GATE

ALL BRANCHES

General Aptitude

Analytical Reasoning

Lecture No.- 05

By- Amulya Ratan Sir

Recap of Previous Lecture

Topic Problem Solving

Topics to be Covered

Topic-1 Cubes

Topic-2 Dices

[MCQ]

#Q. Five persons P, Q, R, S and T belongs to five different cities Jabalpur, Bhopal, Hyderabad, Raipur and Delhi. They are invited to deliver a seminar on different subject Viz., Chemistry, Physics, Mathematics, History and Economics but not necessarily in the same order.

P who belongs to Bhopal gives seminar on Economics. The person who gives seminar on Physics belongs to Jabalpur. T does not give seminar on Chemistry or History but belongs to Hyderabad. S does not belongs to Raipur but gives seminar on Chemistry and History is the option of R.

Q1. Who belongs to Raipur? R

Q2. Physics seminar will be given by? Q

Q3. T gives seminar on? Maths

Q4. S belongs to which city? Delhi

Q5. Who belongs to Jabalpur? P

- Five persons P, Q, R, S and T belongs to five different cities Jabalpur, Bhopal, Hyderabad, Raipur and Delhi. They are invited to deliver a seminar on different subject Viz., Chemistry, Physics, Mathematics, History and Economics but not necessarily in the same order.
- P who belongs to Bhopal gives seminar on Economics.
- The person who gives seminar on Physics belongs to Jabalpur.
- T does not give seminar on Chemistry or History but belongs to Hyderabad.
- S does not belongs to Raipur but gives seminar on Chemistry and History is the option of R.

	CITY	SUBJECT
P	Bhopal	Economics
Q	Jabalpur	Physics
R	Raipur	History
S	Delhi	Chemistry
T	Hyderabad	Maths

CITY	JABALPUR	BHOPAL	HYDERABAD	RAIPUR	DELHI
SUBJECT	Physics				

[MCQ]

#Q. On a shelf are placed six volumes side by side labeled A, B, C, D, E and F. Three volumes B, C and E have green covers while the other volumes have yellow covers. A, D and B are new volumes while the rest are old volumes. A, C and B are law reports, while the rest are Gazetteers.

[MCQ]

#Q. Which volume is new, yellow covered and a Gazetteer?

A E

B D

C C

D A

[MCQ]

#Q. Which two volumes are old Gazetteers?

A. E and F

B. D and B

C. C

D. F

[MCQ]

#Q. Which is green covered, old and a law report volume?

A E

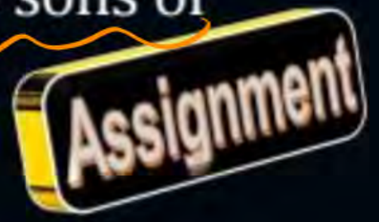
B D

C F

D C

[MCQ]

#Q. Prashant Arora has three children – Sangeeta, Vimal and Ashish. Ashish married Monika, the eldest daughter of Mr. and Mrs. Roy. The Roys married their youngest daughter to the eldest son of Mr. and Mrs. Sharma, and they had two children name Amit and Shashi. The Roys have two more children, Roshan and Vandana, both elder to Veena. Sameer and Ajay are sons of Ashish and Monika. Rashmi is the daughter of Amit.



Q1. What is the surname of Rashmi?

Q2. How is Sameer related to the father of Monika?

Q3. What is the surname of Sameer?

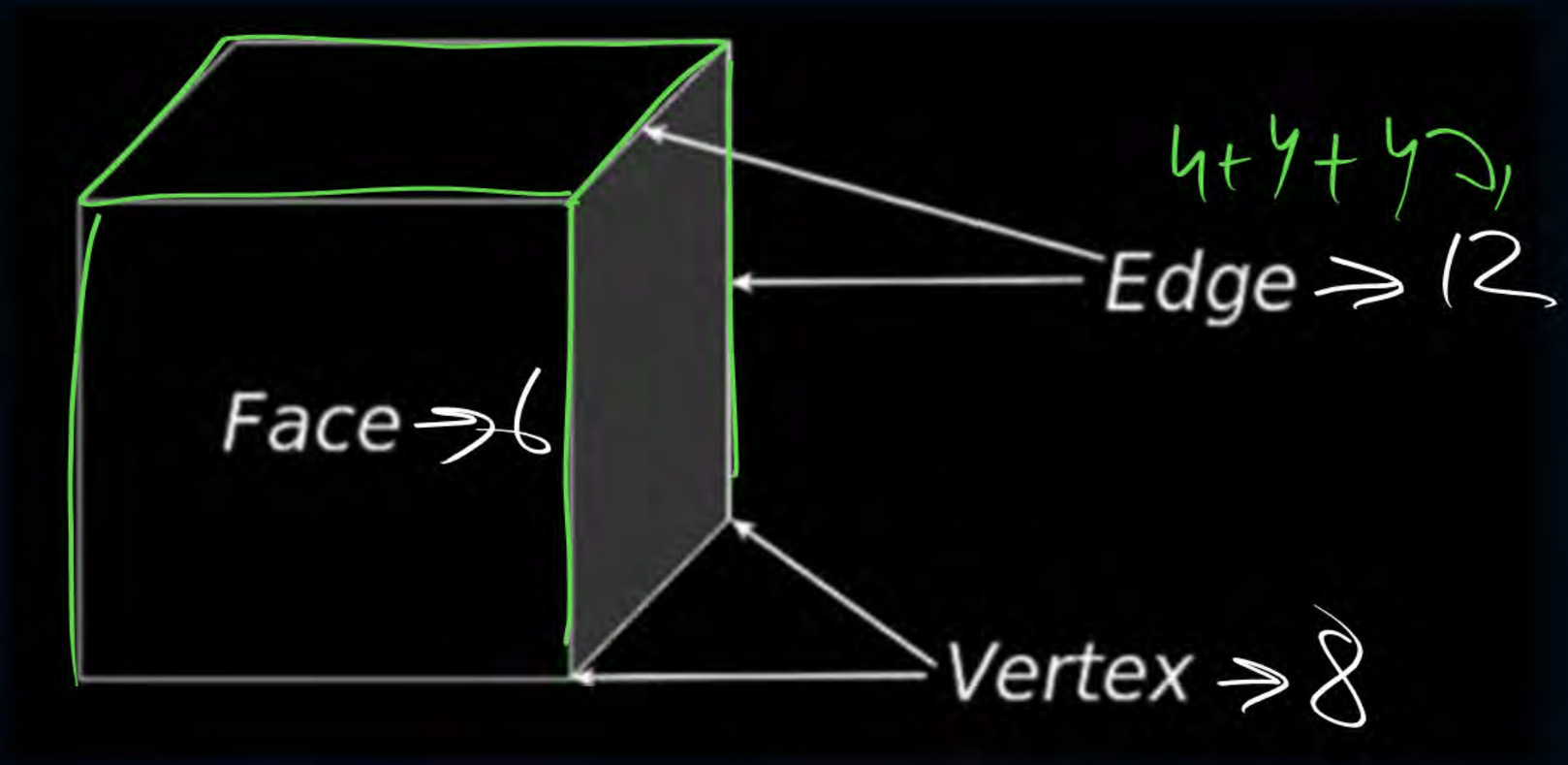
Q4. How is Mrs. Roy related to Ashish?

