Points for Improving Reasoning Ability

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In competitive exam preparations


SUCCESSFUL
people are not gifted; they just
WORK HARD
then succeed on purpose

Practice, practice, practice

- As with many things in life, practise is essential.
- You should always give yourself the time the properly prepare before and test so that you know where your skill level truly lies.
- Practising beforehand will also allow you to improve your reaction time and overall test score.
- Our online inductive reasoning practice tests with answers were designed to give you the practise you need to achieve the most successful result possible.

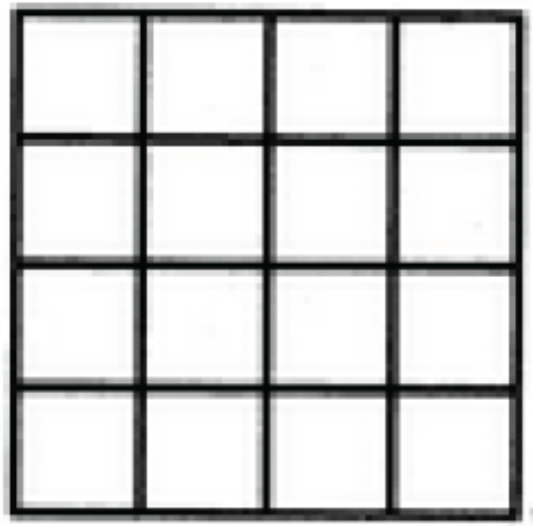
Take your time

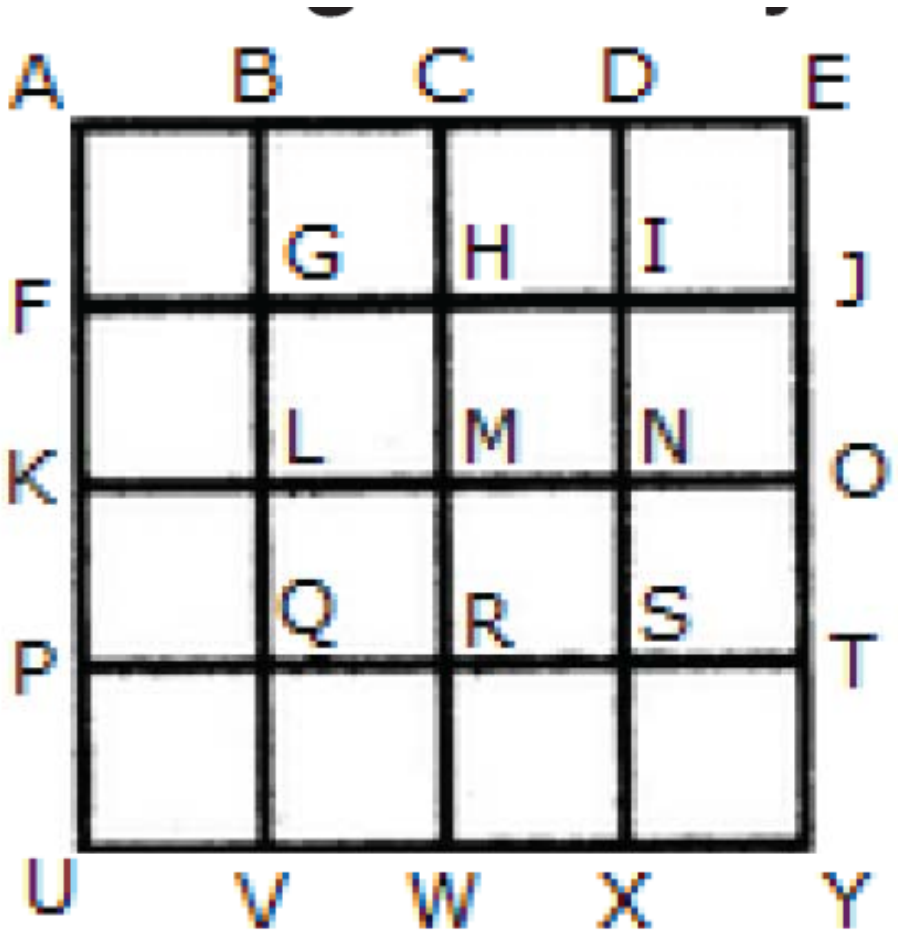
- Time management is crucial to completing this and any other timed test in the time allotted.
- Along the same line, you should not try to hurry through the questions you are presented or else you are bound to make mistakes.
- Taking your time deciphering each image for the pattern being shown will better your chances of answering the question correctly.

Stay Calm

- One of the best ways to remain calm when taking a timed logical thinking test will be to practise beforehand.
- There is no need to panic if you don’t see the answer to any question right away. Your practice test session is designed to include full answer explanations.
- These, in turn, will help you to easily break down any pattern that you will encounter during the course of the testing process.

Count the number of squares in the given figure



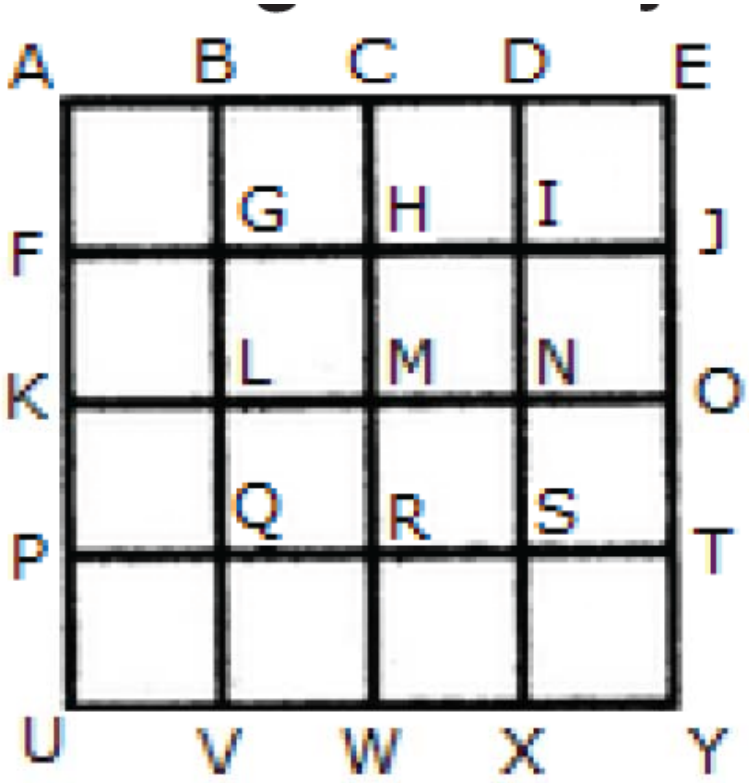


- **1)** 28
  2) 29
  3) 30
  4) 32

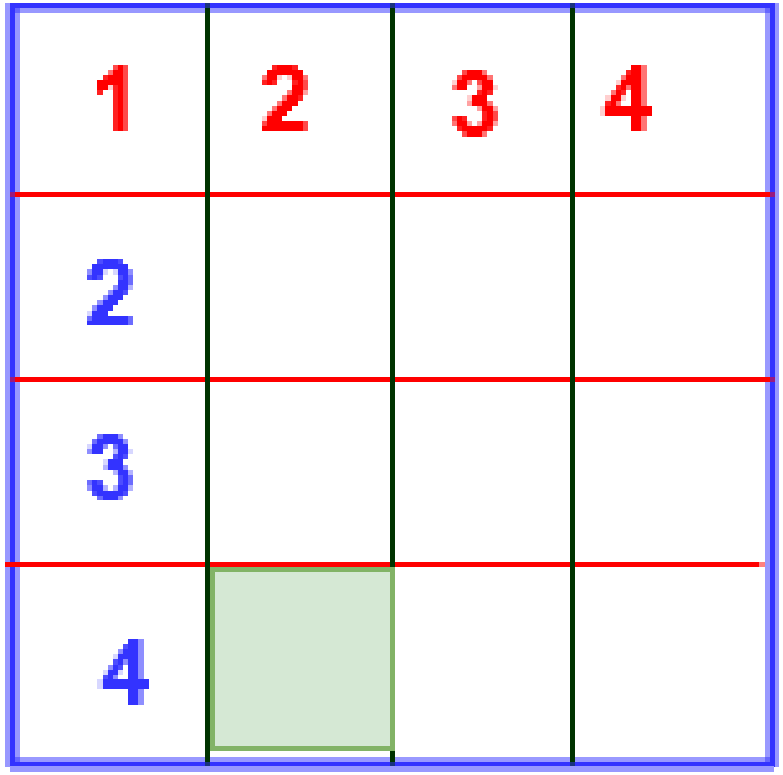
Solution:

- The figure may be labelled as shown.

  The simplest squares are ABGF, BCHG, CDIH, DEJI, FGLK, GHML, HINM, IJON, KLQP, LMRQ, MNSR, NOTS, PQVU, QRWV, RSXW and STYX i.e. 16 in number.
  The squares composed of four components each are ACMK, BDNL, CEOM, FHRP, GISQ, HJTR, KMWU, LNXV and MOYW i.e. 9 in number.
  The squares composed of nine components each are ADSP, BETQ, FIXU and GJYV i.e. 4 in number.
  There is one square AEYU composed of sixteen components.
  There are 16 + 9 + 4 + 1 = 30 squares in the given figure.



