DAY 04

# MCA CET 2025

## REASONING

# CUBE & DICE

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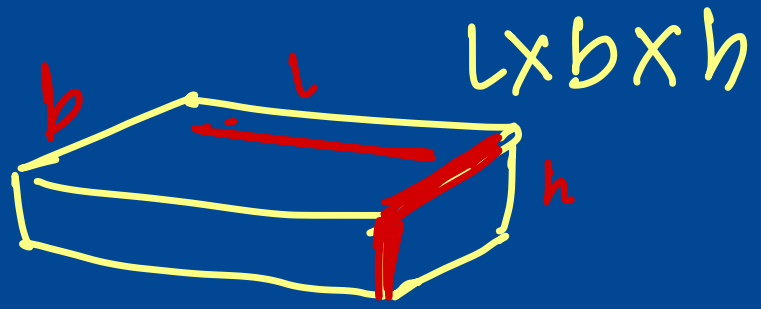
# FOR MAH MCA CET 2025

# Cube

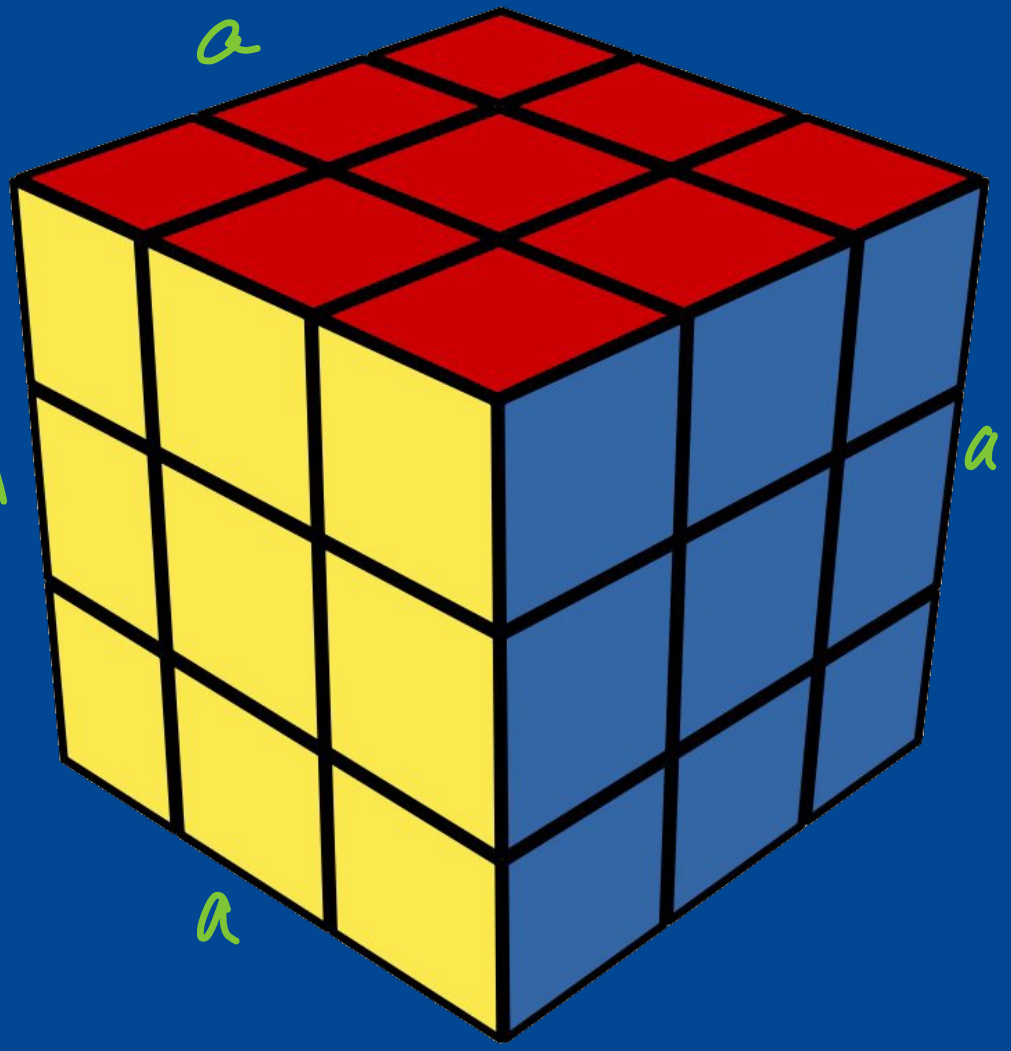



- Corners = 8
- Edges = 12
- Surfaces = 6

Cuboid

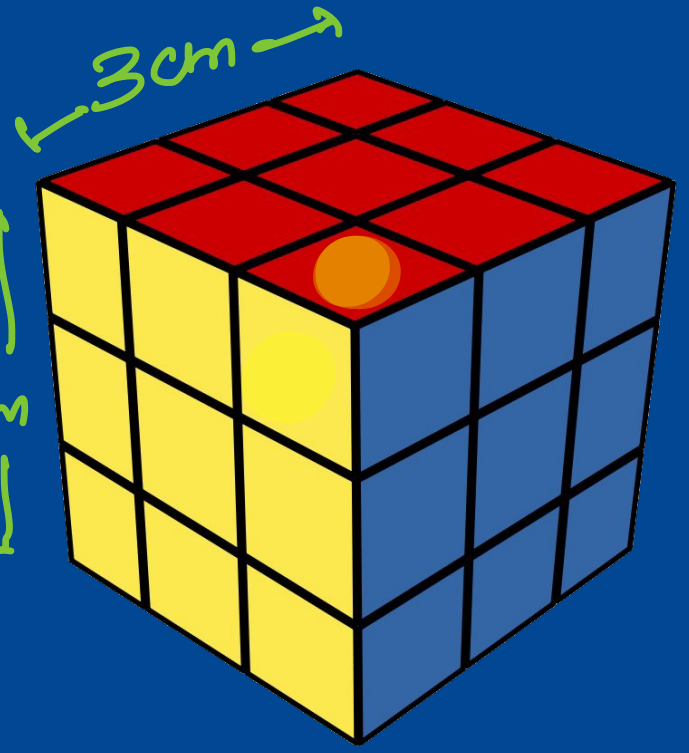
Cube

l = b = h



# Cube

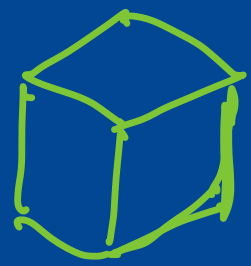
Smaller cube = 1 cm




If a cube is divided into smaller cubes

$$n = \frac{length\ of\ the\ cube}{length\ of\ the\ smaller\ cube}$$

$\frac{3}{1} = 3$



- Number of cubes formed = $n^3$
