**SHO-WAT-CHA-KNO—Telescopes and the Electromagnetic Spectrum**

For each pair of terms, explain how the meanings of the terms differ.

1. refracting telescope and reflecting telescope

   _________________________________________________________________________________________________________
   _________________________________________________________________________________________________________

2. telescope and electromagnetic spectrum

   _________________________________________________________________________________________________________
   _________________________________________________________________________________________________________

3. How does the atmosphere affect astronomical observations?
   
   a. It focuses visible light.
   
   b. It blocks most electromagnetic radiation.
   
   c. It blocks all radio waves.
   
   d. It does not affect astronomical observations.


   _________________________________________________________________________________________________________
   _________________________________________________________________________________________________________

5. What advantages do reflecting telescopes have over refracting telescopes?

   _________________________________________________________________________________________________________
   _________________________________________________________________________________________________________

6. List the types of radiation in the electromagnetic spectrum, from the longest wavelength to the shortest wavelength.

   _________________________________________________________________________________________________________
   _________________________________________________________________________________________________________

7. A telescope’s light-gathering power is proportional to the area of its objective lens or mirror. If the diameter of a lens is 1 m, what is the area of the lens? (Hint: area = 3.1416 x radius²) Show your work below.

   _________________________________________________________________________________________________________

8. Give three reasons why Hawaii is a good location for a telescope.

   1. _______________________________________________________________________________________________________
   
   2. _______________________________________________________________________________________________________
   
   3. _______________________________________________________________________________________________________