





Doubt Clearing Session

Complete Course on General Aptitude - GATE & ESE, 2024 & 2025

UNACADEMY
PLUS CLASS



**COMPLETE
COURSE ON**
General Aptitude for
GATE 2024/25

USE CODE ST26

—Saurabh Sir —



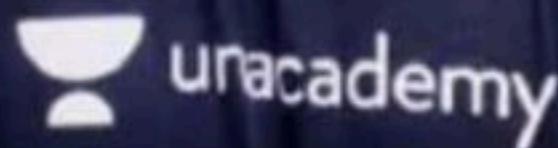
32M+ WATCH MINUTE

12+ YEARS TEACHING EXPERIENCE

SUBSCRIPTION

CODE: ST26

SAURABH THAKUR
IIM ROHTAK





01

$$600 < N < 700 \Rightarrow 601 \leq N \leq 699$$

How many numbers lying between 600 and 700 can be formed with the digits 0-9, where 7 occurs at exactly one of the positions (repetition is allowed)?

- A. 18
- B. 63
- C. 16
- D. 54

$$\begin{array}{r} 6 \\ \hline 9 \\ 7x \\ 0-9 \end{array}$$

$$1 \times 9 \times 1 = 09$$

$$\begin{array}{r} + \\ (09) \\ \hline 6 \\ 7 \\ \hline 7x \\ 0-9 \end{array}$$

$$1 \times 1 \times 9 = 09$$

$$18$$

Ans : (A) Right Answer Explanation:

Let 7 occur in the units place. So, the units digit can be placed in 1 way. The tens digit can be placed by the rest of 9 numbers. The hundreds digit can be placed by 6 only, i.e. one way.

As the numbers are between 600 and 700, number of ways = $1 \times 9 \times 1 = 9$

Now, let 7 occur in the tens place. The units place can be filled by any of the numbers from 0-9 except 7.

The hundreds place can be filled in one way (by only 6). So, total 9 ways. 7 can't occur in the hundreds place.

∴ Total number of ways in which numbers can be formed = $9 + 9 = 18$



02

~~How many five digit numbers contain exactly one 3?~~

$$\begin{array}{r}
 \text{29889} \\
 + \quad 8 \\
 \hline
 30889
 \end{array}$$

1. $\frac{1}{\cancel{9}}$ 0x
 $\cancel{9}$ 1 1 1 1
 0-9, 3x

$\cancel{9}$ 1 1 1 1

$\cancel{9}$ 1 1 1 1

$$\begin{array}{r}
 \text{25890} \\
 + \quad 6 \\
 \hline
 30889
 \end{array}$$

0x
 $\cancel{6}$ 1 1 1 1

$\cancel{6}$ 1 1 1 1

$$\begin{array}{r}
 \text{31889} \\
 + \quad 6 \\
 \hline
 30889
 \end{array}$$

0x
 $\cancel{6}$ 1 1 1 1

$\cancel{6}$ 1 1 1 1

$$\begin{array}{r}
 9^4 + 4 \times 8 \times 9^3 \\
 \hline
 \end{array}$$

3x

Ans : (A)

Since we require that there is exactly one 3, this digit could occupy any of the five places. If the number does not start with 3, the first digit must necessarily be a digit other than 3 and 0. In such a case, the first digit can be chosen in eight ways and the remaining digits can be chosen in 9 ways each. The numbers will be of the following forms: 3XXXX, X3XXX, XX3XX, XXX3X and XXXX3. Correspondingly, the total number of ways is $(9^4 + (4 \times 8 \times 9^3)) = 29889$.



03

How many four-letter words can be formed if the first and the last letters are vowels (if repetition is allowed)?

8400

10,500

16,900

17,200

$$\begin{array}{cccccc} \text{S -} & \times & 26 & \times 26 & \times & \text{S -} \\ \hline & & & & & \\ \text{a | e | i | o | u} & & 4 \cdot 2 & & & \text{a | e | i | o | u} \\ \hline & & & & & \end{array}$$

