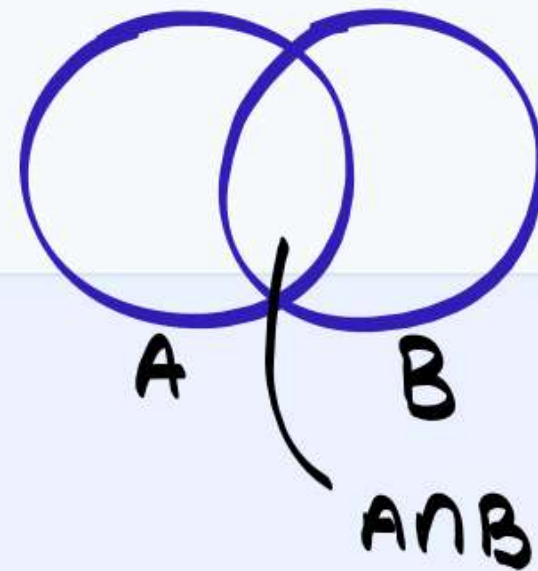
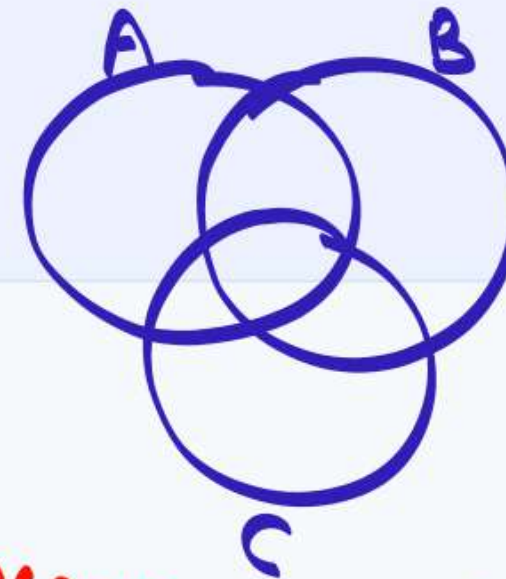


Venn Diagram

Caselet DI



$$P(A \cup B) = P(A) + P(B) - P(A \cap B)$$



$$P(A \cup B \cup C) = P(A) + P(B) + P(C) - P(A \cap B) - P(B \cap C) - P(A \cap C) + P(A \cap B \cap C)$$

PROBLEM 01

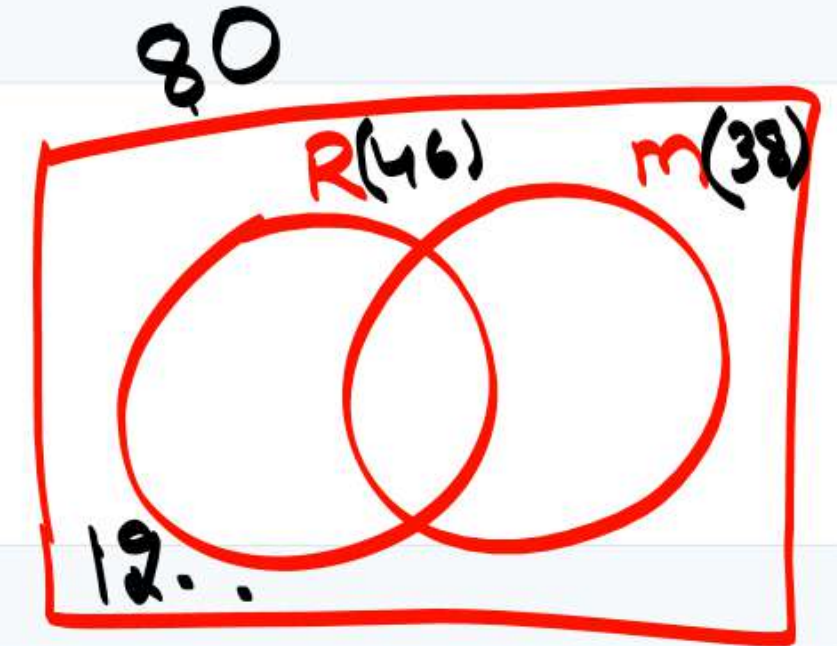
ENGLISH

In a class of 80 students:
Reasoning = 46; Maths = 38
Neither subject = 12
How many students like both subjects?



68

$$46 + 38 - 68 = 84 - 68 = 16$$



$$P(R \cup M) = 80 - 12 = 68$$

80 विद्यार्थियों की एक कक्षा में:
Reasoning पसंद करने वाले = 46; Maths = 38
दोनों में से कोई विषय नहीं = 12
दोनों विषय पसंद करने वाले कितने विद्यार्थी हैं?

