### **Unit Digit Questions**



# MCQ Question 1 Find the unit digit of (432)<sup>412</sup> × (499)<sup>431</sup>. 1. 2 2. 4 3. 6 4. 8

### Answer (Detailed Solution Below)

Option 2:4





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### Unit Digit MCQ Question 1 Detailed Solution

### Given:

 $(432)^{412} \times (499)^{431}$ 

### Concept:

9even no. = unit digit 1

9<sup>odd no.</sup> = unit digit 9

### Calculation:

 $(432)^{412} \times (499)^{431}$ 

Taking unit digits

$$\Rightarrow 2^{412} \times 9^{431}$$

As we know unit digit of  $2^1 = 2$ ,  $2^2 = 4$ ,  $2^3 = 8$ ,  $2^4 = 6$ 

$$\Rightarrow 2^{4(103)} \times 9^{431}$$

 $\Rightarrow 6 \times 9$ 

 $\Rightarrow 54$ 

 $\therefore$  The unit digit of  $(432)^{412} \times (499)^{431}$  is 4.

### Additional Information

To determine the last digit of the number  $432^{412}$ , we need to focus on the last digit of base 432 i.e. 2 and the exponential part 412.

We know,

Power of 2	Last digit
21	2
22	4
23	8
24	6
25	2
2 <sup>6</sup>	4
27	8
28	6
29	2



Notice the pattern of the last digit. It is 2, 4, 8, 6, 2, 4, 8, 6, 2 ..... so on.

Thus the last digit is repetitive and is a four-digit long i.e. 1, 2, 8, 6. If we keep on writing this table till the power of 2 reaches 412 then how many times this pattern repeated can be found by dividing 412 by 4.

412 divided by 4 is 103 with remainder 0 which indicates that the pattern gets fully repeated 412 times and then ends up with the digit i.e. 4. (if it is fully divisible we take power as 4)

∴ The Last digit of the number 432412 is 6.

9<sup>even no.</sup> = unit digit 1

9<sup>odd no.</sup> = unit digit 9

- ∴ The Last digit of the number 9431 is 9
- :. The unit digit of (432)412 × (499)431 is 4.



### MCQ Question 2

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If  $x = (164)^{169} + (333)^{337} - (727)^{726}$ , then what is the units digit of x?

- 3. 7
- 4. 8

### Answer (Detailed Solution Below)

Option 4:8

### 65100014.001 Unit Digit MCQ Question 2 Detailed Solution

Unit digit of  $(164)^{169} + (333)^{337} - (727)^{726}$ 

To check unit place divide power by 4

$$4^{169} + 3^{337} - 7^{726}$$

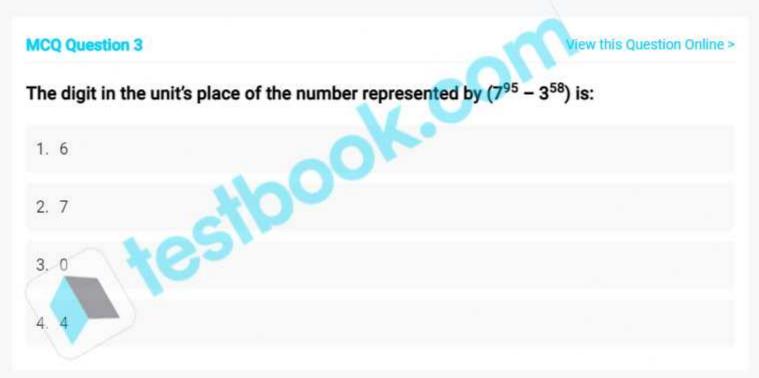
- $\Rightarrow$  69/4 = Reminder 1
- ⇒ 37/4 = Reminder 1
- $\Rightarrow$  26/4 = Reminder 2
- $\Rightarrow 4^1 + 3^1 7^2$
- $\Rightarrow 4 + 3 9$
- $\Rightarrow 7 9$

or, 17 - 9

⇒ 8

So, the unit digit of number x is 8.