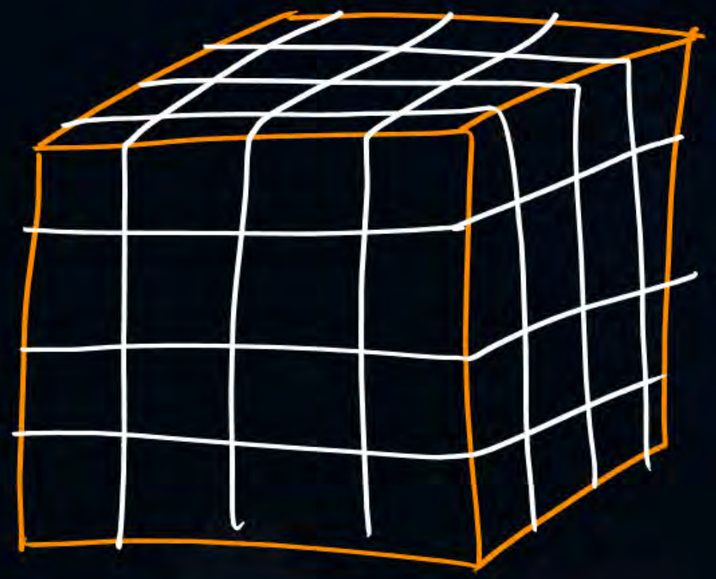
Cubes

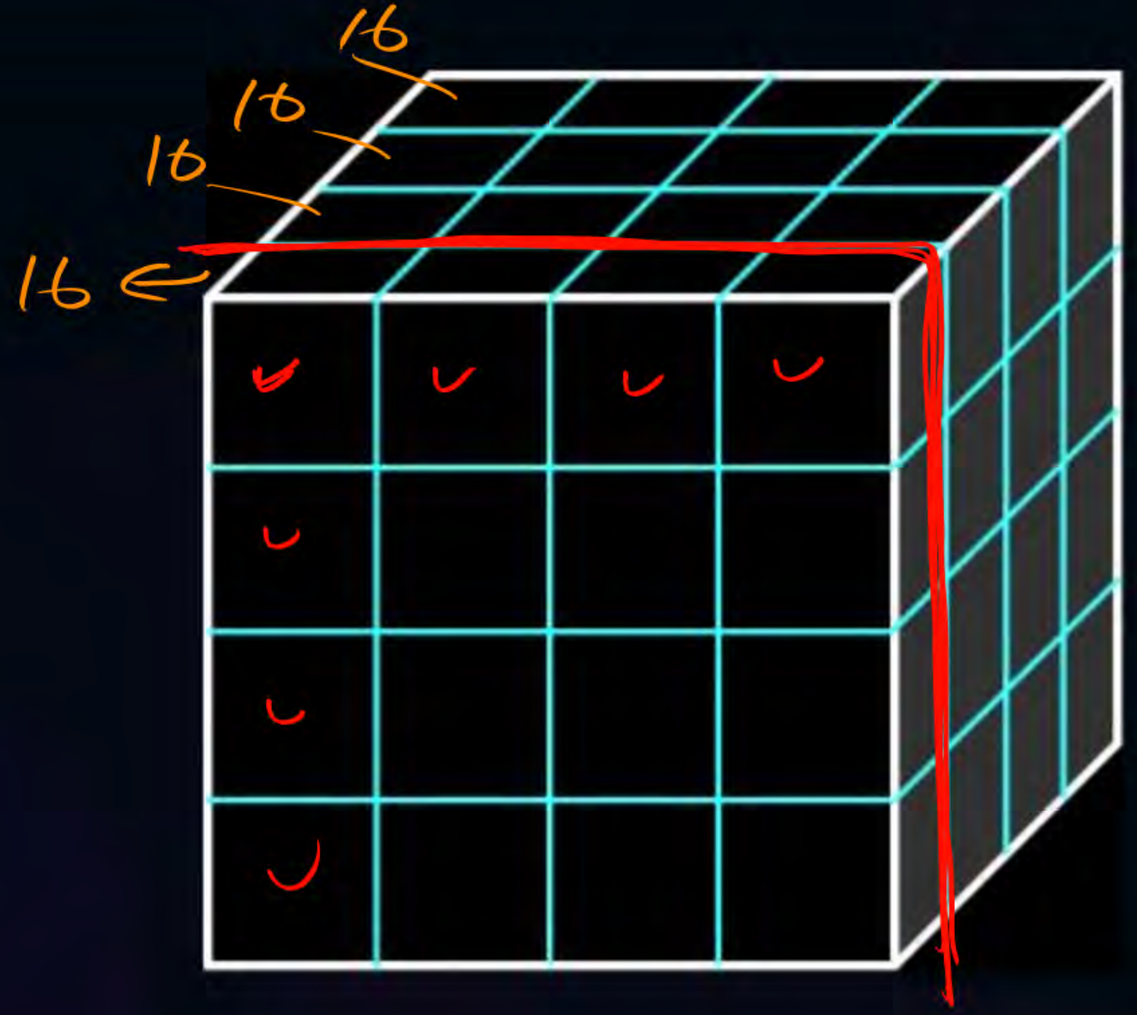
Faces → 6

Edges → 12

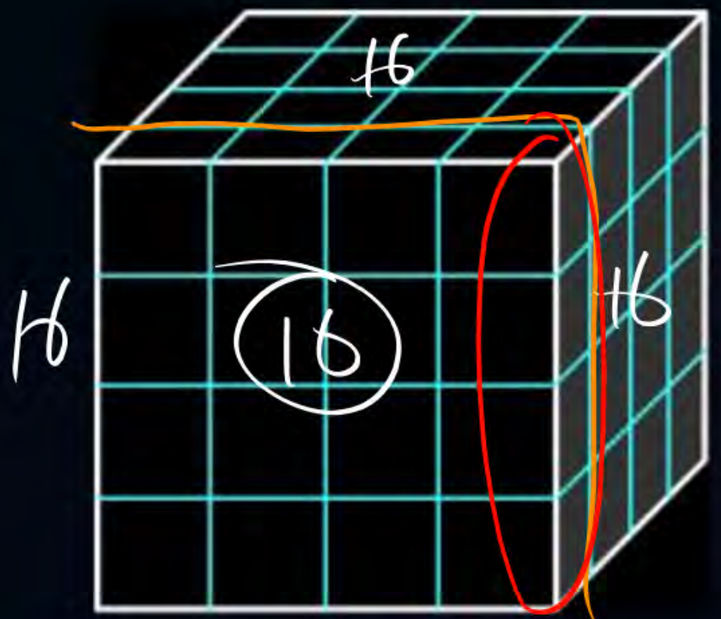
Vertex → 8

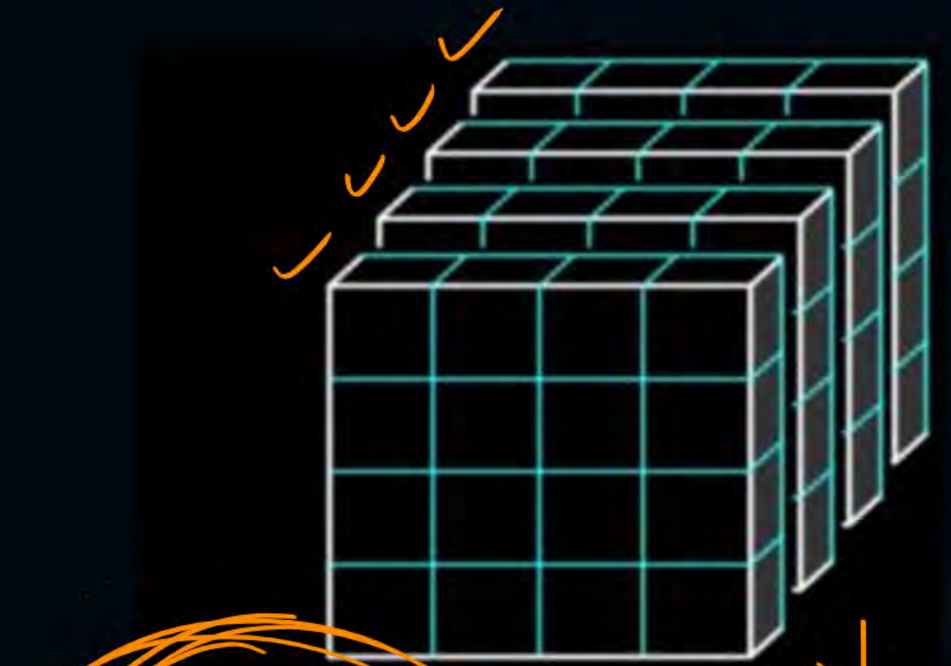

4+4+4=12
Edge ⇒ 12
Face ⇒ 6
Vertex ⇒ 8





$16 \times 4 = 64$





3 'x' cut

No. of cubes $= (x+1)^3$

$= (3+1)^3 = 4^3$

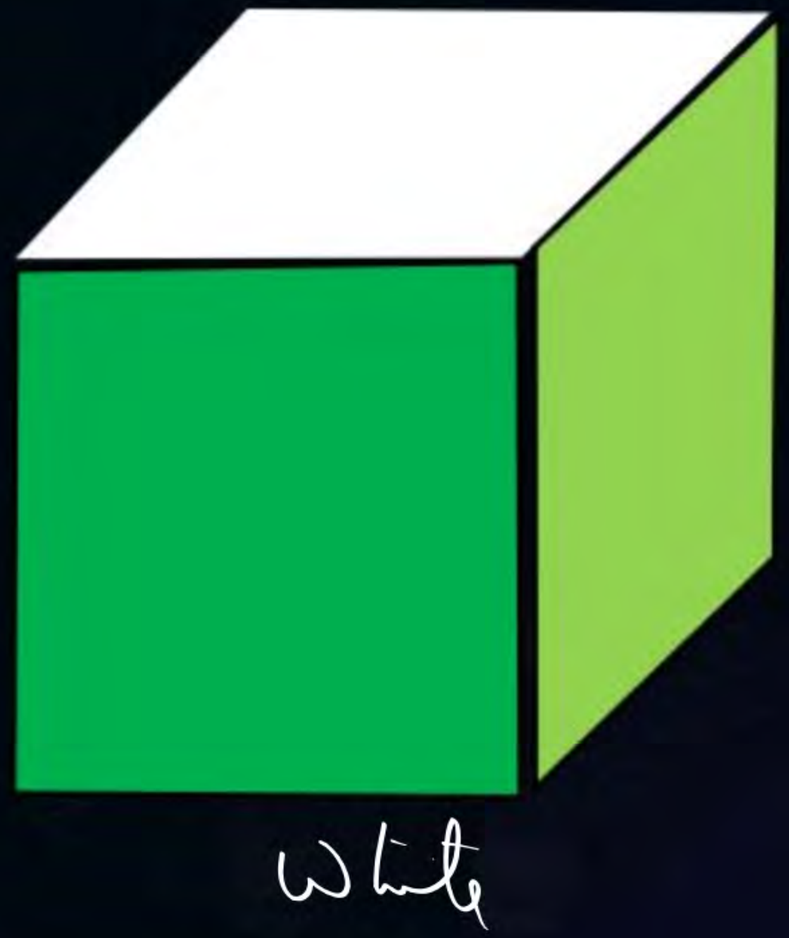
$= 64$

[MCQ]

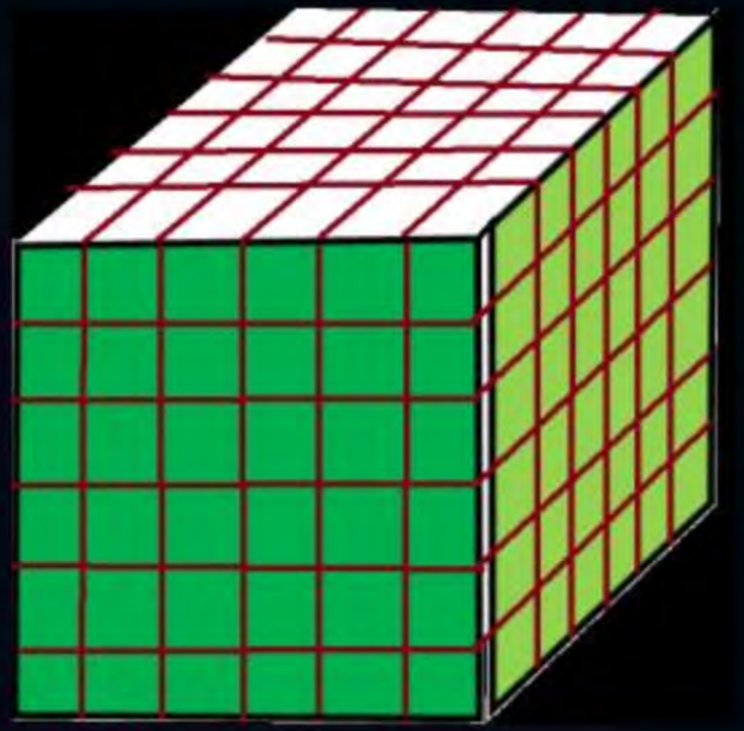
#Q. A Cube was painted on one of the opposite pair faces as WHITE & remaining four faces as GREEN. Five cuts were given on each edges to form smaller Cubes of equal size.

