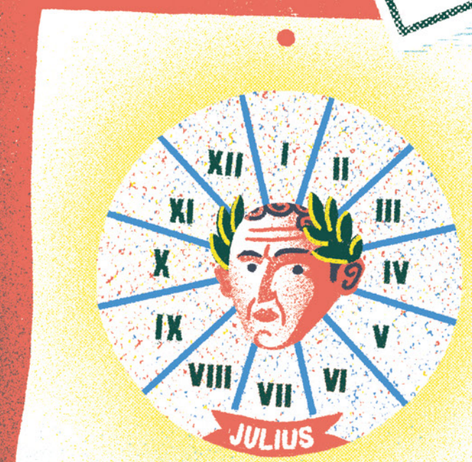
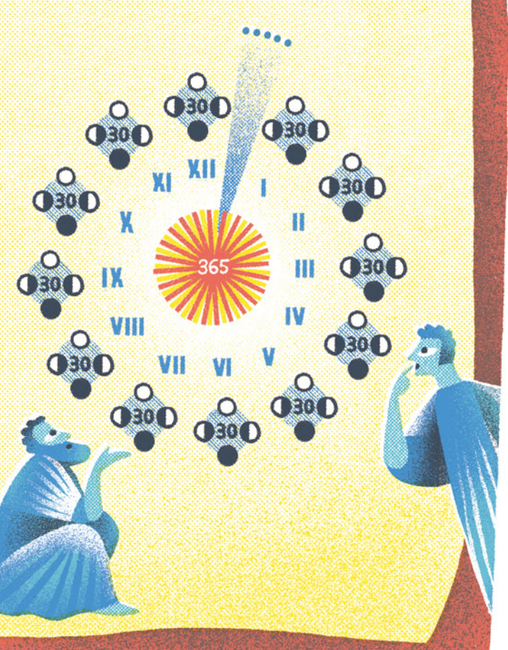
The modern calendar:
a 500-year-old invention

In ancient Greece, they had calendars based on both the Sun and the Moon. Twelve Moon cycles, or "months" of 30 days each, added up to 360 days. In comparison, a solar year, which is based on the position of the Sun in the sky, was about 365 days long. To bridge the gap of those five days, the clever ancient Greeks added an extra month: In a span of 19 years, the first 12 years had 12 months, and the last 7 years had 13 months.





In ancient Rome, Julius Caesar introduced a calendar that made the year 365 days long, with an extra day every four years to keep the calendar in sync with the Sun–this year is called a leap year. That calendar had 12 months, based on complete cycles of the Moon. The Roman Empire was so powerful that this calendar, called the Julian calendar, spread throughout Europe. Today, this extra day is February 29.

By the 1500s, the Julian calendar was lagging 10 days behind the Sun because the actual length of a solar year is 365 days, 5 hours, and approximately 49 minutes. To make up for that flaw, Pope Gregory XIII set some mathematicians and astronomers the task of solving this surplus of 5 hours and 49 minutes. The solution meant that, every few hundred years, a leap year would have to be skipped, meaning that instead of every four years, there would be an eight-year gap. They decided to skip the leap years on the first year of each century, but only if that number was not divisible by 400. So, this means we had a leap year in 2000 (2000 ÷ 400 = 5), but won't in 2100 (2100÷400=5.25). Most of the world, including us, still uses this Gregorian calendar today.

1500 1600 1700 1800 1900 2000 2100 2200 2300

Other calendars are still being used alongside the Gregorian one that are even more closely linked to the movements and appearance of the Moon. Millions of people in China use the traditional Chinese calendar to determine dates for holidays, weddings, and even funerals. The Chinese New Year doesn't start on January 1 like the Gregorian New Year does, but falls on a different day in winter (between January 21 and February 21) each year. The Jewish calendar is also used to determine dates for religious rituals. In this, New Year refers to the harvest season in September or October. It marks the end of the agricultural year and the start of a new one.