

RECREATIONAL SYMMETRY

This is a non-regular section for symmetry-related problems and puzzles (symmetr-enigmas), as well as games, computer programs, descriptions of scientific toys, and other topics which are connected with both recreation and education. There is a Renaissance of problems concerning tilings and polyhedral toys, inspired by the Penrose tilings, the Rubik cube, and other inventions. The scientific dimensions of origami, the Japanese art of paper-folding, are discussed in some recent works by leading scholars and engineers (Husimi, Miura, and others). This section gives a forum for these developments, but it has no intention of competing with journals of recreational mathematics, since only short notes are published here.

Symmetr-enigmas

Problem 1: Symmetric dates

The "Manifesto on (dis)symmetry" (see the first paper in this issue) was signed on the centrosymmetric date 06 || 90 that is on June 11, 1990, according to the American style. It is, however, 6th of November 1990 following the British convention, and a non-existing date according to the International Standards Organization (ISO) which requires the year-month-day order.

For this problem, suppose that the zero is not crossed, contrary to the practice in computing; the one has no "flag", it is just a vertical line segment; the 6 and 9 are congruent; and the two circles in 8 are equal. It is also supposed that there are, as in many questionnaires, three times two boxes for the digits of the month, day, and year. That is we should write, for example, the sixth month or day as 06, and we are not using the first two digits of the year. This last convention may cause troubles for a computerized data bank in the case of the birthdays of the oldest people. (Once, a children's hospital invited a 105-year-old woman, who had absolutely no teeth for the last 30 years, to check her milk teeth.)

Our example, 06 || 90, is a centrosymmetric date (it possesses twofold rotational symmetry). There are, however, also mirror symmetric ones, for example, 08 || 80. A weaker requirement here is to request not the geometric mirror symmetry, but only the palindromic one. That is, the number should remain the same reading it in reverse (e.g., 03 22 30). Palindromic words and sentences gained some importance in experimental poetry; sometimes even magic meanings were attached to them.

The task is to determine the number of centrosymmetric, mirror symmetric, and palindromically symmetric dates, respectively, in this century according to both the American and the British conventions. It is not a difficult exercise, therefore it can be used to freshen the often monotonous problems in elementary combinatorics. A similar exercise can be performed with letters or words, requesting centrosymmetric, mirror-symmetric, and palindromic words or sentences, respectively. If you wish, feel free to send us your answers or comments.

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