- Number of smaller cubes with three surfaces painted = 8
- Number of smaller cubes with two surfaces painted = (n-2) x 12
- Number of smaller cubes with one surface painted = $(n-2)^2$ x 6
- Number of smaller cubes with no surface painted = $(n-2)^3$

$n=3$

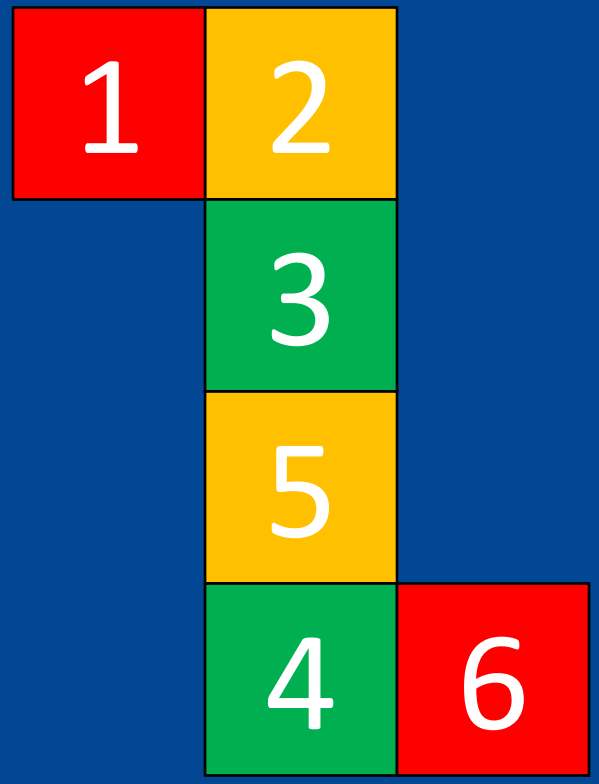
$n^3 = 3\times3\times3 = 27$

Note the change:

$= 3-2^2 = 1^2 = 1$

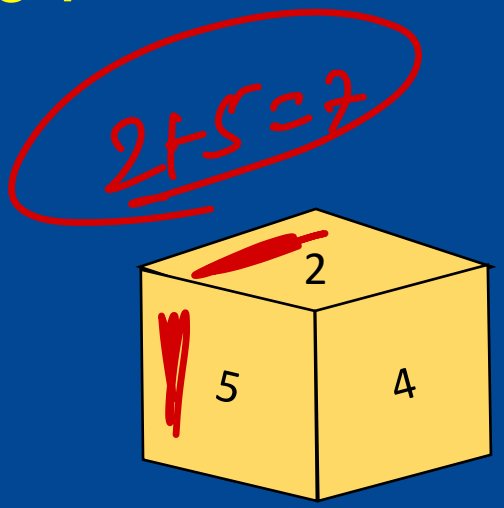
# Standard Dice

- Sum of opposite sides is 7

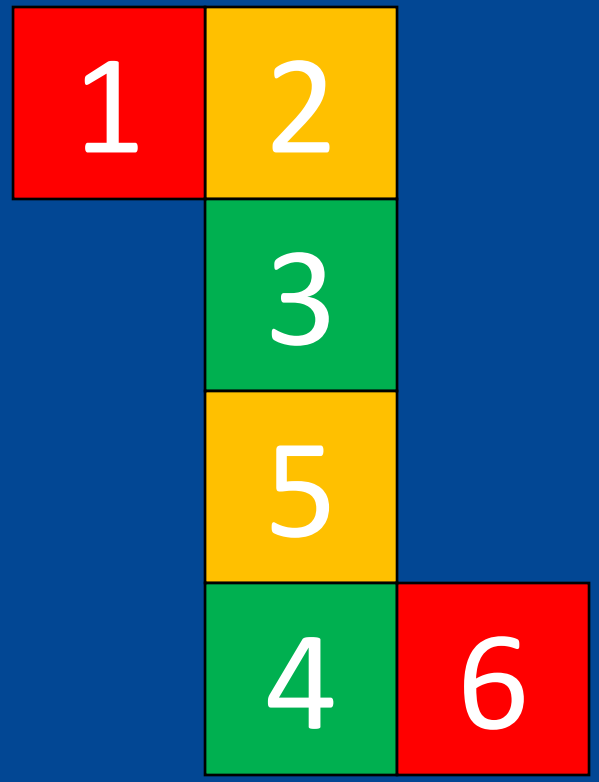


# General or Ordinary Dice

- Sum of opposite sides is NOT equal to 7
- But sum of any two adjacent side is 7



