

PRIMEOKU 3

Every column, row and 3×3 box contains the nine lowest prime numbers. The product of the entries in each set of cells joined by dotted lines is shown in the top left corner; no numbers may be repeated within each set

9867				10		133		374
26	85		4389			299	15	
	1729			1955				
437	34		133		33		391	
		15		22		65		133
3927			221		17043		22	
		22	966					65
35	5681				323		483	
			85		22			

HANDS ON POLYHEDRA



These polyhedra were seen earlier this year, after lockdown allowed more local travel. The two striking yellow and blue creations, named The Nursling Murmurings, are the work of artist Martin Heron who worked with three local schools featuring their handprints and the murmurings of birds. The faces consist of octagons, hexagons, squares and rhombi.

The central dodecahedron was spotted in a playground at Milton-on-Sea and the projections on the side allows children to climb to the top.

DIGITALLY DELICATE PRIMES (RECENT NEWS)

Digitally delicate primes are prime numbers that become composite numbers if you change any one of their digits to any other digit. The smallest example of this is **294001**. This means that any variation of this number, such as **894001** ($= 587 \times 1523$), **204001** ($= 7 \times 151 \times 193$) or **294061** ($= 157 \times 1873$), are not prime. There are infinitely many such numbers! The first few are 294001, 505447, 584141, 604171, 971767, 1062599, ... You can find more at <https://oeis.org/A050249>.

These are relatively new discoveries, as in 1978 Murray Klamkin wondered if any such numbers like this existed and Paul Erdős proved that there is an infinite number of them. In 2011 Terrance Tao, a Fields Medal winner, proved that a 'positive proportion' are digitally delicate – this means the difference between consecutive digitally delicate primes remains fairly steady as the primes get really big, i.e., they do not become more and more scarce.

ANNIVERSARIES

Welcome to 2021 – a year of many anniversaries for The Mathematical Association! It is 150 years since the MA was founded in 1871 as the Association for the Improvement of Geometrical Teaching. The current edition of *SYMmetryplus* marks the completion of 25 years of this journal.



Answers to questions, resource sheets and additional notes based on comments received from readers can be found on the *SYMmetryplus* page on the MA website: <http://www.m-a.org.uk/symmetry-plus>

QUICKIE 39 – LOCKED CASE

The lock on my music case has a three-digit code such as 5, 7, 9.

Unfortunately, I have forgotten the code, but I know that all three digits are different. Also, I know that if I divide the first digit by the second digit and then square the result, I get the third digit.

What is the sum of all the possible three-digit codes for my lock?

SIMPLY SOLVE

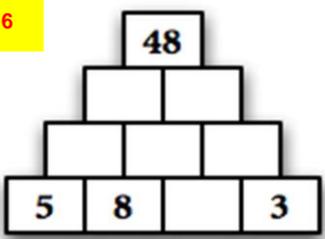
Here are two of the 16 problems listed in the full version of *SYMmetryplus*.

3



A car travels 20 kilometres at 30 kmh^{-1} , then travels 10 kilometres at 60 kmh^{-1} . What is the mean speed for the whole journey of 30 kilometres?

16



Solve this addition pyramid, where each brick is the sum of the two bricks below it. Fraction alert!

This is a taster of the full version of *SYMmetryplus* that is a bright, colourful and lively magazine containing articles, puzzles, problems and competitions for all those who enjoy their mathematics. It is aimed at everyone interested in mathematics, but especially those aged 11 to 18. It has 20 colour pages in A4 format and is published three times a year (spring, summer and autumn).

The Society of Young Mathematicians (SYMS) is a society for all young people who enjoy mathematics, whether they are in a primary or secondary school. Members are part of a national organisation which motivates and encourages young mathematicians.

Every term members receive the SYMS Newsletter – *SYMmetryplus*, which contains short articles, news, things to do, calculator hints, book reviews, games, puzzles and competitions. Members also receive termly copies of the journal *Mathematical Pie*. Again, *Mathematical Pie* contains interesting mathematics problems, puzzles and articles. SYMS encourages and supports mathematical activities for mathematicians of all ages. Adults are very welcome to join SYMS.

SYMS members will receive *SYMmetryplus* and *Mathematical Pie* delivered direct to their homes. All young people interested in mathematics should join The Society of Young Mathematicians NOW!

Full membership is open to everyone and runs from 1st September to the following 31st August. Members receive all 3 issues of the journals, whatever time of year they join. Membership is £10.99 per year (£14.99 if outside the UK in Europe, £18.99 for airmail outside Europe).

For details on how to subscribe, visit <https://www.m-a.org.uk/SYMS>