How many squares are there in an 4 x 4 grid



4x4= 16

3x3 =9

2x2= 4

1x1 =1

total = 30

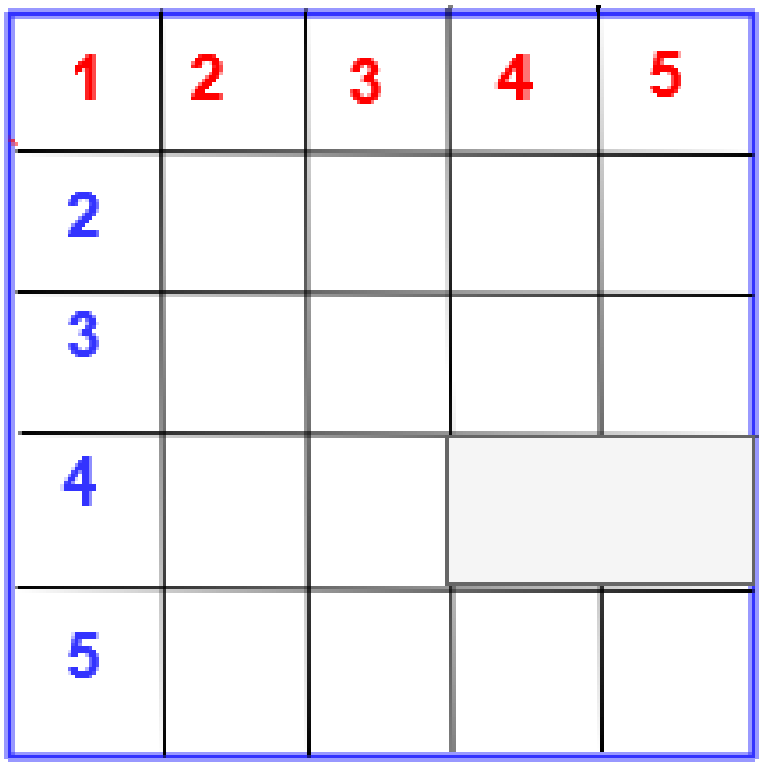
The answer is = 30

- **Solution** : There are 4 rows and 4 columns in the above figure. So let n =4
- Here we using two types of formulas for finding number of squares in an n x n grid as follows
- **Formula – 1**
- $n^2 + (n -1)^2 + (n-2)^2 + – – – – – + (n – n)^2$
- Now substitute n = 4 in the above formula

- $= 4^2 + (4-1)^2 + (4- 2)^2 + (4 – 3)^2 + (4 – 4)^2$
- $= 16 + 9 + 4 + 1 + 0 = 30$

How many rectangles are there in an 5 x 5 grid

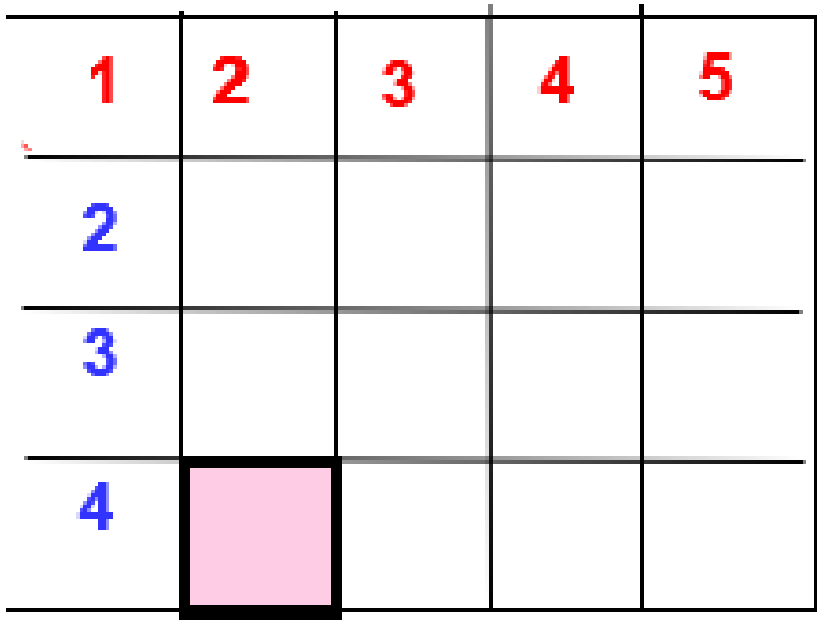
- Rows and columns are equal
- The method is like this



- $[\ 5 + 4 + 3 + 2 + 1 + 0\ ]^2$
- = 15 x 15 = 225

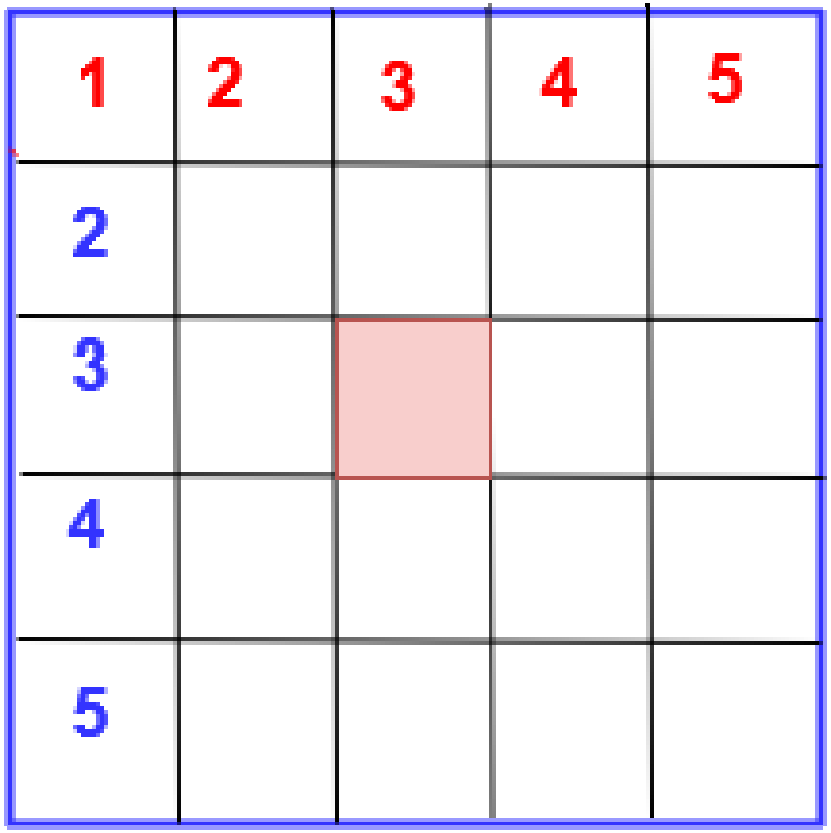
How many squares are there in an 3 x 4 grid

- 5x4= 20
- 4x3 =12
- 3x2= 6
- 2x1 =2
- 1x0 =0
- Total = 40



How many squares are there in an 5 x 5 grid

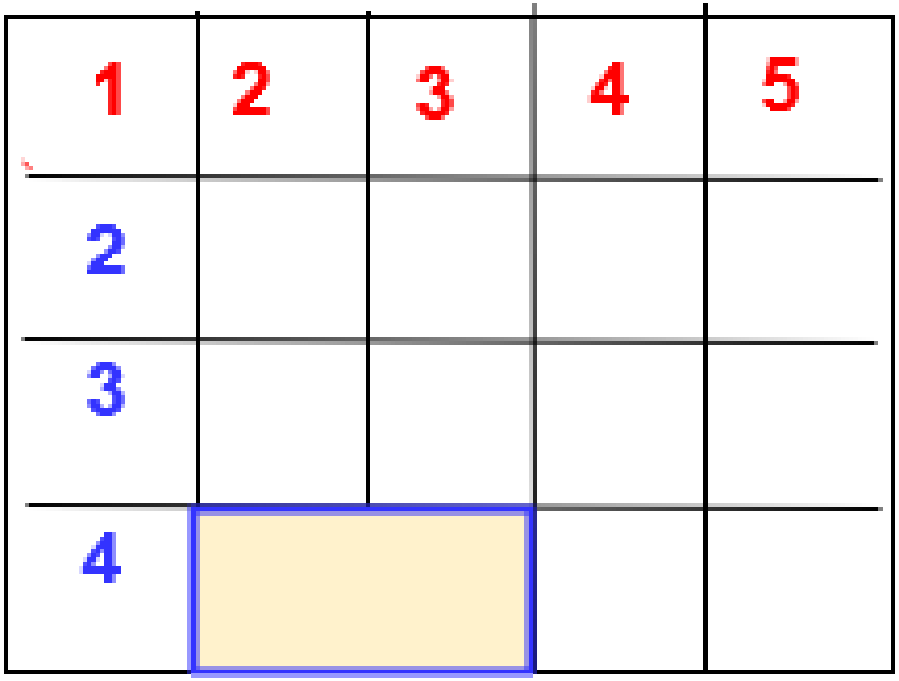
- 5x5 =25
- 4x4= 16
- 3x3 =9
- 2x2= 4
- 1x1 =1
- Total = 55



