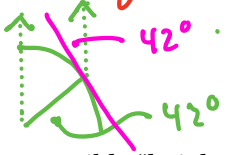
ABRHS PHYSICS (AP) NAME: KEY

Observation Questions

Use the diagrams on the back of this if you are having a hard time.

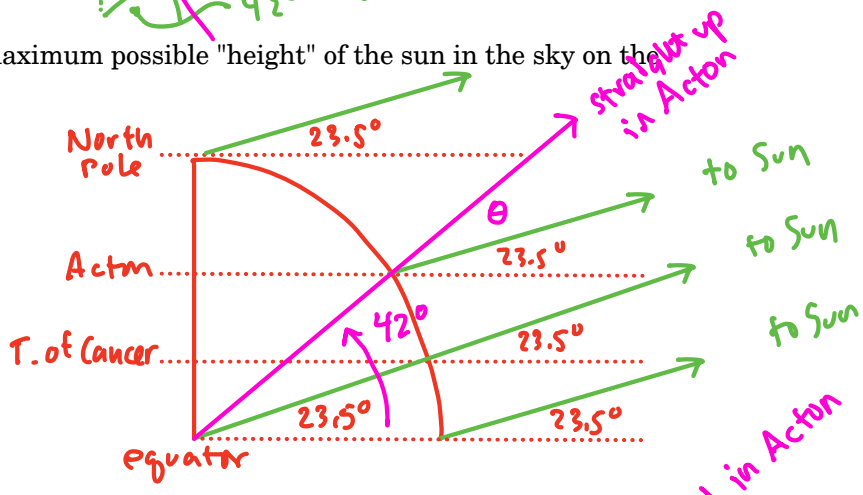
1. Imagine you are on the North Pole. Describe the motion of the sun at the following times:
   a. On the Spring Equinox.
      Basically travels around the horizon, and the first time you see it!
   b. On the Summer Solstice.
      It never sets. Basically goes around in a circle ~23.5° above the horizon.
   c. On the Fall Equinox.
      Like a, goes around the horizon. Basically, the last time you'll see it!
   d. On the Winter Solstice.
      Can't see it - and won't until the equinox

2. For the following locations, how far above the horizon would the North Star be?
   a. On the North Pole.
      ~90° (almost straight up.)
   b. On the equator.
      on the horizon - which means you really can't see it.
   c. On the South Pole.
      unless you can see through the center of the earth, it is not visible.
   d. In Acton (about 42° latitude.)
      ~42° above the horizon

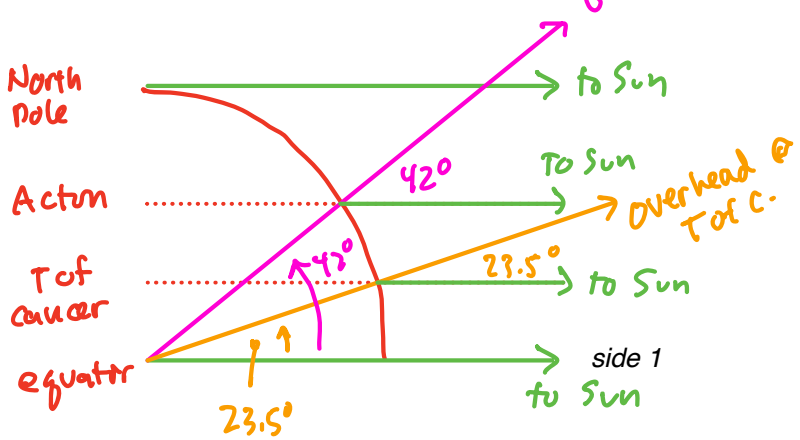


pink is horizon
green dotted is to North Star

3. For the following locations, what is the maximum possible "height" of the sun in the sky on the date of the summer solstice?
   a. On the North Pole.
      23.5°
   b. On the equator.
      90 - 23.5 = 66.5°
   c. On the Tropic of Cancer.
      90°
   d. In Acton (about 42° latitude.)
      θ = 42 - 23.5 = 18.5°
      ∴ 90 - 18.5 = 71.5°



4. For the following locations, what is the maximum possible "height" of the sun in the sky on the date of the vernal equinox?
   a. On the North Pole.
      0°
   b. On the equator.
      90°
   c. On the Tropic of Cancer.
      90 - 23.5° = 66.5°
   d. In Acton (about 42° latitude.)
      90 - 42 = 48°

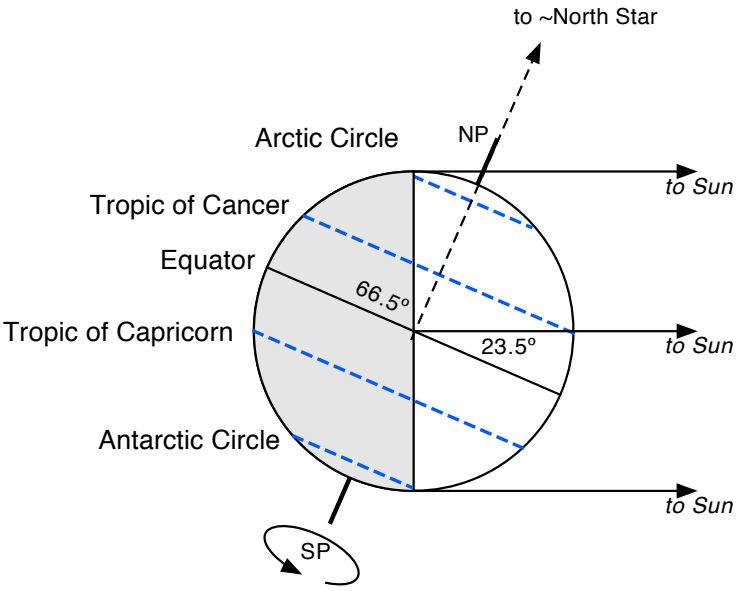


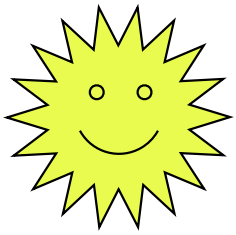
Remember: The horizon is 90° from straight overhead.

NAME: _____

Observation Questions

Summer Solstice - Northern Hemisphere
Winter Solstice - Southern Hemisphere





Winter Solstice - Northern Hemisphere
Summer Solstice - Southern Hemisphere