Puzzle: March 2026

When Dr Peter Neumann gave his talk in 2006, celebrating the 10^{th} year of UKMT, I got engrossed in Lucas numbers.

Peter said: 'The first row is consecutive positive integers, the second row is consecutive Lucas numbers and in the third row is the remainder when the term in the second row is divided by the term in the first row. In each column a 1 in the third row doesn't always give a prime in the first row, but only after the first 400 terms do.'

I wanted to check that Peter was correct!
To my shame I only got as far as the Lucas number below:

107

229973347436274099102 79

1

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1. 1. What is the largest two-digit number *AB* that is divisible by $A \times B$ where *A* and *B* are different digits?

1. 1. What is the largest three-digit number *CDE* that is divisible by $C \times D \times E$ where *C, D* and *E* are different digits?

1. 1. What is the largest four-digit number *FGHI* that is divisible by $F \times G \times H \times I$ where *F, G, H* and *I* are different digits?

1. 1. The largest five-digit number that is divisible by the product of five different digits is 91728. We did this in March 2022, February 2020 and in the Group Round, February 2019 STMC final. Only 2 out of 88 teams got the correct answer in 45 minutes. So questions 5 and 6 could be hard!

1. 1. What is the largest six-digit number *JKLMNP* that is divisible by $J \times K \times L \times M \times N \times P$ where *J, K, L, M, N* and *P* are different digits?

1. 1. What is the *only* seven-digit number *QRSTUVW* that is divisible by $Q \times R \times S \times T \times U \times V \times W$ where *Q, R, S, T, U, V* and *W* are different digits?

Solve as many of the questions you can.

The names of those sending answers to volunteering@ukmt.org.uk by 15th April will appear in the next UKMT News.

Puzzle: December 2025

Answer: 269

For example:

$269 = 79 + 89 + 101 = 3 + 37 + 59 + 73 + 97 = 5 + 7 + 29 + 43 + 47 + 67 + 71$

$= 11 + 13 + 17 + 19 + 23 + 31 + 41 + 53 + 61$

Answers from:

Alan S