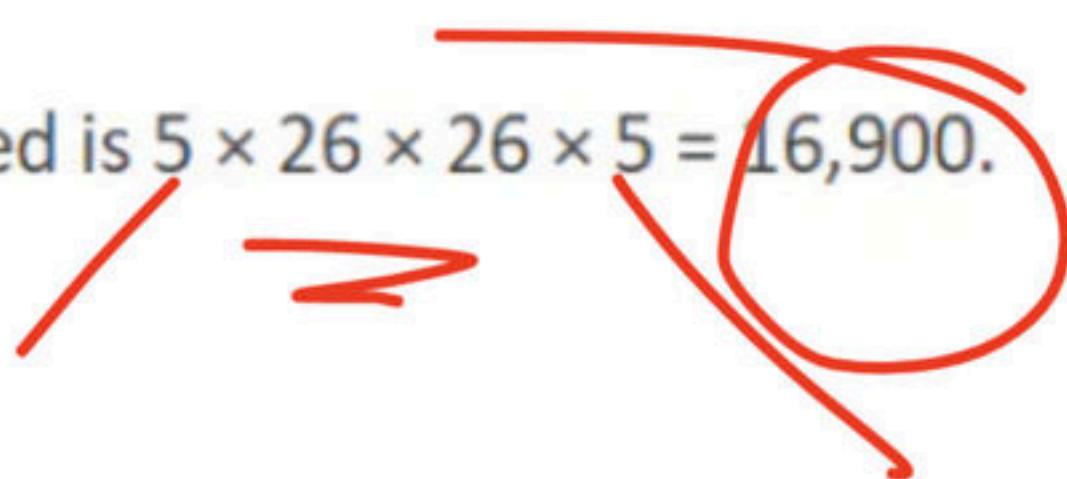
↓ ↓

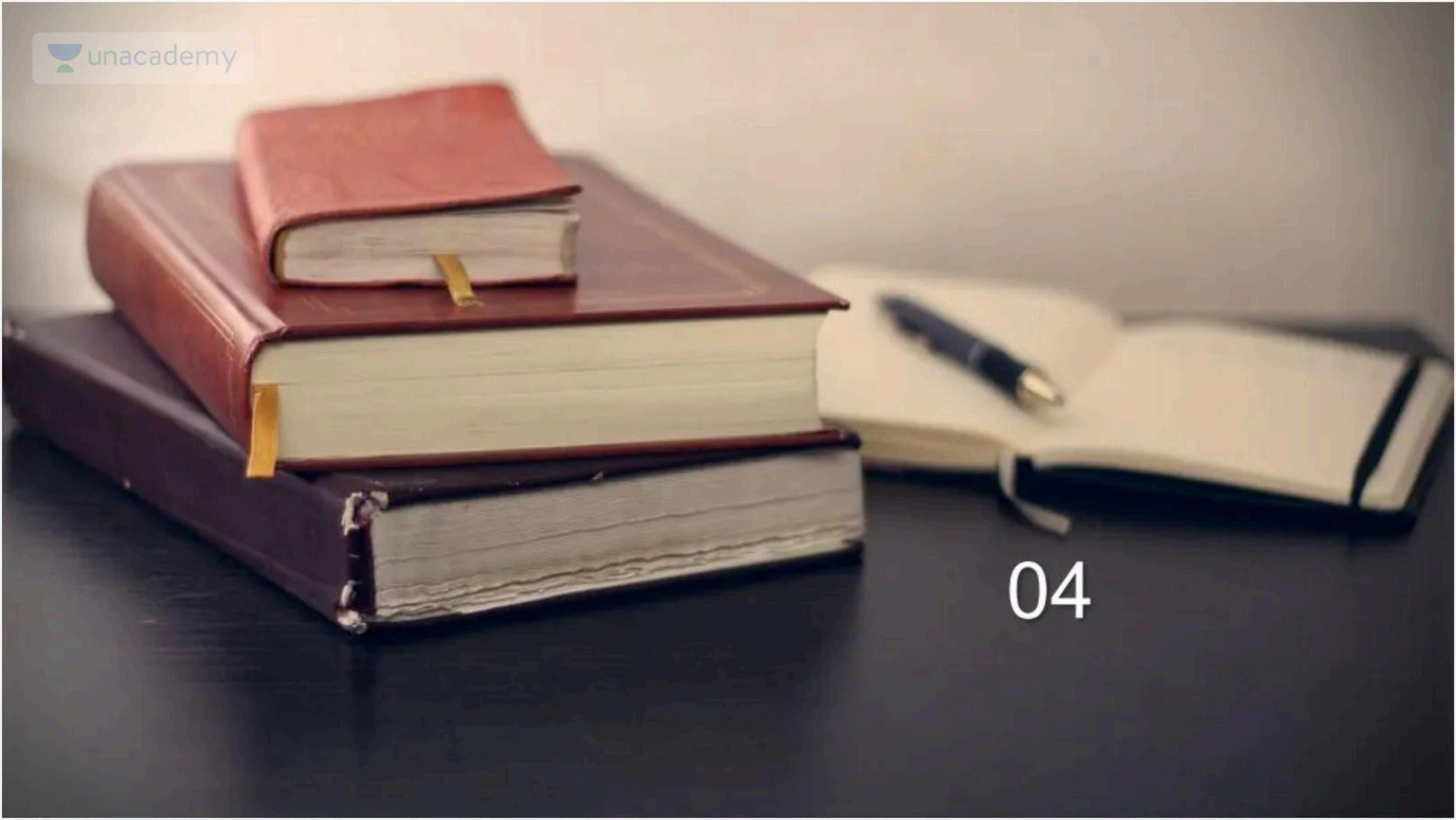
Ans : (C)

The first and the last letters can be filled in five ways each.

The remaining letters can be filled in 26 ways each.

Therefore, the total number of ways in which a four-letter word can be formed is $5 \times 26 \times 26 \times 5 = 16,900$.



A stack of four books is shown, leaning against a light-colored wall. The books have various covers: a dark blue one at the bottom, a light green one above it, a dark red one above that, and a pinkish-red one at the top. A yellow ribbon bookmark is visible in the red book. To the right of the books, a portion of an open notebook with a dark cover and white pages is visible, along with a dark pen resting on it.

04

MA DAM

How many five-digit numbers can be formed that are the same when the order of their digits is reversed?

8500

8100

2700

900

$$\begin{array}{r} 9 \times 10 \times 10 \times 1 \times 1 \\ \hline 0 \times 0-9 \quad 0-9 \\ \hline 1-9 \end{array}$$

700

Ans : (D)

We require that the 1st and the 5th numbers are the same and the 2nd and the 4th numbers are the same. If the 1st and the 2nd numbers are chosen, the 5th and the 4th numbers will also have been chosen. As the 1st number cannot be 0, it can be chosen in 9 ways. The 2nd and the 3rd numbers can be chosen in 10 ways each. Therefore, the total number of ways is $(9 \times 10^2) = 900$.



A wide-angle photograph of a two-lane asphalt road with a solid yellow center line and white edge lines. The road stretches from the foreground into the distance, leading towards a majestic range of mountains. The mountains are rugged with sharp peaks, many of which are capped with white snow. In the middle ground, there's a field of tall, golden-brown grass. A few small, dark trees stand in the grassy area. The sky is a clear, vibrant blue. In the bottom left corner of the image, the number "05" is overlaid in a large, white, sans-serif font.

05



0 | 2 | 3 | 5 | 8

96 - 30 = 66

How many 4-digit numbers can be formed by using the digits 0, 2, 3, 5 and 8 (without repetition) such that each number is not divisible by 4?