1. How many cubes will be formed?
2. How many cubes will have no face painted at all?
3. How many cubes will have only one face painted?
4. How many cubes will have only two face painted, but with same colour?
5. How many cubes will have only two face painted, but different colour?
6. How many cubes will have atleast two face painted?
7. How many cubes will have three face painted?

✓A Cube was painted on one of the opposite pair faces as white & remaining four faces as green. Five cuts were given on each edges to form smaller Cubes of equal size.



A Cube was painted on one of the opposite pair faces as white & remaining four faces as green. Five cuts were given on each edges to form smaller Cubes of equal size.



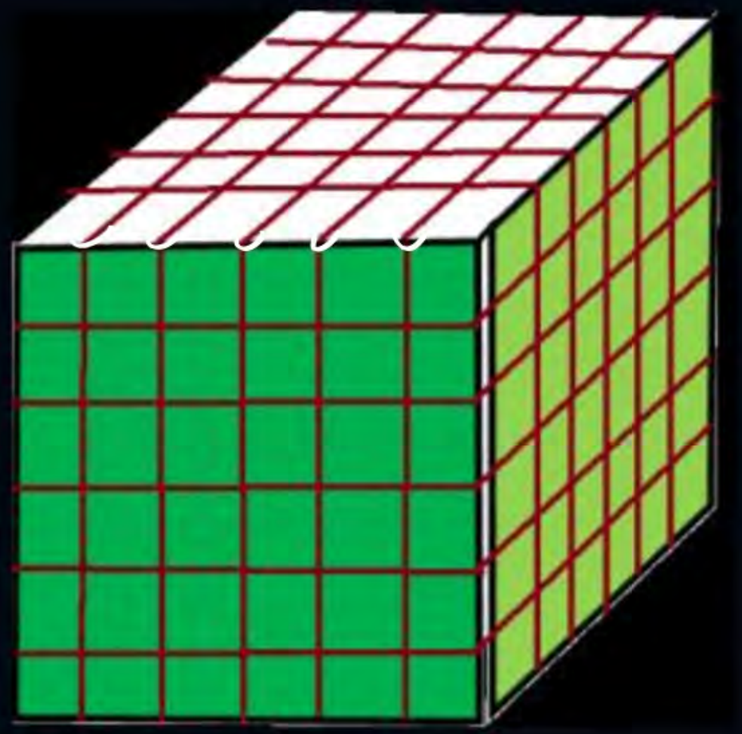
[MCQ]

#Q. How many cubes will be formed?

5 cuts

No. of cubes $= (5+1)^3$

$6^3 = 216$



[MCQ]

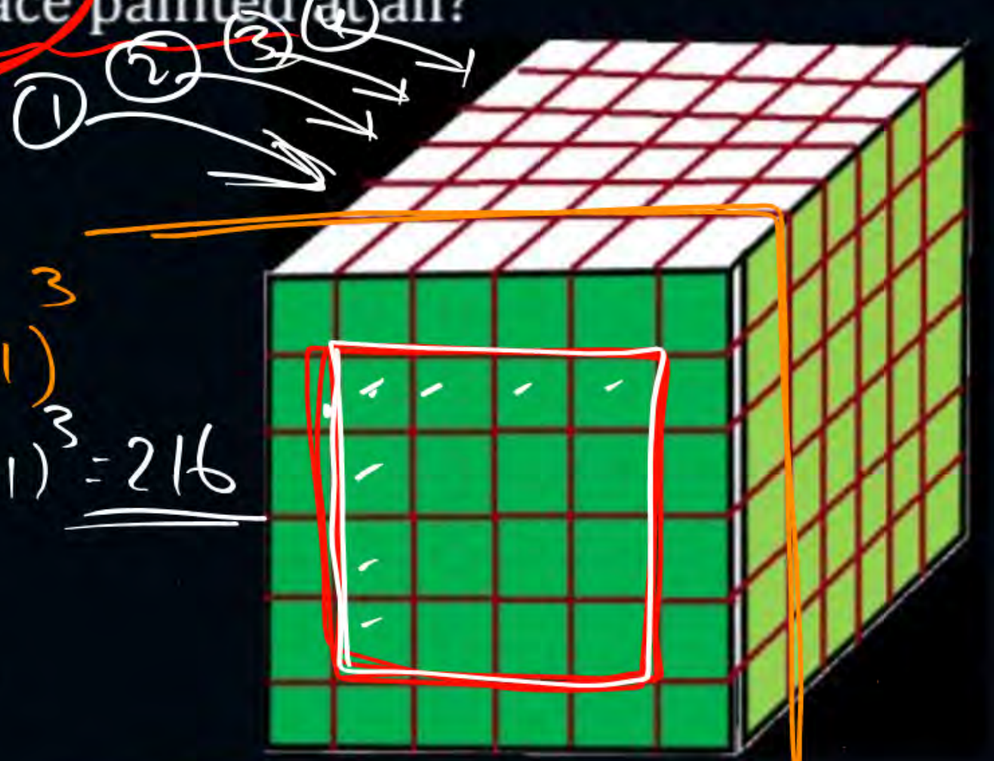
#Q. How many cubes will have no face painted at all?

$16 \times 4 = 64$

'x' cut

No. of cubes $= (x+1)^3$

$(5+1)^3 = 216$



No. of cubes having no face painted $= (x-1)^3$

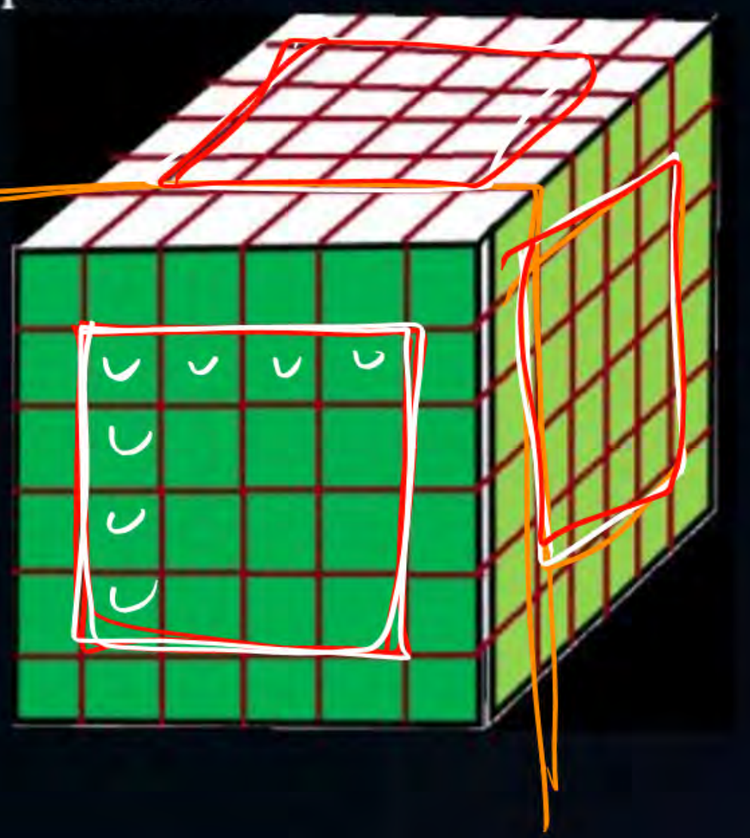
$4^3 = 64$

[MCQ]

#Q. How many cubes will have only one face painted?

$16 \times 6 = 96$

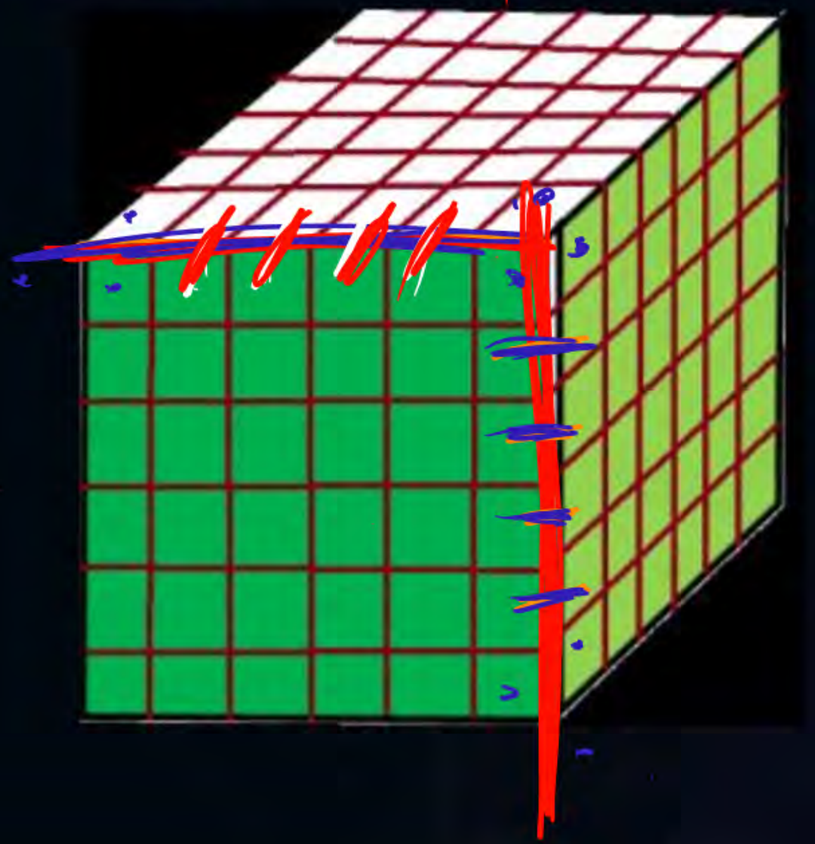
16



[MCQ]

