

Topic: How to find the last two digit

Finding out last two digits of a number is a skill that will help you not only solve some tough questions but quickly eliminate a few wrong options as well. Also, it is a skill that you can develop and master in less than 15 minutes. All you need to do is to remember a few rules and the rest will follow.

Funda 1: A number ending in 1

*Last two digits of $(...a1)^{(...b)}$ will be [Last digit of $a*b$]1*

Ex 1.1 Last two digits of $491^{83} = [\text{Last digit of } 9*3]1 = [\text{Last digit of } 27]1 = 71$

Ex 1.2 Last two digits of $571^{64} = [\text{Last digit of } 7*4]1 = [\text{Last digit of } 28]1 = 81$

Funda 2: Solving last two digits for odd numbers

Change the odd number to something that ends in 1.

Ex 2.1 What are the last two digits of $(86789)^{41}$?

For finding out the last two digits of an odd number raised to a power, we should first try and reduce the base to a number ending in 1.

After that, we can use the property, last two digits of $(...a1)^{(...b)}$ will be [Last digit of $a*b$]1

Let us try and apply this concept in the given question

Last two digits of $(86789)^{41}$

= Last two digits of 89^{41}

= Last two digits of $89 * 89^{40}$

= Last two digits of $89 * (.21)^{20}$

= Last two digits of $89 * 01$ {Here I have used the concept mentioned above} = 89

Funda 3: Solving last two digits for even numbers

24 raised to an odd power will end in 24 and even power will end in 76

This comes in handy when you are calculating last two digits of an even number or a power of 2. Do keep in mind that 2^{10} is 1024

Let me take an example to explain this concept further

Ex 3.1 Find last two digits of 1456^{72}

$1456^{72} = 16^{72} \times 91^{72}$

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Last two digits of $16^{72} =$ Last two digits of $2^{208} =$ Last two digits of $2^{20} \times 2^8 =$ Last two digits of $1024^2 \times 256 =$ Last two digits of $76 \times 56 = 56$

Last two digits of $91^{72} =$ [Last digit of 9×2]1 = [Last digit of 18]1 = 81

Overall the last two digits = Last two digits of $56 \times 81 = 36$

The point to note here is that I converted the given even number into powers of two and an odd number and then solved it.

Funda 4: Last two digits of a number ending in 5

If the second last digit of the base and the power, both are odd – it will end in 75; otherwise the last two digits will be 25.

Ex 4.1 Last two digits of $75^{65} = 75$ (Second last digit of the base and the power – both odd)

Ex 4.2 Last two digits of $65^{75} = 25$

Ex 4.3 Last two digits of $35^{73} = 75$ (Second last digit of the base and the power – both odd)

Ex 4.4 Last two digits of $1995^{2014} = 25$

Ex 4.5 Last two digits of $1995^{2015} = 75$ (Second last digit of the base and the power – both odd)