

1. Explain what "frequency" means.

Number of waves received every second
(cycles per second)

2. What does "pitch" mean, in relation to sound?

Highness or lowness

3. When the frequency of a sound decreases, what happens to its pitch?

Gets lower

4. Suppose you make a sound by zipping a zipper. What happens to the sound's frequency when you zip the zipper quickly? Why?

Gets faster because there are more zipper clicks per second.

5. Why can't sound travel in outer space?

There is no air.

6. Describe one way in which light is like a particle (not a wave).

- Light can travel through empty space.
- Light is pulled by gravity.

7. Describe one way in which light is like a wave.

Has a wavelength

8. Radio waves, microwaves, infrared waves, visible light, ultraviolet radiation, x-rays, and gamma rays are all types of electromagnetic radiation

9. Put these colors of light in order, from shortest wavelength to longest wavelength

(yellow, green, blue, red, violet, indigo, orange)

VIBGYOR

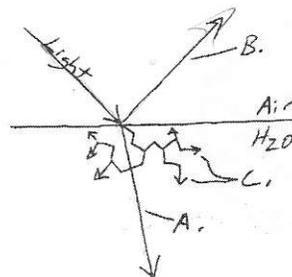
10. Which of those colors has the highest frequency? violet

11. Which color indicates a hotter star or a hotter flame? a. red

b. blue

12. Which frequencies of electromagnetic radiation are most dangerous, low or high frequencies?

13. Label the wave behaviors in the diagram on the right.



A. refraction
B. reflection
C. scattering

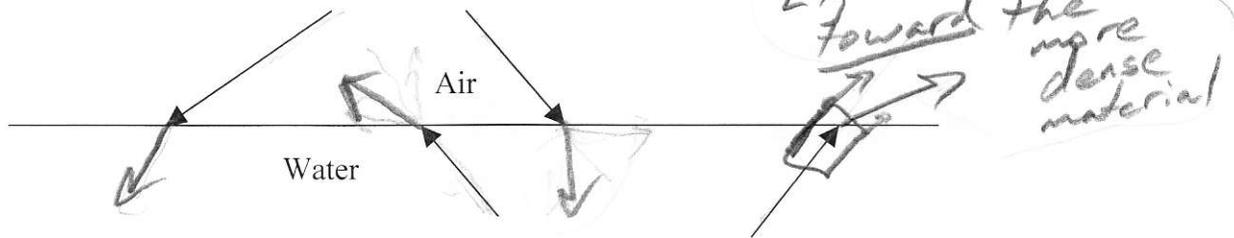
14. Why is the sky blue?

Short wavelengths (blue) get scattered through the atmosphere.

15. Why does the sun turn red at sunset?

Only the longest (red) wavelengths can penetrate the greater thickness of atmosphere at sunset.

16. The diagram below shows light passing from water into air and from air into water. Show how those rays of light refract as they pass from one medium to the other.



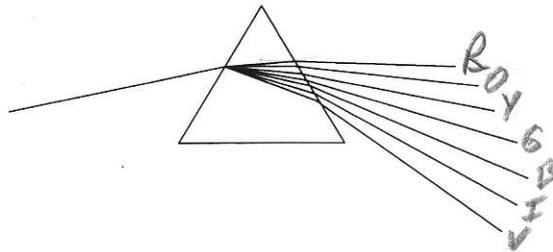
17. Why does light bend when it passes between water and air?

Light travels slower in water.

18. If you want to shoot a fish that is swimming in a tank several feet in front of you (and you are not in the water), where should you aim?

Below where you see the fish.

19. White light is shining through the prism below. Label each of the rays of light with its color.



20. The diagram below shows how a flashlight mirror reflects light from the bulb and directs it forward in a straight beam. Show how you can use a flashlight mirror to start a fire.