# Dice Formation



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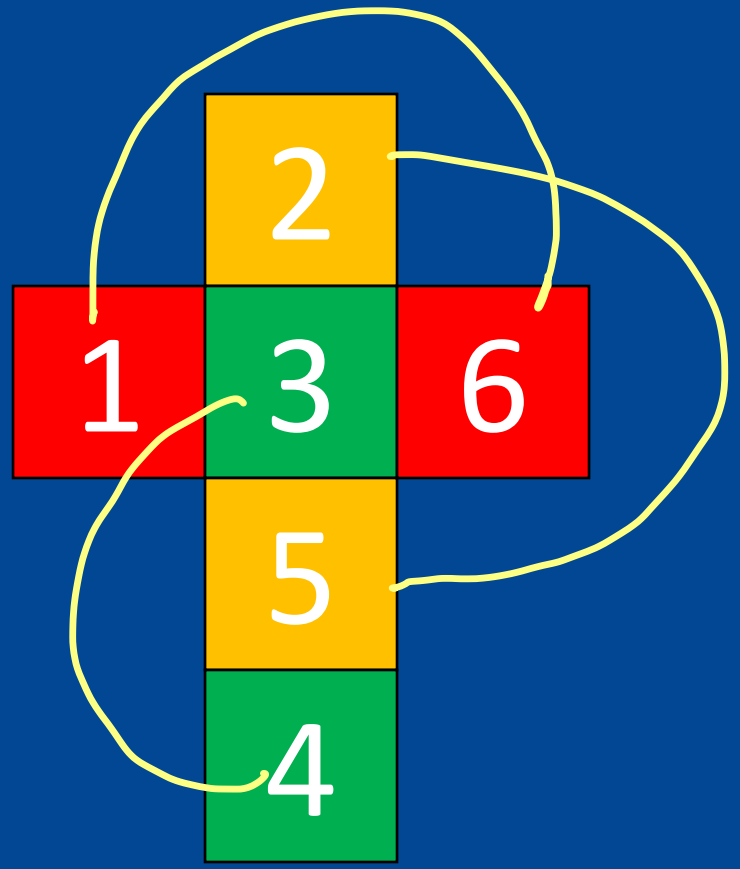

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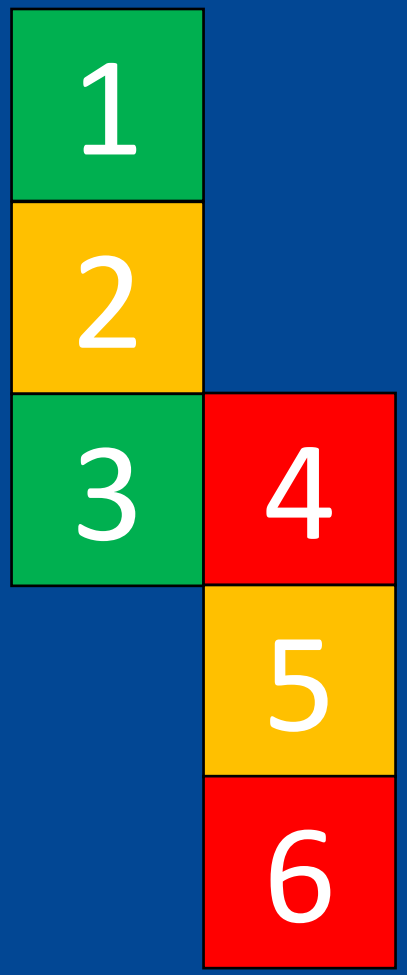

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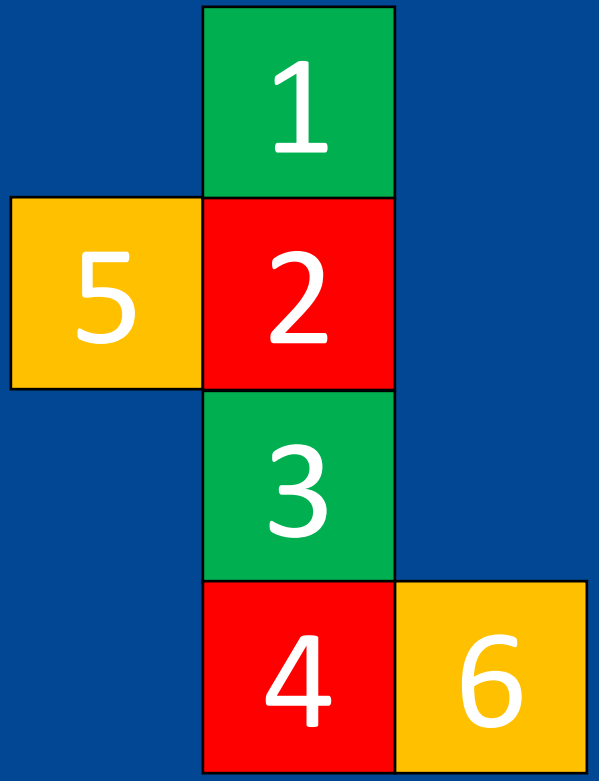