$$P(R \cup M) = P(R) + P(M) - P(R \cap M)$$

$$68 = 46 + 38 - P(R \cap M)$$

$$68 = 84 - P(R \cap M)$$

$$P(R \cap M) = 84 - 68 = 16$$

A. 12

B. 14

✓ C. 16

D. 18

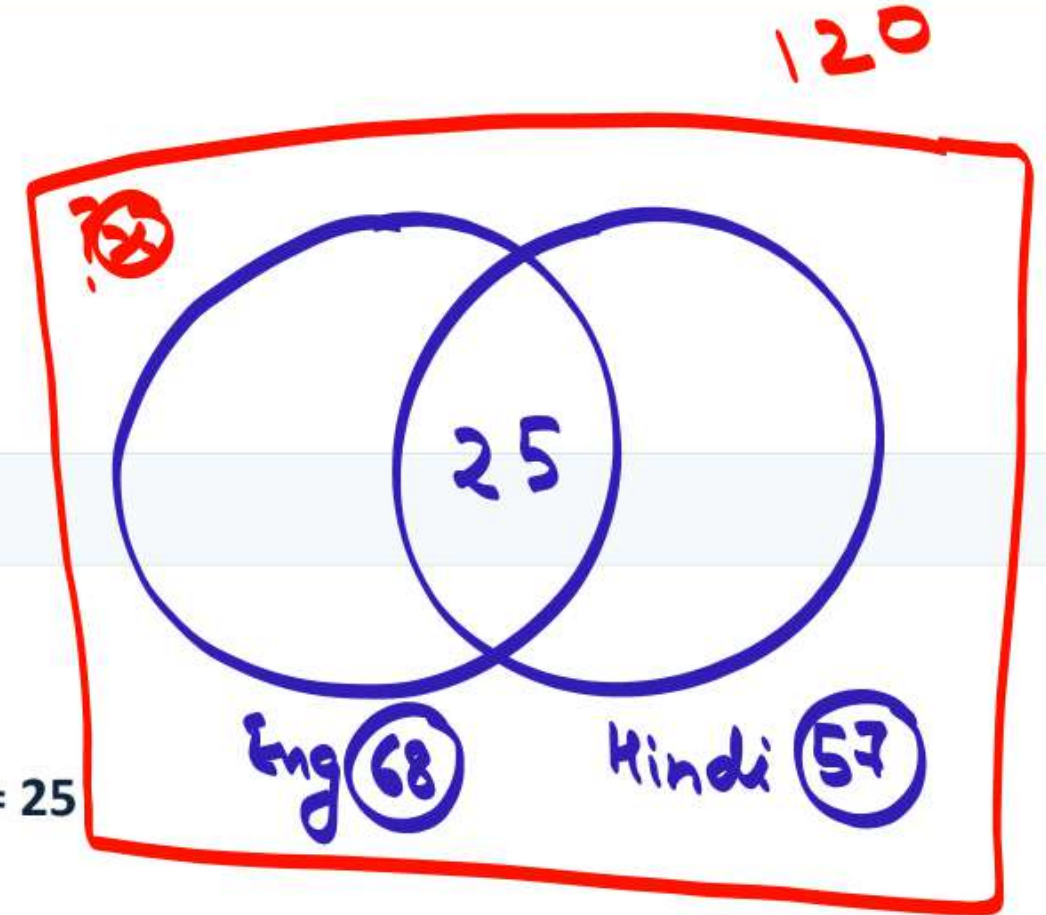
PROBLEM 02

ENGLISH

Among 120 students:
English = 68; Hindi = 57; Both = 25
How many students like neither language?

हिन्दी

120 विद्यार्थियों में:
English पसंद करने वाले = 68; Hindi = 57; दोनों = 25
किसी भी भाषा को पसंद नहीं करने वाले कितने हैं?



$$P(E \cup H) = 68 + 57 - 25$$

$$= 68 + 32 = 100$$

$$x = 120 - 100 = 20$$

A. 15

✓ B. 20

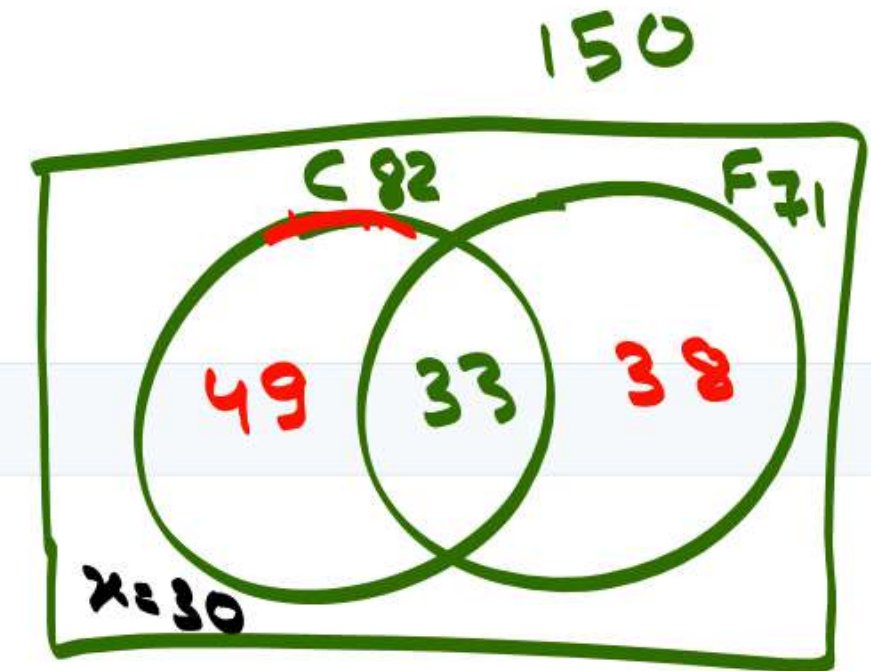
C. 22

D. 25

PROBLEM 03

ENGLISH

A survey covers 150 students:
Cricket = 82; Football = 71; Both = 33
How many students like exactly one sport?