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### Answer (Detailed Solution Below)

Option 4:4

### Unit Digit MCQ Question 3 Detailed Solution

### Given:

 $(7^{95} - 3^{58})$ 

### Concept used:

Cyclicity of 7 is 4

Cyclicity of 3 is 4

### Calculation:

$$7^{95} = 7^{(4 \times 23) + 3} = 1 \times 7^3 = 343$$

$$\Rightarrow$$
 Unit digit of  $7^{95} = 3$ 

$$3^{58} = 3^{(4 \times 14) + 2} = 1 \times 3^2 = 9$$

$$\Rightarrow$$
 Unit digit of  $3^{58} = 9$ 

Unit digit of 
$$(7^{95} - 3^{58}) = 3 - 9 = -6$$
 or  $10 - 6 = 4$ 

:. Unit place will be 4

Note: 3 - 9 = -6 because we have to find the unit digit. whenever the result is negative add 10 in it.

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### MCQ Question 4

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### If $N = 7^{95} - 3^{58}$ , then the digit at the unit place of N is

- 1. 3
- 2. 4
- 3. 6
- 4. 7

### Answer (Detailed Solution Below)

Option 2:4

### Unit Digit MCQ Question 4 Detailed Solution

### Calculation:

The unit place of  $7^1 = 7$ ,  $7^2 = 9$ ,  $7^3 = 3$ ,  $7^4 = 1$ 

The unit place of  $7^{95} = 7^{23 \times 4} \times 7^3 = 3$ 

The unit place of  $3^1 = 3$ ,  $3^2 = 9$ ,  $3^3 = 7$ ,  $3^4 = 1$ 

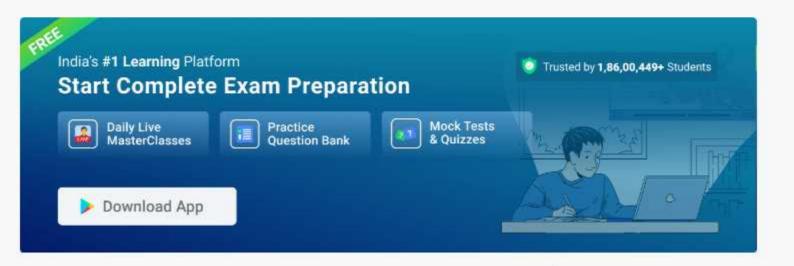
The unit place of  $3^{58} = 3^{14} \times 4 \times 3^2 = 9$ 

The unit of 795 is 3, which is less than 9

Then take 3 has 13 (by carry rule)

The unit place of  $N = 7^{95} - 3^{58} = 13 - 9 = 4$ 

: The unit digit of N is 4



### MCQ Question 5

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The unit digit of  $[(25^{43} \times 56^{42}) + 456^{25} + 23^{42} + 76^{23}]$  is -

- 1. 1
- 2. 2
- 3. 3
- 4. 4

### Answer (Detailed Solution Below)

Option 1:1

### Unit Digit MCQ Question 5 Detailed Solution

The unit digit of 2543 is 5.

The unit digit of 5642 is 6.

The unit digit of 456<sup>25</sup> is 6.

The unit digit of 2342 is 9.

The unit digit of  $76^{23}$  is 6.

 $\therefore$  The resultant value of the unit digits =  $[(5 \times 6) + 6 + 9 + 6] = (30 + 6 + 9 + 6) = 51$ 

So, the unit digit of the expression is 1.

### Important Points

2342: Here, we need to know that the unit place of powers of 3 repeats after every 4th power.

So, we divide the power with 4 and check the value of the remainder.

42/4 → 2 (remainder)

So, the unit digit will be  $3^2 = 9$ .

The unit digits of other numbers end with 5 and 6, the unit digit of the power of which are the number itself throughout.



### MCQ Question 6

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What is the unit digit of the sum of first 150 whole numbers?