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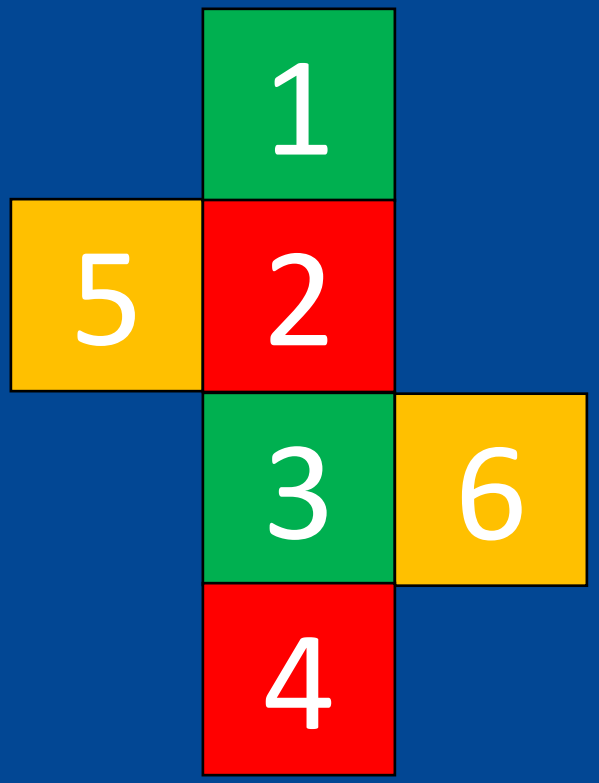
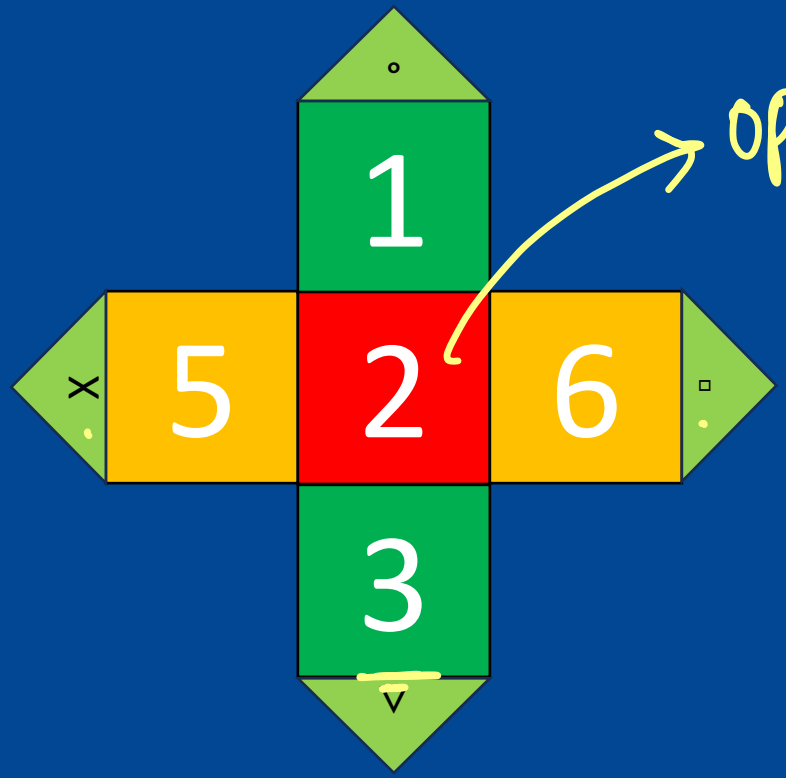
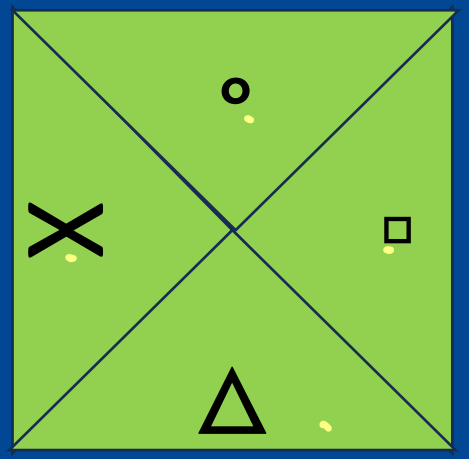


# Dice Formation



# Rule of adjacent

In a pair of dice, if there is one common face between them and the other four faces are distinct, then the remaining face will be opposite the common face.

1, 2, 3, 4, 5, 6

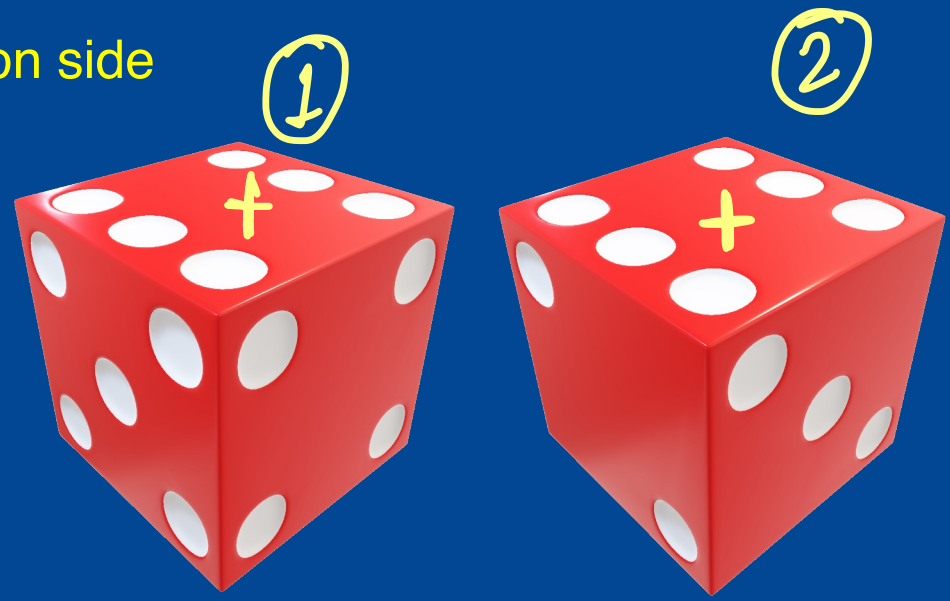
For example,

In the given group we have 6 as the common side

And other 4 sides are unique,

With 5, 4, 3, 2 dots.

