

 **POWER BASICS⁺** PLUS

Physics

Test Pack

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PHYSICS • PRETEST

Circle the letter of the correct answer to each of the following questions.

1. How can an object change its velocity without changing its speed?
 - a. by balancing changes in acceleration with changes in velocity
 - b. by changing its acceleration
 - c. by changing its direction
 - d. This is impossible.

2. What is the term for the imaginary line around which an object spins?
 - a. the angular displacement
 - b. the angular velocity
 - c. the axis of rotation
 - d. the axis of displacement

3. When an object makes one complete rotation, what is its angular displacement?
 - a. 90°
 - b. 180°
 - c. 270°
 - d. 360°

4. What does the principle of inertia state?
 - a. that friction will always overcome velocity
 - b. that the natural position of an object is at rest
 - c. that the natural position of an object is in motion
 - d. that the velocity of an object does not change unless a force acts upon it

5. What is the term for an inward perpendicular force that causes an object to move in a circle?
 - a. centrifugal force
 - b. centripetal force
 - c. circular force
 - d. rotary force

UNIT 3 TEST • SOUND AND LIGHT

Circle the letter of the correct answer to each of the following questions.

1. What is the term for the top of a wave?
 - a. crest
 - b. curl
 - c. equilibrium point
 - d. trough

2. When calculating wavelength, where must you measure?
 - a. from crest to crest
 - b. from equilibrium point to equilibrium point
 - c. from trough to trough
 - d. between any two identical points of the wave

3. What is the term for the substance through which a wave travels?
 - a. aether
 - b. bearer
 - c. medium
 - d. vibratory receptor

4. Which of the following measurements describes the size of a wave?
 - a. amplitude
 - b. frequency
 - c. pulse
 - d. wavelength

5. A wave hits the beach every 10 seconds. What is its frequency?
 - a. 0.10 Hz
 - b. 1.0 Hz
 - c. 10.0 Hz
 - d. 100.0 Hz

-
6. What happens in a transverse wave?
- The medium blocks the wave from traveling.
 - The medium vibrates in a different direction from the direction the wave travels.
 - The medium vibrates in the same direction that the wave travels.
 - The wave travels without a medium.
-
7. What happens when the crests of two different waves overlap?
- constructive interference
 - destructive interference
 - maximum interference
 - minimum interference
-
8. What does the pitch of a sound wave depend upon?
- frequency
 - loudness
 - speed
 - wavelength
-
9. At what air temperature does sound travel the fastest?
- 0°F
 - 10°F
 - 75°F
 - 100°F
-
10. The side of a mountain is 340 meters away. If you shout loudly enough, about how long will it take before you hear your echo?
- 1 second
 - 1.5 seconds
 - 2 seconds
 - 2.5 seconds

-
11. What is the term for a bundle of light energy?
- a. electron
 - b. neutron
 - c. photon
 - d. proton
-
12. Which of the following types of light is not really a color, but rather a combination of all colors?
- a. blue
 - b. green
 - c. red
 - d. white
-
13. Which of the following is NOT one of the subtractive primary colors?
- a. blue
 - b. cyan
 - c. magenta
 - d. yellow
-
14. If you mix red paint and green paint in equal proportions, and both paints are very pure, what color will you get?
- a. black
 - b. gray
 - c. white
 - d. yellow
-
15. What is the term for the set of frequencies emitted by a certain type of atom?
- a. bandwidth
 - b. laser
 - c. prism
 - d. spectrum

-
16. Which of the following is true of laser light?
- All its light is of the same wavelength.
 - It cannot be concentrated as well as ordinary light.
 - It contains more frequencies than ordinary light.
 - It is faster than ordinary light.
-
17. Why does red paint appear red?
- because it absorbs all colors except red
 - because it absorbs red
 - because it reflects all colors except red
 - because it transmits all colors except red
-
18. When light bounces off a surface, what is the term for the angle at which it bounces off?
- the angle of incidence
 - the angle of reflection
 - the angle of refraction
 - the normal
-
19. What condition is necessary for a specular reflection?
- The surface must be close to room temperature.
 - The surface must be very hard.
 - The surface must be very light in color.
 - The surface must be very smooth.
-
20. Light passes from one layer of air to a slightly denser layer (which will slightly slow it down). How will the light bend?
- a great deal away from the normal
 - a great deal toward the normal
 - slightly away from the normal
 - slightly toward the normal

-
21. What is the term for the point to which a converging lens brings together parallel beams of light?
- cluster
 - “eye”
 - focal point
 - node
-
22. In people with normal vision, onto what part of the eye is light focused?
- iris
 - lens
 - pupil
 - retina
-
23. Which of the following is NOT one of the types of cones in the eye?
- blue cones
 - green cones
 - red cones
 - yellow cones
-
24. Why does the sky appear blue on a clear day?
- because the short wavelength of blue light is closest to the size of air molecules, so blue light is scattered the most widely
 - because blue is the natural color of nitrogen
 - because blue is the natural color of oxygen
 - because blue light reaches Earth in higher proportions than other colors of light
-
25. All the waves in a beam of light are precisely horizontal. What is the term for this type of light?
- diffracted
 - ionized
 - iridescent
 - polarized

PHYSICS • POSTTEST

Circle the letter of the correct answer to each of the following questions.

1. What do you need to know to determine the displacement of an object?
 - a. the direction an object has moved
 - b. the distance an object has moved
 - c. the direction and distance an object has moved
 - d. the distance and speed an object has moved

2. What is the term for the imaginary line around which an object spins?
 - a. the angular displacement
 - b. the angular velocity
 - c. the axis of rotation
 - d. the axis of displacement

3. When a car makes a quick turn, what acts on the passengers to push them toward the outside?
 - a. friction
 - b. gravity
 - c. inertia
 - d. velocity

4. Four people, all wearing roller skates, throw the same size basketball. Each of them is pushed backward in reaction. Who will move the least?
 - a. Amy, who has a mass of 50 kilograms
 - b. Julia, who has a mass of 55 kilograms
 - c. Hiroshi, who has a mass of 70 kilograms
 - d. Jamal, who has a mass of 80 kilograms

5. Who formulated the law of falling objects?
 - a. Copernicus
 - b. Einstein
 - c. Galileo
 - d. Newton