Name Block Date

**Directions: Use the Internet to search for the answers to the questions below. For questions 1 &2: Be extremely detailed and write answers in complete sentences. For example, instead of writing “x-rays are used in medicine,” write “x-rays are used to develop images of bones to determine if they are fractured.”**

1. **Electromagnetic Spectrum**
   1. What is the electromagnetic spectrum?
   2. What wavelengths and frequencies are covered on the spectrum?
   3. How do waves on the EM spectrum travel?
   4. What are the seven different types of light on the spectrum?
2. **The seven types—**For each type, list its name and two specific uses. Also list the wavelength and frequency.
   1. **Type 1**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   2. **Type 2**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   3. **Type 3**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   4. **Type 4**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   5. **Type 5**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   6. **Type 6**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
   7. **Type 7**
      1. Use 1:
      2. Use 2:
      3. Wavelength range:
      4. Frequency range:
3. **Draw a picture** of the EM spectrum. Include wavelengths on one side and frequencies on the other. Show the range for each type of light.
4. Explain why antennas are needed for radio, television, and cell phone transmissions and reception.
5. Explain how radio waves are modified to send information in radio and television programs, radio-controlled cars, cell phone conversations, and GPS systems.
6. Explain how different electromagnetic signals (e.g. radio station broadcasts or cell phone conversations) can take place without interfering with each other. In other words, how can Raj call Howard and Penny call Leonard, but Raj can’t hear what Penny is saying?