Astronomy 1102/1104 26 January, 2009
Exercise 2—Due in Section from 2 Feb.

Name: _____

The Altitude of the Sun

Section: _____

In this exercise, we will calculate the altitude of the Sun at different times of the year from various locations on the Earth. For each location below, calculate θ, the altitude of the celestial equator over the southern horizon, and the maximum altitude of the Sun on the equinoxes (A_E), the summer solstice (A_S) and the winter solstice (A_W). In addition, draw in the angles in the diagram given. Also mark the location of the NCP (or SCP). You may find it useful to consult the equations and example in the handout titled *An Introduction to Angles in the Sky*.

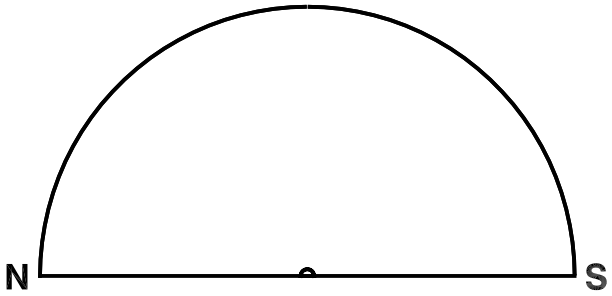
1. Ithaca, New York. Latitude λ = 42.5°N.

a. θ = _____°.

b. A_E = _____°.

c. A_S = _____°.

d. A_W = _____°.



e. Does the Sun ever get directly overhead in Ithaca?

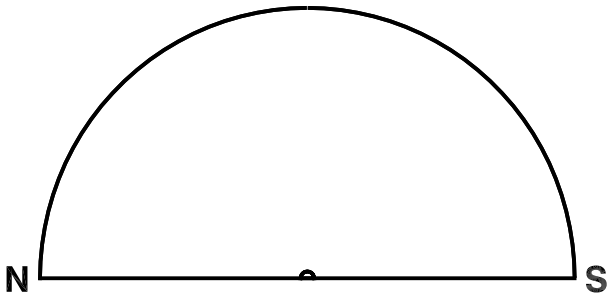
2. Fort Yukon, Alaska. Latitude λ = 66.5°N.

a. θ = _____°.

b. A_E = _____°.

c. A_S = _____°.

d. A_W = _____°.



e. Explain your answer to d.

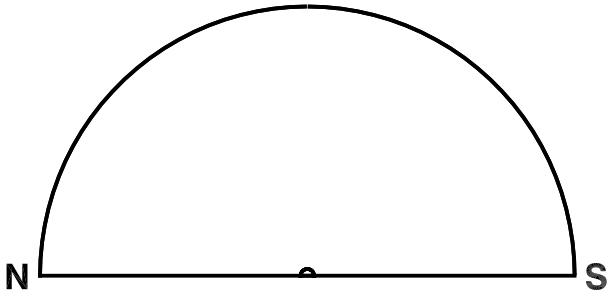
3. Clarence Town, Bahamas. Latitude $\lambda = 23.5°$N.

a. θ = _____°.

b. A_E = _____°.

c. A_S = _____°.

d. A_W = _____°.



e. Does the Sun ever get directly overhead in Clarence Town? If so, for how many days?

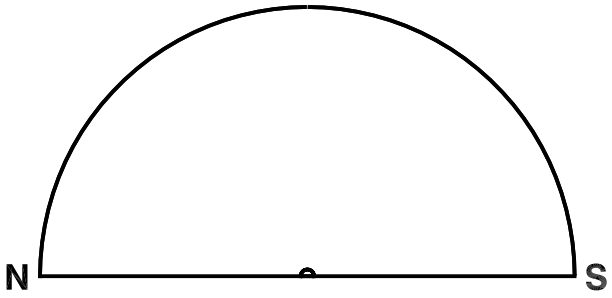
4. Kisumu, Kenya. Latitude $\lambda = 0°$.

a. θ = _____°.

b. A_E = _____°.

c. A_S = _____°.

d. A_W = _____°.



e. Explain your answer to c. What does this angle really mean?

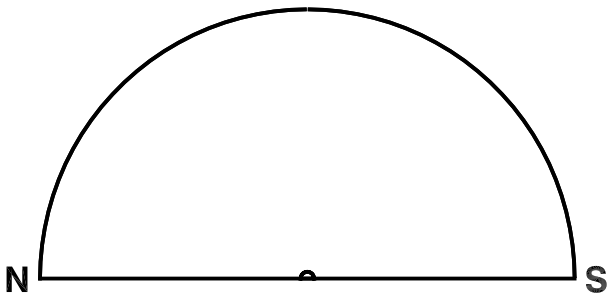
5. Adelaide, South Australia. Latitude $\lambda = 35°$ S.

a. θ = _____°.

b. A_E = _____°.

c. A_S = _____°.

d. A_W = _____°.



e. What happens when the latitude is south of the equator? Keep this in mind when answering the above questions and drawing in the angles and celestial poles.