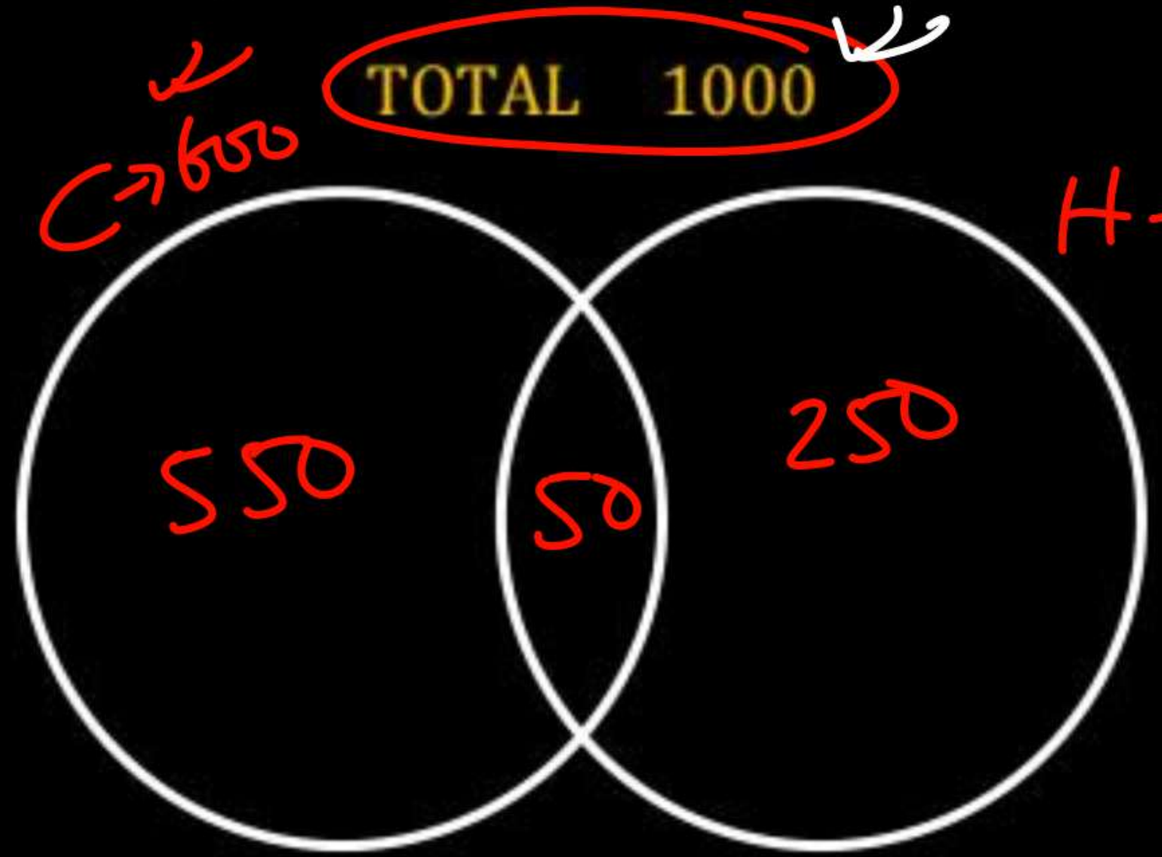
75

Q2. How many read neither Dainik Bhaskar nor Prabhat Khabar?

25

PYQ.

In a class with 1000 students, 600 play chess, 300 play hockey and 50 play both the games. The number of students neither play chess nor hockey is _____ [GATE-2020]



