



- 1) What type of spectrum is produced when the light emitted directly from a hot, dense object passes through a prism?
- 2) What type of spectrum is produced when the light emitted directly from a hot, low-density cloud of gas passes through a prism?
- 3) Describe in detail the source of light and the path the light must take to produce an absorption spectrum.
- 4) There are dark lines in the absorption spectrum that represent missing light. What happened to this light that is missing in the absorption line spectrum?

Types of Spectra

- 5) Stars like our Sun have low-density, gaseous atmospheres surrounding their hot, dense cores. If you were looking at the spectra of light coming from the Sun (or any star), which of the three types of spectrum would be observed? Explain your reasoning.

- 6) If a star existed that was only a hot, dense core and did **NOT** have a low-density atmosphere surrounding it, what type of spectrum would you expect this particular star to give off?

- 7) Two students are looking at a brightly lit full Moon, illuminated by reflected light from the Sun. Consider the following discussion between the two students about what the spectrum of moonlight would look like.

Student 1: *I think moonlight is just reflected sunlight, so we will see the Sun's absorption line spectrum.*

Student 2: *I disagree, an absorption spectrum has to come from a hot, dense object. Since the Moon is not a hot, dense object, it can't give off an absorption line spectrum.*

Do you agree or disagree with either or both of the students? Explain your reasoning.

- 8) Imagine that you are looking at two different spectra of the Sun. Spectrum #1 is obtained using a telescope that is in a high orbit far above Earth's atmosphere. Spectrum #2 is obtained using a telescope located on the surface of Earth. Label each spectrum below as either Spectrum #1 or Spectrum #2.



Spectrum # _____



Spectrum # _____

Explain the reasoning behind your choices.