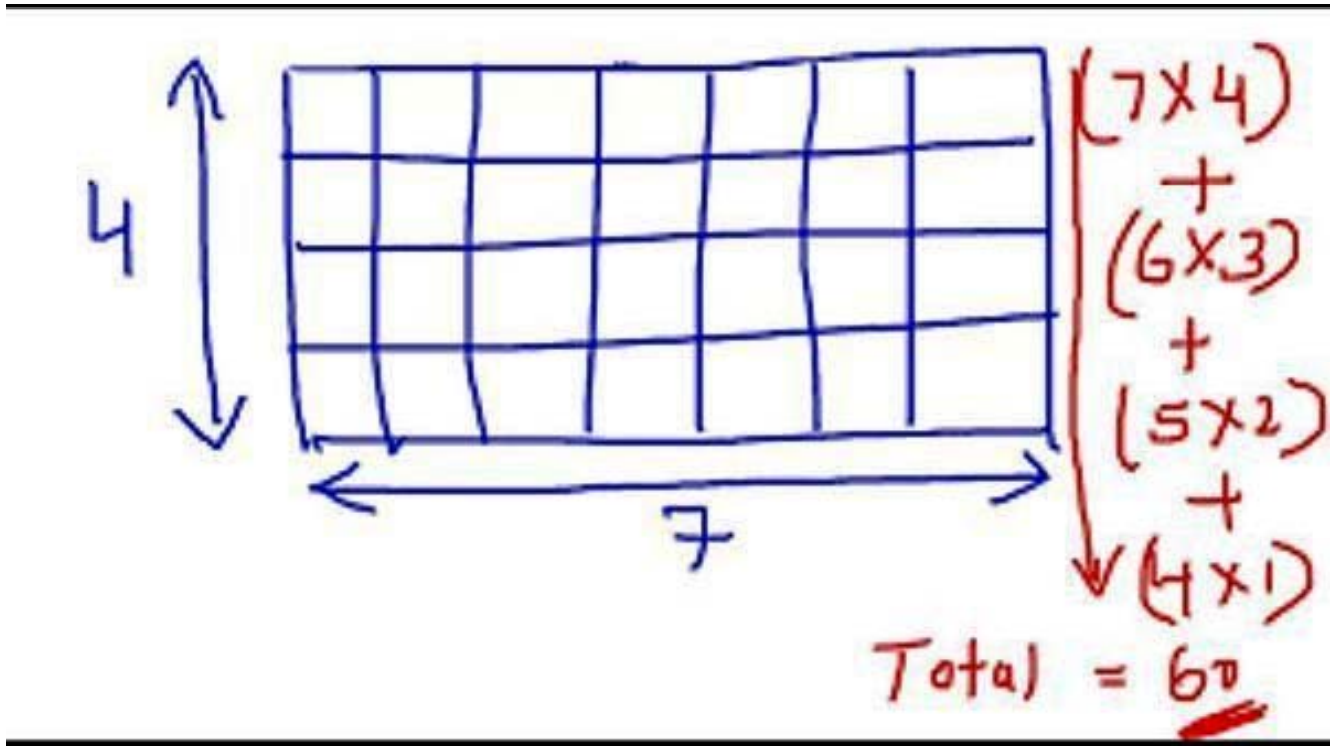
How many rectangles are there in an 4 x 5 grid

- There are 4 rows and 5 columns in the above figure.
- Let number of rows (n)=4 & number of columns (m) = 5
- = [4 +3 +2 +1 +0] x

  [5 + 4 + 3+ 2 + 1 +0]
- = 10 x 15 = 150

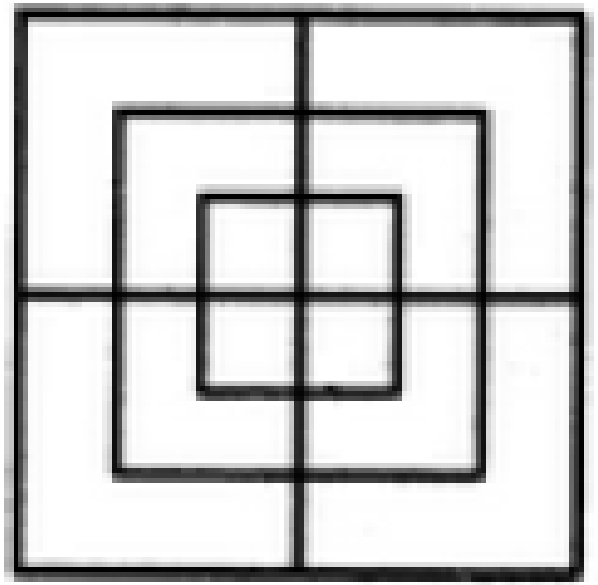


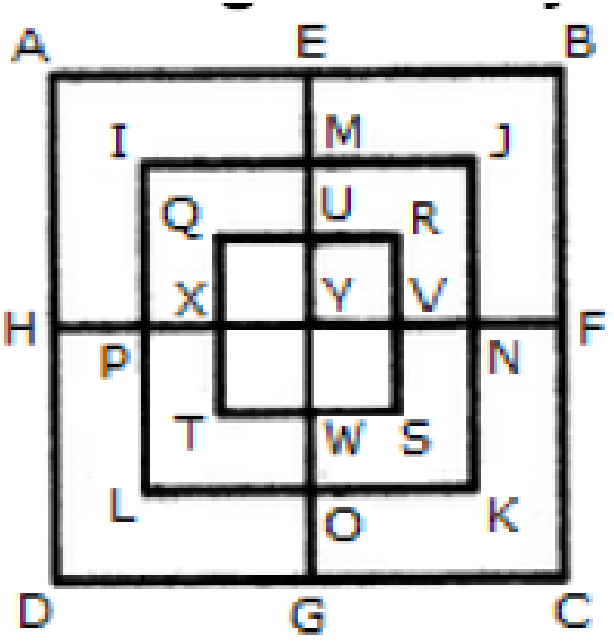
Counting the number of squares



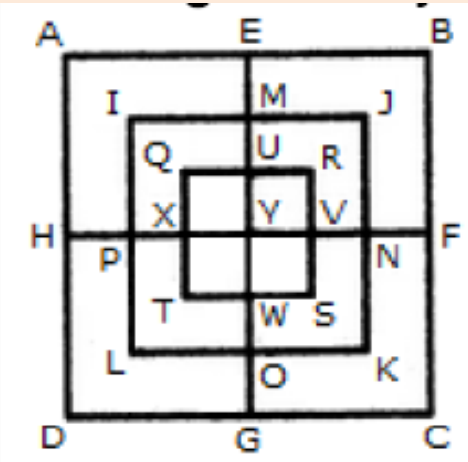
Count the number of squares in the given figure

- **1)** 8
  2) 12
  3) 15
  4) 18





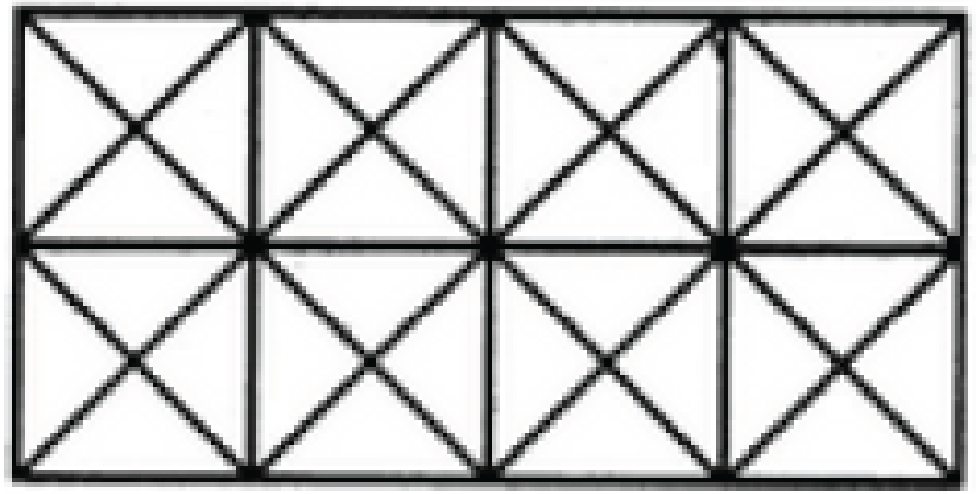
Solution:

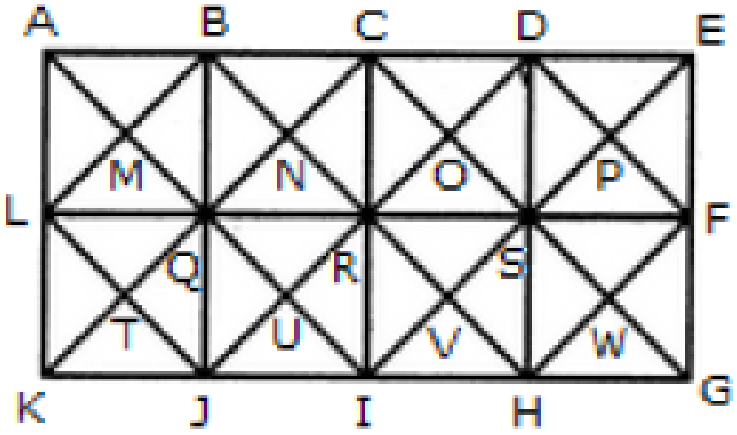


- The figure may be labelled as shown.

