



**Parul University Faculty of Engineering and  
Technology Department of Applied Science &  
Humanities  
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Subject: Quant and Reasoning (203105371)  
Branch: CSE**

## **Unit 11 : Series Analogy , Odd Man Out , Coding and Decoding**

Set of Logical Reasoning Questions and Answers (MCQs) focuses on “Odd Man Out”

### **Series:**

The terms or elements follow a definite law in series but it cannot be generalized. You should know, what is the definite relationship between numbers which make the set of given terms in series. Addition, subtraction, multiplication, division, transposition of terms and series generally form such series. The different questions asked may depend upon the following:

#### **1) Odd number/Even number/Prime numbers**

The series may consist of odd numbers /even numbers or prime numbers except one number, which will be the odd man out. Hence, before solving numerical on this topic must revise all basic concepts.

#### **2) Perfect squares/Cubes:**

Squares: 9, 16, 49, 81 ....

Cubes: 27, 64, 125, 216 ....

#### **3) Multiple of numbers:**

The series contains numbers which are multiple of different numbers.

**Example:** 4, 8, 12, 16, 20.....

#### **4) Numbers in A.P./G.P.**

**Geometric progression:**  $x, xr, xr^3, xr^4$

**Arithmetic progression:**  $x, x + y, x + 2y, x + 3y$  are said to be in A.P.

The terms in series may be arithmetic or geometric progression.

#### **5) Difference or sum of numbers:**

The difference between two consecutive numbers may increase or decrease

#### **6) Cumulative series:**

In this type, the third number is the addition of previous two numbers.

**Example:** 2, 4, 6, 10, 16, 26 .....

#### **7) Power series:**

In this type, the terms are defined on the basis of powers of numbers; the number may be expressed in the form of  $n^3 - n$ .

**Example:**

If  $n = 4$ ,  $n^3 - n = 60$

If  $n = 5$ ,  $n^3 - n = 120...$

**Series:** 60, 120, 210, 336 ...

8) The middle digit is the sum of other two digits.

**Example:** 165, 121, etc

9) The series of numbers may follow different sequence as shown below:

$(n^2 - 1)$ ,  $(n^2 + 1)$ ,  $(n^2 - n)$ ,  $(n^3 - n)$ ,  $(n^2 - n + 1)$ ,  $(n^2 - n - 1)$ , etc

a) If numbers in the series are 1, 5, 11, 19, 29.... then the relation is  $(n^2 - n - 1)$

b) If numbers in the series are 21, 31, 43 then the relation is  $(n^2 - n + 1)$

**Example:**

If  $n = 5$ ,  $(5^2 - 5 + 1) = 21$

If  $n = 6$ ,  $(6^2 - 6 + 1) = 31$

If  $n = 7$ ,  $(7^2 - 7 + 1) = 43$

### Type 1: Find the missing number

**Q 1.** 8, 16, 32, 64, 128, 256, \_\_\_\_, 1024

a. 423

b. 512

c. 896

d. 980

View solution

Correct Option: (b)

**Hint:** Each preceding number is multiplied by 2

$8 \times 2 = 16$ ,  $16 \times 2 = 32$ ,  $32 \times 2 = 64$ ,  $64 \times 2 = 128$ ,

$256 \times 2 = 512$  and  $512 \times 2 = 1024$

**Hence, the missing number is 512**

**Q 2.** 11, 13, 17, 19, 23, 29, \_\_\_\_\_

a. 31

b. 33

c. 51

d. None of the above

View solution

Correct Option: (a)

**Hint:** Numbers 11, 13, 17, 19, 23 and 29 are all

prime numbers.

**Therefore, next prime number is 31**

**Q 3.** 15, 33, 69, 141, \_\_\_\_, 573, 1149

- a. 151
- b. 169
- c. 285
- d. 456

View solution

Correct Option: (c)

**Hint:**

**Each number is twice the previous number with 3 added to the answer.**

$$15 \times 2 = 30, 30 + 3 = 33$$

$$33 \times 2 = 66, 66 + 3 = 69$$

$$69 \times 2 = 138, 138 + 3 = 141$$

$$141 \times 2 = 282, 282 + 3 = 285$$

$$285 \times 2 = 570, 570 + 3 = 573$$

$$573 \times 2 = 1146, 1146 + 3 = 1149$$

**Hence, the missing number is 285**

**Q 4.** 6, 24, \_\_\_\_, 120, 210, 336

- a. 36
- b. 60
- c. 72
- d. 95

View solution

Correct Option: (b)

