Problem D : The Cipher of the Deepest Night

In the heart of the year's longest and coldest night, an ancient chest containing the wisdom of the elders and the crimson fruits of the harvest sits locked. To reveal its secrets before the first light of dawn, one must provide a specific emergency code.

The vault's mechanism is unique: it does not wait for a full sequence. Instead, it continuously scans the stream of characters and accepts the very first valid contiguous segment it encounters.

A segment is considered balanced and valid only if it satisfies the following celestial harmony:

- Its length is at least 6.

- It contains at least one uppercase English letter (A--Z).

- It contains at least one lowercase English letter (a--z).

- It contains at least one decimal digit (0--9).

Your Task

Given a string of alphanumeric characters, determine the length of the **shortest contiguous substring** that meets all the requirements above. If no such substring exists, output 0.

Input

The input contains multiple test cases. The first line contains an integer N — the number of scenarios (test cases).
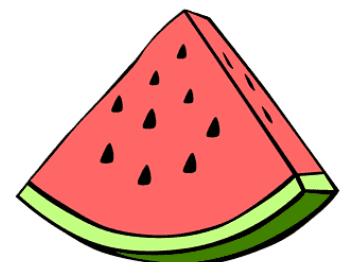
Each of the next N lines contains a string representing the typed input stream.

$$1 \leq N \leq 50$$
$$1 \leq |S| \leq 200$$

Output

For each test case, output a single integer — the minimum length of a valid substring. If no valid substring is found, output 0.

Example

Standard Input	Standard Output
4 AliKam123test AbCdEfG 88syadneerG Windows7released21october2009	6 0 10 8