1. 9

2. 5

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4. 1

### Answer (Detailed Solution Below)

Option 2:5

### Unit Digit MCQ Question 6 Detailed Solution

### Formula used:

Sum of N numbers starting from 1 = N(N + 1)/2

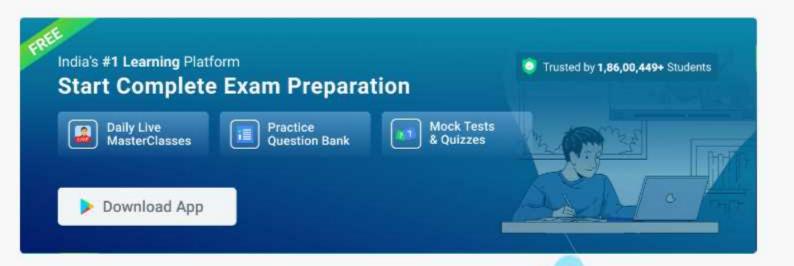
### Calculations:

Whole numbers = 0, 1, 2, 3.....n

So the value of N will be 149.

Sum = (149 × 150)/2 = 149 × 75 = 11175

.. The unit digit is 5.



### MCQ Question 7

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Find the unit digit of  $83 \times 87 \times 93 \times 59 \times 61$ .

1. 9

2. 4

3.

### Answer (Detailed Solution Below)

Option 3:7

### Unit Digit MCQ Question 7 Detailed Solution

### Given:

 $83 \times 87 \times 93 \times 59 \times 61$ 

### Calculation:

83 × 87 × 93 × 59 × 61

Taking unit digits

$$\Rightarrow 3 \times 7 \times 3 \times 9 \times 1$$

 $\Rightarrow 21 \times 27$ 

Again taking unit digits

 $\Rightarrow 1 \times 7$ 

 $\Rightarrow 7$ 

.. The unit digit of 83 × 87 × 93 × 59 × 61 is 7.



MCQ Question 8

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Find the digit at unit place in the product (742 × 437 × 543 × 679)

2. 4

### Answer (Detailed Solution Below)

Option 4:8

### Unit Digit MCQ Question 8 Detailed Solution

### Given:

 $N = 742 \times 437 \times 543 \times 679$ 

Where N is the product of the number.

### Calculation:

 $N = 742 \times 437 \times 543 \times 679$ 

The unit digit of N is the unit digit of the product of the unit digits of the above numbers present in the multiplication.

$$\Rightarrow 2 \times 7 \times 3 \times 9$$

$$\Rightarrow$$
 14 × 27

$$\Rightarrow 4 \times 7$$

.. The unit digit of the given number N is 8.

### MCQ Question 9

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The digit in the unit's place in the number obtained after calculating  $3^{53}$  -  $6^{38}$  +  $27^{56}$  is:

- 1. 4

- 4. 6

### Answer (Detailed Solution Below)

Option 3:8

### Unit Digit MCQ Question 9 Detailed Solution

### Concept:

300/K.COM The unit digit of power of a number repeats itself every 4th time

### Calculation:

$$3^{53} - 6^{38} + 27^{56}$$

$$\Rightarrow$$
 (3)(13×4)+1-(6)(9×4)+2+(27)(14×4)

 $\Rightarrow$  Unit digit will be determined by unit digit of (31 - 62 + 274)

 $\Rightarrow$  Unit digit of  $3^1 = 3$ 

$$\Rightarrow$$
 Unit digit of  $6^2 = 6$ 

 $\Rightarrow$  Unit digit of  $27^4 = 1$ 

Hence, unit digit will be (3 - 6 + 1) = -2

Since unit digit can not be negative, we will add 10 to it because these numbers are in decimal form.

:. Unit digit of 
$$(3)^{53}$$
 -  $(6)^{38}$  +  $(27)^{56}$  = -2 + 10 = 8



### MCQ Question 10

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Find the number of the digits in the expression  $2^{274} \times 25^{137}$ 

- 1. 275
- 2. 274
- 4. 277

### Answer (Detailed Solution Below)

Option 1:275

## esilook Unit Digit MCQ Question 10 Detailed Solution

### Concept used:

$$10^0 = 1$$
 1 digit

$$10^2 = 100$$
 3 digit

$$10^{n}$$
 –  $(n+1)$  digit

### Calculation:

$$2^{274} \times 25^{137}$$

$$\Rightarrow 2^{274} \times (5^2)^{137}$$

→ 2 ^ J

 $\Rightarrow$  (10)<sup>274</sup>

 $\Rightarrow$  Number of digits = (274 + 1) digit

⇒ 275 digit

 $\therefore$  The required answer is 275 digit