**Hint:**

Power series:  $n^3 - n$

$$2^3 - 2 = 6$$

$$3^3 - 3 = 24$$

$$4^3 - 4 = 60$$

$$5^3 - 5 = 120$$

$$6^3 - 6 = 210$$

$$7^3 - 7 = 336$$

**Hence, the missing number is 60**

### **Type 2: Find/Pick the odd man out**

**Q 5.** 9, 16, 25, 36, 125, 169, 196, 225

- a. 36
- b. 196
- c. 169
- d. 125

[View solution](#)

Correct Option: (d)

#### **Hint:**

All numbers except 125 are perfect squares.

$$5^3 = 125$$

**Hence, the odd number is 125**

**Q 6.** 121, 275, 396, 385, 891, 932

- a. 275
- b. 396
- c. 891
- d. 932

[View solution](#)

Correct Option: (d)

#### **Hint:**

The middle digit is the sum of other two digits.

121, 275, 396, 385, 891 all these numbers have middle digit as the sum of other two digits.

Hence, 932 is correct answer.

**Q 7.** 3, 5, 7, 14, 17, 19

- a. 3
- b. 7
- c. 14
- d. 17

[View solution](#)

Correct Option: (c)

**Hint:**

**All numbers except 14 are prime numbers.**

**Hence, the odd number is 14.**

**Type 3: Find the wrong number**

**Q 8.** 6, 9, 11, 12, 14, 15, 25

- a. 9
- b. 11
- c. 14
- d. 25

[View solution](#)

Correct Option: (b)

**Hint:**

**Each number is composite except 11**

**Hence, the odd number is 11**

**Q 9.** 9, 12, 17, 20, 25, 28, 34, 36, 41

- a. 25
- b. 28
- c. 34
- d. 41

[View solution](#)

Correct Option: (c)

**Hint:**

Here, the differences between two successive numbers from the beginning are 3, 5, 3, 5...

34 is the wrong term because the next number should have the difference of 5 i.e. the number should be 33.

**Hence, the odd number is 34**

**Q 10.** 34, 105, 424, 2123, 12756

- a. 12756
- b. 2123
- c. 424
- d. 34

[View solution](#)

Correct Option: (b)

**Hint:**

$34 \times 3 = 102$ , but here the next number is 105.

Hence,  $102 + 3 = 105$

Try this concept for next numbers in sequence.

$105 \times 4 = 420$ ,  $420 + 4 = 424$

**It's working! Check all the numbers in series**

$424 \times 5 = 2120$ ,  $2120 + 5 = 2125$

$2125 \times 6 = 12750$ ,  $12750 + 6 = 12756$

**Hence, correct answer is 2123. The term after 424 should be 2125 instead of 2123.**

**Q 11.** 6, 12, 20, 30, 42, 54, 72, 90, 110

- a. 20
- b. 42

c. 54

d. 90

View solution

Correct Option: (c)

**Hint:**

$2 \times 3 = 6$ ,  $3 \times 4 = 12$ ,  $4 \times 5 = 20$ ,  $5 \times 6 = 30$ ,  $6 \times 7 = 42$ ,  $7 \times 8 = 56$ ,  $8 \times 9 = 72$

The numbers in the series are in order as shown above.

After 42, the next number in series should be 56 instead of 54.

**Hence, the odd number is 54**

. Find the odd one out from the given set of numbers.

121, 385, 462, 561, 678, 792

a) 121

b) 462

c) 678

d) 792

Answer

Answer: c

Explanation: Here, the middle digit of the number is the sum of other two digits of that number. i.e.

$$1 + 1 = 2 \Rightarrow 121$$

$$3 + 5 = 8 \Rightarrow 385$$

$$4 + 2 = 6 \Rightarrow 462$$

$$5 + 1 = 6 \Rightarrow 561$$

$$7 + 2 = 9 \Rightarrow 792$$

6. Find the odd one out from the given data.

EFG, BCE, JKL, ABC, NPO

a) NPO

b) JKL

c) BCE

d) ABC

Answer

Answer: b

Explanation: Here, the group of letters EFG, BCE, ABC and NPO contain vowels in it (i.e. a, e, i, o and u).

i.e. EFG, BCEE, ABC and NPO

Whereas JKL in the given data, does not contain any vowel in it.

