

DON'T WRITE ON THIS PAPER

Chapter 29 choice justifications

Directions: do all work on a separate sheet of paper. #1-6, are true/false. Write the sentence and explain why it's true, or how to make it true. #7-23 are multiple choice. Write the question and correct answer and explain why that's the correct choice.

- 1) Diffuse reflection occurs when light is refracted in many directions from a rough surface.
- 2) Reflection occurs when one part of a wave travels more slowly than another.
- 3) Mirages occur because of the reflection of light on a hot day.
- 4) The separation of light into colors arranged according to their frequency is called dispersion.
- 5) An imaginary line perpendicular to a surface, which we measure from, is called a normal.
- 6) Sometimes a dry road will appear to be wet because of atmospheric refraction.
- 7) The law of reflection says that
 - a. all waves incident on a mirror are reflected
 - b. waves incident on a mirror are partially reflected
 - c. the angle a ray is reflected is random
 - d. the angle of reflection from a mirror equals the angle of incidence
- 8) When a virtual image is created in a plane mirror
 - a. reflected rays bounce in predictable directions
 - b. the image is located behind the mirror
 - c. the image is upright
 - d. all of the above
- 9) The reason we can read the print on this page from any direction is that
 - a. the paper is not a smooth surface for light waves
 - b. the paper/ink reflects light in all directions
 - c. light does not bounce predictably on the paper/ink
 - d. all of the above
- 10) Refraction is a result of
 - a. more than one reflection
 - b. bending
 - c. displaced images
 - d. different wave speeds
- 11) What is different about a secondary rainbow?
 - a. light reflects twice
 - b. the color order is reversed
 - c. it is dimmer
 - d. all of the above
- 12) An echo occurs when sound
 - a. is reflected from a distant surface
 - b. is transmitted through a surface
 - c. changes speed when it strikes a distant surface
 - d. all of the above
- 13) The idea that when light bends it spreads into colors in order of frequency because they have slightly different speeds and wavelengths is
 - a. diffuse reflection
 - b. dispersion
 - c. refraction
 - d. reflection
- 14) The idea that waves will not cross a boundary if the angle is too shallow is
 - a. refraction
 - b. displacement
 - c. total internal reflection
 - d. critical angle

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- 15) A mirage can occur
- when cooler air is above hotter air
 - when air at the ground is heated
 - on a hot day
 - all of the above
- 16) Critical angle is
- when light is refracted through a boundary
 - when light is reflected off a boundary
 - when light is bent and follows the boundary
 - the new wavelength when light crosses a boundary
- 17) Diffuse reflection occurs when
- surface irregularities are smaller and wavelength is bigger
 - surface irregularities are bigger and wavelength is smaller
 - waves hit a smooth, polished surface
 - 2 different waves hit each other
- 18) When waves cross a boundary and speed up
- they bend toward the normal and wavelength increases
 - they bend toward the normal and wavelength decreases
 - they bend away from the normal and wavelength increases
 - they bend away from the normal and wavelength decreases
- 19) Which is an example of light refraction?
- rainbow
 - mirage
 - total internal reflection
 - all of the above
 - none of the above
- 20) In a fiber optic cable, light
- gains energy from the material
 - stays away from the edges and follows the cable
 - scatters every direction inside the cable and out
 - bounces back inside at the boundary and continues forward
- 21) A penny lies in the bottom of a tea cup filled with water. As you look down on the penny, compared to its actual depth, it looks
- further away
 - closer
 - the same depth
- 22) The making of a rainbow involves
- reflection
 - refraction
 - dispersion
 - all of the above
- 23) The walls and ceilings of concert halls are designed with weird shapes and surfaces so that sound waves will experience
- diffuse reflection
 - refraction
 - reflection
 - critical angles
- 24) Draw the picture and label *a - c*