हिन्दी

150 विद्यार्थियों के सर्वेक्षण में:
Cricket पसंद करने वाले = 82; Football = 71; दोनों = 33
केवल एक खेल पसंद करने वाले विद्यार्थी कितने हैं?

$$x = 150 - 30 = 120$$

$$P(C \cup F) = 82 + 71 - 33 = 153 - 33 = 120$$

केवल Cricket + केवल football

$$49 + 38 = 87$$

A. 82

B. 84

✓ C. 87

D. 90

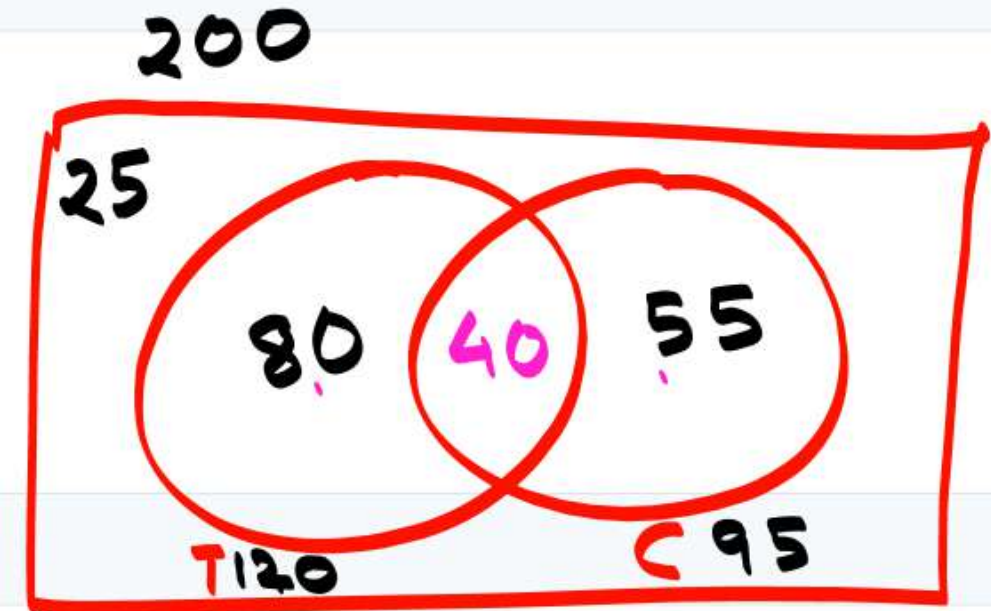
PROBLEM 04

EASY-MODERATE



ENGLISH

A survey covers 200 people:
Tea = 120; Coffee = 95; Neither = 25
How many people drink only tea?



हिन्दी

200 लोगों के सर्वेक्षण में:
Tea पीने वाले = 120; Coffee = 95; दोनों में से कुछ भी नहीं = 25
केवल Tea पीने वाले लोगों की संख्या कितनी है?

$$P(T \cup C) = 200 - 25 = 175$$

$$P(T \cap C) = 120 + 95 - 175 \\ = 215 - 175 = 40$$

A. 70

B. 75

✓ C. 80

D. 85

PROBLEM 05

EASY-MODERATE



ENGLISH

Among 180 students:

Maths = 95; Reasoning = 80; English = 70

$M \cap R = 35$; $R \cap E = 30$; $M \cap E = 25$; All three = 15

How many students like none of these subjects?

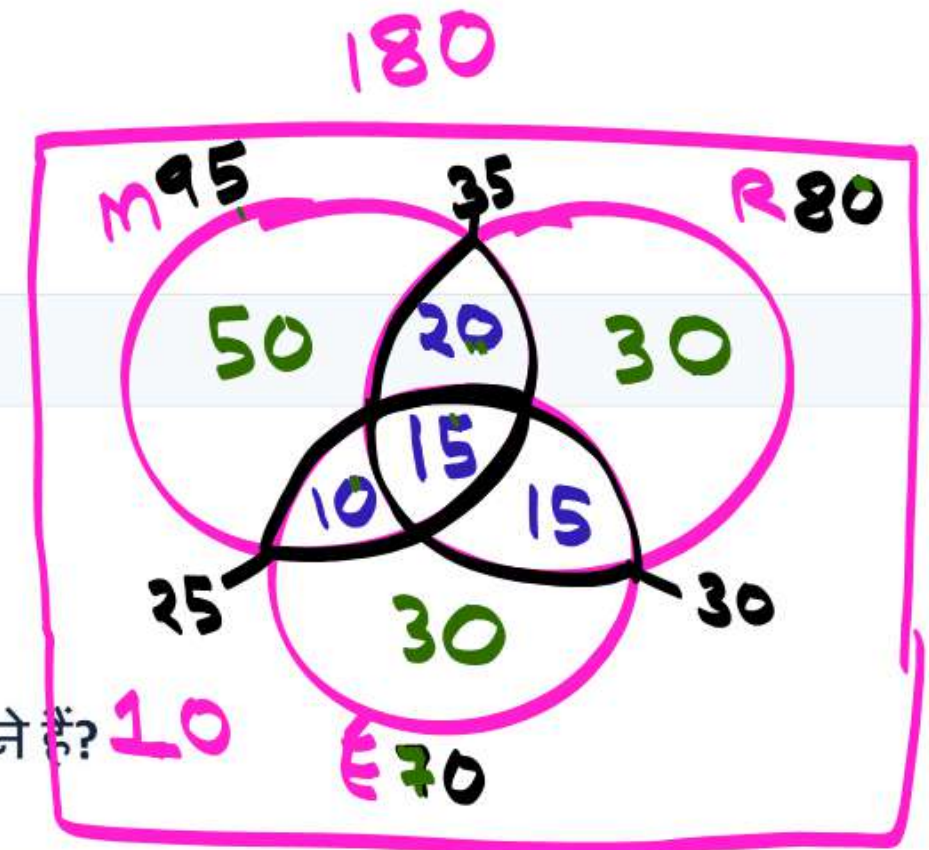
हिन्दी

180 विद्यार्थियों में:

Maths = 95; Reasoning = 80; English = 70

$M \cap R = 35$; $R \cap E = 30$; $M \cap E = 25$; तीनों = 15

किसी भी विषय को पसंद नहीं करने वाले विद्यार्थी कितने हैं?



$$P(A \cup B \cup C) = 50 + 20 + 30 + 10 + 15 + 15 + 30 = 170$$

$$180 - 170 = 10$$

A. 5

B. 10

C. 15

D. 20

PROBLEM 06

EASY-MODERATE



ENGLISH

Among 250 people:

Hindi newspaper = 140; English = 120; Regional = 90

$H \cap E = 55$; $E \cap R = 40$; $H \cap R = 45$; All three = 20

How many read exactly one type of newspaper?

