

SOME QUESTIONS TO CONSIDER

1. Find three interesting facts about the decimal forms of $\frac{1}{7}, \frac{2}{7}, \dots, \frac{6}{7}$
2. Find the next three numbers in the series (21, 220, 221, 23, 264, 265)
3. Inscribe a regular octagon within any given circle
4. Prove $n! \leq \left(\frac{n+1}{2}\right)^n$ for integers $n \geq 1$
5. Derive an expression in terms of n only for $\sum_{k=1}^n k^3$
6. Solve $x^2 - 41y^2 = 1$ for integers x, y

I'll give the solutions by mid-January