Certain numbers have interesting properties. For example, \(1^3 + 5^3 + 3^3 = 153\). That is, the sum of the cubes of the individual digits of the positive integer 153 is the number itself. This may lead you to ask a question like, “Are there other such numbers?” (Yes there are, but that is not our concern today.)

The number 512 stands alone as a three-digit positive integer with three different digits such that the cube of the sum of the digits equals the number itself. That is, \((5 + 1 + 2)^3 = 512\). This is the only three-digit positive integer with three distinct digits that has this property.

Find all five-digit positive integers with distinct digits such that the cube of the sum of the digits equals the original number.

That is, find all five-digit positive integers of the form \(CUBES\) with distinct digits such that

\[
(C+U+B+E+S)^3 = CUBES
\]

More Info:

Check the CEMC at Home webpage on Thursday, April 23 for the solution to this problem. Alternatively, subscribe to Problem of the Week at the link below and have the solution, along with a new problem, emailed to you on Thursday, April 23.

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