MAGIC SQUARE FOR 2004

In the early fourteenth century, in a city called Pātrapuñja-nagara in the region of Naimiṣa (near the modern Sitapur, in the state of Uttar Pradesh), Harṣa composed the tract *Aṅka-yantra-cintāmaṇi* which roughly translates to "magic squares that are effective like wish-fulfilling gems". In this work, Harṣa taught an elegant method of constructing a magic square for any desired constant. Following Harṣa's method, we created a special magic square of the order four, with the magic constant 2004, to carry our good wishes for the New Year.

In Sanskrit, the magic square is called *aṅka-yantra* or *bhadra-yantra*. The latter term is short for *Sarvato-bhadra-yantra*, a diagram that is symmetrical on all sides and is therefore auspicious in all respects.

Accordingly, in our magic square, the sum of all the four numbers is always 2004 in any horizontal row, in any vertical column, and in each of the two diagonals. Again, any shorter diagonal, parallel to the main diagonal, together with its complement on the other side, will also yield the same sum. For example, (553 + 450 + 449) + (552) = 2004. Or, (449 + 558) + (553 + 444) = 2004. Therefore this magic square is known as pan-diagonal.

555	554	449	446
445	450	551	558
553	556	447	448
451	444	557	552

There is more magic still. Take the four cells in the corners and add their numbers. The result will be 2004. Or take any two adjacent cells, and the two cells exactly below or above them. Their sum will again be 2004. For example: 554 + 449 + 450 + 551 = 2004. Or 445 + 450 + 553 + 556 = 2004. Likewise 447 + 448 + 557 + 552 = 2004.

The magic is by no means exhausted. Defying the geometrical boundaries on the four sides, our magic square flows on from the right margin to the left (as if it were rolled up like a cylinder) and again from the bottom margin to the top one. Accordingly, take any two adjacent cells in the right row and the corresponding two cells in the left row. The sum of the numbers in these four cells will yield 2004. Thus (558 +448)+ (445 + 553) = 2004. The same is the case with the bottom and the top rows; e.g. (451 + 444) + (555 + 554) = 2004. There may yet be more magic still; we leave it for you to discover.

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