1000
− 850
850
150

Solution

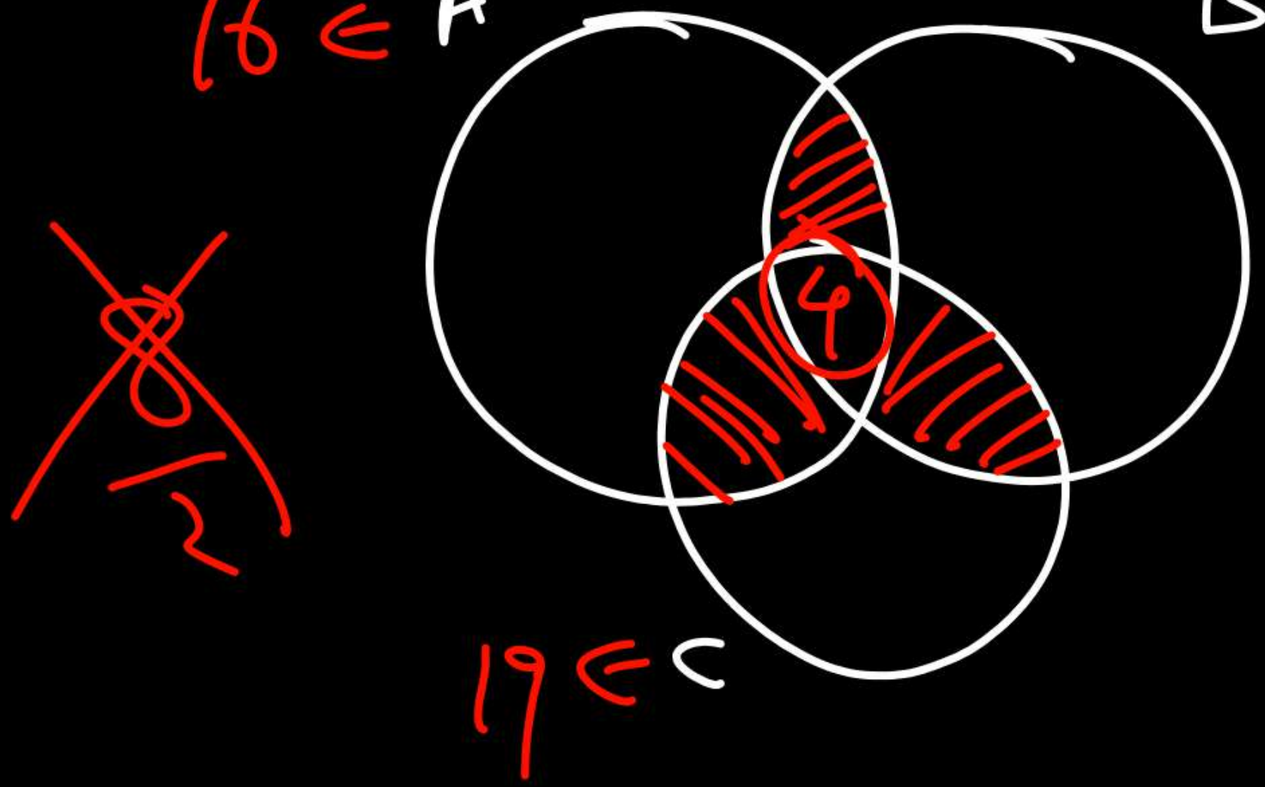
PYQ.

40

There are 40 students in a class. They have to watch movies from A, B and C. They either watch one or all three movies. 16 students watch A, 13 students watch B, 19 students watch C. How many students watched all three movies? [GATE-2018]

16 ∈ A

B - 13



16
+ 13
19
48

PYQ

There are 40 students in a class. They have to watch movies from A, B and C. They either watch one or all three movies. 16 students watch A, 13 students watch B, 19 students watch C. How many students watched all three movies?

