



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

$$\begin{array}{r}
 \star 5 \star \star \star \star \\
 \times \quad \quad \quad 3 \\
 \hline
 \star 1 \star \star \star \star \star
 \end{array}$$

CONDITION 1 The whole calculation uses each of the digits 0 - 9 once and once only.

CONDITION 2 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.

CONDITION 3 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.

According to Condition 2.

4 Digit Number \rightarrow 5694

4, 5, 6 are consecutive which are not in order
 $9 = 4 + 5$

According to Condition 3

$$\begin{array}{r}
 5694 \\
 \times 3 \\
 \hline
 17082
 \end{array}$$

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0, 1, 2 are consecutive
 not in order
 7, 8 are also consecutive
 not in order.

Condition 1 is also satisfied here.