

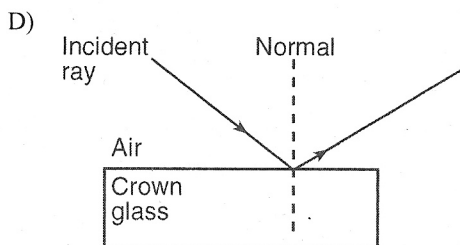
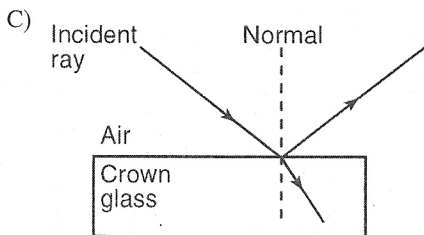
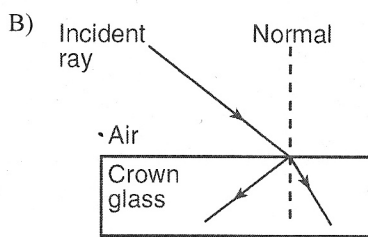
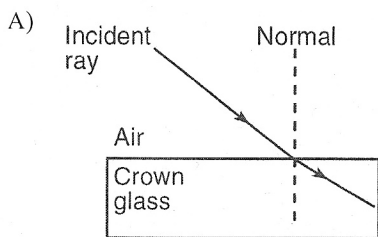
Waves Practice Test

Light Test II

_____ Name _____

Score _____

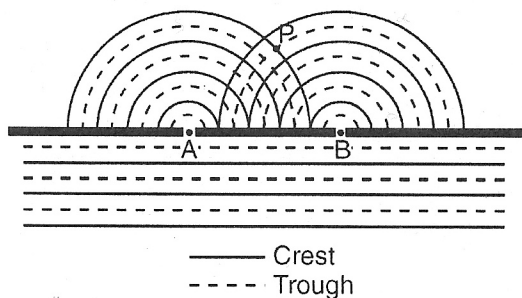
1. Which diagram best represents the behavior of a ray of monochromatic light in air incident on a block of crown glass?



2. Which phenomenon can *not* be exhibited by longitudinal waves?

- A) polarization B) reflection
C) refraction D) diffraction

3. The diagram below represents shallow water waves of constant wavelength passing through two small openings, A and B, in a barrier.



Which statement best describes the interference at point P?

- A) It is destructive, and causes a shorter wavelength.
B) It is destructive, and causes a decrease in amplitude.
C) It is constructive, and causes a longer wavelength.
D) It is constructive, and causes an increase in amplitude.
4. Radio waves diffract around buildings more than light waves do because, compared to light waves, radio waves
- A) have a higher frequency B) move faster
C) have a longer wavelength D) move slower
5. Diffraction of light demonstrates that light
- A) is composed of tiny units of energy
B) has wave properties
C) can be polarized
D) can be reflected
6. In a vacuum, all electromagnetic waves have the same
- A) frequency B) phase
C) speed D) wavelength

7. Radio waves are propagated through the interaction of

- A) gravitational and magnetic fields
B) gravitational and electric fields
C) nuclear and electric fields
D) electric and magnetic fields

8. The diagram below shows parallel rays of light incident on an irregular surface.



Which phenomenon of light is illustrated by the diagram?

- A) refraction B) diffraction
C) diffuse reflection D) regular reflection
9. As a wave is refracted, which characteristic of the wave will remain unchanged?
- A) direction B) velocity
C) frequency D) wavelength
10. Orange light has a frequency of 5.0×10^{14} hertz in a vacuum. What is the wavelength of this light?

- A) 1.5×10^{23} m B) 2.0×10^{-15} m
C) 6.0×10^{-7} m D) 1.7×10^6 m

1. Which of the following properties of a sound wave would change due to the Doppler Effect?
- I. amplitude
 - II. frequency
 - III. velocity
- A) II and III only B) III only
C) I and II only D) II only
E) I, II, and III
2. Standing waves are the result of which of the follow?
- I. Reflection
 - II. Interference
 - III. Diffraction
- A) II only B) I and III only
C) I only D) I and II only
E) II and III only
3. Which of the following is NOT associated with the damaging of a bridge by wind?
- A) diffraction B) resonance
C) natural frequency D) standing waves
E) reflection and interference
4. A person sees a bolt of lightning and then hears the thunder 4 seconds later. If the air temperature is 20°C, approximately how far away was the lightning?
- A) 1,376 m B) 86 m C) 344 m D) 6,880 m
5. If the frequency of the sound produced by a vibrating air column increases, the length of the air column must have
- A) decreased B) increased
C) remained the same
- ~~6. A fire engine is traveling at 40 m/s away from a stationary observer. The siren of the fire engine emits sound waves with a frequency of 680 Hz. If the velocity of sound in the air is 340 m/s, what is the frequency heard by the observer?~~
- ~~A) 420 Hz B) 340 Hz C) 600 Hz D) 770 Hz E) 760 Hz~~
7. If the velocity of a wave must remain constant, which of the following best describes the relationship between wavelength and period?
- A) The velocity must change if the wavelength changes.
B) If the wavelength increases, the period remains the same.
C) If the period increases, the wavelength must decrease.
D) If the wavelength increases, the period decreases proportionately.
E) If the wavelength increases, the period increases proportionately.
8. A pipe in a calliope is closed at one end and is 0.5 m long. The calliope uses hot air so that the speed of sound in the tube is 400 m/s. What is the fundamental frequency of the calliope tube?
- A) 300 Hz B) 200 Hz C) 100 Hz D) 400 Hz E) 500 Hz
9. A wave travels through a long rope with a wavelength of 20 m and a frequency of 4 Hz. What is the velocity of the wave?
- A) 5 m/s B) 10 m/s C) 0.2 m/s D) 320 m/s E) 80 m/s
10. A 5 m rope is fixed at both ends. What is the largest wavelength that could have a standing wave in this segment of rope?
- A) 1.25 m B) 2.5 m C) 5 m D) 7.5 m E) 10 m
11. As the length of a vibrating string is increased, the pitch produced
- A) decreases B) increases
C) remains the same
12. Which of the following necessarily results when two different waves of different wavelengths begin in phase and are propagated through the same medium?
- A) polarization B) refraction
C) interference D) diffraction
E) Doppler shift
13. A tuning fork resonates over an air tube 20 centimeters long that is closed at one end. The wavelength of the sound produced by the tuning fork is
- A) 40 cm B) 20 cm C) 5 cm D) 80 cm