Sunday Times Teaser 3047 – Some Permutations

by Howard Williams

A solution by Robert Brown

Here is a simple solution to Teaser 3047 which does not involve evaluation of the 3-digit case.

Let the 5 digits have sum = S. As there are n! = 120 permutations, it's possible to arrange these as an addition sum with 120 rows and 5 vertical columns, each column with a sum of 24S. This makes the total = (11111) x (24S).

If S = 25, this gives 6,666,600 as required.

An obvious set of 5 digits summing to 25 is 34567. This includes 2 pairs that sum to 10 each (3+7, 4+6). As these have products 21 & 24, it's sensible to replace them by 1+9 and 2+8, which have lower products. This gives the lowest possible product with 5 as the central digit (12589 has product = 720). There's an obvious alternative 12679, but its product is 756.

So, by evaluating just 3 tries, I have the answer.