  The simplest squares are QUYX, URVY, YVSW and XYWT i.e. 4 in number.
  The squares composed of two components each are IMYP, MJNY, YNKO and PYOL i.e. 4 in number.
  The squares composed of three components each are AEYH, EBFY, YFCG and HYGD i.e. 4 in number.
  There is only one square i.e. QRST composed of four components.
  There is only one square i.e. IJKL composed of eight components.
  There is only one square i.e. ABCD composed of twelve components.
  Total number of squares in the given figure = 4 + 4 + 4 + 1 + 1 + 1 = 15.

Count the number of squares in the given figure



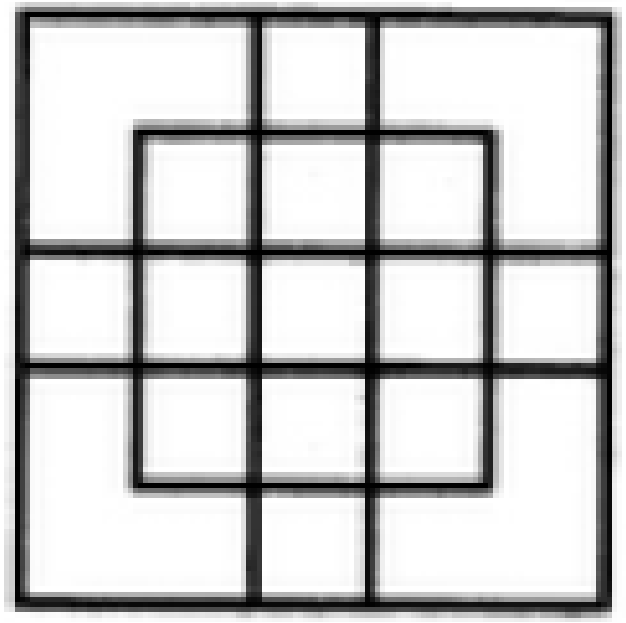


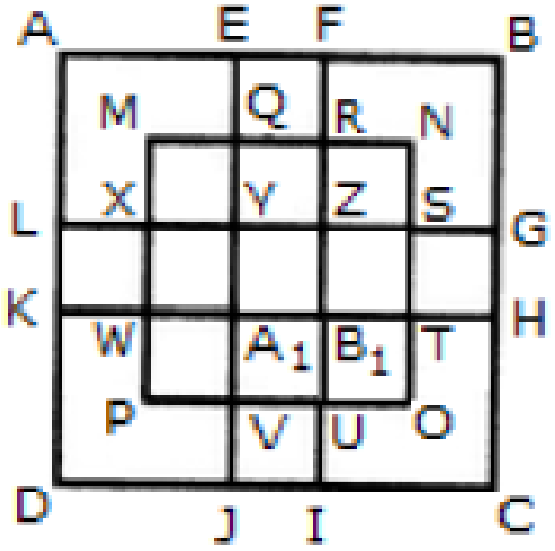
- 1) 11 2) 21 3) 24 4) 26

Thus, there are 10 + 8 + 3 + 3 = 24 squares in the figure.

Count the number of squares in the given figure

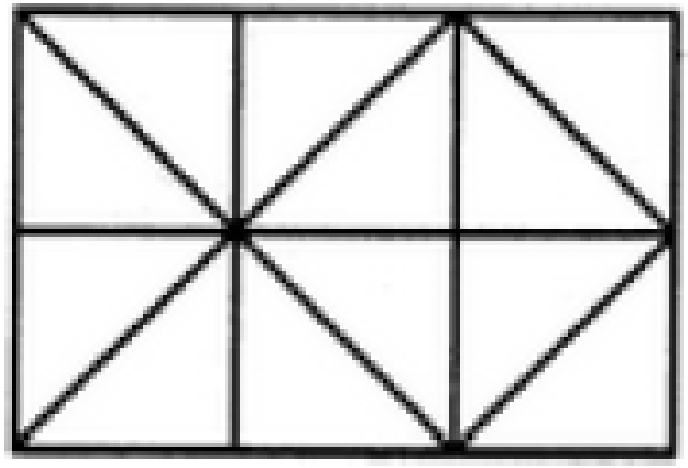
1) 18
2) 19
3) 25
4) 27

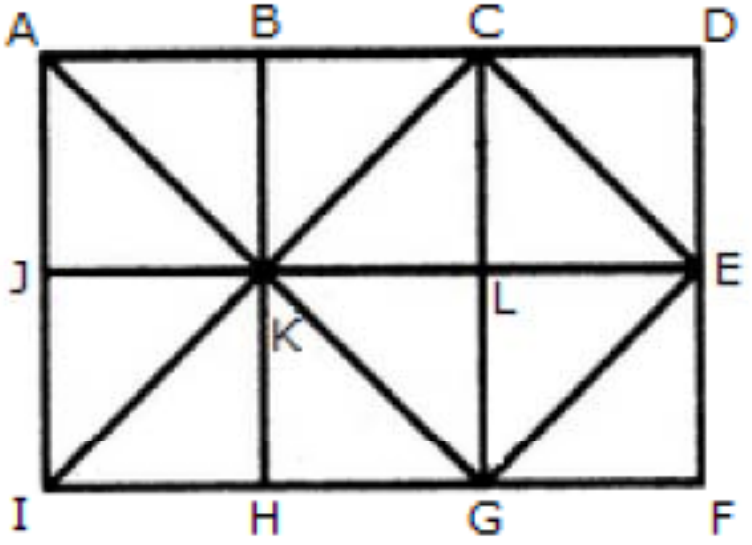




Count the number of squares in the given figure

- **1)** 6
  2) 7
  3) 9
  4) 10





Logical Reasoning

- Number Series
- Analogies
- Letter and Symbol Series
- Artificial Language
- Logical Problems
- Logical Deduction
- Matching Definitions
- Essential Part
- Analyzing Arguments
- Making Judgments

Simple Arithmetic Number Series

- In an arithmetic number series, each number either increases or decreases by the same amount each time.
- These series are relatively easy to spot. You should always check to see whether the series is increasing or decreasing by a constant factor before moving on to other possibilities.
- Here are two examples of arithmetic number series.
- 7, 11, 15, 19, 23, 27, 31, 35, 39… (+ 4 is the rate)
- 21, 15, 9, 3, -3, -9, -15, -21… (-6 is the rate)

Which of the following is the next term of series given below?

- 4, 6, 9, 13
- (a) 17 (b) 18
- (c) 19 (d) 20

- **+2, +3, +4 is the rate of change in this series**
- **Sol.** (b) 18

Choose the next term of series given below

- **64, 32, 16, 8, ?**
- (a) 0 (c) 2
- (b) 1 (d) 4

- **Rate is x/2**
- **Sol.** (d)
- Each number is half of its previous number.

What will come in place of question mark in the following series?

- 79, 87, ? , 89, 83
- (a) 80 (b) 81
- (c) 82 (d) 85
- **Repeat + and - alternatively.**
- **79 to 87 means +8. 89 to 83 means -6**
- **87-6=81**
- **81+8=89 in the sequence (present)**
- **Sol.** 81

What will come in place of question ? mark in the following series?

- 21, 34, ?, 89, 144
- (a) 43 (c) 64
- (b) 55 (d) 71

- Sol. (b)
- Each number is the sum of the two preceding numbers.
- 21+34 = 55
- 34 + 55 = 89
- 55 + 89=144

To find the wrong term in the series:

- **Find the wrong term in the series**

  3, 8, 15, 24, 34, 48, 63

  (a) 15 (c) 34 (b) 15 (d) 63

- **Sol.** (c)
- $2^2 - 1, 3^2 - 1, 4^2 - 1, 5^2 - 1, 6^2 - 1$
- 4-1, 9-1, 16-1, 25-1, 36-1, 49-1 , 64-1

EXAMPLES ON ALPHABETIC SERIES

- What will come in place of question mark in the following series?
- G, H, J, M, ?

  (a) R (b) S (c) Q (d) P

- **G H I J K L M N O P Q R**
- **Sol.** (c) Q

Dynamic Arithmetic Series

- In a dynamic arithmetic series, you'll still be either adding or subtracting, but the factor will change each time.
- For example, you might add one to the first number to get the second number and then two to the second number to get to the third number.
- Alternatively, you might be adding one number to the odd numbers in the series and a different number to the even numbers in the series.

Arithmetic Sequences

- In arithmetic sequence questions, you will find that the differences between the numbers are obtained by adding, subtracting or performing both operations to the previous term.
- **Example:**
- Please choose one correct answer:
- 1 | **?** | 5 | **?** | 9 | 11
- **A)** 2, 6
- **B)** 3, 7
- **C)** 2, 8
- **D)** 3, 6

Answer

Please choose one correct answer:

1 | ? | 5 | ? | 9 | 11

- **Apply Simple common sense**
- ✔ **The correct answer is B**
- There are two items missing. The only two visible adjacent items are 9 & 11.
- The difference between them is 2.
- In addition, the difference between 5 and 9 is 4 as well as between 1 and 5.
- That is, in both cases the difference between the 1st and 3rd item and the 3rd and 5th item is 4.
- We can conclude that the missing numbers in the series should have a difference of 2 between the items adjacent to them on either side.
- The numbers 3 & 7 complete the series.
- **The answer is 3,7**

Geometric Series

- A geometric series, as opposed to an arithmetic series, deals with multiplication and division.
- 2, 6, 18, 54, 162…
- Ans Value x 3 repeat

- 100, 50, 25, 12.5, 6.25…
- Ans: given value divided by 2

Geometric sequences ex.