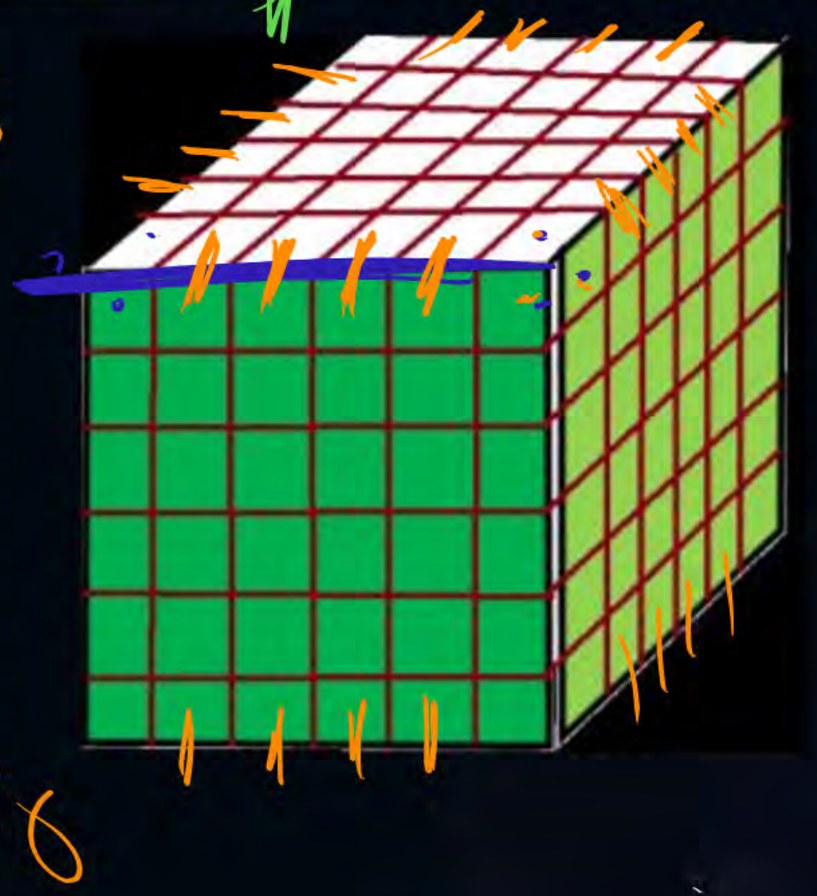
#Q. How many cubes will have only two face painted, but with same colour?

$4 \times 4 = 16$



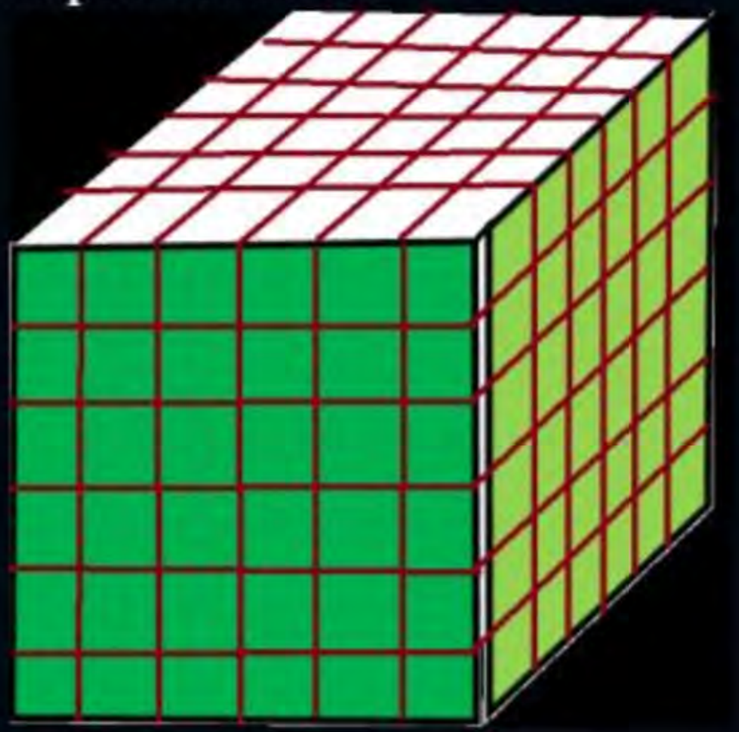
[MCQ]

#Q. How many cubes will have only two face painted but with different colour?



[MCQ]

#Q. How many cubes will have atleast two face painted?



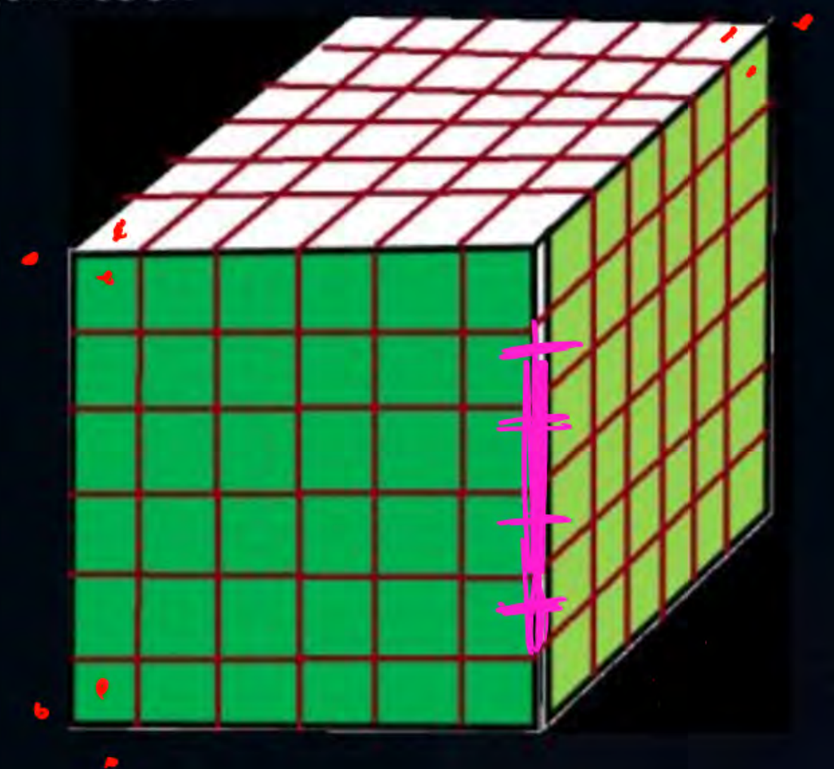
48 + 8

= 56

[MCQ]

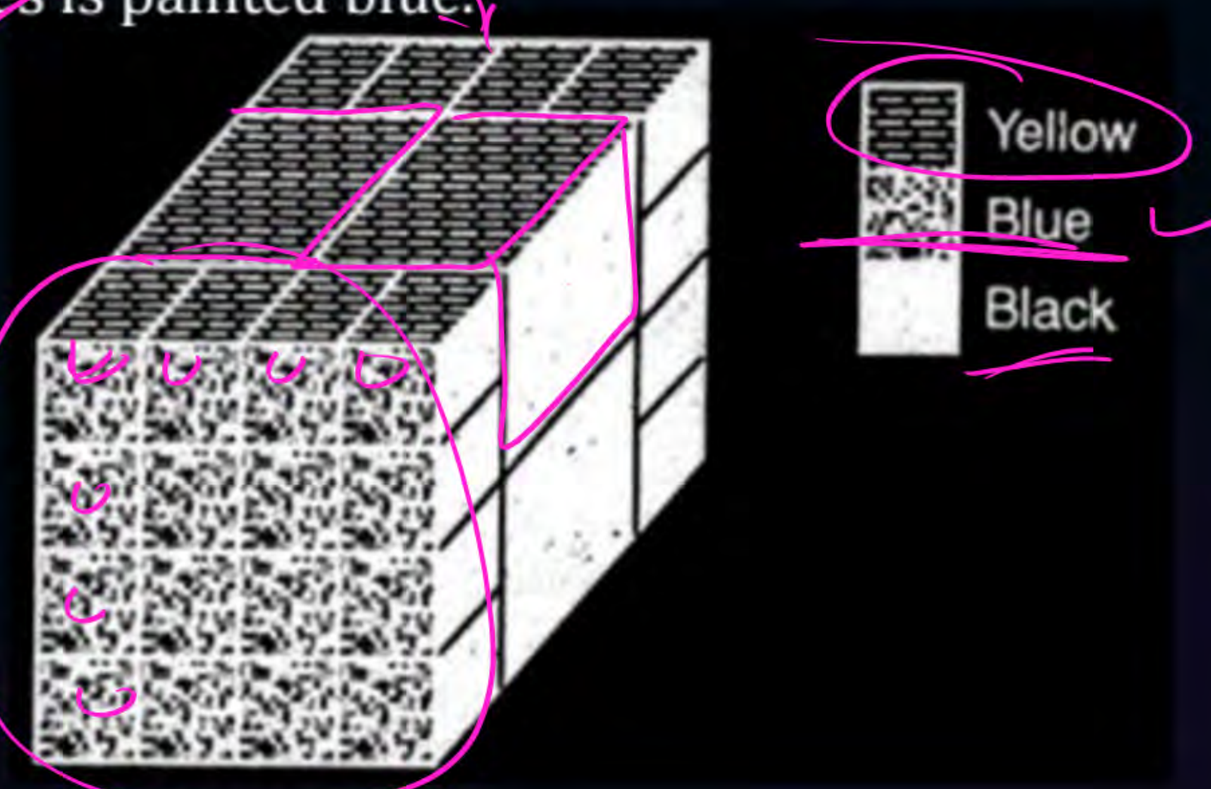
#Q. How many cubes will have three face painted?

$8 \times 1 = 8$



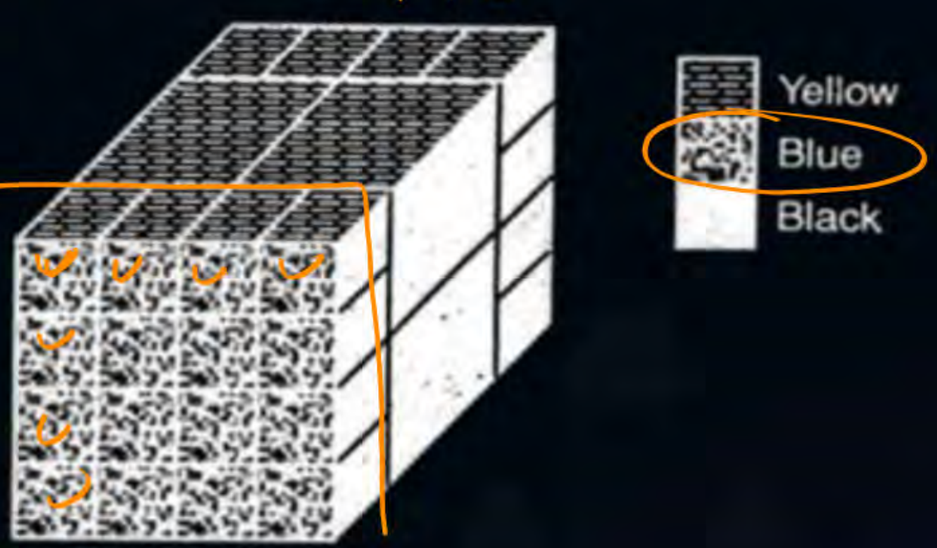
[MCQ]

#Q. A solid cube as shown in below image, has been painted yellow, blue and black on pairs of opposite face. The cube is the cut into 36 smaller cubes such that 32 cubes are of the same size while 4 others are of bigger size. Also no face of any of the bigger cubes is painted blue.



