

# Problem 1307: Verbal Arithmetic Puzzle

## Problem Information

**Difficulty:** Hard

**Acceptance Rate:** 34.78%

**Paid Only:** No

**Tags:** Array, Math, String, Backtracking

## Problem Description

Given an equation, represented by `words` on the left side and the `result` on the right side.

You need to check if the equation is solvable under the following rules:

- \* Each character is decoded as one digit (0 - 9).
- \* No two characters can map to the same digit.
- \* Each `words[i]` and `result` are decoded as one number **without** leading zeros.
- \* Sum of numbers on the left side (`words`) will equal to the number on the right side (`result`).

Return `true` if the equation is solvable, otherwise return `false`.

**Example 1:**

**Input:** words = ["SEND", "MORE"], result = "MONEY" **Output:** true **Explanation:** Map 'S' -> 9, 'E' -> 5, 'N' -> 6, 'D' -> 7, 'M' -> 1, 'O' -> 0, 'R' -> 8, 'Y' -> 2 Such that: "SEND" + "MORE" = "MONEY",  $9567 + 1085 = 10652$

**Example 2:**

**Input:** words = ["SIX", "SEVEN", "SEVEN"], result = "TWENTY" **Output:** true **Explanation:** Map 'S' -> 6, 'I' -> 5, 'X' -> 0, 'E' -> 8, 'V' -> 7, 'N' -> 2, 'T' -> 1, 'W' -> 3, 'Y' -> 4 Such that: "SIX" + "SEVEN" + "SEVEN" = "TWENTY",  $650 + 68782 + 68782 = 138214$

**Example 3:**

**Input:** words = ["LEET", "CODE"], result = "POINT" **Output:** false **Explanation:** There is no possible mapping to satisfy the equation, so we return false. Note that two different

characters cannot map to the same digit.

**\*\*Constraints:\*\***

\* `2` <= words.length <= 5` \* `1` <= words[i].length, result.length <= 7` \* `words[i], result` contain only uppercase English letters. \* The number of different characters used in the expression is at most `10`.

## Code Snippets

**C++:**

```
class Solution {
public:
    bool isSolvable(vector<string>& words, string result) {

    }
};
```

**Java:**

```
class Solution {
    public boolean isSolvable(String[] words, String result) {

    }
}
```

**Python3:**

```
class Solution:
    def isSolvable(self, words: List[str], result: str) -> bool:
```