Total

32

68

30

66

04 | 40

20
60

0.8 | 80
2

$$4 \times 4 \times 3 \times 2 = 96$$

0x
0 | 3 | 5 | 8

0 | 2 | 3 | 5 | 8

02 | 3 | 5 | 8

01 | 2 | 3 | 5

12

12

12

12

30:04

$$\frac{4}{0\times} \times \frac{4}{0\times} \times \frac{3}{0\times} \times \underline{\underline{2}} = 96$$

0\times 0\times 0\times 2

0\times 0\times 0\times 2

0\times 0\times 0\times 2

0\times 0\times 0\times 2

$$\frac{6}{3} 4$$



7-

N Z

이지 3|5|8

$$\begin{array}{r}
 \text{Total} \\
 \hline
 4 \times 4 \times 3 \times 2 = 96
 \end{array}$$

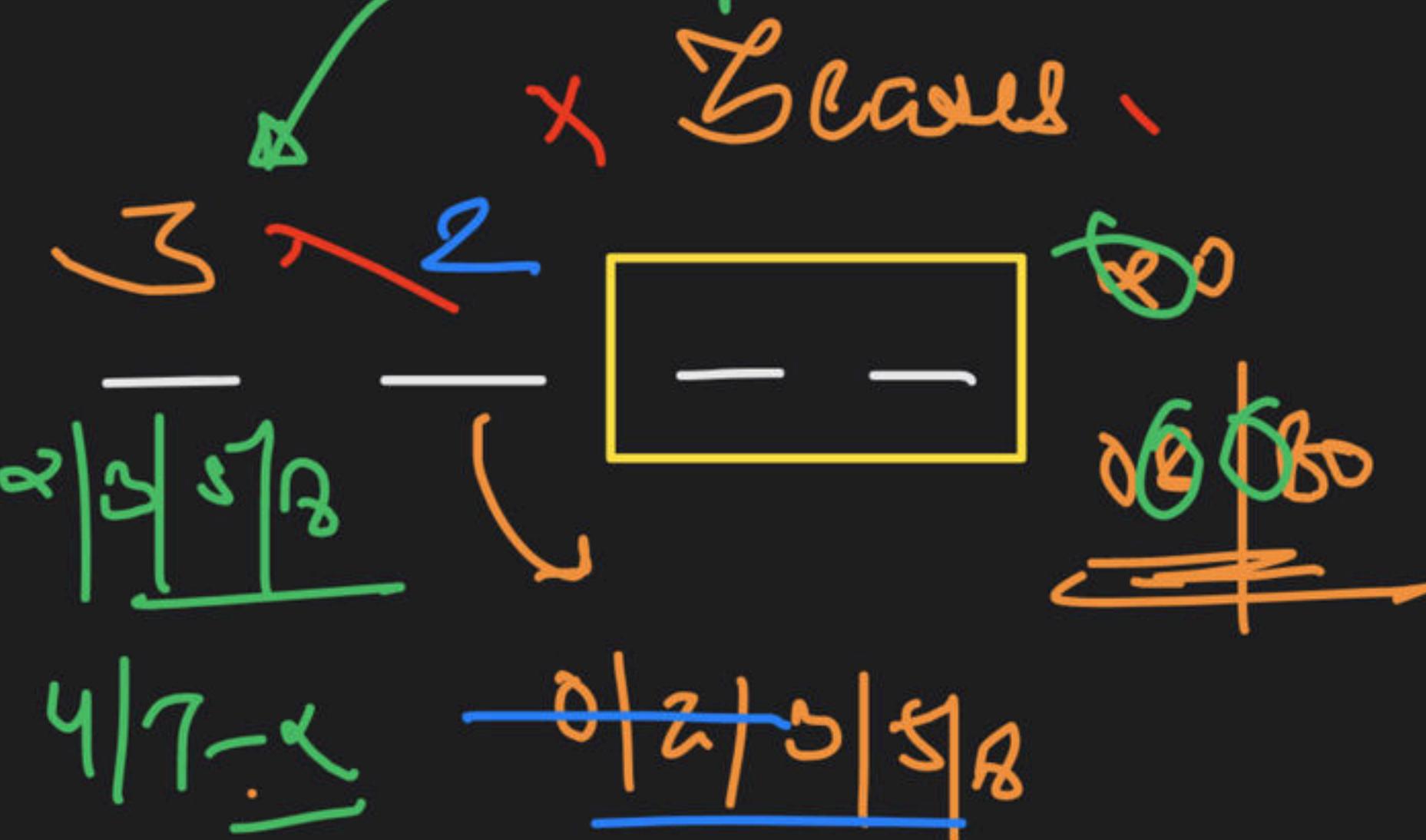
$\frac{0x}{\alpha|3|5|8}$ $\frac{02|0|5|8}{02|3|5|8}$ $\frac{02|3|5|8}{02|3|5|8}$ $\frac{02|3|5|8}{02|3|5|8}$

$\frac{1}{2}$

$\frac{1}{2}$

$\frac{1}{2}$

3 rows



$$\begin{array}{r}
 2 \quad 2 \\
 \hline
 0x \quad 02|3 \\
 \hline
 2|3|5|8 \quad 5|8
 \end{array}$$

$\frac{2}{2|3|5|8}$ $\frac{2}{2|3|5|8}$

28
32
52



Ans : (D)

Right Answer Explanation:

Total 4-digit numbers that can be formed = $4 \times 4 \times 3 \times 2 = 96$

If a number is divisible by 4, then the number formed by the last 2 digits should be divisible by 4.

So, 08, 20, 28, 32, 52 or 80 should be the last 2 digits.

If the last 2 digits are either 20, 80 or 08, the remaining two digits can be filled in $3 \times 2 = 6$ ways.

Therefore, $6 \times 3 = 18$ ways.

If the last 2 digits are 28, 32 or 52, the remaining two digits can be filled in 4 ways. Therefore, $4 \times 3 = 12$ ways.

So, the required number of 4-digit numbers = $96 - (18 + 12) = 96 - 30 = 66$

06



Ques. 12
15
16

$$\begin{array}{r} & \overset{4}{\cancel{H}} \\ 6 & \overline{)1215} \\ & -3 \\ & \hline & 9 \\ & -6 \\ & \hline & 3 \\ & -3 \\ & \hline & 0 \end{array}$$

Ans. 12

How many 4-digit numbers divisible by 6 can be formed from the digits 1, 2, 3, 4, 5 and 6 without repetition?

48 0 3 2 1 0 4 3 1 6

42 12 1 | 2 | 3 | 0 3 2 1 6

60 0 12 1 | 2 | 3 | 0 3 2 1 6

54 12 3 2 1 0 3 2 1 6

121415

121516

121516

121516

121516

Ans : (C)

If the number is divisible by 6, it has to be divisible by both 2 and 3.

If it has to be divisible by 2, it has to be even.

