Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Pd: \_\_\_ Ast: \_\_\_\_\_

**Wave Energy Book Assignment**

**Unit 3 Lesson 1 (p.194-198)**

1. Define the following terms:
   1. Wave
   2. Medium
   3. Longitudinal wave
   4. Transverse wave
   5. Mechanical wave
   6. Electromagnetic wave
2. Identify the medium for each of the following types of waves:
   1. Ocean waves
   2. Earthquake waves
   3. Sound waves from a speaker
3. Are the Sun’s rays mechanical or electromagnetic? Provide evidence and reasoning to support your claim.

**Unit 3 Lesson 2 (p.204-209)**

1. Define the following terms:
   1. Amplitude
   2. Wavelength
   3. Wave Period
   4. Frequency
   5. Wave Speed
2. How are frequency and wave period related?
3. What does the energy of an electromagnetic wave depend on?
4. Sound travels slower in colder air than it does in warmer air. Why does the speed of sound depend on air temperature? Explain your reasoning.
5. A wave has low speed but high frequency. Make an inference about the wavelength of this wave. Support your claim with evidence/reasoning.

**Unit 3 Lesson 4 (p.230-235)**

1. Define the following terms:
   1. Transparent
   2. Translucent
   3. Opaque
   4. Absorption
   5. Reflection
   6. Refraction
   7. Scattering
2. Describe the difference between the way light interacts with your shirt and the way light interacts with a mirror.
3. Why is the sky blue on sunny days, but red at sunset?
4. Why does a black asphalt road become hotter than a white cement sidewalk on a summer day if each of them receive the same amount of sunlight? Explain your reasoning.

**Summary**

1. Heather puts a straw into a glass of water. She notices that when she looks through the glass and the water from the side, the straw appears to be broken. Explain this phenomenon.
2. The energy generated by the Sun travels to Earth as electromagnetic waves. Because the radiation from the Sun travels to Earth in varying wavelengths, scientists consider them to be a spectrum. Which statement describes an electromagnetic wave with a long wavelength?
   1. It has a high frequency and low energy. c. It has a low frequency and can travel through a vacuum.
   2. It has a high frequency and high energy. d. It has low frequency and needs a medium to travel in.
3. Draw a diagram of a transverse wave. Label the wavelength and amplitude on your diagram.
4. You see a piece of blue construction paper sitting on a table. Explain why the construction paper appears blue.
5. Which of these objects would reflect almost all of the light that strikes it?
   1. White poster board c. Bright overhead light
   2. Clear glass window d. Black construction paper
6. You measure the maximum displacement of a wave that your lab partner made by moving the end of a string up and down. What property of a wave are you measuring?
7. Your lab partner covers a flashlight with a piece of thick black paper. Why won’t you see the light when she turns on the flashlight?
8. Some waves carry more energy than others. Which wave has more energy, a loud sound or a quiet sound? Why? Use evidence to support your claim and explain your reasoning.