[MCQ]

#Q. How many cubes have at least one face painted blue?



16

16

16+16 = 32

A 0

B 8

C 16

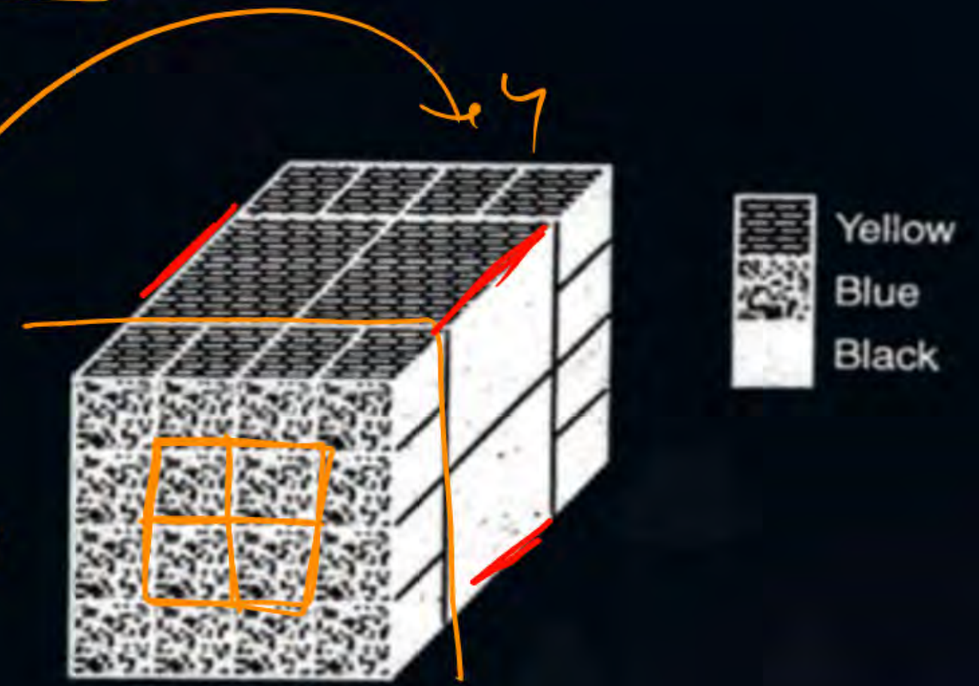
D 32

[MCQ]

#Q. How many cubes have only one face painted?

Small

4+4=8



A 12

B 8

C 4

D 0

[MCQ]

At least

#Q. How many cubes have two or more faces painted?

Three face

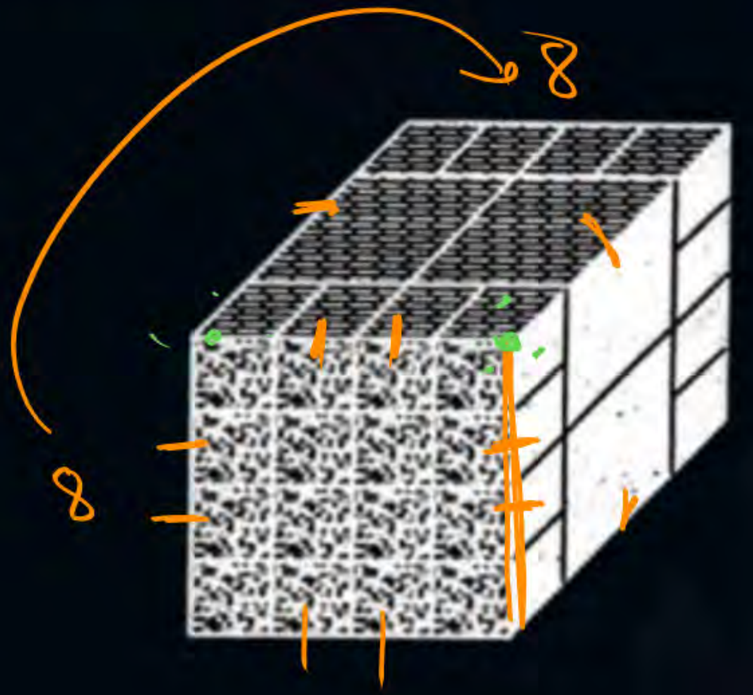
8

Two faces

Small Big

16 + 4

= 20



A 34

B 36

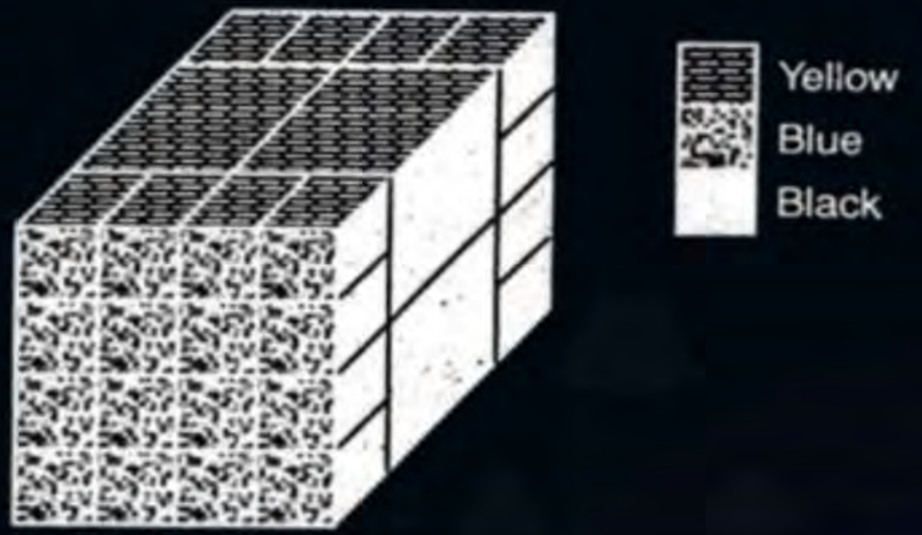
C 28

D 24

20 + 8 = 28

[MCQ]

#Q. How many cubes only three faces painted?



A 0

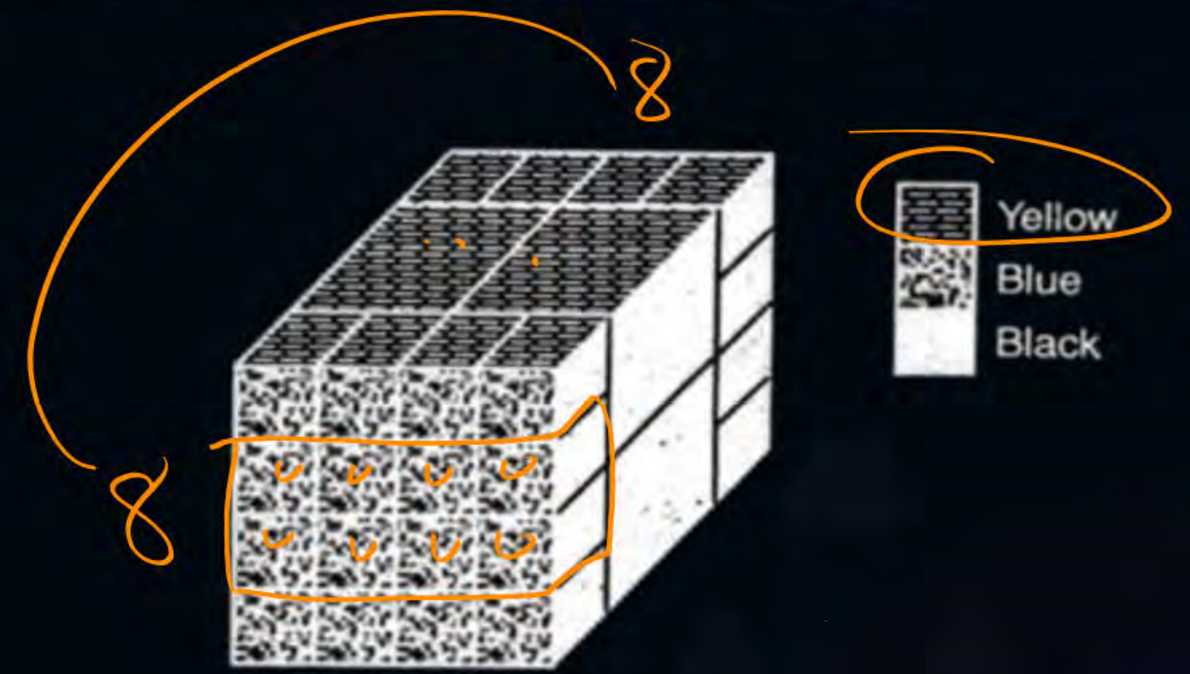
B 2

C 4

D 8

[MCQ]

#Q. How many cubes do not have any of their faces painted yellow?



