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Review

The ancient Egyptians regarded the division of 1 as the basis for all fractions. My current problems in the Problem Corner examine the division of 1 in terms of Repeat Blocks (RB) and Single Digit Quality (SDQ).

For example, $1/7 = 0.14285\overline{7}142857$, a repeating fraction that has an RB of the 6 digits, 1 4 2 8 5 and 7. The 3, 6 and 9 digits are not present.

To find the SDQ of the digits in this repeat block, we simply continue to add the digits of the resulting sum until we obtain a single digit. We employ the SDQ symbol \Rightarrow to mean the reduction to a single digit. In this study of fractions we seek any patterns that emerge. Thus the RB sums to $27 \Rightarrow 9$ as seen in Problem 187.

- Write the decimal equivalent of $1/13$ to at least 12 places.
- What is the Repeat Block and the SDQ of the Repeat Block?
- Compare with $2/13$, $3/13$, through $16/13$.
- What do the inverses of 7, 11, and 13 have in common?