If it is divisible by 3, then the sum of the digits has to be divisible by 3.

Possible 4-digit combinations are: (1, 2, 3, 6); (1, 2, 4, 5); (2, 3, 4, 6); (1, 3, 5, 6); (3, 4, 5, 6)

Number of cases for (1, 2, 3, 6) = $\underline{3} \times 2 \times 1 \times 2 = 12$

Number of cases for (1, 2, 4, 5) = $\underline{3} \times 2 \times 1 \times 2 = 12$

Number of cases for (2, 3, 4, 6) = $\underline{3} \times 2 \times 1 \times 3 = 18$

Number of cases for (1, 3, 5, 6) = $\underline{3} \times 2 \times 1 \times 1 = 6$

Number of cases for (3, 4, 5, 6) = $\underline{3} \times 2 \times 1 \times 2 = 12$

Total number of cases = $\underline{12 + 12 + 18 + 6 + 12} = 60$

07



How many natural numbers greater than 7,00,000 can be formed by using the digits 0, 3, 5, 6, 7, 8, if repetition is not allowed?

7,00,000

720

1024

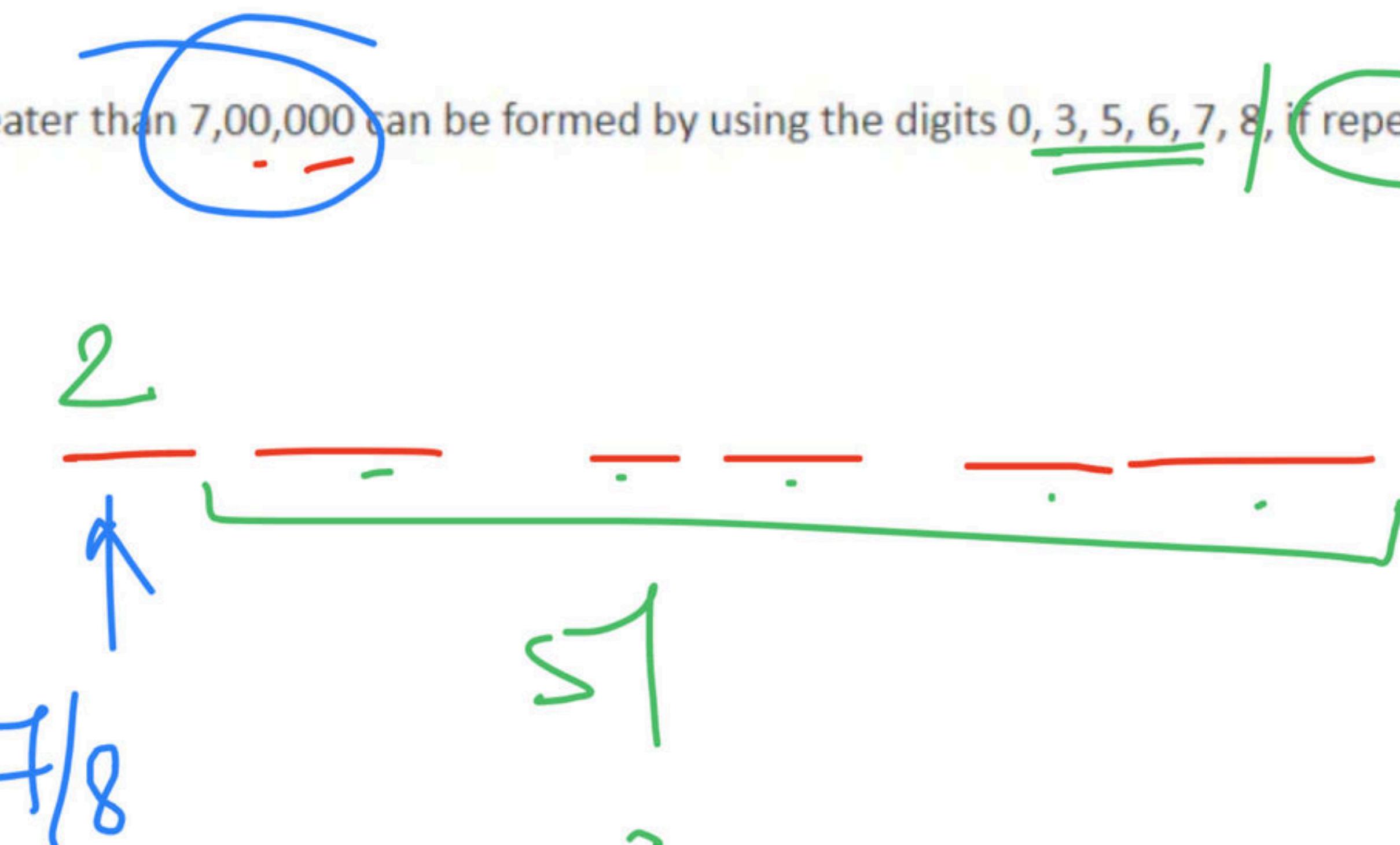
7280

240

$$2 \times 5! =$$

