

UPGRADE to the Bundle

Crash Course - PHYSICS 46 Episode Series Bundle

- ✓ Classroom Ready - Just Print and Go!
- ✓ Active Engagement - Keep Students' Attention
- ✓ Direct Video Link Included

WATCH VIDEO



ALL 46 Episodes with Answer
Keys and Direct Video Link

CLICK HERE



Crash Course Physics #43: Quantum Mechanics – Part 1

Name: _____ Date: _____

You can access the video here → https://youtu.be/7kh1VT0J3DE?si=_xgErVULHmp-Q1y9

1. Light behaves like both a _____ and a wave, depending on the experiment.
2. The _____ was a major problem for classical wave-based theories of light.
3. A _____ is an idealized object that absorbs all incoming light and emits energy based on its temperature.
4. The _____ law failed to predict the correct intensity of radiation at high frequencies.
5. _____'s law resolved the ultraviolet catastrophe by introducing the concept of energy quanta.
6. A _____ is a discrete packet of electromagnetic energy.
7. The energy of a quantum is equal to its frequency multiplied by _____'s constant.
8. According to the particle theory of light, light is made up of particles called _____.
9. The _____ describes the emission of electrons when light strikes a metal surface.
10. The minimum energy required to eject an electron from a metal is called the _____.
11. According to particle theory, increasing the _____ of light increases the maximum kinetic energy of the ejected electrons.
12. If the frequency of light is below the _____ frequency, no electrons will be ejected regardless of intensity.
13. Increasing the _____ of the light increases the number of electrons ejected but not their maximum kinetic energy.
14. The idea that light behaves as both a particle and a wave is called _____.
15. The study of how energy behaves in discrete packets is known as _____.

Crash Course Physics #43: Quantum Mechanics – Part 1 KEY

1. Light behaves like both a **particle** and a wave, depending on the experiment.
2. The **ultraviolet catastrophe** was a major problem for classical wave-based theories of light.
3. A **blackbody** is an idealized object that absorbs all incoming light and emits energy based on its temperature.
4. The **Rayleigh-Jeans** law failed to predict the correct intensity of radiation at high frequencies.
5. **Planck's** law resolved the ultraviolet catastrophe by introducing the concept of energy quanta.
6. A **quantum** is a discrete packet of electromagnetic energy.
7. The energy of a quantum is equal to its frequency multiplied by **Planck's** constant.
8. According to the particle theory of light, light is made up of particles called **photons**.
9. The **photoelectric effect** describes the emission of electrons when light strikes a metal surface.
10. The minimum energy required to eject an electron from a metal is called the **work function**.
11. According to particle theory, increasing the **frequency** of light increases the maximum kinetic energy of the ejected electrons.
12. If the frequency of light is below the **cutoff** frequency, no electrons will be ejected regardless of intensity.
13. Increasing the **intensity** of the light increases the number of electrons ejected but not their maximum kinetic energy.
14. The idea that light behaves as both a particle and a wave is called **wave-particle duality**.
15. The study of how energy behaves in discrete packets is known as **quantum mechanics**.

15 Questions

Answer Key Included

Save 85% per worksheet!