Hence, JKL is the answer.

7. Find the odd one out from the given data.

RED, BLACK, GREY, ORANGE, VIOLET

a) BLACK

b) RED

c) ORANGE

d) VIOLET

Answer

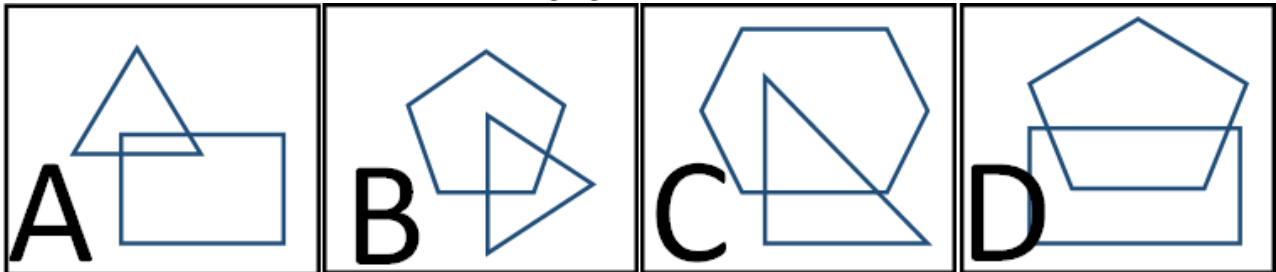
Answer: b

Explanation: There are 3 primary colors which are RED, YELLOW and BLUE.

In the given data, RED is the only primary color given. Whereas BLACK, ORANGE, GREY and VIOLET in the given data are not considered as primary colors.

Hence, RED is the answer.

3. Find the odd one out from the following figures.



a) A

b) B

c) C

d) D

Answer

Answer: b

Explanation: In all the figures the sum of the number of edges of the figure inside the box is odd.

i.e.

$A \Rightarrow 3 + 4 = 7$  (odd)

$C \Rightarrow 6 + 3 = 9$  (odd)

$D \Rightarrow 5 + 4 = 9$  (odd)

4. Find the odd one out from the given data.

Earth, Venus, Titan, Jupiter, Mercury

a) Mercury

b) Venus



- c) Titan
- d) Earth

Answer

Answer: c

Explanation: In the solar system, Earth is the third planet from the Sun, Venus is the second planet from the Sun, Jupiter is the fifth planet from the Sun and Mercury is the closest planet to the Sun.

But Titan is a moon orbiting Saturn. Since all other options are the name of planets. Hence, Titan is the answer.

## Analogies

Analogical Reasoning or argument by analogy can be defined as a specific way of thinking, based on the idea that because two or more things are similar in some respects, they are probably also similar in some further respect.

Q) Glass: Break:: Fire:?

Explanation: If a glass is thrown or falls, it should break. So, related to the first one, the fire would burn.

According to the analogies, the answer would be "fire."

## Letter and Symbol Series

Letter and Symbol Series are a sequential order of letters, numbers, or both arranged in a way that each term in the series is obtained according to some specified rules. These rules are based on mathematical operations, place of letters in alphabetical order. Letter series is a logical arrangement of letters of the English alphabet arranged in a specified pattern.

Q) SCD, TEF, UGH, \_\_\_\_, WKL, what should be coded in?

Explanation: If you observe, the first letter of every word is replaced with the following letter. And the second and third are replaced with alternate letters.

So the following word in the series is "VIJ."

### Q-1. Solve this Alphabet Based Analogy Reasoning Questions

AB : L :: BC : ?

- (a) X (b) V
- (c) Y (d) W

**Ans. W**

A=1 B=2 L=12  $\leftrightarrow$  **AB : L ::12:12 BC : ? ::23 :23 so 23=W**

Q-1. Find solutions of given Below Alphabet Based Analogy Reasoning Questions.

BEHK : PSVY :: ADGJ : ?

**(a) KMOR (b) DHLP  
(c) PRTV (d) ORUX**

**Ans :**

**BEHK +14  $\rightarrow$  PSVY**

**ADGJ +14  $\rightarrow$  ORUX**

Q-3. Choose the correct option From given Alphabet Based Analogy Reasoning Question.

F : 216 :: L : ?

