

Worksheet - WHAT IS LIGHT?

- For each fact about light, choose the theory that explains it ("W" for wave or "P" for particle):
 - When light goes through a single slit, it spreads out. _____
 - When some colors of light shine on a metal plate, electrons are ejected. _____
 - Only certain colors of light cause photosynthesis. _____
 - When light moves from air to water, it bends. _____
 - When light goes through two narrow slits, a pattern of dark and bright regions shows on the screen. _____
 - When gaseous atoms are bombarded with electricity, certain colors of light are produced. _____
- What is the scientific term for the property of light described in
#1a? _____ #1b? _____
#1d? _____ #1e _____
- What is the photoelectric effect?
Give two uses.
- What three experimental facts about the photoelectric effect could only be explained by the idea of atoms absorbing photons of light of a certain energy?
- The "particle theory" of light has a more scientific name.
What is it?
Who developed this theory?
Who used it to explain the photoelectric effect?
- What is the formula for calculating the energy of a photon of light?

What does each letter represent?
- According to the quantum theory, why does bright red light never produce the photoelectric effect, no matter how long it shines on the metal plate?
- According to the modern theory of light, light acts as a wave when it _____ and acts as a particle when it _____.
This is called _____ - _____