

Waiting for Easter

Given a date, calculate the number of days until next Easter according to canonical (western) rule using the Gregorian Calendar.

Input

First line of input is a positive integer $t < 100$, the number of testcases. Each of the following t lines contains a single date ($1600 < \text{year} < 2100$). The example below shows the date format.

Output

For every date print the number of days until next Easter or 0 if it's an Easter date.

Example

Input:

```
3
16 April 2011
27 February 1954
7 July 1777
```

Output:

```
8
50
286
```