Small

16

A 0

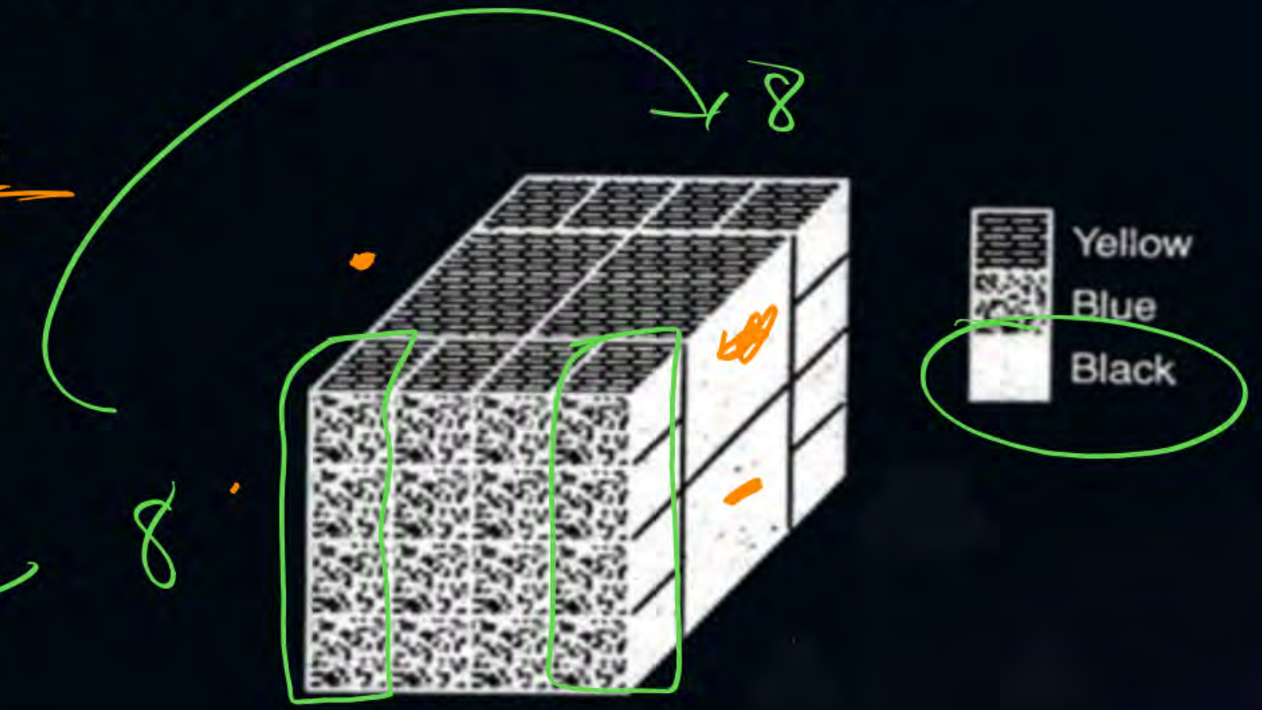
B 8

C 16

D 20

[MCQ]

#Q. How many cubes have at least one of their faces painted black ?



Small 16 + Big 4

8

8

= 20

A 32

B 16

C 8

D 0

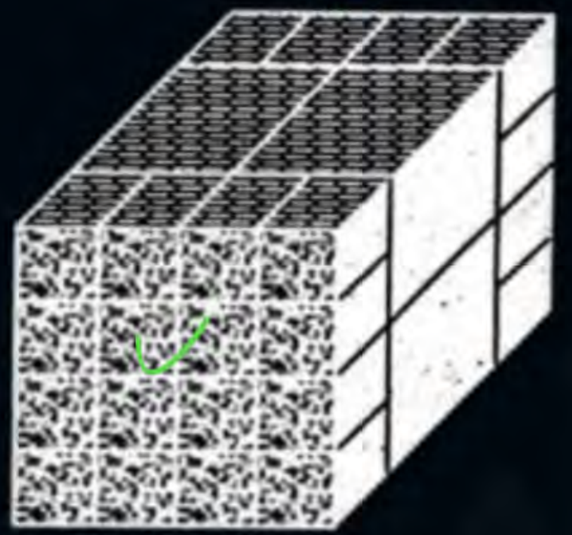
[MCQ]

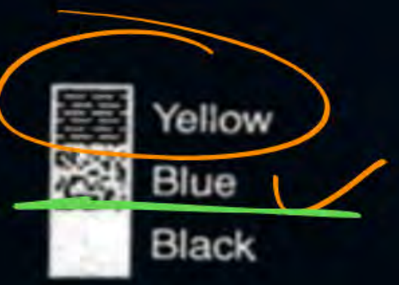
#Q. How many cubes have at least one of their faces painted yellow or blue?

Big 4

Small 32

16





$4 + 32 = 36$

16

A 0

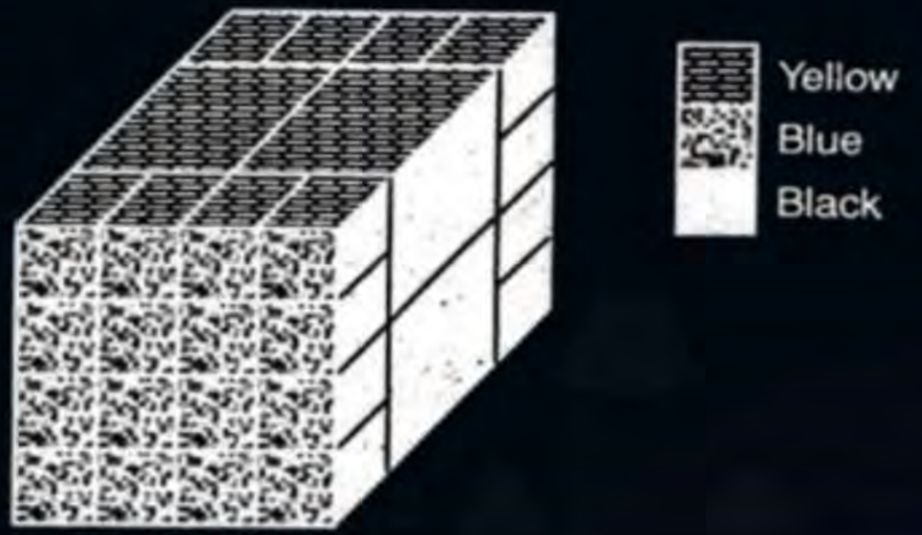
B 16

C 32

D 36

[MCQ]

#Q. How many cubes have no face painted?



A 0

B 8

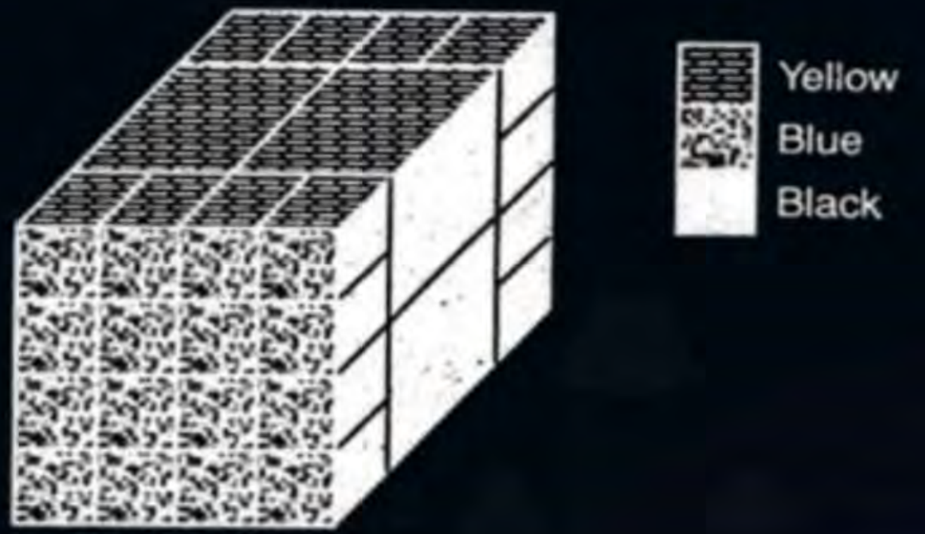
C 12

D 16

[MCQ]

#Q. How many cubes have two faces painted yellow and black respectively?

