

Goal • Test your understanding of the concepts in Unit 2.

What to Do

Circle the letter of the best answer.

- Which describes the wavelength of a water wave?
 - the height of a wave crest above the wave trough
 - the height of a wave crest above the rest position of the wave
 - the distance from one point on a wave to the same point on the next wave
 - the number of times per second that the crest of a wave passes a fixed point
- The complete range of all wavelengths of radiant energy is called
 - the visible spectrum
 - the invisible spectrum
 - the colour spectrum
 - the electromagnetic spectrum
- A mirror changes the direction of a ray of light in a process called
 - diffusion
 - refraction
 - reflection
 - absorption
- Ultraviolet rays are electromagnetic rays associated with
 - heat
 - light
 - radar
 - sunburns
- The ray model of light explains why shadows formed in sunlight have sharp edges. This is because
 - light rays travel in straight lines
 - the angle of incidence equals the angle of reflection
 - the light rays spread out as they travel
 - the light rays are blocked by objects between the light source and the observer
- In a transparent material, the light rays
 - are absorbed and no clear image is seen through the material
 - are scattered and no clear image is seen through the material
 - are transmitted without scattering but no image is seen through the material
 - are transmitted without scattering and a clear image is seen through the material

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7. When light rays pass from water into air,
- they bend toward the normal as they move into a material with greater density
 - they bend away from the normal as they move into a material with greater density
 - they bend toward the normal as they move into a material with lower density
 - they bend away from the normal as they move into a material with lower density
8. Light rays that are made to come together to a point after passing through a lens are described as
- merging
 - diverging
 - conjoining
 - converging
9. ~~The lens in a healthy living human eye is~~
- ~~opaque and hard~~
 - ~~opaque and flexible~~
 - ~~transparent and hard~~
 - ~~transparent and flexible~~
10. ~~Near-sightedness is a vision problem that~~
- ~~makes it difficult to focus on nearby objects~~
 - ~~makes it difficult to focus on distant objects~~
 - ~~causes multiple blurry images of an object to be seen~~
 - ~~allows a scene to be clear directly ahead but the edges of the scene are fuzzy~~

Match the Term on the left with the best Descriptor on the right.	
Each Descriptor may be used only once.	
Term	Descriptor
___ 11. amplitude	A. part of the eye that does most of the focussing
___ 12. energy	B. a transparent material that can focus light
___ 13. refraction	C. all waves transfer this
___ 14. concave	D. the shape of a lens or mirror in which the surface bends inwards
___ 15. lens	E. the height of a wave
___ 16. translucent	F. permits light to pass but the image is not clear
___ 17. astigmatism	G. causes several fuzzy images to form on the retina
___ 18. cornea	H. the length of a wave
___ 19. pupil	I. connects the retina to the brain
___ 20. optic nerve	J. transparent part of eye surrounded by the iris and which appears to be black
	K. the shape of a lens or mirror in which the surface bends inwards
	L. the bending of light as it passes from air into glass

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21. Draw a sketch of a light wave. Label the amplitude, wavelength, trough, and crest.

~~22.~~ Calculate the frequency, in hertz, of each of the following:

(a) the tic-toc sound of a wind up clock, which starts a new sound 60 times in one minute

(b) a heart rate of a cyclist, which beats 300 times in 100 seconds

(c) the frequency of a water wave, which laps up on the shore 6 times in one minute

23. For each of the following parts of the invisible spectrum, list one way in which the radiation is used to create some sort of image.

(a) X rays _____

(b) infrared rays _____

(c) microwaves _____

24. Compare and contrast the reflection of light from a white sheet of paper with the reflection of light from a mirror. Ray diagrams may be useful in your answer.

~~25. A magnifying glass uses sunlight to light a piece of paper on fire. Draw a ray diagram to show how light rays from the sun are refracted by the lens of the magnifying glass. Be sure to show the general shape of the lens used in the magnifying glass.~~

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