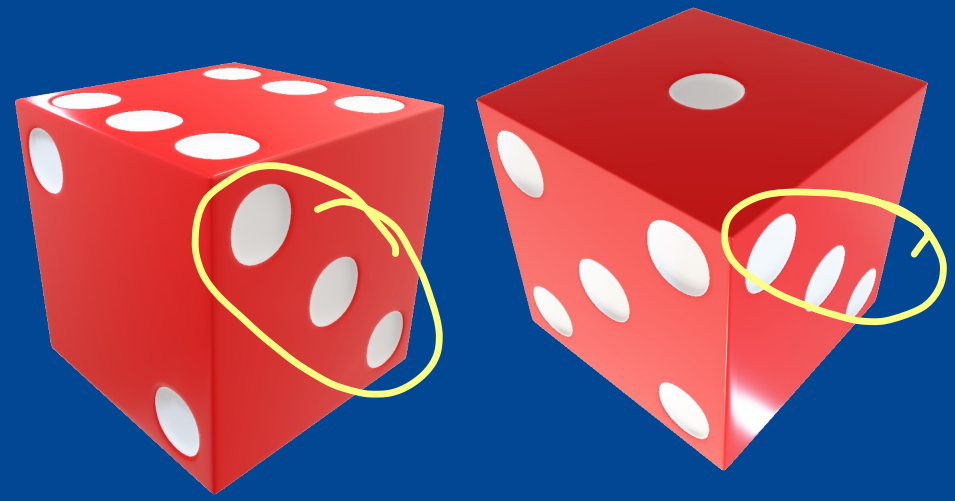
**Then 1 is opposite to 6**



# Rule of square circular motion

3 ↔ 4

Given a pair of dice with a common face, arrange the faces in a clockwise direction relative to the common face for each die.



The resulting arrangement will indicate which faces are opposite each other.

Common

| | | |
|---|---|---|
| 3 | 2 | 6 |
| 3 | 5 | 1 |

# Rule of common

In a pair of dice, if two faces are common to both,
then the remaining two faces will be opposite each other.

A cube is made up of 125, 1 cm, smaller cubes placed on a table. How many smaller cubes are visible only on three sides? (2017 CET)

8

(a) 4

(b) 8

(c) 12

(d) 16

$n^3 = 125$

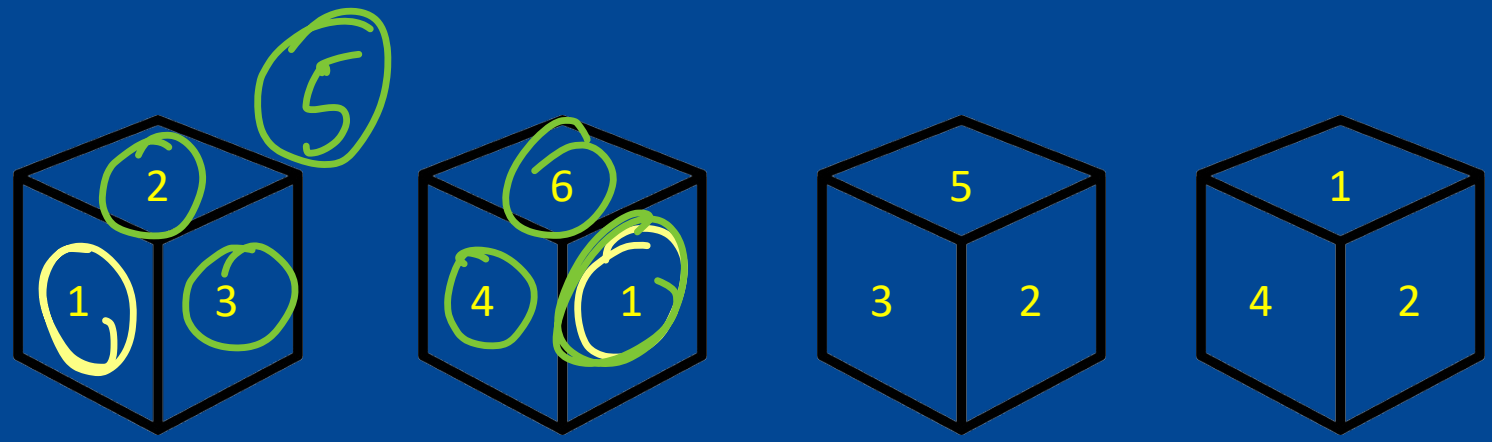
$n = 5$

In each of the following question, four positons of the same dice have been shown. Your have to observe these figures and select the number opposite to the number as asked in each of the question.

Which number is opposite to number 5?

(a) 4 (b) 8 (c) 12 (d) 16

1, 2, 3, 4, 5, 6



A cuboid of dimensions (6 cmx 4 cm x 1 cm) is painted black on both the surfaces of dimensions (4 cm x 1 cm), red on the surfaces of dimensions (6 cm x 1 cm) and green on the surface of dimensions (6 cm x 4 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

How many cubes will have all three colours, black, green and red each at least on one side?

(a) 16

(b) 12

(c) 10

(d) 4

A cuboid of dimensions (6 cmx 4 cm x 1 cm) is painted black on both the surfaces of dimensions (4 cm x 1 cm), red on the surfaces of dimensions (6 cm x 1 cm) and green on the surface of dimensions (6 cm x 4 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

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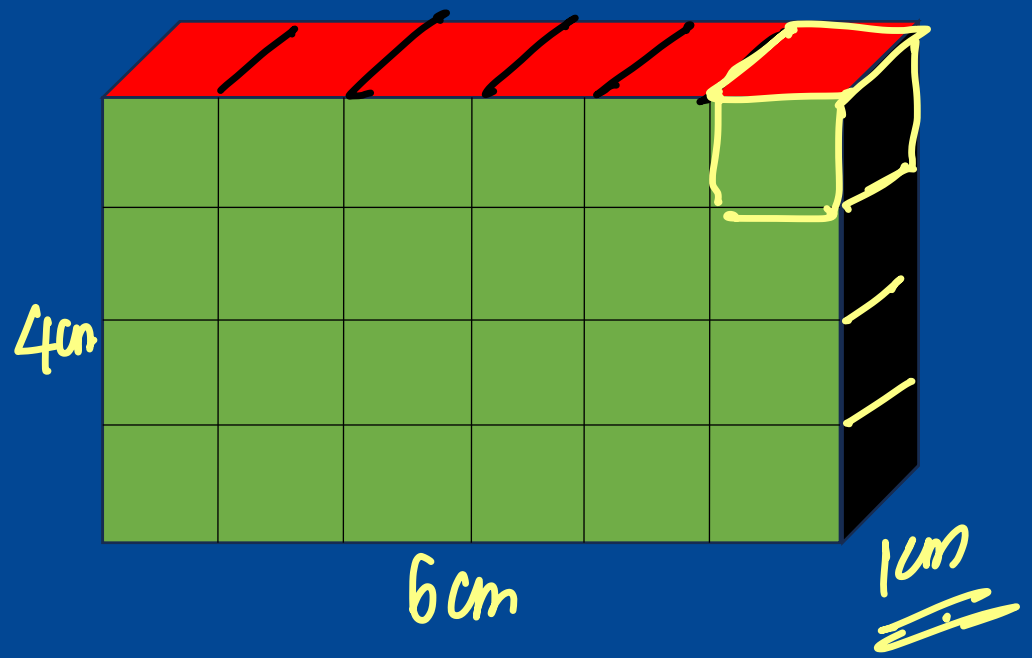