TOTAL 40

N

$2N = 8$

$a + b + c + 3N = 48$

$N = \frac{8}{2} = 4$

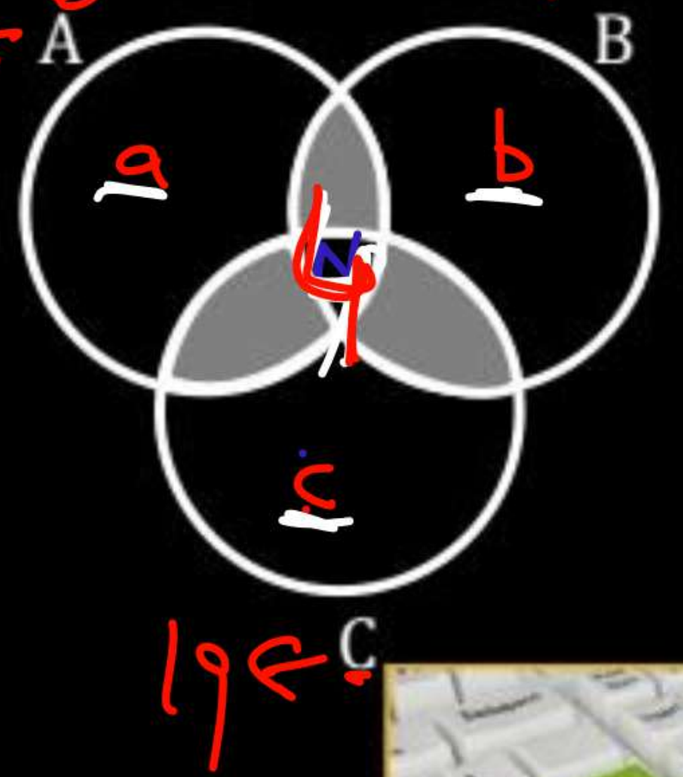
$a + b + c + N = 40$

$a + N = 16$

$b + N = 13$

$c + N = 19$

48



Brainstorming 3:

In a class of 160 students, it was found that 65 play Cricket 70 play Hockey and 90 play Football, 30 play Cricket and Hockey, 40 Cricket and Football, 35 play Hockey and Football and 15 play none of these three games.

Q1. How many play all three games?

Q2. How many students play exactly one game?

Sol. 65 play Cricket 70 play Hockey and 90 play Football, 30 play Cricket and Hockey, 40 Cricket and Football, 35 play Hockey and Football and 15 play none of these three games.

160 − 15 = 145

80

65
70
90
225

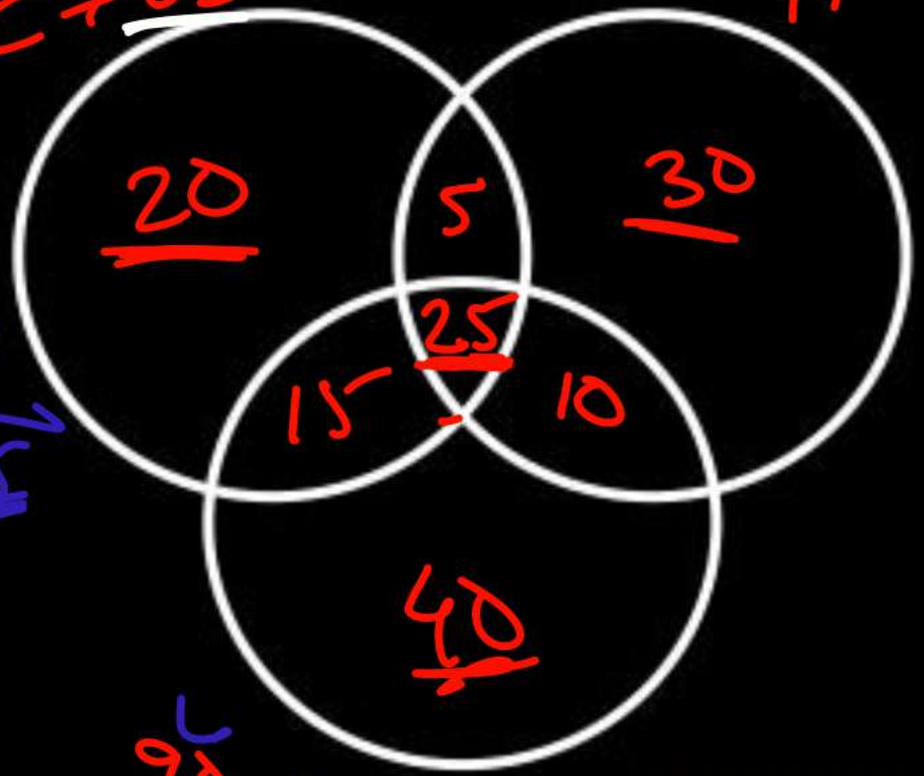
30
35
40
105

TOTAL 160

C → 65

H

F



25

90

Q1. How many play all three games?

Q2. How many students play exactly one game?

98

Brainstorming 4

Among 520 people in cricket stadium, it was found that 275 people likes MS Dhoni, 295 people like Sachin Tendulkar, 275 people like Virat Kohli, 50 people like all these three cricketers and each one likes atleast one of these three cricketers.

