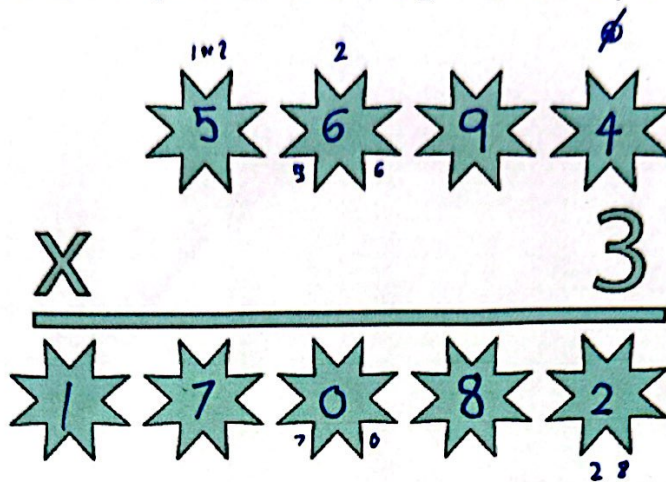




This represents the multiplication of a 4-digit number by 3.



The whole calculation uses each of the digits 0 - 9 once and once only.

The 4-digit number contains three consecutive numbers, which are not in order. The third digit is the sum of two of the consecutive numbers.

The first, third and fifth digits of the five-digit product are three consecutive numbers, again not in order. The second and fourth digits are also consecutive numbers.

Can you replace the stars in the calculation with digits?

This activity originally featured in the hands-on Brain Buster Maths Boxes, developed by members of the NRICH Team and produced by BEAM. These resources are out of print but can still be found on Amazon.

4-digit

$$\begin{array}{r} 1 \\ 456 - 9 \\ \hline 567 \\ 678 \\ 789 \\ 0 \end{array}$$

5 digits

$$\boxed{07182}$$

1 2 3 4 5
 6 7 8 9 0

For 4-digits: The only 3-consecutive, are 012, 456, 567, 678 and 789.

The only one that can have a total of 2 of them, that isn't already there, is 456. The 3rd digit is 9. (4+5)

For 5 digit: 4, 5, 6 can be ones place.

5 is out: $(5) \times 3 = 15$, so 0th of 5d is

2 or 8. But carry is 1: $1 + 9 \times 3 = 28$:

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Only 0, 7, 1 are left.

5 & 6 work, giving 1 or 2. only 2+d works, so

