



# Physics

## Test Pack

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**PHYSICS • PRETEST**

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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.

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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

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

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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

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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

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**UNIT 3 TEST • SOUND AND LIGHT**

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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

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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

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

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

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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?
- a. The medium blocks the wave from traveling.
  - b. The medium vibrates in a different direction from the direction the wave travels.
  - c. The medium vibrates in the same direction that the wave travels.
  - d. The wave travels without a medium.
- 
7. What happens when the crests of two different waves overlap?
- a. constructive interference
  - b. destructive interference
  - c. maximum interference
  - d. minimum interference
- 
8. What does the pitch of a sound wave depend upon?
- a. frequency
  - b. loudness
  - c. speed
  - d. wavelength
- 
9. At what air temperature does sound travel the fastest?
- a. 0°F
  - b. 10°F
  - c. 75°F
  - d. 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?
- a. 1 second
  - b. 1.5 seconds
  - c. 2 seconds
  - d. 2.5 seconds

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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
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16. Which of the following is true of laser light?
- a. All its light is of the same wavelength.
  - b. It cannot be concentrated as well as ordinary light.
  - c. It contains more frequencies than ordinary light.
  - d. It is faster than ordinary light.
- 
17. Why does red paint appear red?
- a. because it absorbs all colors except red
  - b. because it absorbs red
  - c. because it reflects all colors except red
  - d. 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?
- a. the angle of incidence
  - b. the angle of reflection
  - c. the angle of refraction
  - d. the normal
- 
19. What condition is necessary for a specular reflection?
- a. The surface must be close to room temperature.
  - b. The surface must be very hard.
  - c. The surface must be very light in color.
  - d. 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. a great deal away from the normal
  - b. a great deal toward the normal
  - c. slightly away from the normal
  - d. slightly toward the normal

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21. What is the term for the point to which a converging lens brings together parallel beams of light?
- a. cluster
  - b. “eye”
  - c. focal point
  - d. node
- 
22. In people with normal vision, onto what part of the eye is light focused?
- a. iris
  - b. lens
  - c. pupil
  - d. retina
- 
23. Which of the following is NOT one of the types of cones in the eye?
- a. blue cones
  - b. green cones
  - c. red cones
  - d. yellow cones
- 
24. Why does the sky appear blue on a clear day?
- a. because the short wavelength of blue light is closest to the size of air molecules, so blue light is scattered the most widely
  - b. because blue is the natural color of nitrogen
  - c. because blue is the natural color of oxygen
  - d. 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?
- a. diffracted
  - b. ionized
  - c. iridescent
  - d. polarized
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**PHYSICS • POSTTEST**

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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

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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

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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

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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

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