



How to Solve: Units' Digit of Power of 9

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YouTube Video Link to this Post is [Here](#)

Following is Covered in this post

Theory of Units' Digit of Power of 9

- Find Units' digit of 9^{81} ?
- Find Units' digit of 9^{53} ?
- Find Units' digit of 9^{68} ?
- Find Units' digit of 9^{60x+61} (given that x is a positive integer)?
- Find Units' digit of 13259^{1279} ?

Theory of Units' Digit of Power of 9

- To find units' digit of any positive integer power of 9

We need to find the cycle of units' digit of power of 9

9^1 units' digit is 9
 9^2 units' digit is 1

9^3 units' digit is 9
 9^4 units' digit is 1

=> The power repeats after every 2nd power

=> **Cycle of units' digit of power of 9 = 2**

=> **Units' digit of odd power of 9 = 9**

=> **Units' digit of even power of 9 = 1**

Q1. Find Units' digit of 9^{81} ?

Sol: 81 is odd

=> Units' digit of $9^{81} = 9$

Q2. Find Units' digit of 9^{53} ?

Sol: 53 is odd

=> Units' digit of $9^{53} = 9$

Q3. Find Units' digit of 9^{68} ?

Sol: 68 is even

=> Units' digit of $9^{\text{Even}} = 1$

Q9. Find Units' digit of 9^{60x+61} (given that x is a positive integer)?

Sol: $60x + 61 = \text{Even} + \text{Odd} = \text{Odd}$

=> Units' digit of $9^{60x+61} = 9$

Q5. Find Units' digit of 13259^{1279} ?

Sol: Units' digit of power of any number = Units' digit of power of the units' digit of that number

=> Units' digit of $13259^{1279} = \text{Units' digit of } 9^{1279}$

=> 1279 is Odd

=> Units' digit of $13259^{1279} = \text{Units, digit of } 9^{1279} = 9$

Hope it helps!