$$7/8$$

$$840$$





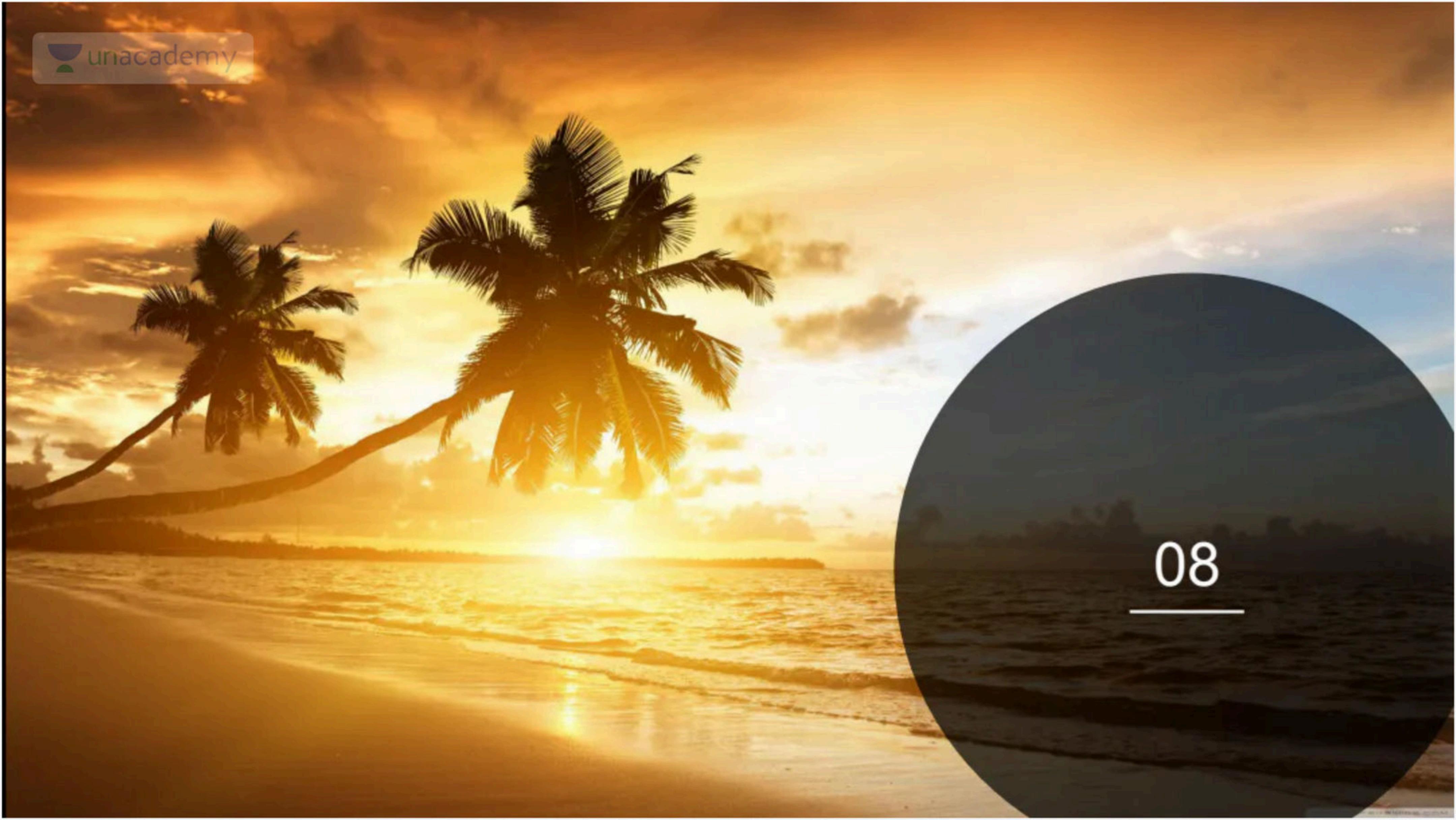
Ans : (D)

Right Answer Explanation:

First digit should be 7 or 8 as the number should be greater than 7,00,000, so number of ways arranging that is 2.

Ways of arranging rest of the 5 digits will be 5!.

So, required number of natural numbers = $2 \times 5! = 240$



08

Divisor
 d

$$\begin{array}{r} 4 \\ \hline 5) 22 \\ -20 \\ \hline 2 \end{array}$$

Question - (a)
 \rightarrow
Dividend

A number when divided by 779 gives 47 as the remainder. On dividing the same number by 19, what would be the remainder?

- 0
- 3
- 9
- 10

$X_2 \rightarrow$ Remainder (r)

$$\boxed{D = d \times q + r}$$

$$22 = 5 \times 4 + 2 \quad !!$$

$$\begin{aligned} D &= \cancel{(779 \times 9)} + \cancel{47} / 19. \\ 19 &= 0 + 19 \times 2 + 7 \end{aligned}$$

Sol. -(C)

When the number is divided by 779, let the quotient obtained be k .

