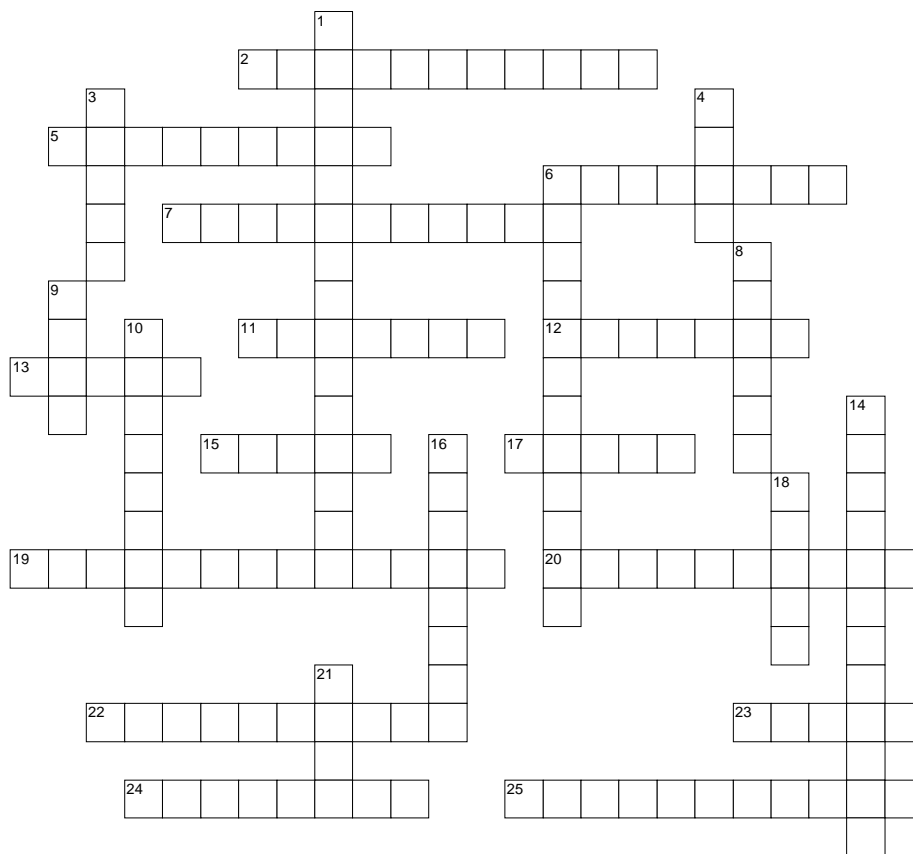


Review - LIGHT

Puzzle



www.CrosswordWeaver.com

Across

- 2 visible because of reflected light 5 The energy of a photon of light depends on its -
 6 Rattlesnakes use these to locate their prey
 7 the spreading of light waves when they go through a narrow slit
 11 Einstein used the ____ theory to explain the photoelectric effect.
 12 produced by light reflected and refracted by millions of water droplets
 13 the lowest frequency emag waves 15 invented in the 1950's based on Einstein's idea
 17 Red, blue, and ____ are the primary colors of light
 19 ____ effect is light producing electricity 20 A color plus its ____ produces white light
 22 Cook food by resonant vibrations of large food molecules
 23 the absence of color 24 identical light waves in phase
 25 UV light is used to excite electrons which give off visible light when they fall down in smaller steps

Down

- 1 waves that can travel through a vacuum 3 used in airports to check luggage
 4 mixture of blue and green thirds of the spectrum
 6 Light waves show ____ patterns when they go through a double slit.
 8 a quantum of light energy 9 The modern theory of light recognizes its ____ nature.
 10 Magenta, cyan, and yellow are primary -
 14 light bulbs using heated filaments to excite electrons
 16 emits light as the result of electron moving from excited to ground states
 18 electromagnetic rays used in cancer treatment
 21 The ____ theory failed to explain the photoelectric effect.

Review - LIGHT

REVIEW QUESTIONS:

1. State two things that all electromagnetic waves have in common.
2. List the 7 types of electromagnetic waves, from lowest to highest frequency, and give a use for each.
3. Name three properties of light that can be explained only by the wave theory.
4. The photoelectric effect is _____ producing _____. The wave theory predicted that any _____ of light should cause electrons to begin to vibrate sympathetically (the phenomenon of _____) and eventually jump out of the metal atom. But the wave theory failed because experiments showed that only _____ colored light could produce the effect, and that there was (always, never) a time delay.
5. Einstein used the _____ theory to explain the photoelectric effect by considering light to be absorbed and radiated in bundles, which Einstein called _____. The energy of this bundle depends only on its _____. When light hits a metal, each _____ absorbs a single photon of light. If the photon has enough _____, the electron will be ejected (eventually, immediately). Red light is the (lowest, highest) in frequency and energy and (always, never) produces the effect, no matter how bright it is. But even faint _____ colored light always ejects electrons. Bright light simply consists of (many, few) photons which eject (more, fewer) electrons.
6. State two more facts about light that can only be explained by the quantum (particle) theory of light.
7. Why is Wave-Particle Duality the modern theory of light?
8. Describe three methods of producing light.
9. Describe the first laser.
10. Give 4 words or phrases to describe laser light.
11. A pigment absorbs its _____. For example, a magenta pigment absorbs _____, and a blue pigment absorbs _____.
12. Use color tiles to tell what color is seen when:
white light shines on a mixture of cyan and yellow pigments-

green light shines on a red pigment-

red light shines on a mixture of magenta and yellow pigments-

white light shines on a mixture of blue and green pigments-
13. How can you make your own rainbow?
14. Why is the daytime sky on earth blue? Why does the sun look yellow to us?

Review - LIGHT