Problem

187

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Solving this series of problems requires a calculator that can display a great many digits. These are freely available on the internet, for example: http://gvhome.001webs.com/bcalc.htm.

In these problems with fractions and their decimal equivalents, we will not do any round-off.

Write the decimal equivalent of 1/7 to at least 25 places.

a) What pattern do you notice?

b) Which digits are missing from this pattern?

c) What is the SDQ of the sum of the digits in this pattern and of its missing digits? (SDQ was last discussed for problem #159 from the April 2008 issue).

d) Compare with 2/7, 3/7, through 6/7.

e) Compare with 8/7, 9/7, etc.