

**Waves & Electromagnetic Spectrum Worksheet**

**Directions:** Use the word bank to answer the following questions. **Each word will be used only once.**

Crest	Frequency	Mechanical	Infrared
Trough	Transverse	Radio	Gamma
Wavelength	Longitudinal	Ultraviolet	X-Rays
Visible Light	Amplitude	Electromagnetic	

1. \_\_\_\_\_ waves are used to penetrate solids and are used in doctor's offices and as airports.
2. \_\_\_\_\_ is the distance between one point of a wave to the same point in the next wave.
3. \_\_\_\_\_ is the number of waves per unit of time.
4. \_\_\_\_\_ waves occur when the motion of the medium is parallel to the direction of the wave.
5. \_\_\_\_\_ waves have a color spectrum known as ROYGBIV.
6. \_\_\_\_\_ waves disturb matter.
7. The \_\_\_\_\_ is the top of a wave.
8. The \_\_\_\_\_ is the bottom of a wave.
9. \_\_\_\_\_ is the maximum distance that matter is displaced from the resting position.
10. \_\_\_\_\_ waves are produced by stars and galaxies.
11. \_\_\_\_\_ waves occur when the motion of the medium is at right angles (perpendicular) to the direction of the wave.
12. \_\_\_\_\_ waves are often used in heat lamps.
13. \_\_\_\_\_ waves are utilized by insects to locate nectar.
14. \_\_\_\_\_ waves are transverse waves that disturb electromagnetic fields.
15. \_\_\_\_\_ waves have the shortest wavelength and the highest frequency.

## Electromagnetic Spectrum Worksheet #1

- In each of the following pairs, circle the form of radiation with the LONGER WAVELENGTH:
  - red light **or** blue light
  - microwaves **or** radiowaves
  - infrared radiation **or** red light
  - gamma rays **or** UV radiation
- In each of the following pairs, circle the form of radiation with the GREATER FREQUENCY:
  - yellow light **or** green light
  - x-rays **or** gamma rays
  - UV radiation **or** violet light
  - AM radio waves **or** FM radio waves
- In each of the following pairs, circle the form of radiation with the LOWER ENERGY:
  - red light **or** blue light
  - microwaves **or** radiowaves
  - infrared radiation **or** red light
  - gamma rays **or** UV radiation
  - yellow light **or** green light
  - x-rays **or** gamma rays
  - UV radiation **or** violet light
  - AM radio waves **or** FM radio waves
- Springfield's "Classic Rock" radio station broadcasts at a frequency of 102.1 MHz. What is the length of the radio wave **in meters**?
- A beam of light has a wavelength of 506 nanometers. What is the frequency of the light? What color is the light?
- Blue light has a frequency of  $6.98 \times 10^{14}$  Hertz. Calculate the wavelength of blue light **in nanometers**.