- **Example:**
- Please choose one correct answer:
- 0 | 3/4 | 8/9 | 15/16 | 24/25 | **?**
- **A)** 29/28
- **B)** 33/32
- **C)** 35/36
- **D)** 37/38

✔ **The correct answer is C**

Logic:

3+ 5 =8, 8+7=15, 15+ 9=24

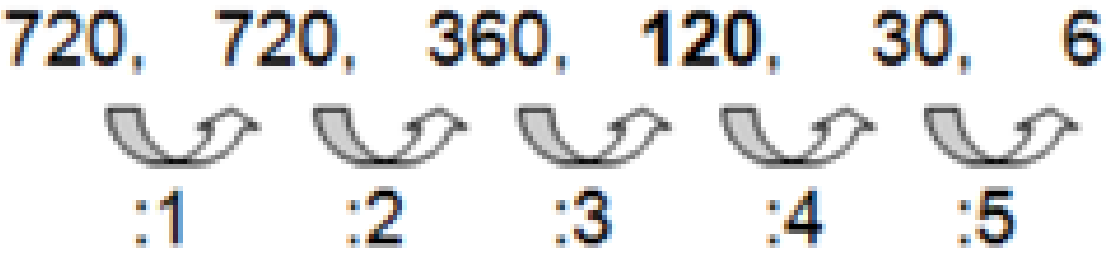
24+11 = 35

Exponent Sequences

- Exponent sequences display all terms as exponent numbers, moving in a specific order.
- They can be broken down into 2 groups:
- 1) perfect square and
- 2) perfect cube sequences.
- **a. Perfect Squares**
- In perfect square sequences, all terms are perfect square numbers (x^2) moving in a specific order
- **b. Perfect Cube Sequences**
- In a perfect cube sequences, all terms are cubed numbers (x^3), also moving in a specific order.

Example:

- What is the following number in the series?
- 720 | 720 | 360 | **?** | 30 | 6
- **A)** 180
- **B)** 120
- **C)** 90
- **D)** 60



Solving tip: A good way to tackle this question would be to examine it backwards- starting from the last term, working your way up to the first term.
This tip can be useful especially in questions where you are required to find a term that is in the middle of the series.

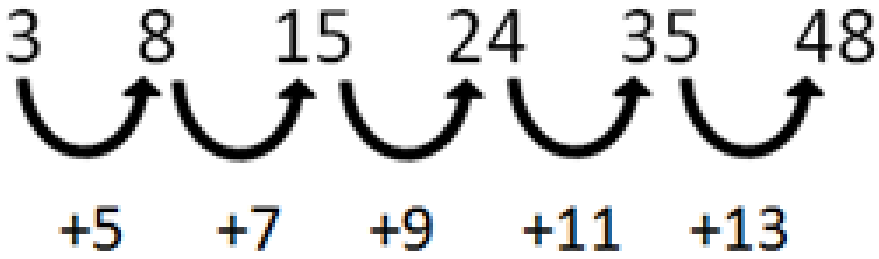
- ✔ **The correct answer is B**
- **Solving tip:** A good way to tackle this question would be to examine it backwards- starting from the last term, working your way up to the first term.
- This tip can be useful especially in questions where you are required to find a term that is in the middle of the series.

Complex Number Series

- Complex series use a two-step rule. For instance, a complex series might use both arithmetic and geometric principles.
- If the numbers seem to be spaced apart at random intervals but increase continuously, then you might have a complex series.
- 1, 5, 13, 29, 61…
- Here the rule is 2 X +3. You must double each number and then add three to find the next number.

Alternating Sequences

- Here, a single sequence made of alternating terms form two independent sub-sequences and combine them.
- **Example:** 3 | 8 | 15 | 24 | 35 | **?**
- **A)** 42
- **B)** 36
- **C)** 48
- **D)** 46



- Therefore 13 (11 + 2) should be added to the last term in the series.
- 35 + 13 = **48**

Look at this series

- Q: 7, 10, 8, 11, 9, 12, ... What number should come next?
- **A.**7 **B.**10 **C.**12 **D.**13

- Option **B**
- **Explanation:**
- This is a simple alternating addition and subtraction series. In the pattern, 3 is added

Look at this series:

- 2, 4, 6, 8, 10, ... What number should come next?
- **A.**11 **B.**12 **C.**13 **D.**14

- **Answer:** Option **B**
- **Explanation:**
- This is a simple addition series. Each number increases by 2.

Look at this series:

- 201, 202, 204, 207, ... What number should come next?
- **A.**205 **B.**208 **C.**210 **D.**211
- **Answer:** Option **D**
- **Explanation:**
- In this addition series, 1 is added to the first number; 2 is added to the second number; 3 is added to the third number; 4 is added to the fourth number; and go on.

Look at this series:

- 544, 509, 474, 439, ... What number should come next?
- **A.**404 **B.**414 **C.**420 **D.**445
- **Answer:** Option **A**
- **Explanation:**
- This is a simple subtraction series. Each number is 35 less than the previous number.

Look at this series

- Q: 7, 10, 8, 11, 9, 12, 10 ... What number should come next?
- **A.**7 **B.**10 **C.**12 **D.**13

- Option **C**
- **Explanation:**
- This is a simple alternating addition and subtraction series. In the first pattern, 3 is added; in the second, 2 is subtracted

Look at this series:

- 36, 34, 30, 28, 24, ... What number should come next?
- **A.**20 **B.**22 **C.**23 **D.**26

- Option **B**
- **Explanation:**
- This is an alternating number subtraction series. First, 2 is subtracted, then 4, then 2, and so on.

Look at this series:

- 53, 40, 27, ... What number should come next?
- **A.**12 **B.**14 **C.**27 **D.**53
- **Answer:** Option **B**
- **Explanation:**
- In this series, each number is repeated, then 13 is subtracted to arrive at the next number.

Look at this series:

- 58, 52, 46, 40, 34, ... What number should come next?
- **A.**26 **B.**28 **C.**30 **D.**32
- **Answer:** Option **B**
- **Explanation:**
- This is a simple subtraction series.
- Each number is 6 less than the previous number.

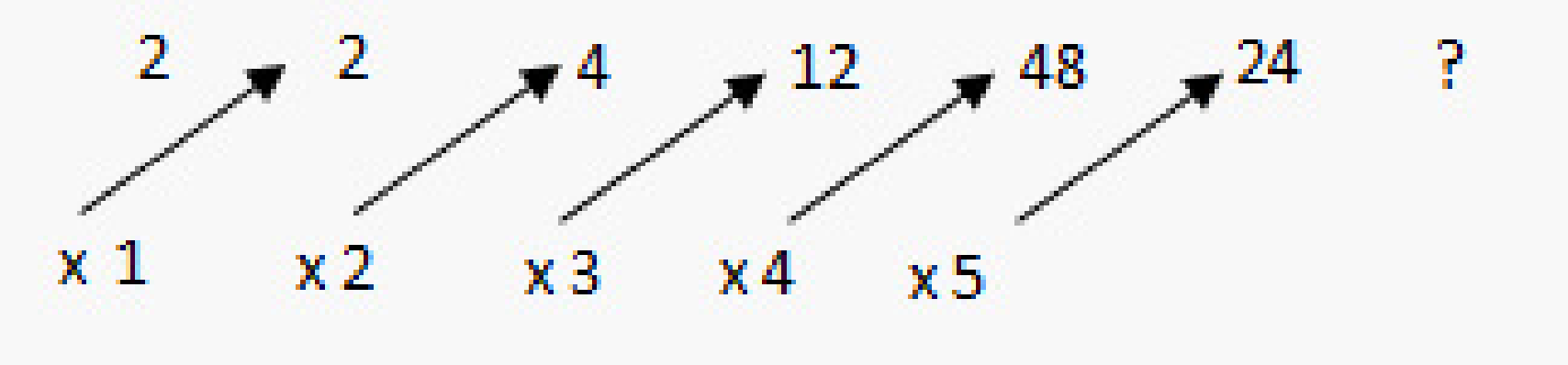
Look at this series:

- 31, 29, 24, 22, 17, ... What number should come next?
- **A.**15 **B.**14 **C .**13 **D.**12
- **Answer:** Option **A**
- **Explanation:**
- This is a simple alternating subtraction series, which subtracts 2, then 5.

Look at this series:

- 1.5, 2.3, 3.1, 3.9, ... What number should come next?
- **A.**4.2 **B.**4.4 **C.**4.7 **D.**5.1
- **Answer:** Option **C**
- **Explanation:**
- In this simple addition series, each number increases by 0.8.

