Fun Facts:

**Polaris**

Computer Code: polaris

* **Other Names:**
  + The North Star
  + Lodestar
  + Navigatoria
  + Alpha Ursae Minoris
* **Location:**
  + RA: 02h 53m 4s
  + Dec: +89⁰ 20’
* **Basics:**
  + This is a variable double star in Ursa Minor, but there is actually a 3rd spectroscopic companion. It is famous for its location near the celestial pole.
  + Distance: 430 light years
    - The light we’re seeing left this star around the 1580s. These are some things that were happening around that time:
      * The Reformation was in full swing.
      * Sir Walter Raleigh was forming the Roanoke colony off of North Carolina.
      * England & Spain were warring with each other. France had a civil war.
  + Variability: Polaris A is a pulsating Cepheid star (the closest one to Earth).
    - It currently ranges in magnitude from +1.86 to +2.13 over a period of just under 4 days.
    - Hydrogen fusion in its core has stopped and it is now passing through a phase of instability where it pulsates.
    - Polaris’ pulsations have nearly stopped. Around 1900, the luminosity varied 8% from its average, but since then the variation has been declining. The variation reached 1% in the mid-1990s.
* **Double Star:**
  + - Distance: Polaris A and Polaris B are at least 2,400 AU apart. They take at least 42,000 years to rotate around each other.
    - Polaris Ab was discovered in 1929 using spectroscopy. Ab takes 29.6 years to orbit A, at an average distance of 18.5 AU. A very eccentric orbit takes it between 6.7 and 27 AU.
  + **Polaris A (UMi A)**
    - Evolved supergiant
    - B-V Color Index: +0.61 yellow
    - Luminosity: 2,500 Suns visual
    - Temperature: 10,340⁰ F
    - Diameter: 45.6 Suns
    - Mass: 6 Suns
    - Magnitude Range: +1.86 to +2.13
    - Period 3.96 days
  + **Polaris B (UMi B)**
    - Main sequence, pale white
    - Luminosity: 28 Suns visual
    - Mass: 1.4 Suns
    - Magnitude : +9.1
    - Discovered by William Herschel in 1780.
  + **Polaris Ab (UMi Ab)**
    - Orbits Polaris A
    - Main sequence dwarf star
    - Mass: 1.25 Suns
* **The Pole Star:**
  + Today, Polaris is less than 42’ from the true pole and is actually moving closer to it. It will reach a minimum of 27.5’ from true pole in the year 2101 AD. After that it will begin moving away from true pole.
  + The change in location is due to the slow wobble in the orientation of the Earth’s axis (caused by gravitational effects of the Sun & Moon). This is called precession. The north celestial pole traces out a 47⁰ circle in the sky every 25,800 years.
    - Other stars along this circle were the pole star in the past and will be again in the future.
    - When the Pyramids were built about 4,600 years ago, the star Thuban was the pole star.
    - Vega was the pole star about 12,000 years ago.
    - At the time of Christopher Columbus, Polaris was 4⁰ away from the pole. He did not need to use it for navigation because the compass had already been invented, but he did check his compass against it.
* **Other Notes:**
  + It is the 48th brightest star in the sky, but is easy to spot because there are relatively few bright stars near it.
  + It is easily spotted using the 2 pointer stars from the Big Dipper’s scoop (Merak & Dubhe).
  + Polaris marks the end of the handle of the Little Dipper.
  + It is not visible from the Southern Hemisphere.