हिन्दी

250 लोगों में:

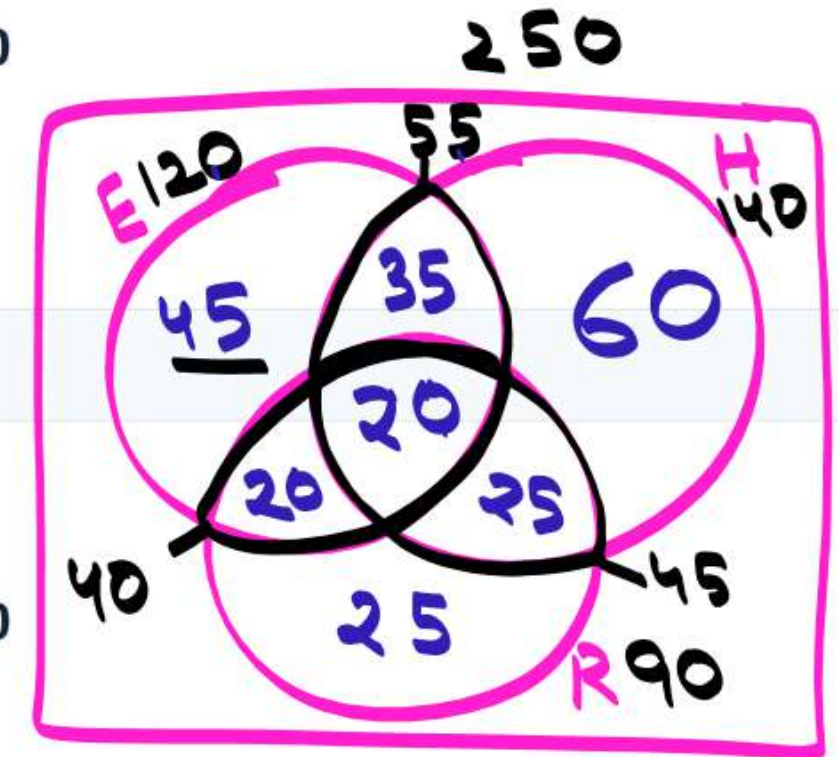
Hindi newspaper = 140; English = 120; Regional = 90

$H \cap E = 55$; $E \cap R = 40$; $H \cap R = 45$; तीनों = 20

केवल एक प्रकार का newspaper पढ़ने वाले कितने हैं?

Only Hindi + Only Eng + Only Regional

$$60 + 45 + 25 = 130$$



A. 120

B. 125

✓ C. 130

D. 135

PROBLEM 07

ENGLISH

300 candidates attempted sections A, B and C:

$A = 170$; $B = 160$; $C = 150$

$A \cap B = 90$; $B \cap C = 80$; $A \cap C = 70$; All three = 50

How many attempted at least two sections?

हिन्दी

300 अभ्यर्थियों ने sections A, B और C हल किए:

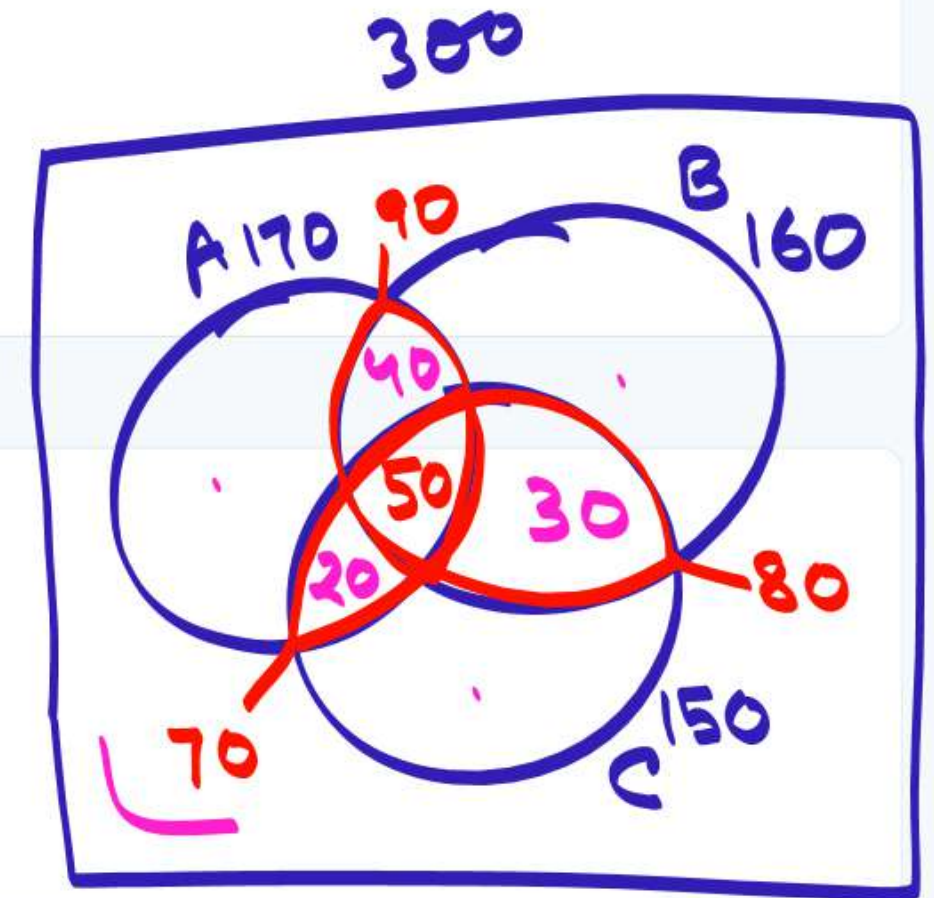
$A = 170$; $B = 160$; $C = 150$

$A \cap B = 90$; $B \cap C = 80$; $A \cap C = 70$; तीनों = 50

कम-से-कम दो sections हल करने वाले कितने हैं?

2 Section + 3 Section

$$(40 + 20 + 30) + 50 = 140$$



A. 130

B. 135

✓ C. 140

D. 150

500x62%

PROBLEM 08

ENGLISH

Among 500 students:

Maths = 62%; Reasoning = 54%; English = 48%

$M \cap R = 180$; $R \cap E = 150$; $M \cap E = 140$; All three = 100

How many like exactly two subjects?

हिन्दी

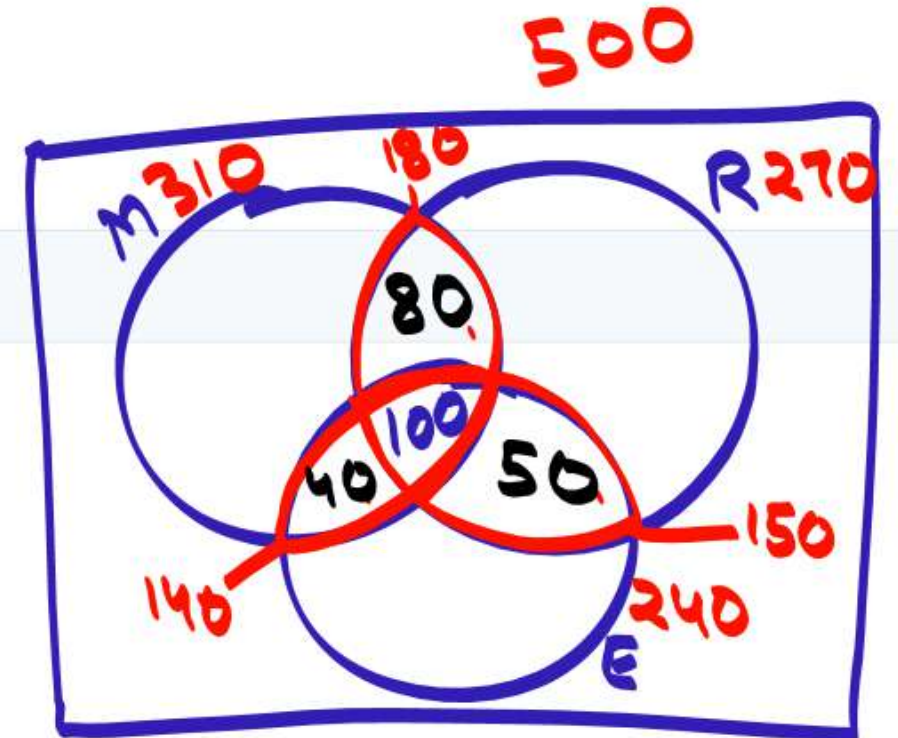
500 विद्यार्थियों में:

Maths = 62%; Reasoning = 54%; English = 48%

$M \cap R = 180$; $R \cap E = 150$; $M \cap E = 140$; तीनों = 100

ठीक दो विषय पसंद करने वाले विद्यार्थी कितने हैं?