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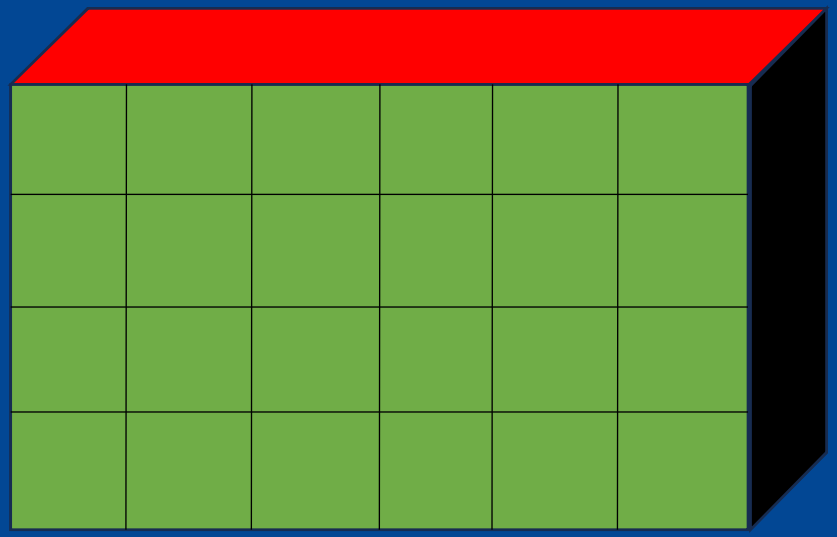
How many cubes will be formed?

(a) 6

(b) 12

(c) 16

(d) 24



A cuboid of dimensions (6 cmx 4 cm x 1 cm) is painted black on both the surfaces of dimensions (4 cm x 1 cm), red on the surfaces of dimensions (6 cm x 1 cm) and green on the surface of dimensions (6 cm x 4 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

If cubes having only black as well as green colour are removed, then how many cubes will be left?

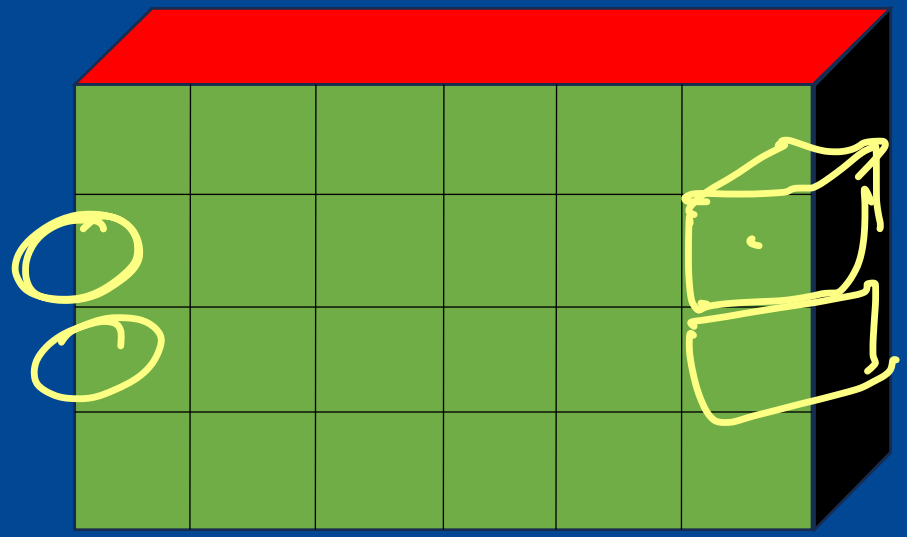
(a) 4

(b) 8

(c) 16

(d) 20

T = 24



4

A cuboid of dimensions (6 cmx 4 cm x 1 cm) is painted black on both the surfaces of dimensions (4 cm x 1 cm), red on the surfaces of dimensions (6 cm x 1 cm) and green on the surface of dimensions (6 cm x 4 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