$a+b+c = 275$ (150)

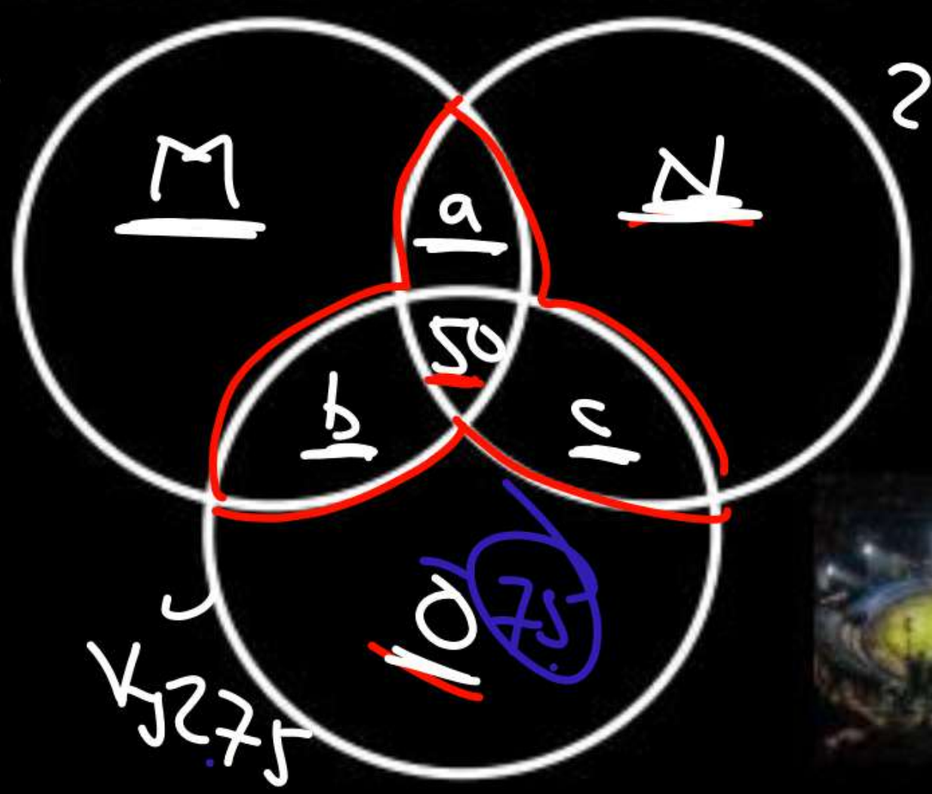
$M+N+O = 195$

$D \Rightarrow 275$

$275 + 295 + 275 = 845$

$845 - 520 = 325$

$520 - 325 = 195$



1. If 75 people like only Virat Kohli, then how many people like MS Dhoni and Sachin Tendulkar but not Virat Kohli?

(a) 75 (b) 245 (c) 225 (d) 60

2. How many people like exactly one player?

(a) 195 (b) 160 (c) 120 (d) 125

3. How many people like exactly two players?

(a) 275 (b) 200 (c) 125 (d) 105

Brainstorming 5:

During the cultural day of a college, 235 students participated. Out of them, 100 participated in art, 105 participated in music and 95 participated in dance. 20 participated in none of these three. 45 participated in exactly two of the above three events. 20 students participated in all three events.

1.If 45 students participated in only art, then how many students participated in both music and dance but not art?

(a) 10 (b) 15 (c) 20 (d) 25

2.If 20 students participated in both art and dance but not music, then how many students participated in music only?