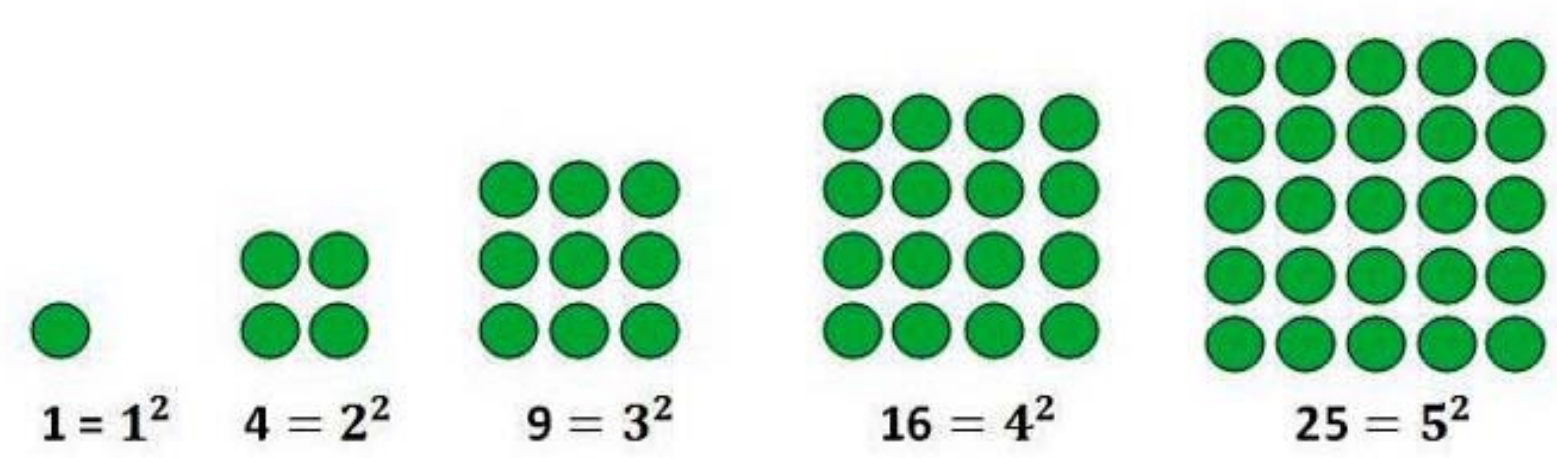
What should be come in place of x in the following series; 2, 2, 4, 12, 48, 240, ?

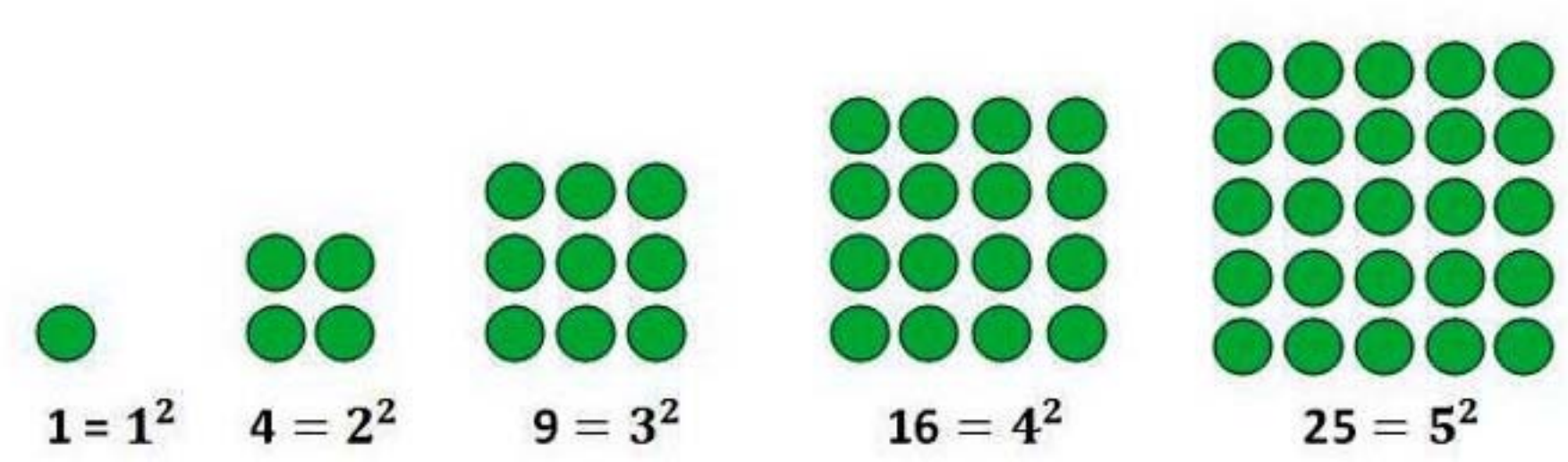


- **Sol:** In this question, every number is multiplied by the consecutive natural numbers starting from one. This can be understood with the help of the following diagram.
- The next number, as is clear from the above illustration, is obtained by multiplying the last number 240 by 6. So, the answer is 240 × 6 = 1440.

Square Number: Some Tricks and Examples

- What is a square number?
- A square number or a number raised to the power of 2, is a number multiplied by the same number.





- In those cases the multiplication is simple, but if we want to calculate 62^2 the multiplication is more complicated. This is why we are going to look at two tricks for finding the square of numbers in a much simpler way.

Square of a number that ends in 5

- The steps to follow are:
- We remove the units ones place digit from the number, that is to say, we remove the 5.
- We multiply the number that remains by the number that comes after this number when counting.
- We add the number 25 on to the end of the result of the previous multiplication.
- We already have the result of taking the square of that number.

Let’s look at an example: 25^2

- We take the number 25 and remove the 5. So only the 2 remains.
- We multiply the 2 by the number that follows it when counting (so 3) following number:
- 2 x 3 = 6
- After the 6 we add the number 25:
- 625
- We have already arrived at the result of the operation:
- $25^2 = 625$

Let's look at an example: 47^2

- For less than 50 adopt this method:
- We subtract 25 from the number.
- These will be the first two digits of the number.
- $47 – 25 = 22$
- The difference between 50 and 47 is:
- $50 – 47 = 3$
- We square the number 3:
- $3^2 = 9$
- The first two digits of the number are 22 and the last two digits are 09.
- $47^2 = 2,209$

Square of a number close to 50

- Let’s consider the numbers close to 50: those that are between 41 and 59. For these numbers you calculate their square in the following manner:
- We subtract 25 from the number. This number will be the first two digits of the final result.
- We find the difference between 50 and the number.
- We square that difference and the result will be the last two digits of the final result.

Let's look at another example: 56^2

- We subtract 25 from the number:
- $56 – 25 = 31$
- We take the difference between the number and 50:
- $56 – 50 = 6$
- We square the previous number:
- $6^2 = 36$
- Combining the first two digits and the last two digits we are left with:
- $56^2 = 3{,}136$

Another example: 405^2

- We take the number 405 and remove the 5.
- We are left with 40.
- We multiply 40 by the number that follows it when counting (so 41) following number:
- 40 x 41 = 1,640
- We add 25 on to the end of the number:
- 164,025
- We have already arrived at the correct result:
- $405^2 = 164,025$

Number Series ex-1.

- **1. Look at this series: 2, 1, (1/2), (1/4), ... What number should come next?**
- A. (1/3)
- B. (1/8)
- C. (2/8)
- D. (1/16)

Check answer

Number Series-1 Answer

- **1. Look at this series: 2, 1, (1/2), (1/4), … What number should come next?**
- A. (1/3)
- B. (1/8)correct
- C. (2/8)
- D. (1/16)

Explanation: This is a simple division series; each number is one-half of the previous number. In other terms to say, the number is divided by 2 successively to get the next result.

4/2 = 2

2/2 = 1

1/2 = 1/2

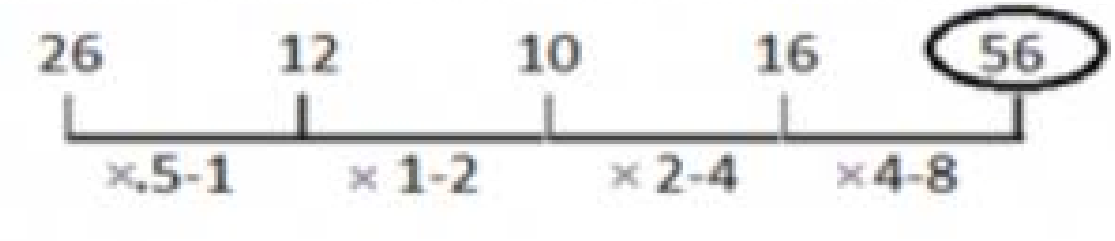
(1/2)/2 = 1/4

(1/4)/2 = 1/8 and so on.

Example-2

- 26, 12, 10, 16, ?
- A. 50
- B. 52
- C. 53
- D. 56

- **26, 12, 10, 16, ?**
- A. 50
- B. 52
- C. 53
- D. 56
- **Explanation:**



D. 56 correct

- Ex-3: Look carefully for the pattern, and then choose which pair of numbers comes next.
  2 44 4 41 6 38 8
- A. 10 12
- B. 35 32
- C. 34 9
- D. 35 10

Explanation: Here, there are two alternating patterns, one addition and one subtraction. The first starts with 2 and increases by 2; the second starts with 44 and decreases by 3. Answer is : D. 35 10

In the word ECONOMETRICS, if the first and second, third and forth, forth and fifth, fifth and sixth words are interchanged up to the last letter, what would be the tenth letter from right?