Assignment



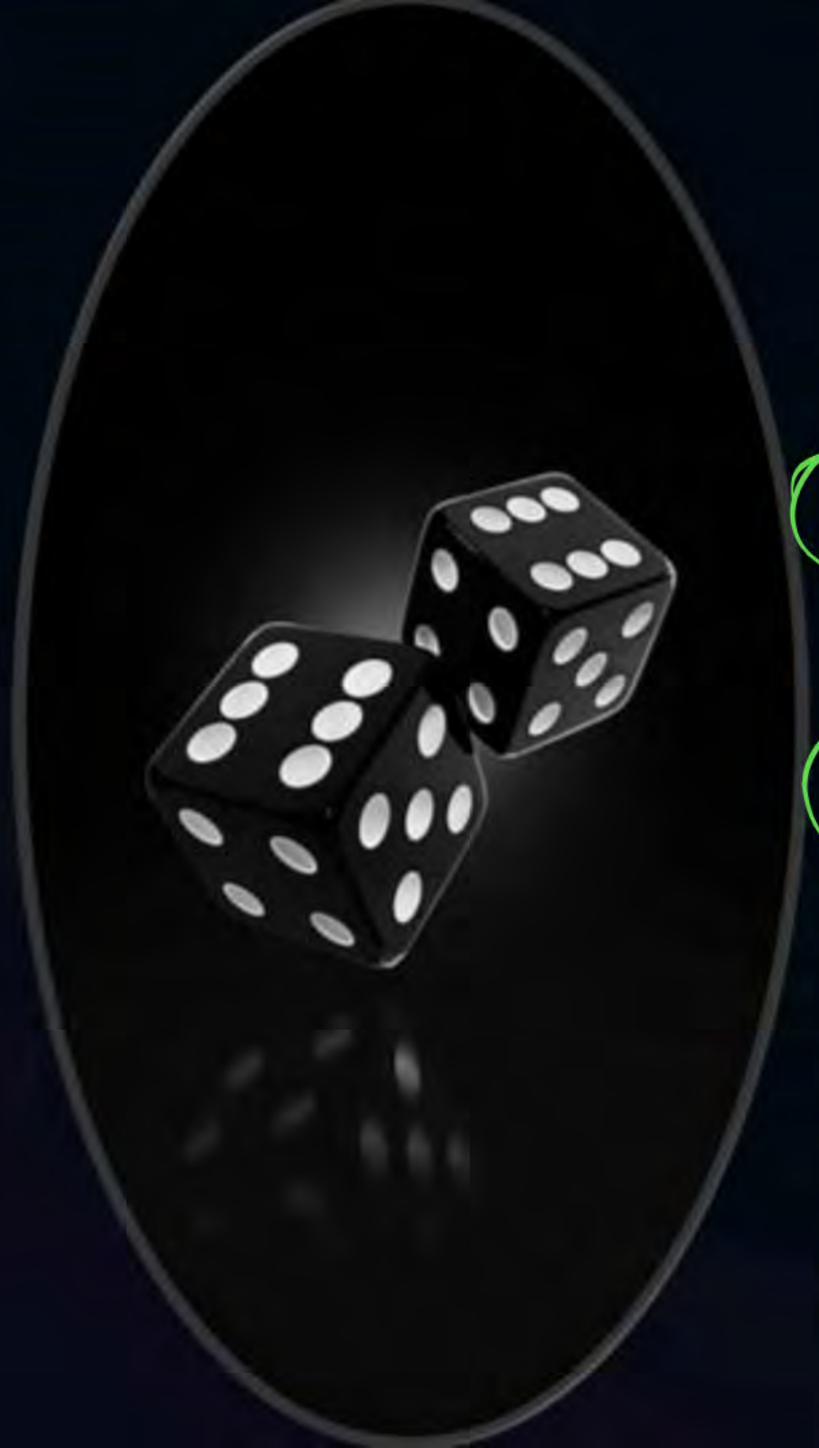
A 16

B 12

C 8

D 0

Dice



① Standard

② General

Standard & General Dice

Questions

opp face sum
= 7

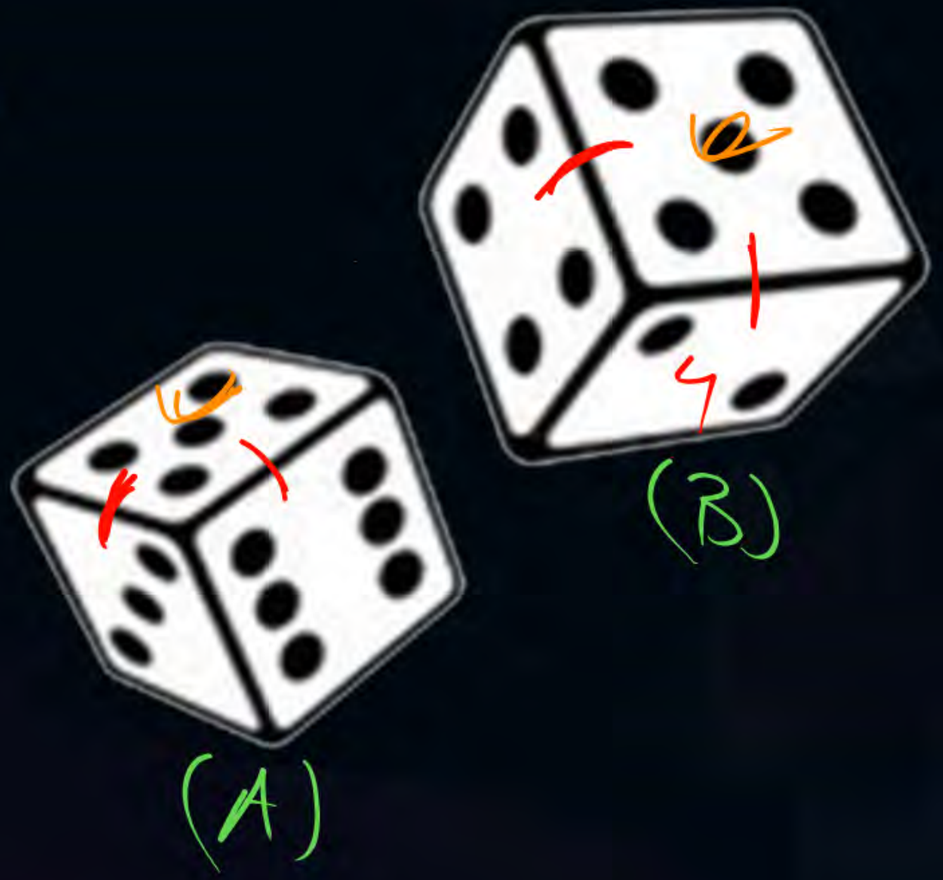
1 ⟺ 6 4 ⟺ 3

2 ⟺ 5

Rule 1:

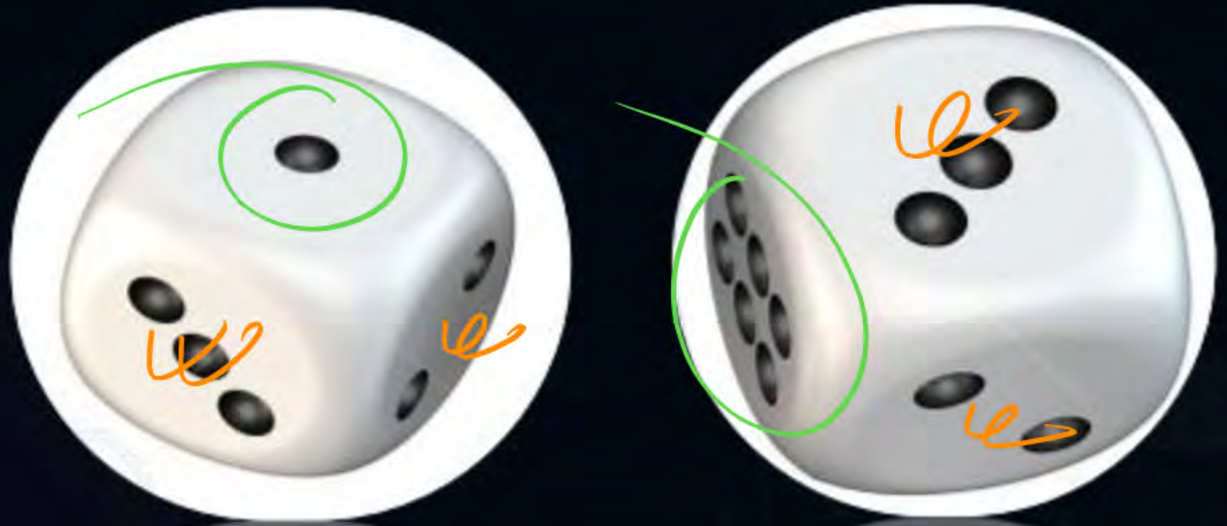
5 ⇒ 3, 6, 4, 2

5 ⇔ 1



Rule 2:

1 → 6



Rule 3:

1 ⟷ 3
6 ⟷ 4

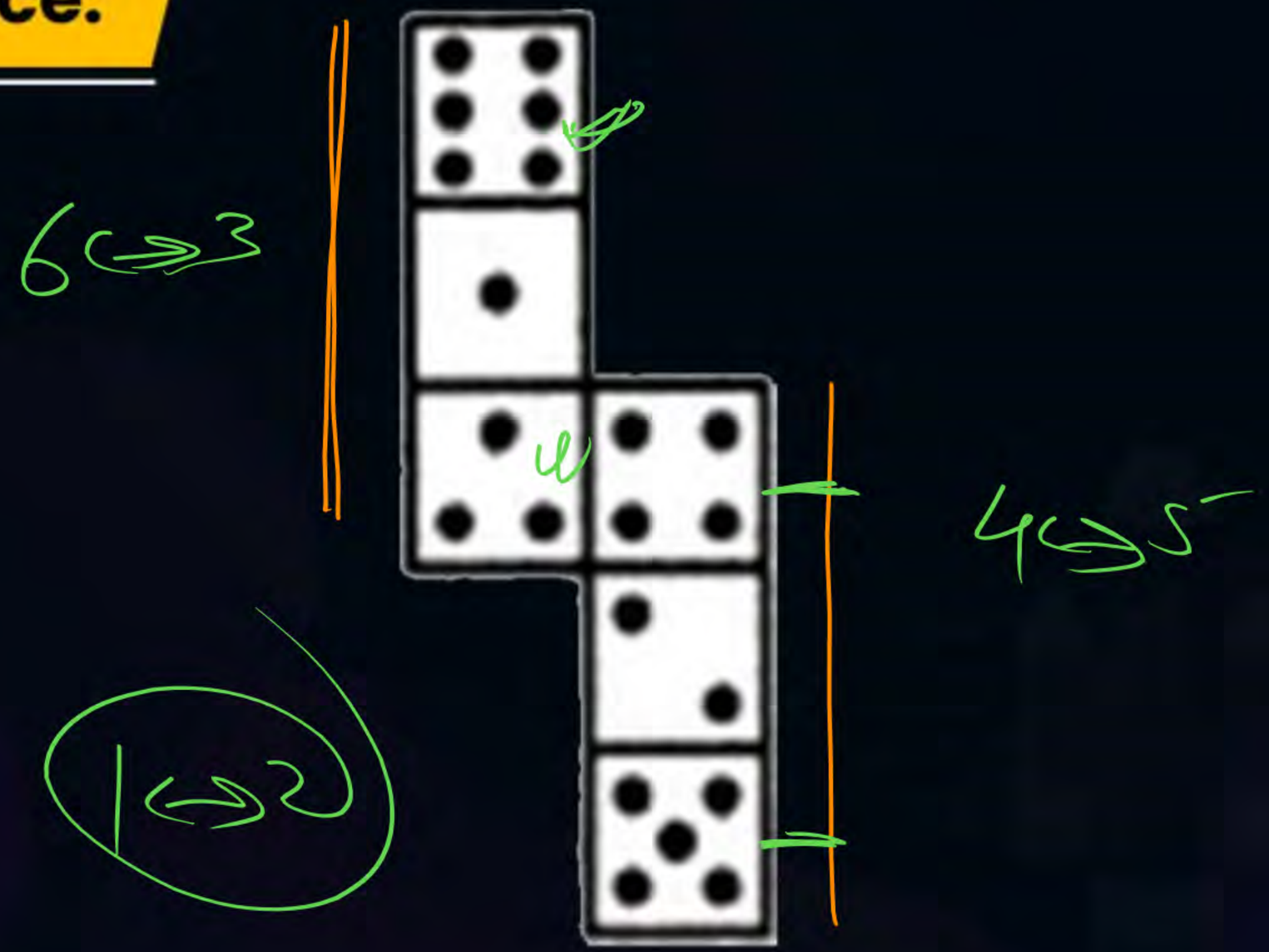
Rule 1
2 ⟷ 5

2 → 1 — 6
2 → 3 — 4

(A)