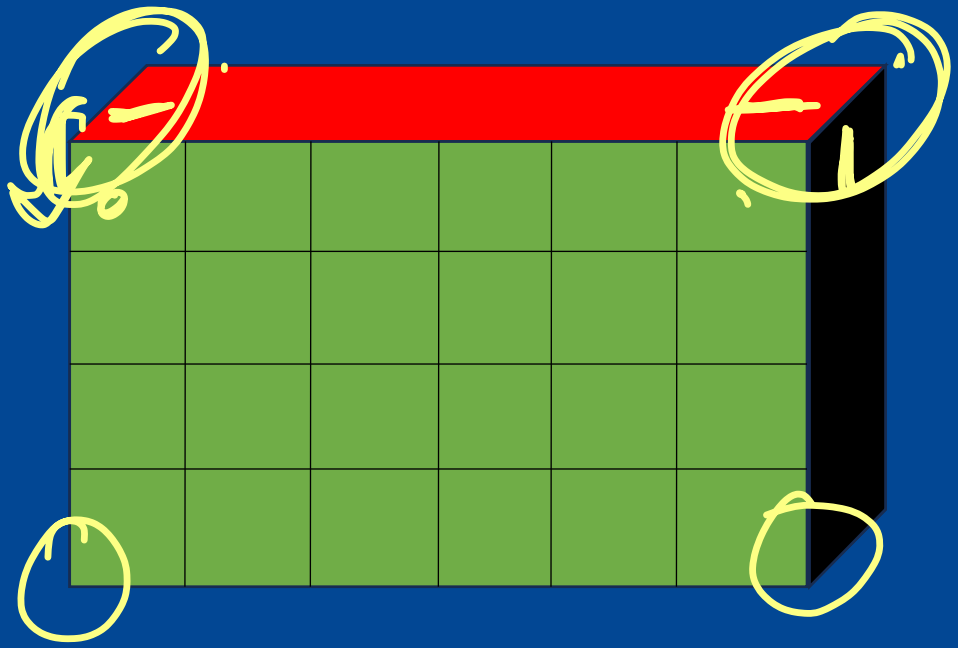
How many cubes will have 4 colored sides and 2 sides without any colour?

(a) 8

(b) 4

(c) 16

(d) 10



A cuboid of dimensions (6 cmx 4 cm x 1 cm) is painted black on both the surfaces of dimensions (4 cm x 1 cm), red on the surfaces of dimensions (6 cm x 1 cm) and green on the surface of dimensions (6 cm x 4 cm). Now, the block is divided into various smaller cubes of side 1 cm each. The smaller cubes so obtained are separated.

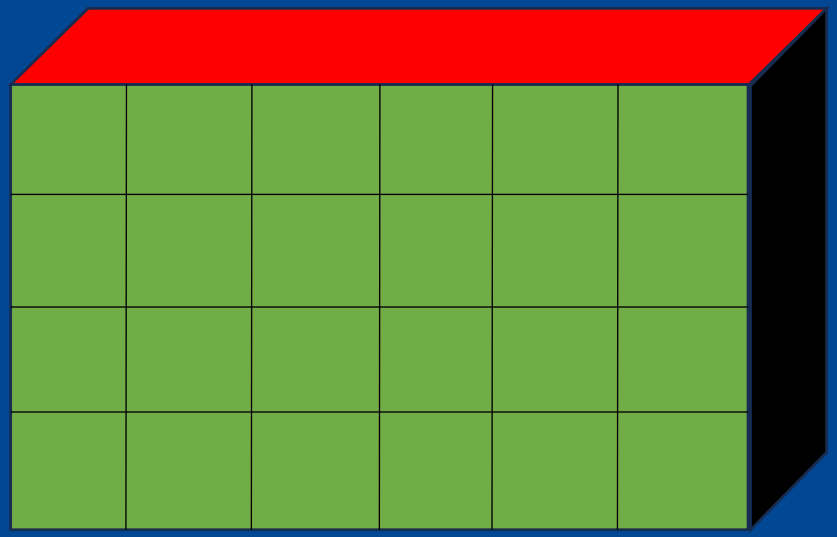
How many cubes will have two sides with green colour and remaining sides without any colour?

(a) 12

(b) 10

(c) 8

(d) 4



A cube is coloured red on all of its faces. It is then cut into 64 smaller cubes of equal size. The smaller cubes so obtained are now separated.

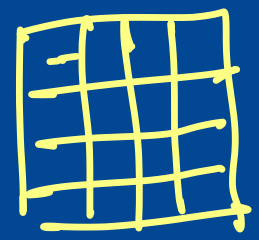
$n^3 = 64$

$n = 4$

How many smaller cubes have no surface coloured?

(a) 24 (b) 16 (c) 8 (d) 10

$(n-2)^3 = 2^3$



$2+3$

How many smaller cubes will have atleast two surfaces painted with red colour?

(a) 4 (b) 18 ~~(c) 32~~ (d) 24

$(n-2) \times 12 = 24 + 8 = 32$

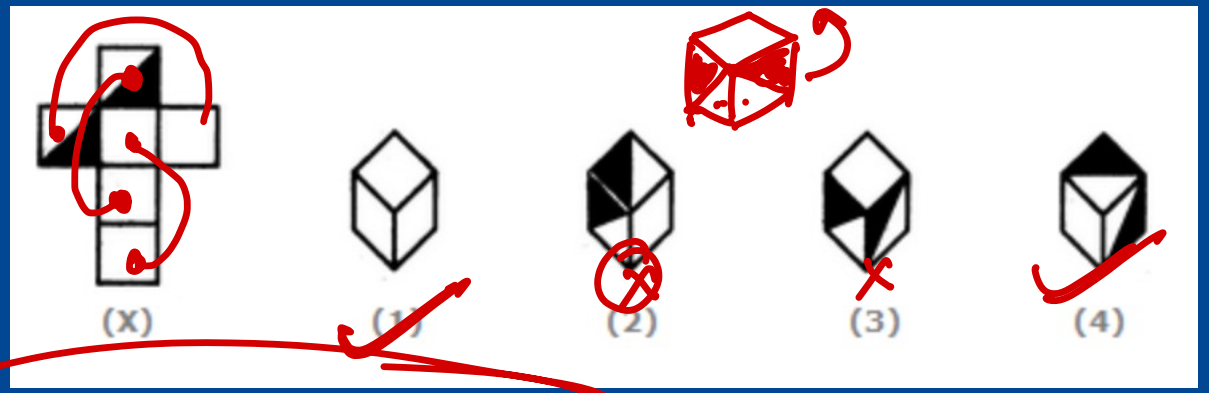
How many smaller cubes have two surfaces painted with red colour?

(a) 24 (b) 8 (c) 12 (d) 20.

