Is it possible to use the sixteen digits 2, 2, 3, 3, 4, 4, 5, 5, 6, 6, 7, 7, 8, 8, 9, 9 as the digits of two numbers, \( x \) and \( y \), such that \( x = 2y \)? (All sixteen digits must be used exactly once.)

**Solution:** This is not possible.

Notice that the sum of these sixteen digits is 88, and so \( x + y \equiv 1 \pmod{3} \). However, if \( x = 2y \), then \( x + y = 2y + y = 3y \equiv 0 \pmod{3} \).

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