WORKSHEET

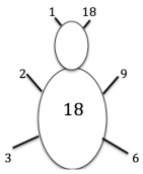
THE ANSWER IS 2026, BUT WHAT IS THE QUESTION?

What different questions can you find with 2026 as the answer? You can be a creative mathematician, someone who has your own mathematical ideas.

Perhaps you can make up an easy question, a hard one and one that is very hard. Compare your questions with other people's. For example, you might ask: 'What do you add to 1066 to get the answer 2026?'.

Find your own interesting facts about 2026 and calculations with the answer 2026 or just investigate a few of the properties of 2026 below. For example you might ask:

1. Do you find anything interesting if you reverse the digits of 2025 and add the two numbers together?
2. Is it correct to say "twenty twenty-six" or should we say "two thousand and twenty-six" or are both correct? Why?
3. People say "twenty twenty-six" so do the 2 twenties mean – 20 thousands, 20 hundreds, 20 tens or 20 units?
4. Find the prime factors of 2026 and write 2026 as a product of its prime factors.
5. Here is the factor bug for 18. The antennae show $1 \times 18 = 18$. The pairs of legs show and $2 \times 9 = 18$ and $3 \times 6 = 18$. For square numbers instead of a pair of legs the bug has a tail. For example the 16-bug has a tail for 4. Factor bugs for other numbers can have more legs. How many legs for 2026? Does it have a tail?



6. 2026 is the sum of two squares $45^2 + 1^2$. Check it out.
7. 2026 is the sum of 3 squares. If one is 37^2, can you find the other two? How many other ways of writing 2026 as the sum of 3 squares can you find if you ask AI?
8. Investigate whether the number 2026 is happy or sad. A ***happy number*** is a positive integer that, when replaced by the sum of the squares of its digits, and this process is repeated, the number chain eventually reaches 1. If the process results in an endless cycle without ever reaching 1, the number is considered unhappy or sad.
   For example 79 and 97 are happy numbers because
   $7^2 + 9^2 \rightarrow 130 \rightarrow 10 \rightarrow 1$
   $(49 + 81) \quad (1 + 9) \quad (1 + 0)$
   and 4 is a sad number because $4 \rightarrow 16 \rightarrow 37 \rightarrow 58 \rightarrow 89 \rightarrow 145 \rightarrow 42 \rightarrow 20 \rightarrow 4$
   and this cycle of 8 numbers repeats over and over again indefinitely.
9. What is 2026 written in Roman Numerals?
10. What is the number 2026 written as a binary number?
11. What interesting facts can you find about the year that you were born?

HELP

How old are you? If you are 9 years old then write down some interesting calculations that have the answer 9 (or whatever your age is, do the same for your age).

For example all these have the answer 9:

3×3 ; half of 18 ; 10 – 1 ; 20 – 11; 16 -7 ; 3^2 ; square root of 81 etc.

See the problem 'I'm Eight'

https://aiminghigh.aimssec.ac.za/years-3-10-i-am-eight/

NEXT

5. How many ways can you arrange the digits 2, 0, 2 and 6 to get different numbers? What is the sum of those numbers?

6. Explore Wild and Wonderful Number Patterns, see http://nrich.maths.org/33

Make up some of your own number patterns.
You've probably come across number patterns before, ones like :-
2 4 6 8 10 12 . . .
512 256 128 64 32 . . .
220 210 200 190 180 170 . . .
11 14 17 20 23 26 . . .
Work out the rules that produced each of the patterns.
What is the reason for the series of dots appearing after each one?
Now make up some of your own number patterns.