1.1.a Nā Hōkū/The Stars

The stars of the Navigator’s Triangle are known to Hawaiian voyagers as the constellation Huinakolu, part of Maui’s Fishhook. Today’s voyagers also know that the Western constellation these stars are a part of is called Scorpius. These hōkū help all astronomers and voyagers find to the North Star, and find their way at sea.

**Hawaiiki/Alpha Cygni/ Deneb**
- blue supergiant star
- 1600–3200 light years away
- only a few million years old
- makes more light in 1 day than the Sun does in 140 years (it’s at least 100,000 X brighter)

**Humu/Alpha Aquilae/Altair**
- blue-white “main sequence” dwarf star
- 17 light years away
- under 1 billion years old
- rotates in only 6½ hours (our Sun takes 25 days)

**Keoe/Alpha Lyrae/Vega**
- light blue “main sequence” subgiant
- 25 light years away
- 3½ billion years old
- 5th brightest star in the sky
- will be the North Star by 14,000 AD (also was the North Star long ago)
- 3 X bigger & 50 X brighter than our Sun

**Hōkū-pa’a/Polaris/North Star**
- white-yellow supergiant
- 431 light years away
- appears not to move from Earth’s north pole
- the outside edge of Big Dipper stars also point to this star

**DRAW** 3 lines to connect the stars shown below in the Navigator’s Triangle ... then draw an arrow through the box to show how they point to Hōkū-pa’a.

**THINK:** During Makahiki, these stars can be seen in Hawai‘i in the ______________________ sky.
1.1.b About Nā Hōkū / The Stars (cont’d)

**Makali‘i/ Pleiades, The 7 Sisters**

- Makali‘i means ‘little eyes’ in Hawaiian
- these stars start Hawaii’s new year, Makahiki, when they 1st rise in the east
- part of the constellation Taurus
- only 440 light years away
- used by early astronomers to measure the size of the universe
- includes about 500 stars plus nebulae, but our eyes can only see about 14
- is mostly hot blue stars that were formed together about 100 million years ago, & still travel together as a group
- also has brown & white dwarf stars & other deep space features

**Ka Hei-Hei O Nā Keiki / Orion, The Great Hunter**

- Hawaiian name refers to a string game, like Cat’s Cradle
- seen all over the world & known by many names (Orion’s Belt is 3 paddlers in Tonga, the 3 Marys in S.America & the Saucepan in Australia)
- includes many stars & the brightest nebula (near the belt)
- Egypt’s ancient Gaza pyramids are a sky map of Orion’s Belt

**A’a / Sirius, The Dog Star**

- Hawaiian name means to burn brightly (plus other meanings)
- ‘sirius’ is Latin for ‘scorcher’
- brightest star in the sky
- part of constellation Canis Major (Big Dog)
- less than 9 light years away (only 50 trillion miles)
- is a ‘main sequence’ white-green, dwarf star
- 2½ times bigger than Ka Lā
- has a ‘pup’ star which orbits it, also called Sirius B, a white dwarf star

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http://www.astro.wisc.edu/~dolan/constellations/Orion.html

http://www.astropix.com/HTML/B_WINTER/C_A_MAJ.HTM

http://www.mactonnies.com/imperative44.html
1.1.c Ka Lā, Mahina, Hōkūloa  
(The Sun, Moon & Venus)

In astronomy, Ka Lā, the Sun, is a hōkū - a star. Mahina, the moon, orbits the planet Earth. And Hōkūloa (Long Star), Venus, is a hōkū hele - what ancient Hawaiians called a 'wandering star,' a planet.

**STUDENT DIRECTIONS:** Guess which celestial body these facts describe! Draw lines to match them up!

**Named for the goddess of love**  
*Also known as Sol*  
*Also known as Luna*  
Atmosphere is extremely hot  
Has almost no atmosphere  
Atmosphere is CO₂ & Nitrogen  
₂nd brightest object in night sky  
Is a 'main sequence' star  
Is ₅ times hotter than Earth  
Is made mostly of hydrogen & helium  
Is very hot on ₁ side & very cold on the other side  
Can be seen both day & night  
Can be seen both day & night  
Has extreme air pressure  
Has very little air pressure

**Causes Earth’s tides**  
Rotates from east to west  
Rotates around the Earth  
Rotates around the Milky Way  
Is bigger than Earth  
Is smaller than Earth  
Is smaller than Venus  
Brightest star in day sky  
Used to create the modern calendar  
Used to create the Hawaiian calendar  
Is part of the Milky Way  
Closer to the Sun than to Earth  
Is covered with basalt like we find in Hawai‘i  
Is made of many of Earth’s elements

**TEACHER DIRECTIONS:** DO NOT COPY IN COLOR!