**(a) 144 (b) 1728  
(c) 1729 (d) 1628**

answer :(b)1728 Solution: **F $\Rightarrow$ 6 : 6<sup>3</sup> = 216 Similarly, L  $\Rightarrow$ 12: 12<sup>3</sup> = 1728**

## Coding Decoding

- [Letter-Letter Coding](#)
- [Letter-Number Coding](#)
- [Number-Number Coding](#)
- [Coding-Decoding Puzzles](#)

### Coding Decoding Practice Questions

A Code is a 'system of signals'. Therefore, Coding is a method of transmitting a message between the sender and the receiver without a third person knowing it. The Coding and Decoding Test is set up to judge the candidate's ability to decipher the rule that codes a particular word/message and break the code to decipher the message.

### Mixed Number Coding

In this mixed number-coding question, three or four complete messages are given in the coded language, and the code number for a particular word is asked.

Q) If 'the monster hunter' is coded as 324, and 'will be the' is coded as 476, and 'they are in' is coded as 158. Which digit represents the?

Explanation: If you observe the question in two statements, the is repeated, and in both the two statements, the only repeated letter is 4.

So, as per mixed number coding, the exact code for "the" is "4".

These are a few types of coding and decoding types. Now, walk through learning some tricks and tips to learn reasoning in this coding, decoding, and reasoning tutorial.

## Types of Coding-Decoding With Examples

The types are classified in several categories, but this tutorial deals with the types which have a huge impact at the present in this coding, decoding, and reasoning scenario.

- Letter Coding

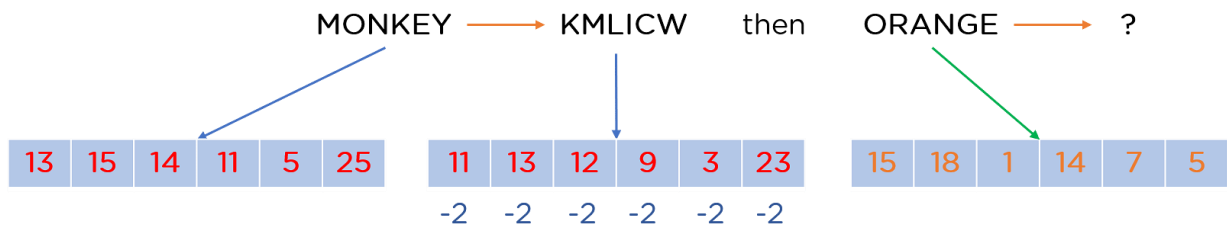
Letter Coding is a type in which the letters are replaced with other letters.

Take an example of Letter Coding:

Q) MONKEY is coded as "KMLICW", then what should be the code for ORANGE.

Explanation: To solve these kinds of problems, you have to remember that every alphabet has a specific number.

So, according to the question,



So, each alphabet of ORNAGE should be decreased by 2



MONKEY - the code for money is

M is coded as 13

O is coded as 15

N is coded as 14

K is coded as 11

E is coded as 5

Y is coded as 25

In the same way, "KMLICW" is coded as

K is coded as 11

M is coded as 13

L is coded as 12

I is coded as 9

C is coded as 3

W is coded as 23

If you observe both the given word and, it is coded by decreasing 2 for each alphabet.

So, in the same way, to code "ORANGE", the same number should be decreased.

So you code "ORANGE" as:

O is coded as 15

R is coded as 18

A is coded as 1

N is coded as 14

G is coded as 7

E is coded as 5

So, in the same way, it decreased each alphabet by 2

The final solution for Orange would be 13, 16, 25, 12, 5, 3

And you should code the word as "MPYLEC".

- Number Coding

In the Number Coding section of reasoning ability, the candidate will have to observe and guess the hidden code of two or more sets of numbers. Once the parent code is known, the candidate will have to use this code to generate other numbers.

Q) If "HOUSE" is coded as 35842, and LEMON is coded as 12659, then what would be the code for HELEN?

Explanation: The code of every letter is already specified in the question itself, so no need to use fixed codes of the letters.



HELEN is coded as 32129

Now, specify the number of each letter to solve the problem. If you observe the two words, some of the letters are repeated, so no need to write the repeated letters.

Now, code the letters.

H is coded as 3

O is coded as 5

U is coded as 8

S is coded as 4

E is coded as 2

L is coded as 1

M is coded as 6

N is coded as 9

Using these codes, "HELEN" is coded as 3,2,1,2,9.

Q-1. In a certain code language '**ROMAN**' is written as '**IFADE**'. How would '**WATER**' be written in that same code?