$$\text{Number} = 779k + 47$$

$$= 19 \times 41k + 19 \times 2 + 9 = 19(41k + 2) + 9$$

Hence, remainder = 9

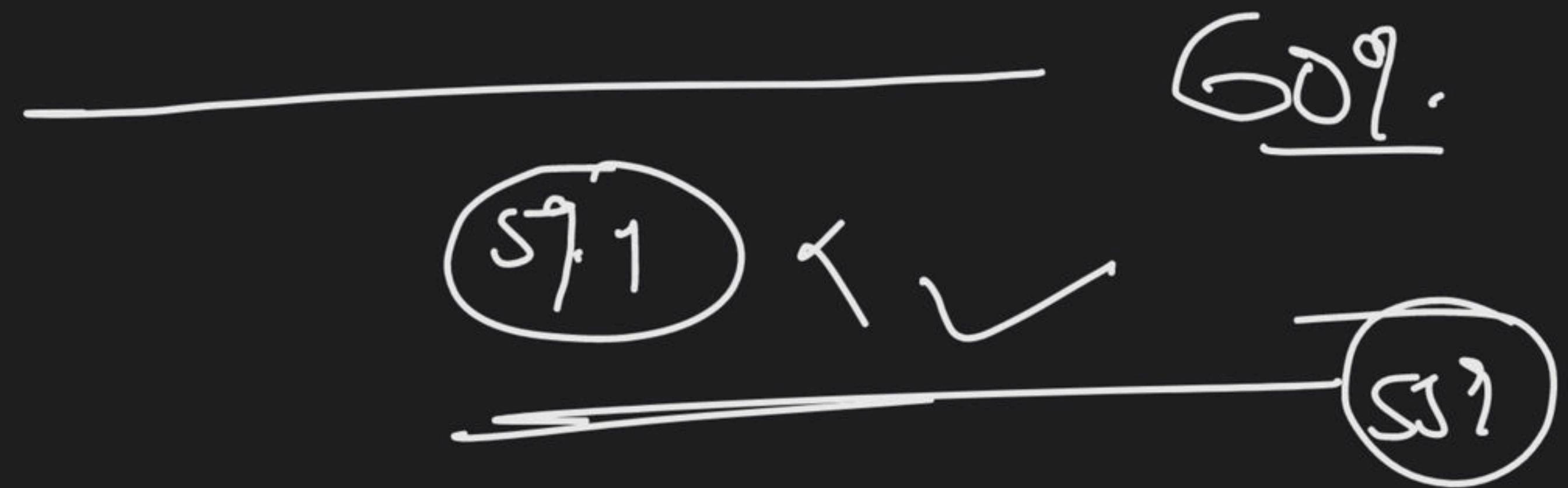
09

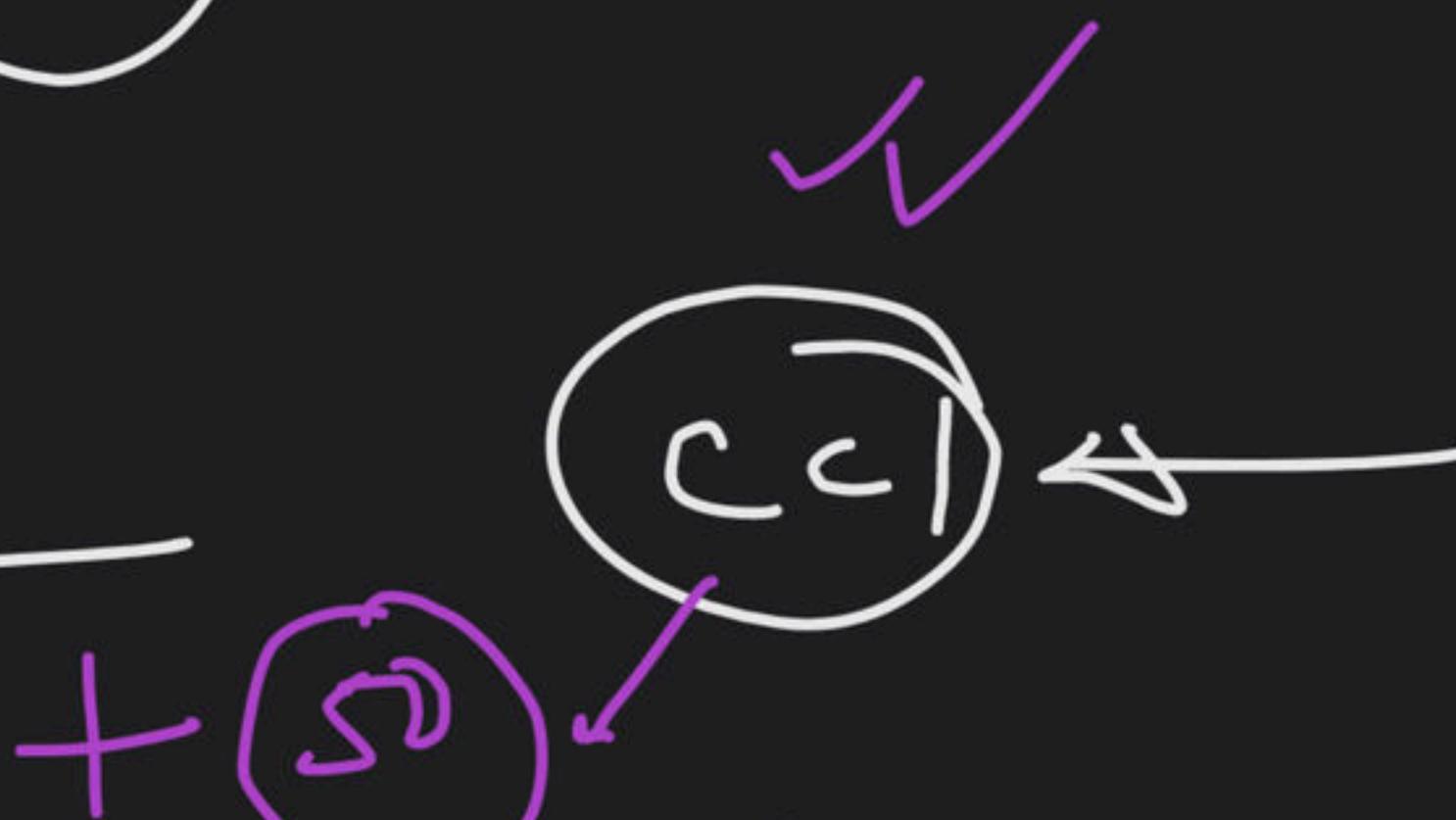
When a company refuses to allow other companies to produce patented technology, the consumer invariably loses. The company that holds the patent can charge exorbitant prices because there is no direct competition. When the patent expires, other companies are free to manufacture the technology and prices fall. Companies should therefore allow other manufacturers to license patented technology.

The argument above presupposes which of the following?

