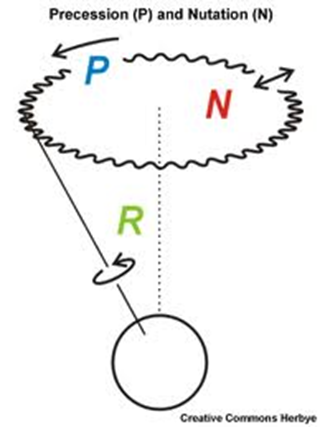
1. **Nutation:** 

**Definition: A periodic oscillation (nod) of the Earth’s axis that causes the precession of the poles to follow a wavy rather than smooth circular path.**

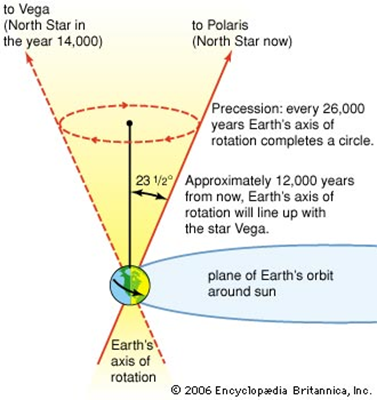
**The Activity: Watch the video of the Earth’s precession.**

**Questions:**

**1.Explain what nutation is in your own words.**

**2.What causes nutation to occur based on the text provided on the website.**

[**https://space-geodesy.nasa.gov/multimedia/EarthOrientationAnimations/nutationAndPrecession.html**](https://space-geodesy.nasa.gov/multimedia/EarthOrientationAnimations/nutationAndPrecession.html)

**2. Precession:** 

**Definition: the slow, circular, change in direction of the Earth’s axis as it rotates. This 26,000-year cycle causes the “North Star” to change.**

**The Activity: Watch the video on precession and then, practice viewing precession by spinning the top.**

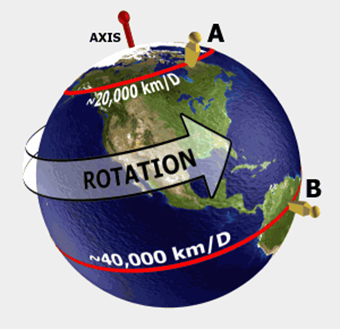
**https://www.youtube.com/watch?v=0qHjtp4cdCA**

**Questions:**

**1.Is the precession more noticeable when the gyroscope is going faster or slower?**

**2.Approximately how long does 1 precession of the Earth take?**

**3. Why do astronomical maps & charts become outdated every 50-100 years**

**3. Rotation:**

**Definition: An orbital body (star, planet or moon) turning on its imaginary axis. Rotation causes differences in time, date, light and gives the Earth its shape**

**The Activity: Watch the two videos on Earth’s rotation and the Moon’s rotation.**

**<https://www.youtube.com/watch?v=pLl8sDZRSYg>**

**<https://www.youtube.com/watch?v=exIpL0Uhr_k>**

**Question:**

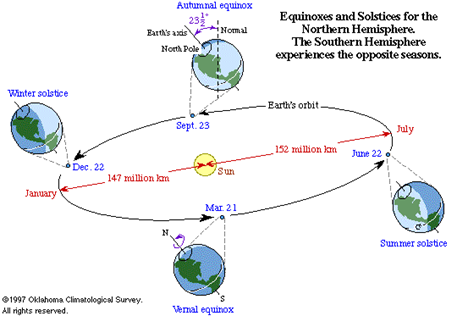
**1. How long does it take Earth to make one rotation?**

**2. In which direction does the Earth rotate?**

**3. What is caused by Earth’s rotation around the sun?**

**4. Why do we only see one side of the moon?**

**4. Revolution:**



**Definition: The path a planet takes as it goes around its star or the path a moon takes as it goes around its planet**

**The Activity: Choose the preset “Sun & Earth”. Move the sliding bar on the right side to select different planets. Click anywhere in “space” to add more planets. Be patient and watch what happens.**

**Questions:**

**1. What affects the speed of a planet’s rotation?**

**2. How long does it take Earth to make a complete revolution?**

**Earth’s Motions WebQuest--Answer Sheet**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Movement:** | **Nutation** | **Precession** | **Rotation** | **Revolution** |
| **Definition** |  |  |  |  |
| **How long does it take?** |  |  |  |  |
| **Visual/Drawing:** |  |  |  |  |