

One day our teacher asked us a puzzling question:

I wonder if you can discover
my special two-digit number...

My number is special because
adding the sum of its digits
to the product of its digits
gives me my original number!

What could my
number be?

For example, try 24

The sum of its digits is 6
The product of its digits is 8

Since $6 + 8$ is not 24,
24 cannot be the special number

**Can you find a special number?
Can you find more than one?
Can you find them all?**

There are other sorts of special two-digit numbers...

- I add twice the tens digit to the units digit, then add this to the product of the digits. I get back to my original number.
- I add three times the tens digit to the units digit, then add this to the product of the digits. I get back to my original number.
- I add four times... or five times... or...

Can you use algebra to help you to find these special numbers?