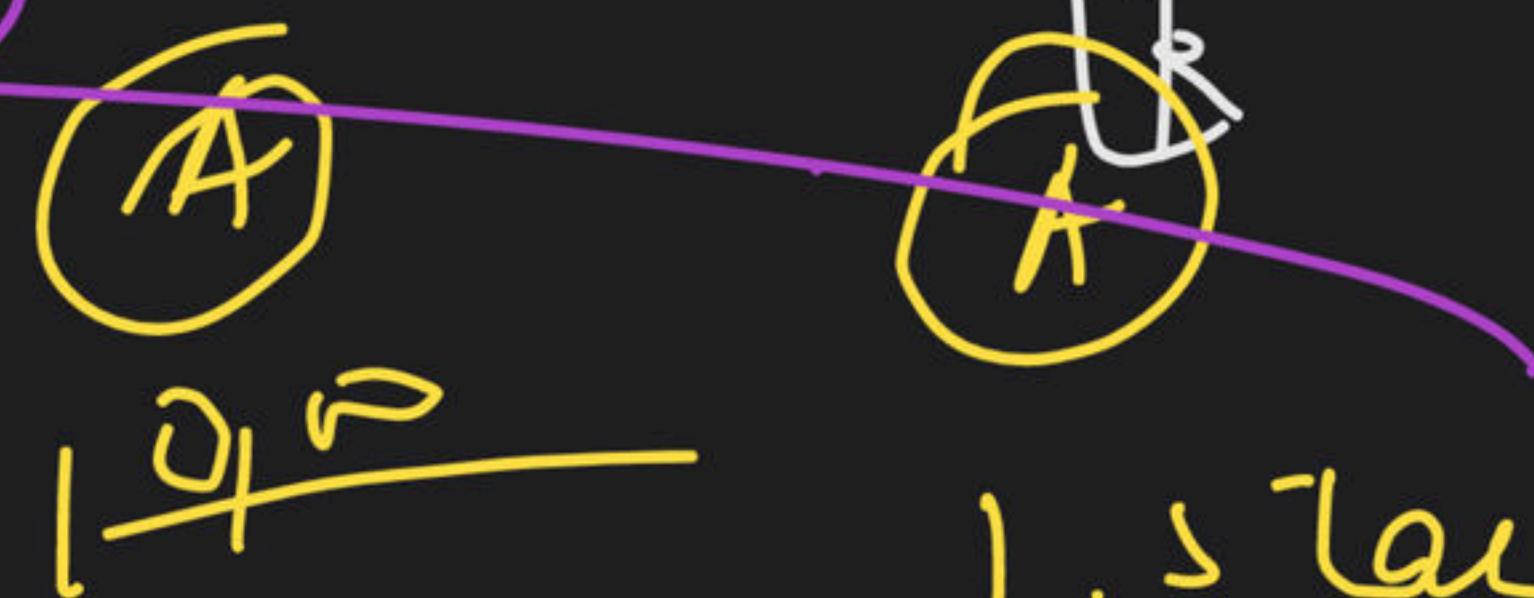
- A. Companies cannot find legal ways to produce technology similar to patented technology
- B. Companies have an obligation to act in the best interest of the consumer
- C. Too many patents are granted to companies that are unwilling to share them
- D. The consumer can tell the difference between patented technology and inferior imitations





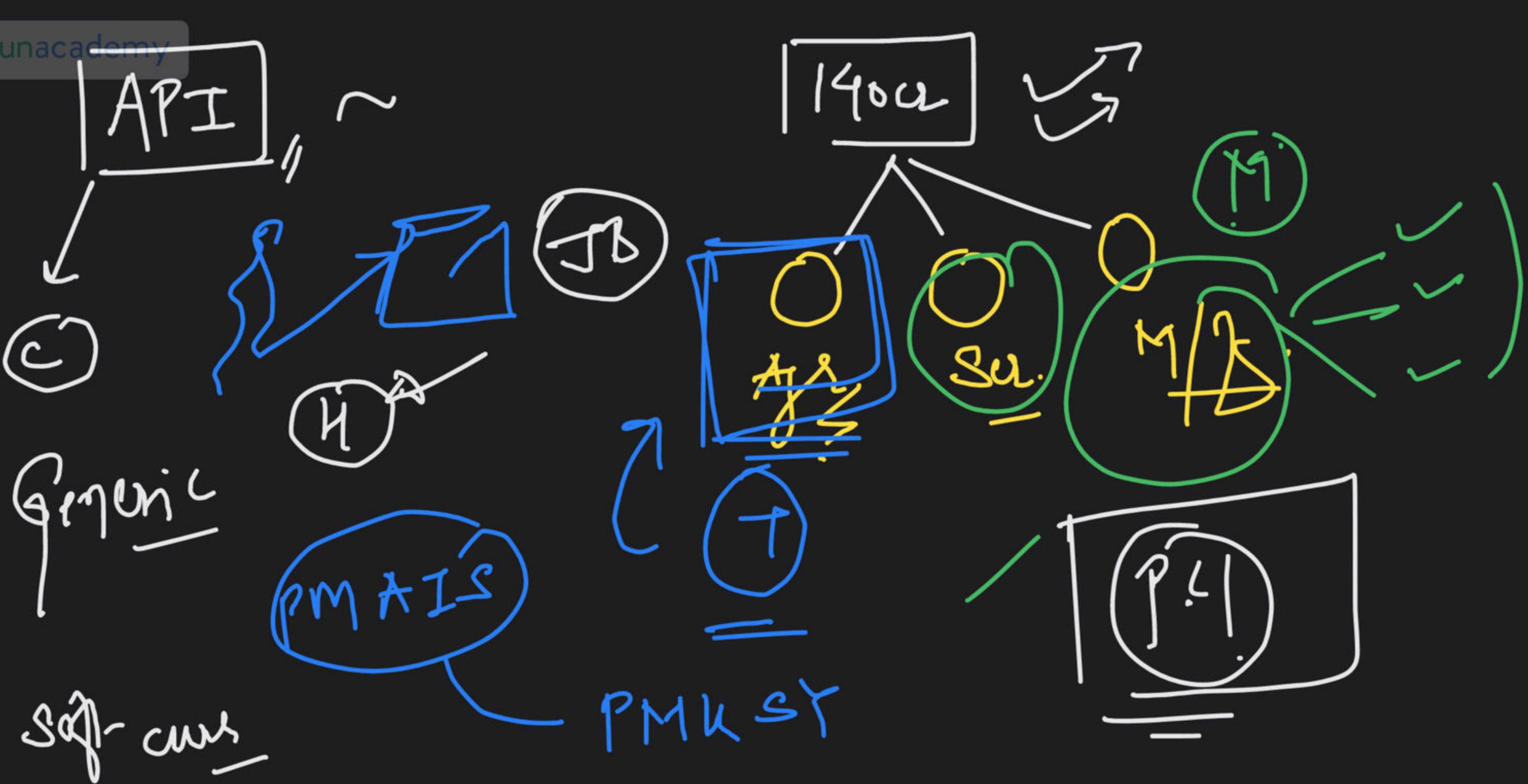


PA
PCP



1. s⁻¹ lae

1. s⁻¹



Explanation: The conclusion of the argument is that companies should allow other manufacturers to license patented technology. The basis for that claim is that not doing so keeps prices high and harms the consumer. We're asked what the argument assumes ("presupposes") in drawing its conclusion.