$$(80 + 40 + 50) = 170$$



A. 160

✓ B. 170

C. 180

D. 190

PROBLEM 09

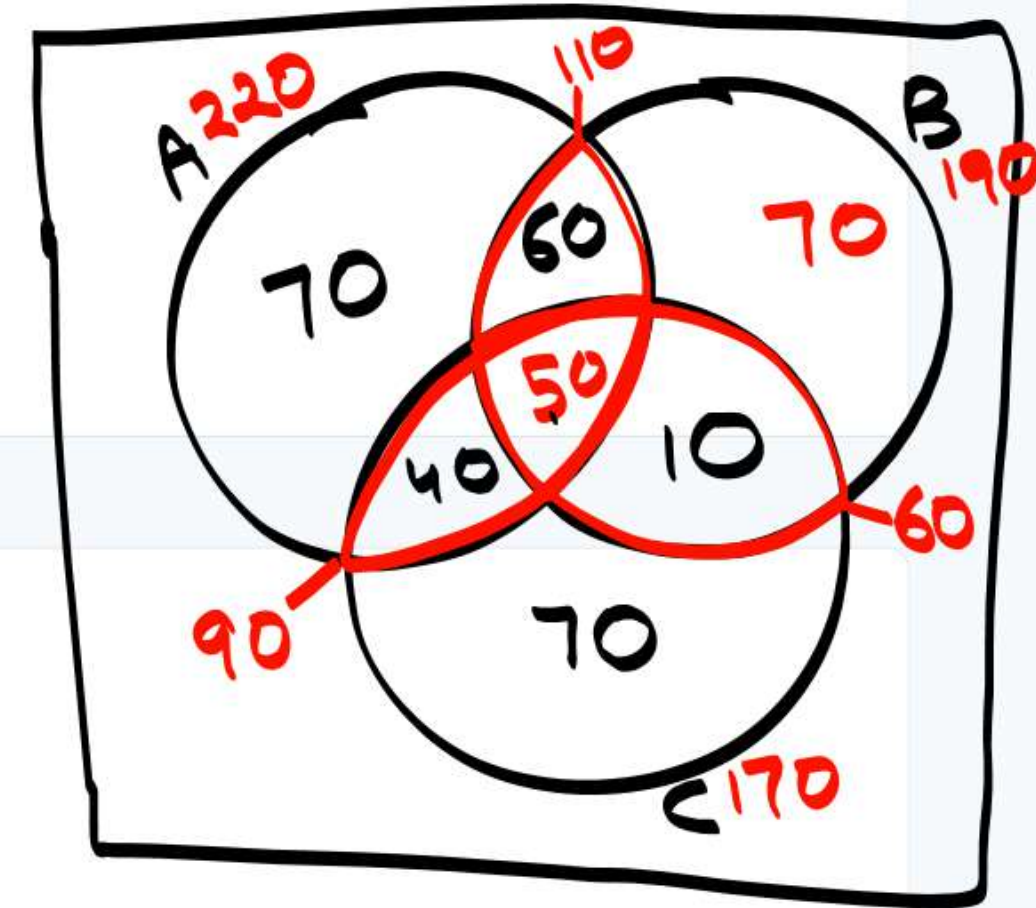
ENGLISH

An institute offers courses A, B and C:
 $A = 220$; $B = 190$; $C = 170$
 $A \cap B = 110$; $A \cap C = 90$; All three = 50; Only B = 70
 How many students are enrolled in both B and C?

हिन्दी

एक संस्थान में courses A, B और C उपलब्ध हैं:
 $A = 220$; $B = 190$; $C = 170$
 $A \cap B = 110$; $A \cap C = 90$; तीनों = 50; केवल B = 70
B और C दोनों courses में विद्यार्थी कितने हैं?

$$50 + 10 = 60$$



A. 50

☒ B. 60

C. 70

D. 80

PROBLEM 10

ENGLISH

700

customers use online platforms A, B and C:

$A = 320$; $B = 280$; $C = 240$

Only $A \cap B = 90$; Only $B \cap C = 70$; Only $A \cap C = 60$; All three = 40

How many customers use none of these platforms?

हिन्दी

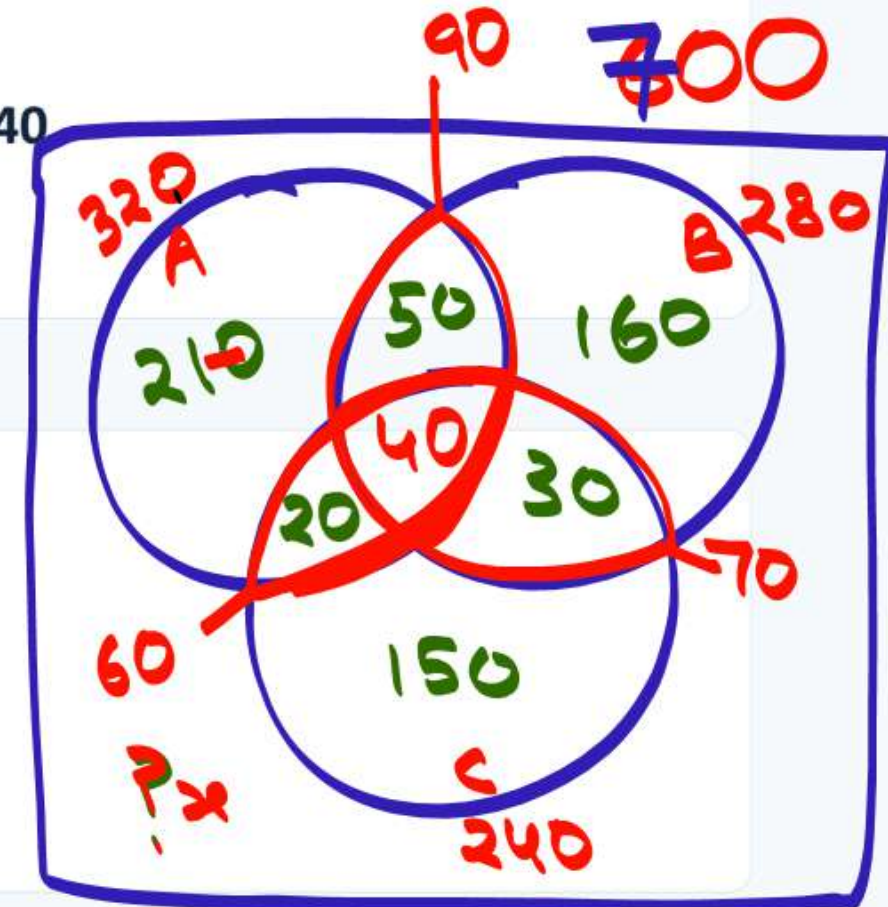
700

ग्राहक online platforms A, B और C प्रयोग करते हैं:

$A = 320$; $B = 280$; $C = 240$

$A \cap B = 90$; $B \cap C = 70$; $A \cap C = 60$; तीनों = 40

किसी भी platform का प्रयोग नहीं करने वाले कितने हैं?



$$320 + 160 + 30 + 150 = 660$$

$$x = 700 - 660 = 40$$

A. 40

B. 50

C. 60

D. 70

PROBLEM 11

ENGLISH

A survey covers **990** candidates:
Exam A = 55%; Exam B = 50%; Exam C = 45%
Only $A \cap B = 140$; Only $B \cap C = 120$; Only $A \cap C = 100$; All three = 60
How many candidates appeared in none of the exams?

