

Cal Poly Department of Mathematics

Puzzle of the Week

Jan 21-27, 2011

From Tom O'Neil:

Recall that the *mean* \bar{x} and *standard deviation* σ of a set of numbers $\{x_1, x_2, \dots, x_k\}$ are defined by

$$\bar{x} = \frac{\sum_{i=1}^k x_i}{k}, \quad \sigma = \sqrt{\frac{\sum_{i=1}^k (x_i - \bar{x})^2}{k}}.$$

As it happens, for every set of seven consecutive integers the numbers \bar{x} and σ are also integers. [For example the mean of $\{6, 7, 8, 9, 10, 11, 12\}$ is 9 while it's standard deviation is 2]

What is the next value of k for which any set of k consecutive integers have both \bar{x} and σ integers?

Solutions should be submitted to Morgan Sherman:

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before next Friday. Those with correct and complete solutions will have their names listed on the puzzle's web site (see below) as well as in next week's email announcement. Anybody is welcome to make a submission.

<http://www.calpoly.edu/~sherman1/puzzleoftheweek>