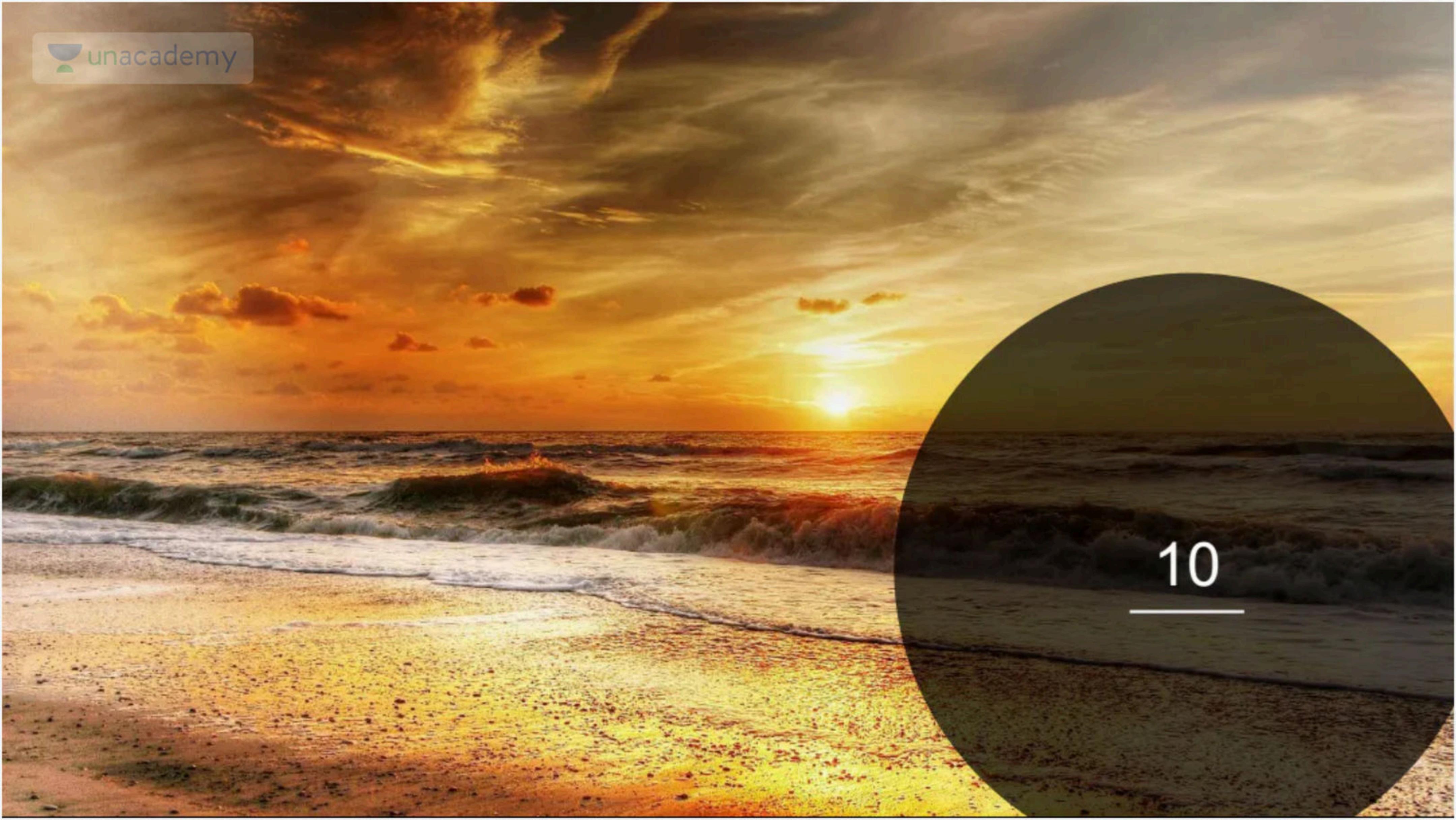
The correct answer will fill the logic gap between the idea that keeping prices high harms the consumer and that companies should allow other manufacturers to license patented technology. The conclusion is based on the assumption that companies have an obligation of some kind to do what's best for the consumer.

(A) This does not address the moral obligation to the consumers (i.e., "should") of the companies who produced the patented technology, the main point of the conclusion. Furthermore, even if companies could find legal ways to produce similar technologies, the patented technology could still command exorbitant prices, thereby harming the consumer.

(B) CORRECT. The conclusion only makes sense if companies have an obligation to act in the best interest of the customer, as this choice states.

(C) This generally follows along with the author's claim, but we are not required to assume this in order to reach the conclusion that companies who are granted patents are obligated to look out for the best interests of their customers.

(D) This addresses a tangential issue of whether or not consumers could notice the difference between a new patented technology and a possible imitation. This does not address the core issue of the obligation to the consumer.



10

Independent concert promoters, in order to maintain their credibility and compete with larger, publicly traded promoters, must represent the concert tours of well-known artists. To attract such business, these private companies have had to increase their **guaranteed payments** to famous clients. To offset these increases, smaller promoters have raised their ticket prices, resulting in low attendance at a number of recent shows. Which of the following assertions is best drawn from the information above?

- A. Independent concert promoters often lose money by representing well-known artists
- B. The largest independent concert promoter has fewer employees than the smallest publicly traded promoter
- C. Ticket price is **the most** important determining factor for concert attendance
- D. The contracts between concert promoters and artists are not always based solely on revenue generated by ticket sales

Explanation: The passage gives information about the concert promotion business. The question asks us to make an assertion, or conclusion, based on the information provided. Any conclusion in a Critical Reasoning argument must be directly supported by evidence from the text. Also, remember that in a Draw a Conclusion question, you do not have to tie together all the given premises.

- (A) The passage does not indicate that these promoters are losing money. The only related fact is that attendance at recent shows has been low.
- (B) The passage does indicate that publicly traded promoters, on the whole, are “larger.” However, “larger” does not necessarily refer to number of employees. In fact, based on the information in the passage, one could argue that “larger” might refer to financial concerns, such as overall revenues, size of marketing budget, or available cash resources.
- (C) According to the passage, ticket price is one factor that influences concert attendance. However, the passage does not indicate that it is the “most important” factor. This answer choice is too extreme.
- (D) **CORRECT.** The passage states that certain famous clients receive “guaranteed payments” from concert promoters. Thus, by definition, these contracts are not based solely on revenue generated by ticket sales