- (A) EIABE
- (B) EABEI
- (C) IFAEB1
- (D) AEBEI

**Answer: (B) EABEI**

**Explanation:**

<b>R</b>	<b>O</b>	<b>M</b>	<b>A</b>	<b>N</b>
18	15	13	1	14
1+8	1+5	1+3	1	1+4
9	6	4	1	6
<b>I</b>	<b>F</b>	<b>A</b>	<b>D</b>	<b>E</b>
<b>W</b>	<b>A</b>	<b>T</b>	<b>E</b>	<b>R</b>
23	1	20	5	18
2+3	1	2+0	5	1+8
5	1	2	5	9
<b>E</b>	<b>A</b>	<b>B</b>	<b>E</b>	<b>I</b>

Q-3. In a certain code language 'MADRAS' is written as 'OWNHEQ'. How will 'AFRICA' be written in that same code?

- (A) WYEVJE
- (B) EYWJVE
- (C) MPJKLM
- (D) WYVEJE

Answer : A WYEVJE  
CONSIDER

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

Using Table

<b>M</b>	<b>A</b>	<b>D</b>	<b>R</b>	<b>A</b>	<b>S</b>
13	1	4	18	1	19
'13+4	'1+4	'4+4	'18-4	'1-4	19-4
17	5	8	14	23	15
<b>Q</b>	<b>E</b>	<b>H</b>	<b>N</b>	<b>W</b>	<b>O</b>
<b>O</b>	<b>W</b>	<b>N</b>	<b>H</b>	<b>E</b>	<b>Q</b>
<b>A</b>	<b>F</b>	<b>R</b>	<b>I</b>	<b>C</b>	<b>A</b>
1	6	18	9	3	1
'1+4	'6+4	'18+4	'9-4	'3-4	1-4
5	10	22	5	26	23
<b>E</b>	<b>J</b>	<b>V</b>	<b>E</b>	<b>Y</b>	<b>W</b>
<b>W</b>	<b>Y</b>	<b>E</b>	<b>V</b>	<b>J</b>	<b>E</b>

Q-7. In a coding system, **24631** is written as 'GREAT' and 5897 as 'MONK'. How can **84712** be written in that same coding system?

- (A) ORKTP
- (B) KRTPG
- (C) ORKTG
- (D) ORTKG

Ans. C

2	4	6	3	1		5	8	9	7
G	R	E	A	T		M	O	N	K
8	4	7	1	2					
O	R	K	T	G					

Q15-18. In a certain code “**Global Recession is Critical phase**” Is written as “**su zu ti ra mo**” , “**Recession Affects Economy**” Is written as “**chi mo nic**”, “**Global Economy Going Down**”, Is written as “**fa nic ti ye**”, “**Hiked Rates Down Growth**”, Is written as “**phi ye koo da**”, and “**Critical Rates**” Is written as “**su phi**”.

Q-15. What is code for “**phase**”?

- (A) su
- (B) zu
- (C) ra
- (D) Either zu or ra

[Hide answer](#)

**Answer:** (D) Either zu or ra

**Explanation:** code for “**phase**” is 'Either zu or ra'

<b>Global</b>	<b>Recession</b>	<b>is</b>	<b>Critical</b>	<b>phase</b>
su	Zu	ti	ra	mo
<b>Recession</b>	<b>Affects</b>	<b>Economy</b>		
chi	Mo	nic		
<b>Global</b>	<b>Economy</b>	<b>Going</b>	<b>Down</b>	
fa	Nic	ti	ye	
<b>Hiked</b>	<b>Rates</b>	<b>Down</b>	<b>Growth</b>	
phi	Ye	koo	da	
<b>Critical</b>	<b>Rates</b>			
su	Phi			



<b>Global</b>	<b>ti</b>
<b>Rates</b>	<b>phi</b>
<b>Critical</b>	<b>su</b>
<b>Recession</b>	<b>mo</b>
<b>Down</b>	<b>ye</b>

Q-16. What does “**fa**” stand for?

- (A) Global
- (B) Down
- (C) Economy
- (D) Going

[answer](#)

**Answer: (D)** Going

**Explanation:** "fa" stand for 'Going '

Q-18. Which of the following code for “**Critical Rates Affects Growth**”?

- (A) koo da phi chi
- (B) ti da zo chi
- (C) phi su da chi
- (D) su phi chi da or koo

**Answer: (D)** su phi chi da or koo