हिन्दी

990 अभ्यर्थियों के सर्वेक्षण में:
Exam A = **540**; Exam B = **490**; Exam C = **360**
140 $A \cap B = 140$; **120** $B \cap C = 120$; **100** $A \cap C = 100$; तीनों = 60
किसी भी परीक्षा में शामिल नहीं होने वाले कितने हैं?

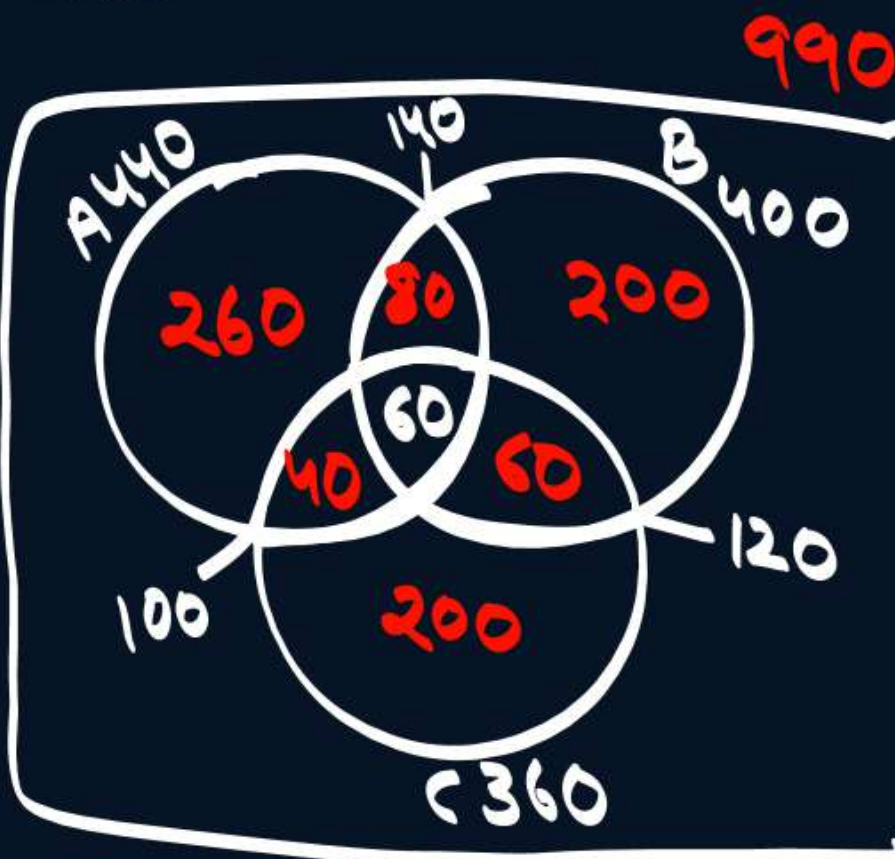
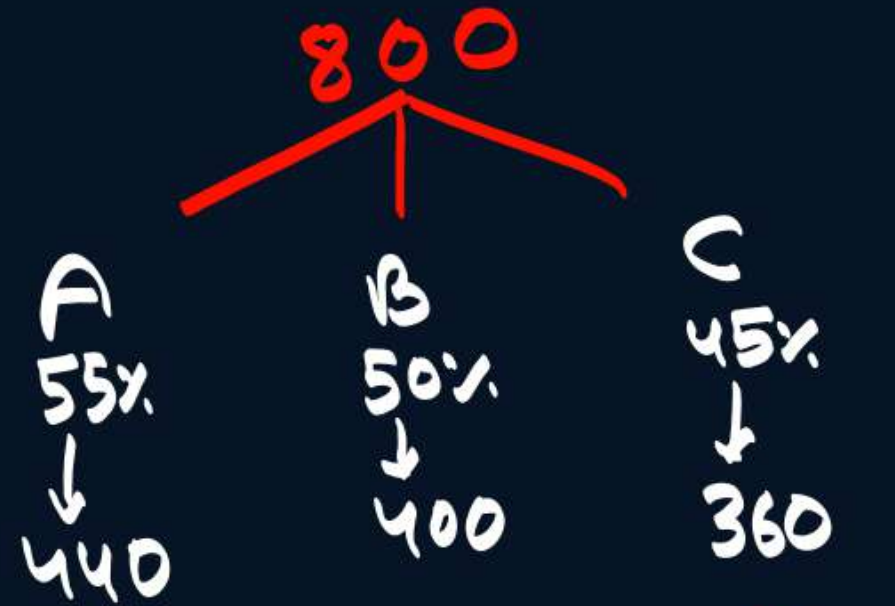
$$990 - 900 = 90$$

A. 60

B. 70

C. 80

☒ D. 90



$$260 + 80 + 200 + 40 + 60 + 60 + 200 = 900$$

PROBLEM 12

ENGLISH

A survey covers 1,000 students:
SSC = 65%; Railway = 58%; Banking = 52%
 $SSC \cap \text{Railway} = 380$; $\text{Railway} \cap \text{Banking} = 330$
 $SSC \cap \text{Banking} = 300$; All three = 200
How many prepare for exactly two examinations?

हिन्दी

1,000 वदुया र्थुयों के सर्वेक्षण में:
SSC = 65%; Railway = 58%; Banking = 52%
 $SSC \cap \text{Railway} = 380$; $\text{Railway} \cap \text{Banking} = 330$
 $SSC \cap \text{Banking} = 300$; तीनों = 200
ठीक दो परीक्षाओं की तैयारी करने वाले कतने हैं?

A. 390

B. 400

C. 410

D. 420

PROBLEM 13

ENGLISH

In a group of 100 students:
Reasoning = 58; Mathematics = 47; Neither = 15
How many students study only Reasoning?