- A. O
- B. R
- C. N
- D. I

Check answer

In the word ECONOMETRICS, if the first and second, third and forth, forth and fifth, fifth and sixth words are interchanged up to the last letter, what would be the tenth letter from right?

- A. O
- B. R
- C. N
- D. I
- **Explanation:** word is CENOMOTEIRSC tenth word is N

Alphabetical order

- If the following five words are arranged in alphabetical order, which word will come in the middle?
- A. Electric
- B. Elector
- C. Elect
- D. Electrode

Check answer

English alphabet

- Find the 11th letter to the left of 20th letter from left in the English alphabet.
- A. D
- B. J
- C. K
- D. I

A. D
B. J
C. K
D. I correct

Word Arrangement

- In dictionary, which word comes fourth in arrangement?
- A. Propense
- B. Prophet
- C. Prong
- D. Propine

Check answer

Word Arrangement

- In dictionary, which word comes fourth in arrangement?
- A. Propense 1
- B. Prophet 3
- C. Prong 2
- D. Propine 4

A. Propense
B. Prophet
C. Prong

D. Propine

In each of the following questions, which one of the given responses would be a meaningful order of the following words in ascending order?

- 1. Cook
  2. Chew
  3. Digest
  4. Bite
  5. Swallow
- A. 1, 2, 4, 3, 5
- B. 3, 2, 4, 5, 1
- C. 1, 4, 2, 5, 3
- D. 4, 3, 2, 5, 1

1. Cook 2. Chew 3. Digest 4. Bite 5. Swallow

- A. 1, 2, 4, 3, 5
  B. 3, 2, 4, 5, 1
- C. 1, 4, 2, 5, 3 correct
- D. 4, 3, 2, 5, 1
- **Explanation:** The process of consuming food involves cooking it, then biting it, then chewing it, then swallowing it and finally digesting it.
  Therefore, the correct order will be
  Cook (1) Bite (4) Chew (2) Swallow (5) Digest (3).

Answer the given questions based the following English Alphabet Series

- Which is the 8th letter from your left?
- A. E
- B. H
- C. I
- D. S

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z.

EJOTY formula

Letters	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q	R	S	T	U	V	W	X	Y	Z
Rank	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26

					E		J				O				T				Y							
			5				10				15				20				25							

Learning this method helps you to learn the rank of 5 letters which are the multiple of 5.

Check answer

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

- A. E
- B. H correct
- **C. I**
- D. S
- **Explanation:** According to the EJOTY formula position of E is 5. Therefore 8th letter from the left is 3 positions ahead of E and it is H.
  5+3=>8, E+3=>8
  E+1=>F
  E+2=>G
  E+3=>H

Coding related questions

- If in a certain language, MADRAS is coded as NBESBT, how is BOMBAY coded in that code?
- A. CPNCBX
- B. CPNCBZ
- C. CPOCBZ
- D. CQOCBZ

Check answer

Solution

- A. CPNCBX
- B. CPNCBZ correct
- C. CPOCBZ
- D. CQOCBZ
- **Explanation:** Each letter in the word is moved one step forward to obtain the corresponding letter of the code.

Coding exercise

- If PAINT is coded as 74128 and EXCEL IS CODED AS 93596 then how would you encode ACCEPT?
- A. 455978
- B. 547978
- C. 554978
- D. 735961

Check answer

Solution

- A. 455978 correct
- B. 547978
- C. 554978
- D. 735961
- **Explanation:** Clearly, in the given code, the alphabets are coded as follows:
- P A I N T E X C E L
  7 4 1 2 8 9 3 5 9 6
  Like A C C E P T
  4 5 5 9 7 8

Mirror image

- Choose the alternative which closely resembles the mirror image of the given combination.

MALAYALAM

(1) MALAYALAM

(2) MALAYALAM

(3) MALAYALAM

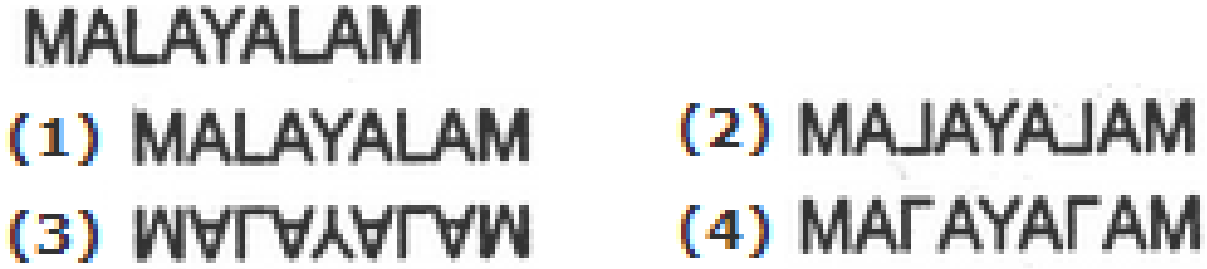
(4) MALAYALAM

- A. 1
  B. 2
  C. 3
  D. 4

Check answer

Mirror image

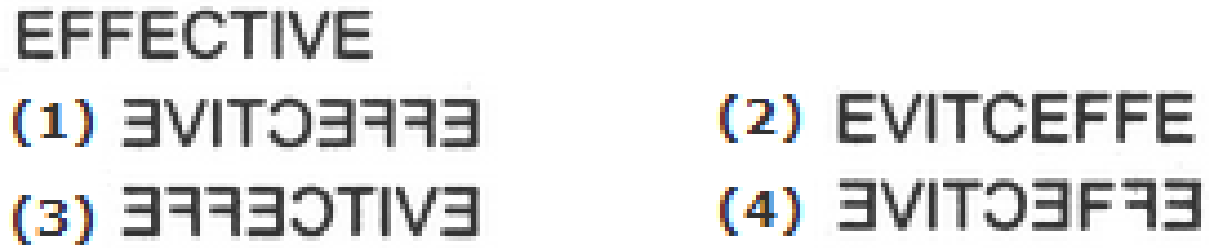
- Choose the alternative which closely resembles the mirror image of the given combination.



- A. 1
  B. 2
  C. 3
  D. 4

Answer : B

- Choose the alternative which resembles the mirror image of the given combination.



- A. 1
  B. 2
  C. 3
  D. 4

Check answer

Answer

- Choose the alternative which resembles the mirror image of the given combination.

- **A. 1**

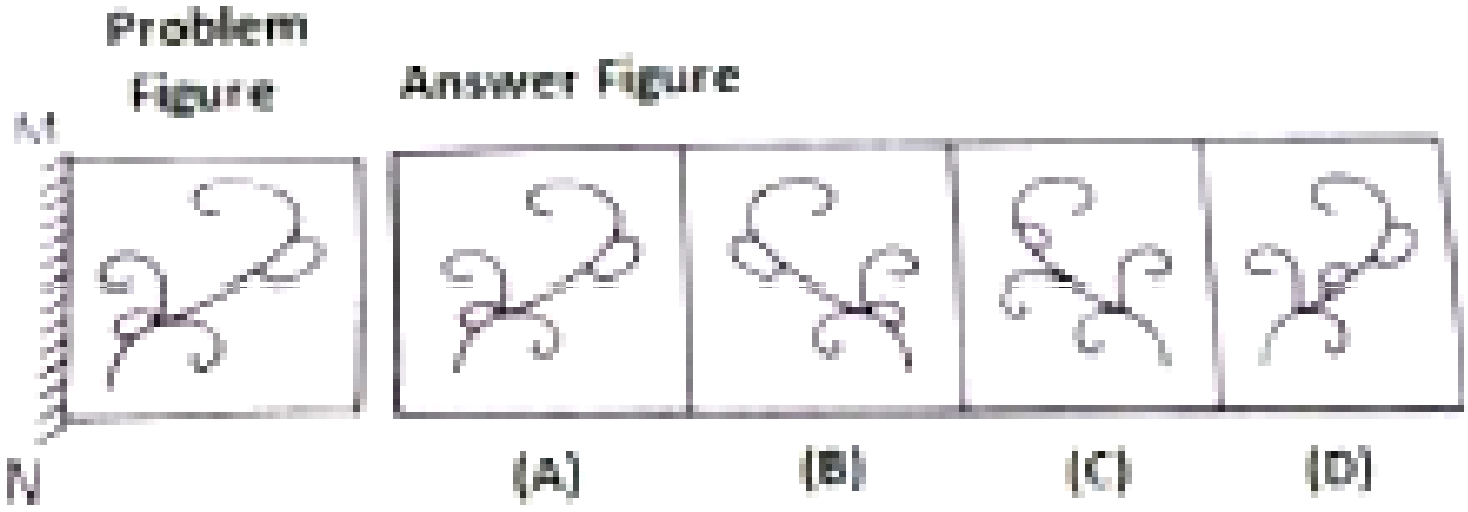
  B. 2

  C. 3

  D. 4

Choose the correct figure of a mirror image

- A. A
  B. C
  C. B
  D. D



Arrange alphabetically

- Arrange the following words will come in middle if all of them are arranged alphabetically as in a dictionary?
- A. Nozzle
- B. Nausea
- C. Nostril
- D. Nomenclature
- E. Normal