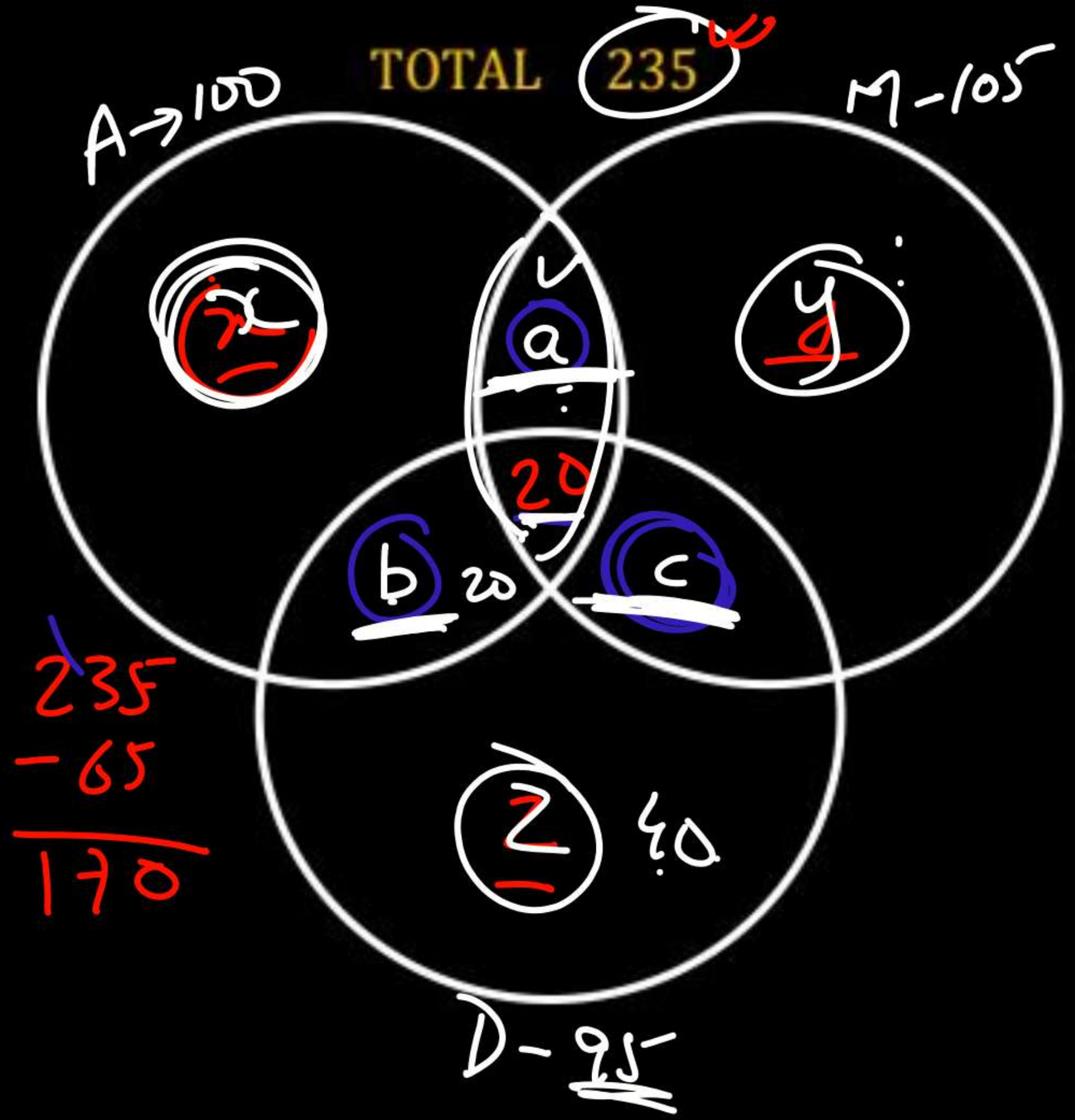
(a) 55 (b) 60 (c) 65 (d) 50

3.If total students participated in dance only are 40, then how many students participated in both art and music?

(a) 5 (b) 10 (c) 20 (d) 30

4.How many students participated in art or music or dance only?

(a) 110 (b) 150 (c) 170 (d) 130



During the cultural day of a college, 235 students participated. Out of them, 100 participated in art, 105 participated in music and 95 participated in dance.

45 participated in exactly two of the above three events. 20 students participated in all three events.

Brainstorming 6:

The following table gives the statistics of a class in which each student opted for Maths or Statistics or both. Unfortunately most of the figures have been erased but I remember some information as follows:

Q1. 13 1/3% of the students took both Math's and Statistics

Q2. 40% of the students were females.

Q3. None of the females took both Mathematics and Statistics.

	Maths	Statistics	Both	Total
Male	50	20	20	90
Female	10	50	X	60
Total	60	70	20	150

Q&A

Brainstorming 6:

How many males took both Mathematics and Statistics?

a) 40 b) 10 c) 20 d) 60

How many students took only Mathematics?

a) 50 b) 80 c) 60 d) 10

	Maths	Statistics	Both	Total
Male	50	20	20	90
Female	10	50	X	60
Total	60	70	20	150


thank you