

Diffraction Grating Answer Key

1. What colors were emitted when white light was shown through the diffraction grating? *Red, green, blue*
2. What was the difference between the fluorescent and incandescent light bulbs through the diffraction grating? *An incandescent bulb through diffraction grating will produce a continuous spectrum where one color blends into another. A fluorescent bulb will create distinct lines or spectra of wavelengths.*
3. Does a diffraction grating work the same way as a prism? Explain. *Prisms are non-linear and can be used over a wide range of wavelengths. Diffraction grating is spread linearly as it is equally spread which can improve resolution and be better seen typically.*
4. Why are diffraction gratings important in science? *Diffraction gratings separate light emitted so it can be studied and used for a range of sciences from space studies, the medical field, and aquatic ecosystems.*
5. What is the electromagnetic spectrum? *The electromagnetic spectrum is the range of frequencies of electromagnetic radiation and their wavelengths.*
6. What are examples of waves from the electromagnetic spectrum that are invisible to humans? *Gamma rays, x-rays, ultraviolet light, infrared rays, radar waves, microwaves, television waves, radio waves are invisible.*
7. What information do you receive from a spectrophotometer? *A spectrophotometer is an instrument used to measure the intensity of the light waves absorbed. This tool can be used for studying not just visible light but ultraviolet and infrared rays as well.*
8. What careers would use a spectrophotometer? Explain. *A chemist who is involved in material manufacturing, a medical scientist who tests new medicines and vitamins, a geneticist who investigates DNA, and an astronomer who researches light emitted from outer space would use a spectrophotometer.*