Arrange alphabetically

- Arrange the following words will come in middle if all of them are arranged alphabetically as in a dictionary?
- A. Nozzle
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- C. Nostril
- D. Nomenclature
- E. Normal

A. Nozzle
B. Nausea
C. Nostril
D. Nomenclature
E. **Normal**

Alphabetical order

- If the following five words are arranged in alphabetical order, which word will come in the middle?
- A. Electric
- B. Elector
- C. Elect
- D. Electrode

A. Electric correct

B. Elector

C. Elect

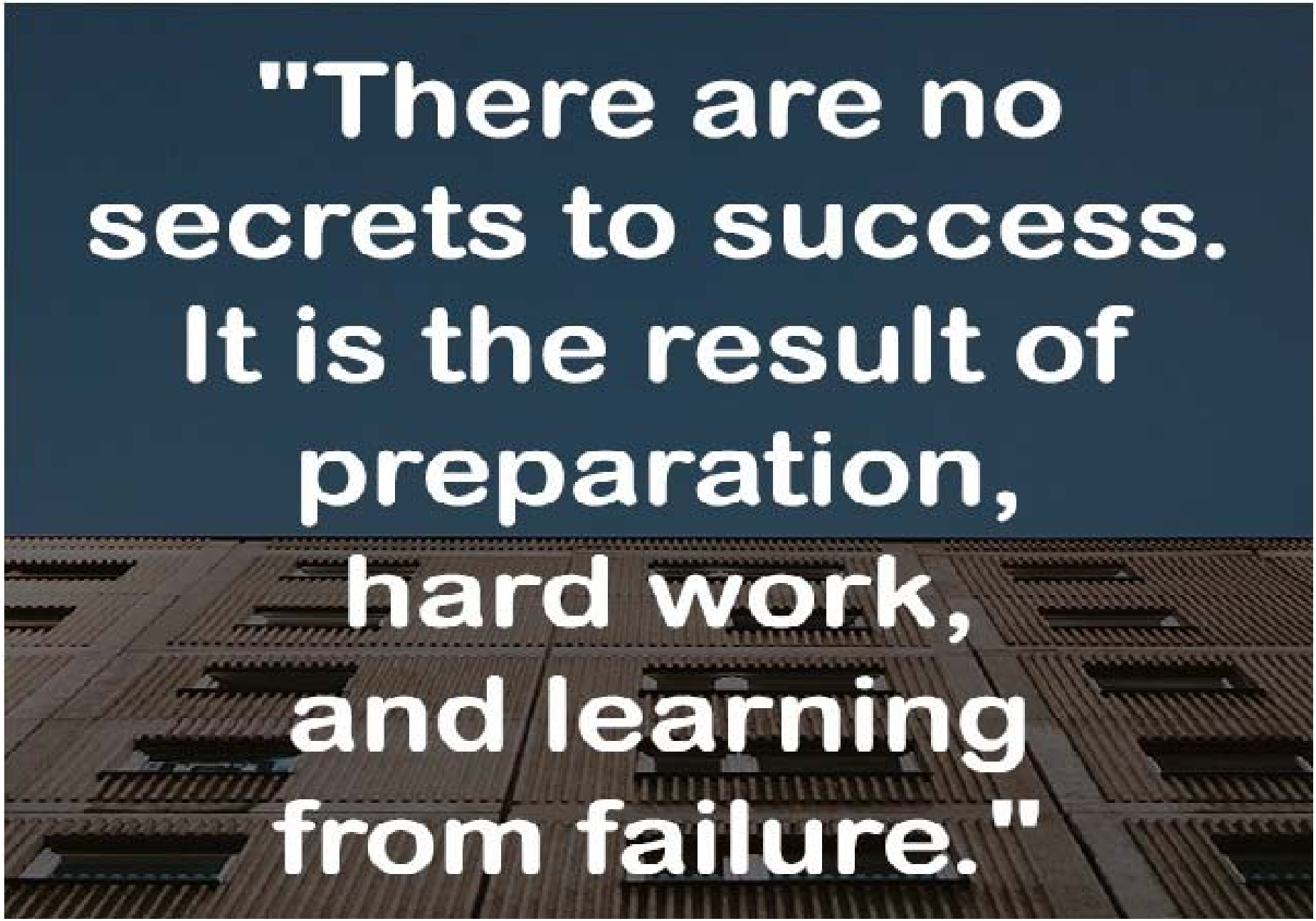
D. Electrode

SIMPLE CALCULATIONS OF %

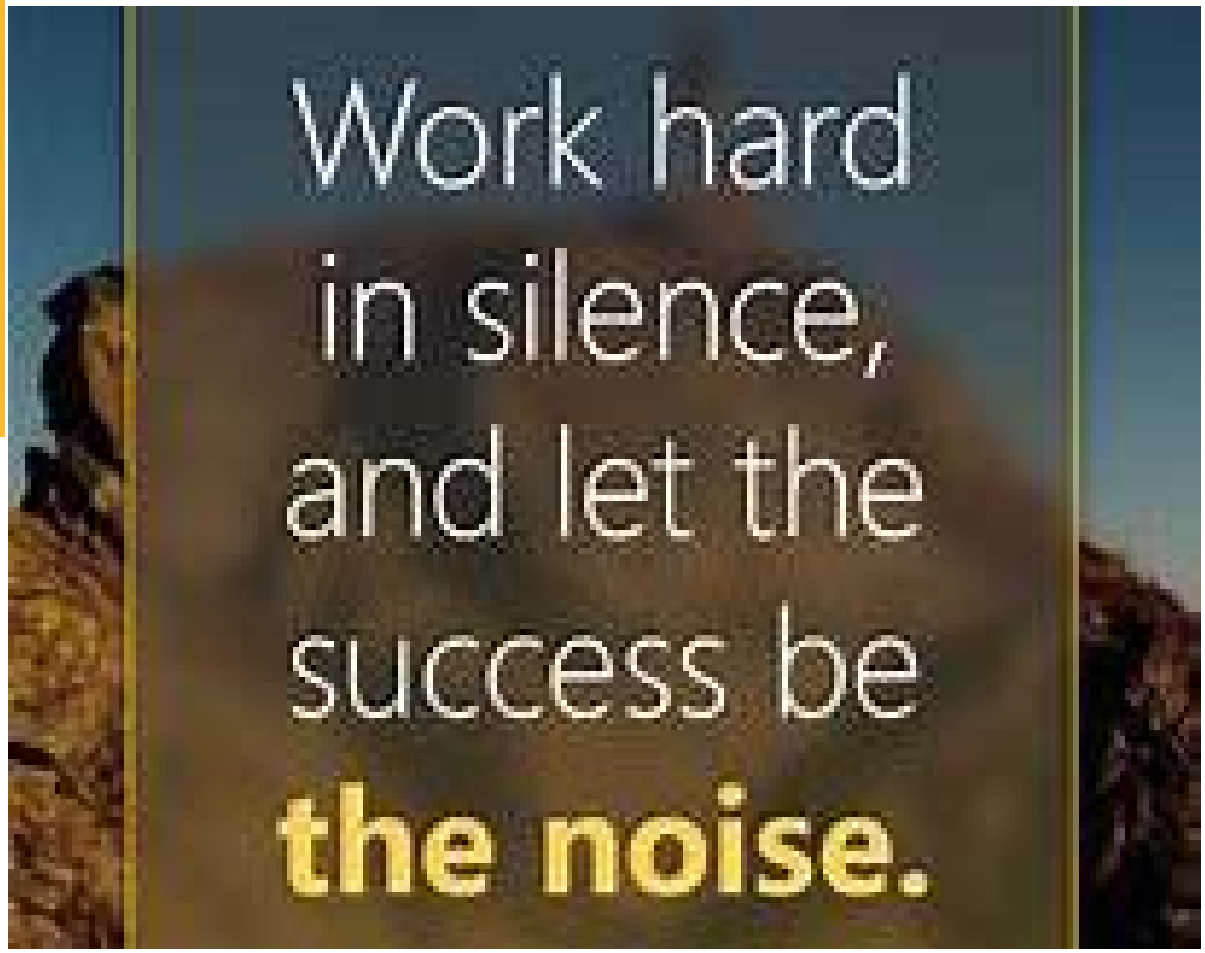
- Rent of the house is increased from ` 7000 to `7700. Express the increase in price as a percentage of the original rent.
- **Solution:**
- Increase value = Rs 7700 – Rs 7000 = Rs 700
  Increase % = (Increas value)/(Original value)×100= 700/7000×100=10
  ∴ Percentage rise = 10%

SIMPLE CALCULATIONS OF %

- The cost of a bike last year was Rs19000. Its cost this year is Rs 17000. Find the per cent decrease in its cost.
  Decrease % = (Decreasing value)/(Original value) × 100
- % decrease = (19000-17000)/19000×100
  =2000/19000×100= 10.5%.
  ∴ Percentage decrease = 10.5%.


"There are no
secrets to success.
It is the result of
preparation,
hard work,
and learning
from failure."


SELF-BELIEF
AND HARD WORK
WILL ALWAYS
EARN YOU
SUCCESS


Work hard
in silence,
and let the
success be
the noise.

Programme continues…