हिन्दी

100 वदया र्थयों के एक समूह में:
Reasoning = 58; Mathematics = 47; कोई भी वषय नहीं = 15
केवल Reasoning पढने वाले वदयार्थी कतने हैं?

A. 35

B. 38

C. 40

D. 42

PROBLEM 14

ENGLISH

Among 180 students:

Science = 102; Commerce = 86; Both streams = 48

How many students belong to exactly one stream?

हिन्दी

180 वद्यार्थियों में:

Science = 102; Commerce = 86; दोनों streams = 48

केवल एक stream से संबंधित वद्यार्थी कितने हैं?

A. 88

B. 90

C. 92

D. 96

PROBLEM 15

EASY-MODERATE



ENGLISH

Among 240 people:

Tea = 135; Coffee = 110; Juice = 95

$T \cap C = 50$; $C \cap J = 45$; $T \cap J = 40$; All three = 20

How many consume none of these drinks?

हिन्दी

240 लोगों में:

Tea = 135; Coffee = 110; Juice = 95

$T \cap C = 50$; $C \cap J = 45$; $T \cap J = 40$; तीनों = 20

इनमें से कोई भी पेय नहीं पीने वाले कतने हैं?

A. 10

B. 15

C. 20

D. 25

PROBLEM 16

ENGLISH

Among 300 students:

Course A = 180; B = 165; C = 135

$A \cap B = 95$; $B \cap C = 75$; $A \cap C = 65$; All three = 45

How many students study exactly one course?

हिन्दी

300 वद्यार्थियों में:

Course A = 180; B = 165; C = 135

$A \cap B = 95$; $B \cap C = 75$; $A \cap C = 65$; तीनों = 45

केवल एक course पढ़ने वाले वद्यार्थी कतने हैं?

A. 135

B. 140

C. 145

D. 150

PROBLEM 17

ENGLISH

A survey covers 400 customers:
Product X = 240; Y = 210; Z = 180
 $X \cap Y = 130$; $Y \cap Z = 100$; $X \cap Z = 90$; All three = 60
How many customers use at least two products?

हिन्दी

400 ग्राहकों के सर्वेक्षण में:
Product X = 240; Y = 210; Z = 180
 $X \cap Y = 130$; $Y \cap Z = 100$; $X \cap Z = 90$; तीनों = 60
कम-से-कम दो products प्रयोग करने वाले कतने हैं?

A. 180

B. 190

C. 200

D. 210

ENGLISH

**Among 500 candidates:
Section A = 64%; Section B = 56%; Neither = 40 candidates
How many candidates qualified exactly one section?**

हिन्दी

**500 अभ्यर्थियों में:
Section A = 64%; Section B = 56%; कोई section नहीं = 40
केवल एक section qualify करने वाले अभ्यर्थी कितने हैं?**

A. 300

B. 310

C. 320

D. 330

PROBLEM 19

ENGLISH

Among 600 users:

Platform A = 350; B = 300; C = 250

Only $A \cap B = 110$; Only $B \cap C = 80$; Only $A \cap C = 70$; All three = 50

How many users use none of these platforms?

हिन्दी

600 users में:

Platform A = 350; B = 300; C = 250

केवल $A \cap B = 110$; केवल $B \cap C = 80$; केवल $A \cap C = 70$; तीनों = 50

कसी भी platform का प्रयोग नहीं करने वाले कतने हैं?

A. 40

B. 50

C. 60

D. 70

PROBLEM 20

ENGLISH

Among 800 students:

Mathematics = 60%; Reasoning = 55%; English = 45%

$M \cap R = 260$; $R \cap E = 220$; $M \cap E = 200$; All three = 150

How many students like exactly one subject?

हिन्दी

800 वद्या र्थ्यों में:

Mathematics = 60%; Reasoning = 55%; English = 45%

$M \cap R = 260$; $R \cap E = 220$; $M \cap E = 200$; तीनों = 150

केवल एक वषय पसंद करने वाले वद्यार्थी कतने हैं?

A. 350

B. 360

C. 370

D. 380

ENGLISH

In a newspaper survey:

$B = 340$; $A \cap B = 180$; All three = 70; Only B = 90

If $B \cap C = x$, find x .

हिन्दी

Newspaper survey में:

$B = 340$; $A \cap B = 180$; तीनों = 70; केवल B = 90

यदि $B \cap C = x$ है, तो x ज्ञात कीजिए।

A. 130

B. 140

C. 150

D. 160

PROBLEM 22

ENGLISH

Among 1,000 candidates:

Exam A = 620; B = 560; C = 480

$A \cap B = 350$; $B \cap C = 300$; $A \cap C = 280$; All three = 180

Find: exactly one examination : none of the examinations.

हिन्दी

1,000 अभ्यर्थियों में:

Exam A = 620; B = 560; C = 480

$A \cap B = 350$; $B \cap C = 300$; $A \cap C = 280$; तीनों = 180

केवल एक परीक्षा देने वाले : कोई परीक्षा नहीं देने वाले का अनुपात ज्ञात करें।

A. 17 : 4

B. 34 : 9

C. 18 : 5

D. 35 : 9

Answer Key / उत्तरमाला

1. C — 16
2. B — 20
3. C — 87
4. C — 80
5. B — 10
6. C — 130
7. C — 140
8. B — 170
9. B — 60
10. A — 40
11. B — 90

12. C — 410
13. B — 38
14. C — 92
15. B — 15
16. C — 145
17. C — 200
18. C — 320
19. C — 60
20. C — 370
21. B — 140
22. B — 34 : 9

Use the questions first; reveal this slide after practice.