

Fundamentals of Optics

Physics · Answer Key · 18 Questions

1. What is the unit used to measure the power of a lens?

- A) Diopter**
- B) Watt
- C) Hertz
- D) Joule

2. Which phenomenon is primarily responsible for the appearance of a rainbow?

- A) Diffraction
- B) Dispersion**
- C) Polarization
- D) Interference

3. What happens to the speed of light when it passes from air into glass?

- A) It increases
- B) It remains constant
- C) It decreases**
- D) It becomes zero

4. Which type of mirror is commonly used as a rear-view mirror on cars to provide a wider field of view?

- A) Plane mirror
- B) Concave mirror
- C) Convex mirror**
- D) Parabolic mirror

5. The human eye acts most similarly to which type of optical device?

- A) A concave lens
- B) A camera**
- C) A microscope
- D) A telescope

6. What is the angle of incidence equal to, according to the law of reflection?

- A) The angle of refraction
- B) The angle of diffraction
- C) The angle of reflection**
- D) The critical angle

7. Which color of visible light has the shortest wavelength?

- A) Red
- B) Green
- C) Yellow
- D) Violet**

8. Total internal reflection can only occur when light travels from:

- A) A denser medium to a less dense medium**
- B) A less dense medium to a denser medium
- C) Air into a vacuum
- D) A vacuum into air

9. What is the primary function of the iris in the human eye?

- A) Focusing light on the retina
- B) Adjusting the size of the pupil**
- C) Converting light into nerve impulses
- D) Protecting the cornea

10. Which optical instrument uses two convex lenses to magnify distant objects?

- A) Simple microscope
- B) Refracting telescope**
- C) Periscope
- D) Kaleidoscope

11. What term describes the bending of light as it passes around the edge of an obstacle?

- A) Reflection
- B) Refraction
- C) Diffraction**
- D) Dispersion

12. Myopia, or nearsightedness, is typically corrected using which type of lens?

- A) Concave lens**
- B) Convex lens
- C) Cylindrical lens
- D) Bifocal lens

13. In optics, what does the 'normal' refer to?

- A) The path of incident light
- B) A line perpendicular to the surface at the point of incidence**
- C) The reflected light ray
- D) The point where refraction occurs

14. Which material has the highest refractive index among the following?

A) Water

B) Diamond

C) Glass

D) Ice

15. What is the name for the point where parallel rays of light converge after passing through a convex lens?

A) Center of curvature

B) Optical center

C) Principal focus

D) Aperture

16. Which electromagnetic wave has a frequency slightly higher than that of violet light?

A) Ultraviolet

B) Infrared

C) Microwave

D) Radio wave

17. What is the term for the separation of white light into its component colors?

A) Reflection

B) Dispersion

C) Absorption

D) Scattering

18. Which part of the eye contains the photoreceptor cells known as rods and cones?

A) Cornea

B) Lens

C) Retina

D) Iris