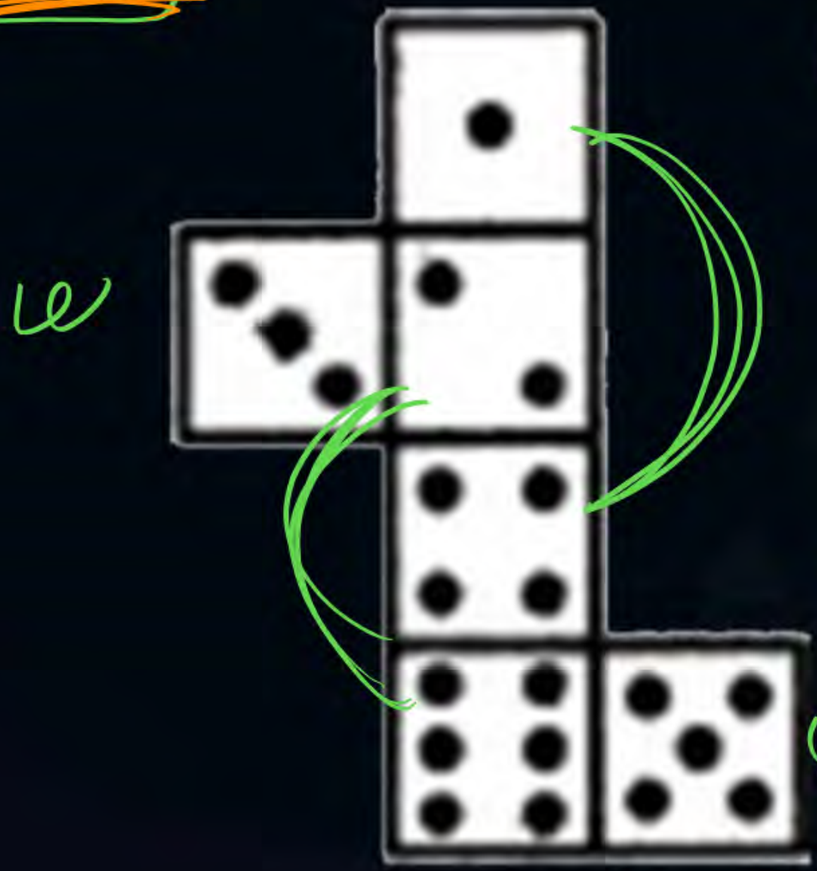
(B)

Open Dice:



[MCQ]

#Q. When the following figure is folded to form a cube, how many dots lie opposite the face bearing five dots?



A 1

B 2

C 3

D 4

[MCQ]

#Q. Which cube can be formed by folding the given shape on the right?

A

B

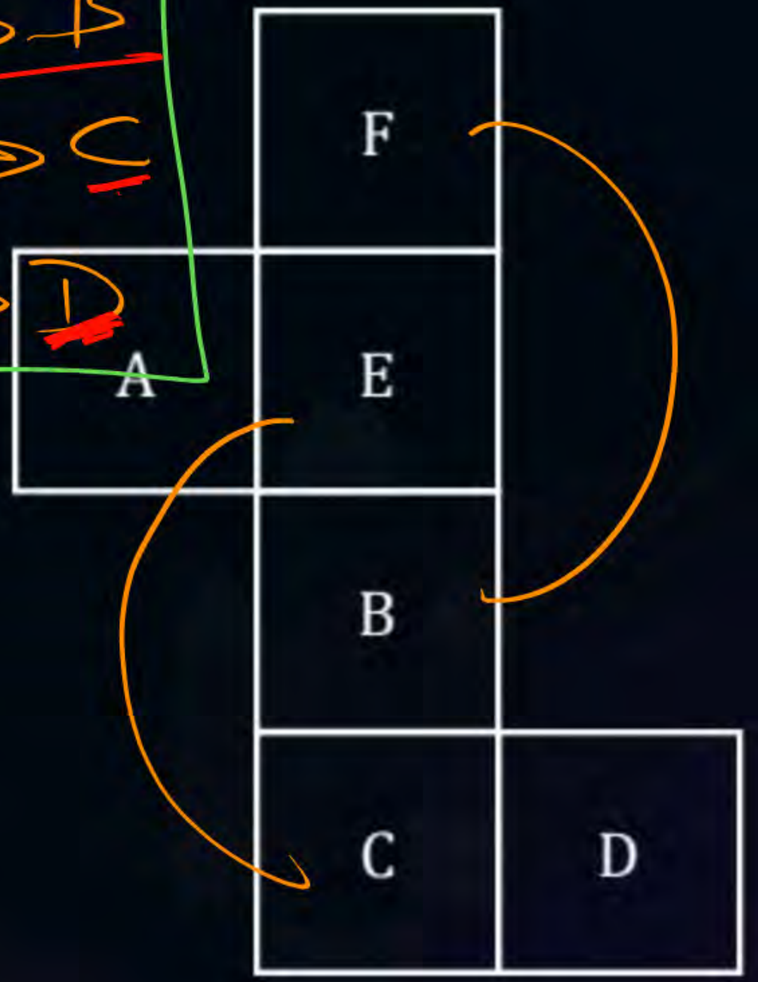
C

D

F → B

F → C

A → D



[MCQ]

Assignment

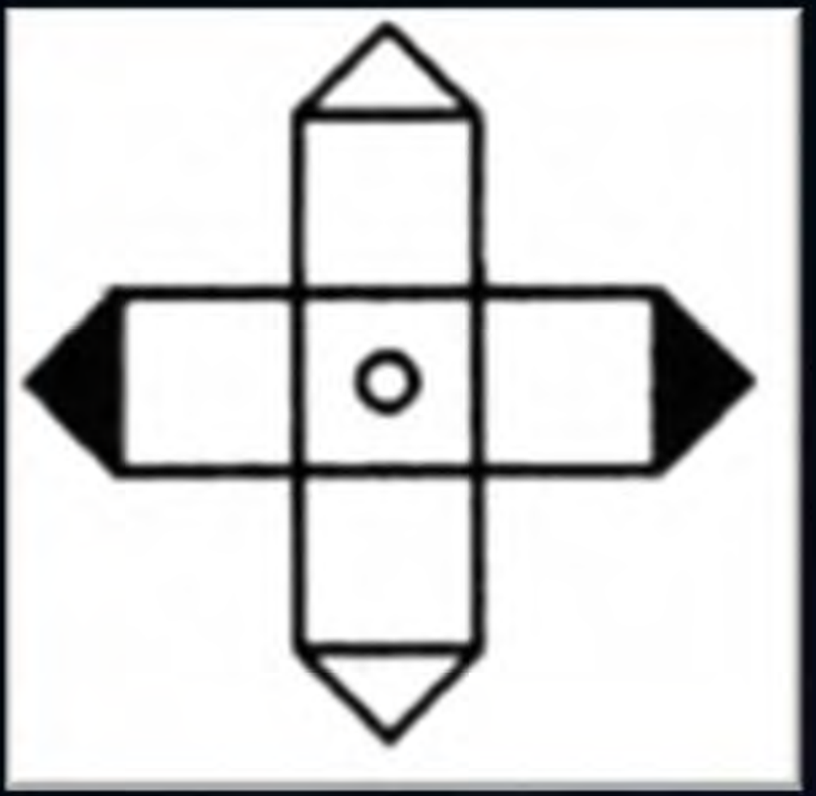
#Q. Which cube can be formed by folding the given shape on the right?

A 

B 

C 

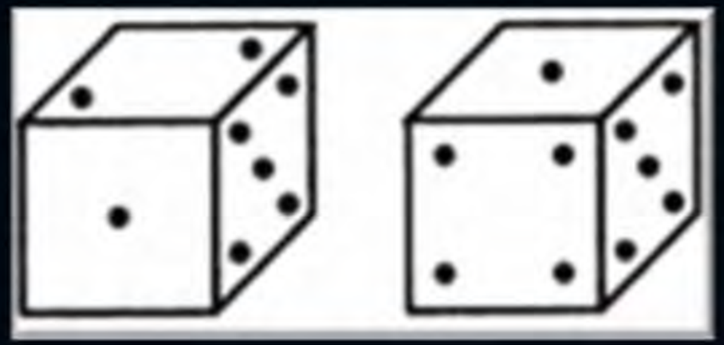
D 



[MCQ]

Assignment

#Q. Observe the dots on a dice (one to six dots) in the following figures. How many dots are contained on the face opposite to that containing four dots?



A 2

B 3

C 6

D Can't be determined

[MCQ]

Assignment

#Q. Three different positions of a dice are shown below. How many dots lie opposite 2 dots?

A 1

B 3

C 6

D 5

[MCQ]

Assignment

#Q. The six faces of a dice have been marked with alphabets A, B, C, D, E and F respectively. This dice is rolled down three times. The three positions are shown as: Find the alphabet opposite A.

A C

B D

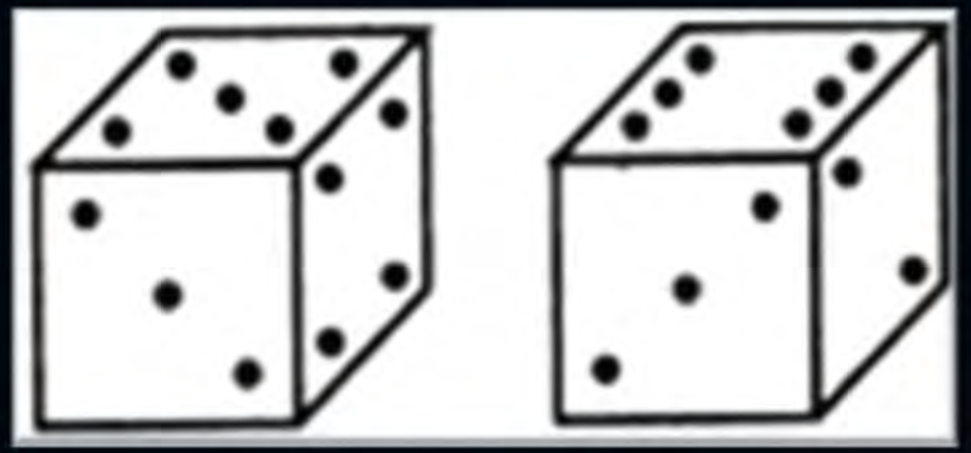
C E

D F

[MCQ]

Assignment

#Q. Two positions of a dice are shown below. If the face with 1 dot is at the bottom, then the number of dots on the top is



A 2

B 3

C 4

D 5

[MCQ]

#Q. A cube has six different symbols drawn over its six faces. The symbols are dot, circle, triangle, square, cross and arrow. Three different positions of the cube are shown in figures X, Y, and Z.

Assignment

Which symbol is opposite the dot?

(x) (y) (z)

A Circle

B Arrow

C Cross

D Triangle

2 mins Summary

Topic Cubes & Dice

THANK - YOU