Problem of the Week
Problem D
A Big Leap

Most people think of a year as 365 days, however it is actually slightly more than 365 days. To account for this extra time we use leap years, which are years containing one extra day.

Mara uses the flowchart shown to determine whether or not a given year is a leap year. She has concluded the following:

- 2018 was **not** a leap year because 2018 is not divisible by 4.

- 2016 was a leap year because 2016 is divisible by 4, but not 100.

- 2100 will **not** be a leap year because 2100 is divisible by 4 and 100, but not 400.

- 2000 was a leap year because 2000 is divisible by 4, 100, and 400.

If Mara chooses a year greater than 2000 at random, what is the probability that she chooses a leap year?

Start with a year

Is the year divisible by 4? — NO → The year is NOT a leap year

YES

Is the year divisible by 100? — NO → The year is a leap year

YES

Is the year divisible by 400? — NO → The year is NOT a leap year

YES

The year is a leap year