

How to Solve: Last Two Digits of Numbers ending with 2

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

Following is Covered in the Video

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Theory of Last Two Digits of Numbers Ending with 2

- Find Last two digits of 2^{4274} ?
- Find Last two digits of 842^{9802} ?

Theory of Last Two Digits of Numbers Ending with 2

- Express the Number as $(2^{10})^{\text{Power}} * 2^{\text{SmallerPower}}$
- Now we know that $2^{10} = 1024$ and we have expressed the number 1024^{Power}
- 24^{OddPower} will have last two digits as 24
- $24^{\text{EvenPower}}$ will have last two digits as 76
- If we have power of power then we can use last two digits of $76^{\text{AnyPositiveInteger}}$ is 76

Q1. Find Last two digits of 2^{4274} ?

Sol: $2^{4274} = 2^{4270 + 4} = 2^{10 \cdot 427} * 2^4$
 $= (2^{10})^{427} * 16 = 1024^{427} * 16$
 $= 1024^{\text{Odd}} * 16$
 \Rightarrow Last two digits $24 * 16$
 \Rightarrow Last two digits = 84

Q2. Find Last two digits of 842^{9802} ?

Sol: $842^{9802} = (421 * 2)^{9802}$

$= (421)^{9802} * 2^{9800 + 2}$ [\[Watch this video to learn about How to Find Last two digits of Exponents ending with 1\]](#)

\Rightarrow Last two digits = $41 * \text{Last two digits of } (2^{10})^{980} * 2^2$

\Rightarrow Last two digits = $41 * \text{Last two digits of } 1024^{\text{Even}} * 4$

\Rightarrow Last two digits = $41 * \text{Last two digits of } 76 * 4$

\Rightarrow Last two digits = 64

[Link to Theory for Units' digit of exponents here.](#)

Hope it helps!