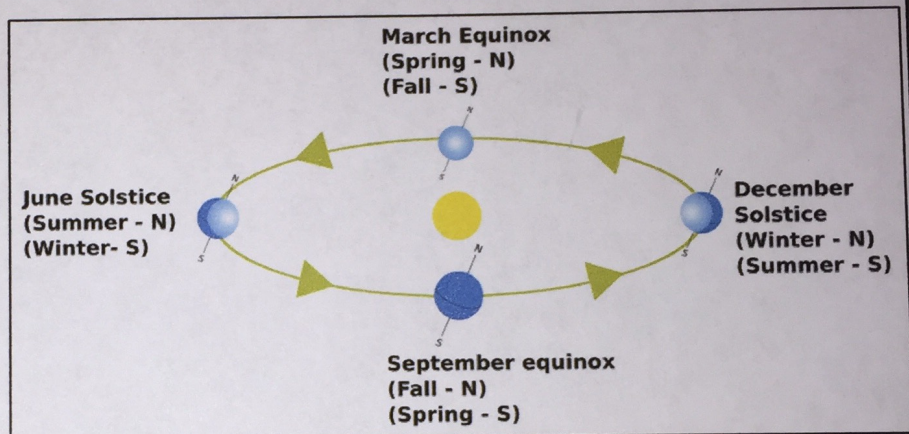


# Earth's Revolution

Have you ever noticed that your classroom globe is tilted? This is no accident. Globes are made to be replicas, or models, of the Earth. Earth tilts on its axis<sup>1</sup> toward the sun at 23.5 degrees. This tilt is why we have seasons. If the Earth's axis was straight up and down with no tilt, the temperature would never change. The Earth's tilt, combined with its revolution around the Sun, causes summer, fall, winter, and spring.

The Earth revolves around the Sun in an elliptical, or oval, orbit<sup>2</sup>. When the North Pole is tilted toward the Sun, the Northern Hemisphere has summer while the Southern Hemisphere has winter. About six months later, when the North Pole is tilted away from the Sun, the Southern



Hemisphere has summer while the Northern Hemisphere has winter.

It takes Earth 365.242 days to make a complete revolution around the Sun (or 365 and about one quarter days). This is what we call the solar year. Our modern calendar only has 365 days EXCEPT every four years, we add another day to February. These years are called leap years. 2016 was a leap year, and the next will be 2020. But wait, 0.242 is not an exact quarter of a day. Over the course of many years, those thousandths of a day can add up! Luckily, Pope Gregory XIII fixed this glitch in 1582 by establishing the Gregorian calendar, which is what we still follow today. If we didn't follow the Gregorian calendar, every 128 years, we would be ahead of the solar year by one day. So how was the problem fixed? Leap years occur every 4 years except in years ending with two zeroes that aren't divisible by 400. The year 1896 was a leap year, but the year 1900 was not. This helped our calendar catch up to the solar year.

<sup>1</sup>axis: imaginary line on which something spins