How many smaller cubes have only three surfaces painted with red colour?

(a) 0 (b) 12 (c) 24 (d) 8

Choose the box that is similar to the box formed from the given sheet of paper (X).




A. 1 and 4 only

B. 3 and 4 only

C. 1 and 2 only

D. 2 and 3 only

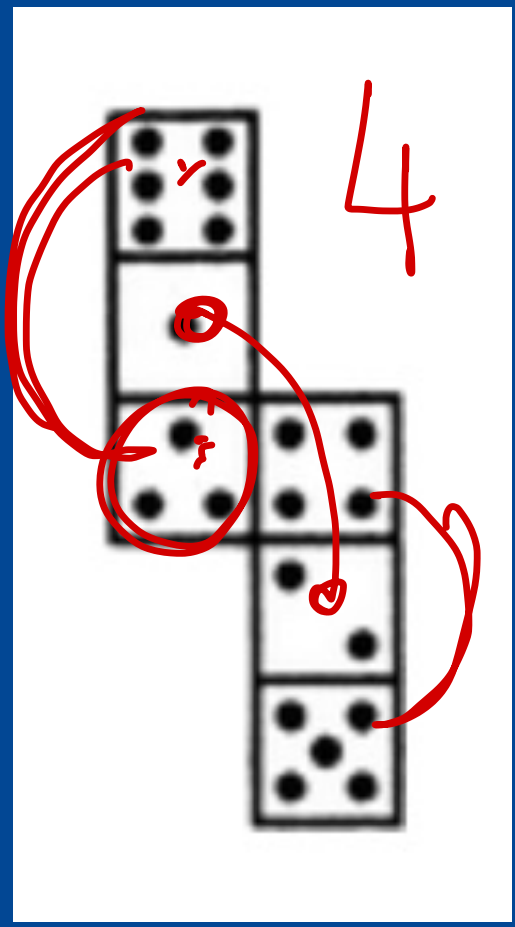
How many dots lie opposite to the face having three dots, when the given figure is folded to form a cube?

A. 2

B. 4

C. 5

D. 6



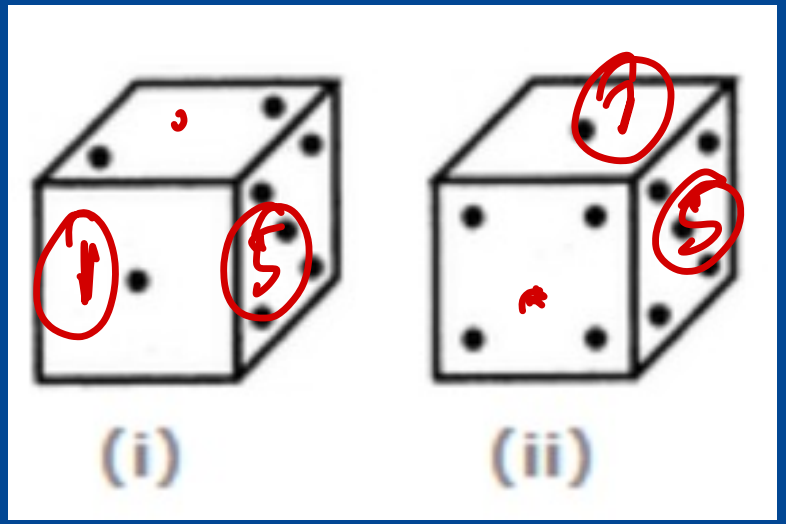
Observe the dots on a dice (one to six dots) in the following figures. How many dots are contained on the face opposite to that containing four dots?

A. 2

B. 3

C. 6

D. Cannot be determined



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:

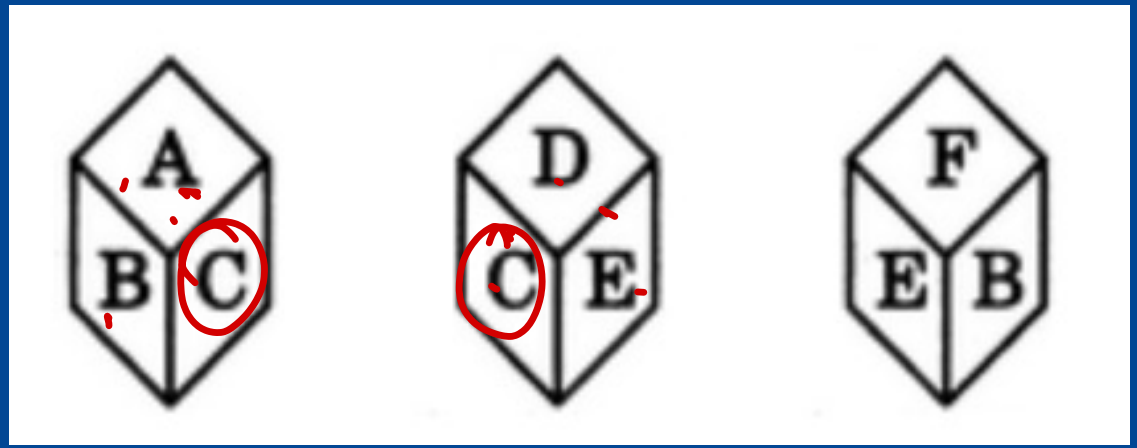
Find the alphabet opposite A.

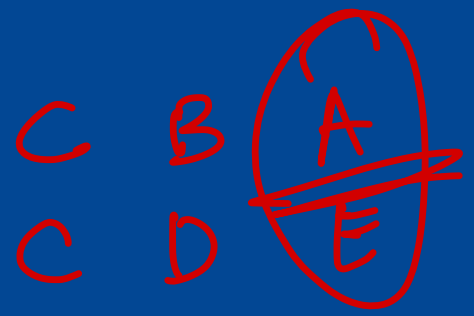
a. C

b. D

c. E

d. F



DAY 05

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