If the angle of incidence is 45°, what is the angle of reflection?

A. 120°
B. 50°
C. 90°
D. 45°

The wave interaction shown above is caused when the wave passes from one medium to another changing —

A. speed
B. amplitude
C. frequency
D. length
A pencil is placed in a beaker of water. When viewed from the side, the pencil appears to be bent. This is an example of —

A attraction
B refraction
C reflection
D diffraction

4 Which diagram best shows the reflection of light?

A

B

Mirror

C

Glass

D

Prism base
Driving on a foggy night can be difficult because the light from headlights of the car is —
A diffracted and then reflected by the particles of water in the air
B absorbed and then scattered by the particles of water in the air
C refracted and then absorbed by the particles of water in the air
D reflected and then absorbed by the particles of water in the air

The bending of a wave around the edge of a barrier is called—
A diffraction
B interference
C refraction
D reflection

On a sunny morning, students standing in front of a store window noticed an image of themselves in the glass. Why did the students see their image in the glass?
A Some of the light was reflected off the surface of the glass.
B Some of the light passed through the glass window.
C Some of the light was absorbed by the glass surface.
D Some of the light separated into different colors.
A student is conducting an experiment with four different types of mirrors. Which mirror in the experiment converges light and produces an upright, magnified image of the candles?

A  Mirror 4  
B  Mirror 1  
C  Mirror 2  
D  Mirror 3

The above lens is a type of —

A  converging lens  
B  convergent lens  
C  diverging lens  
D  divergent lens
10 This type of lens is thinner in the middle than on the edges. What type of lens does this describe?
A Binocular lens
B Telescopic lens
C Convex lens
D Concave lens

11 What type of lens creates the image seen in the eyeglasses?
A Plane
B Reflection
C Concave
D Convex

12 Which color of visible light has the highest frequency?
A Violet
B Blue
C Yellow
D Red
13 Which electromagnetic wave carries the most energy?
A. Visible light
B. Radio waves
C. Ultraviolet rays
D. Gamma rays

14 Directions: Type your answer in the box.

Which letter represents the wavelength of visible light?
Letter B

15 Waves that travel at the same speed as light, but have different wavelengths and frequencies make up the—
A. energy fields
B. magnetic resonance
C. electromagnetic spectrum
D. polarized light
What type of electromagnetic wave is used in remote controlled cars?

A. FM Radio  
B. UHF Radio  
C. Infra-red  
D. Medium radio

**THE ELECTROMAGNETIC SPECTRUM**

Visible light has a wavelength the size of a —

A. water molecule  
B. virus  
C. bacteria  
D. protein
Match the type of wave with the technological use in the table.

### Uses of Electromagnetic Radiation

<table>
<thead>
<tr>
<th>Type of Wave</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Infrared</td>
<td>-used to identify heat signatures of people lost in the wilderness</td>
</tr>
<tr>
<td>Radio</td>
<td>-used to send communications, including video, to astronauts</td>
</tr>
<tr>
<td>Microwaves</td>
<td>-widely used in the cooking industry</td>
</tr>
<tr>
<td>Ultraviolet</td>
<td>-used in tanning beds</td>
</tr>
<tr>
<td>X-Rays</td>
<td>-used by medical professionals to “see” inside the body</td>
</tr>
</tbody>
</table>

19. **The rays of light hit a mirror below and are all bounced off at the same angle. This is an example of —**
   - A. diffraction
   - B. refraction
   - C. regular reflection
   - D. diffuse reflection

20. **Light travels —**
   - A. in squares
   - B. in ovals
   - C. in circles
   - D. in straight lines

21. **Which part of the spectrum has the longest wavelength?**
   - A. Blue
   - B. Red
   - C. Orange
   - D. Yellow
Click and drag the colors into the correct order.

When white light shines through a prism, it is refracted. Place the visible colors in order from least refracted to most refracted.

23 What happens when a material absorbs all visible light and no light is reflected back?

A  A rainbow appears.
B  Objects seem smaller.
C  Black is seen.
D  White shows up.
E  Light is bent.

24 Directions: Click and drag the colors to the correct box.

Place the colors in correct the location.

When all colors of the visible spectrum are combined, what color of light is produced?

A  Yellow
B  White
C  Black
D  Red
26 Which is the correct order of the colors of the visible light spectrum?
   A Orange, yellow, green, blue, violet, and red
   B Green, blue, violet, red, orange, and yellow
   C Red, orange, green, blue, violet, and yellow
   D Red, orange, yellow, green, blue, and violet

27 Which best describes light?
   A An empty vacuum
   B A black color
   C A form of energy
   D A compression wave

28 Light travels in —
   A compression waves
   B mechanical waves
   C longitudinal waves
   D transverse waves
Which objects show reflection?

Which is the best example of reflection?

A. A bear can see itself when drinking from a river.
B. White light goes through a prism and a rainbow appears on the other side.
C. A stick looks like it is bent in the water.
D. The fish in the fish tank is not where it appears to be.
E. Eye glasses are worn to help correct a person's vision.
A student is seated at a table as shown in the diagram. When the student looks into the mirror, which objects will he see?

- Triangle
- Sun
- Heart
- No symbol
- Diamond

A shiny aluminum screen can be placed on the windshield of a parked car. This screen helps to keep the car cool because it —

- A causes evaporation
- B reflects the sunlight
- C conducts electricity
- D absorbs heat

A white shirt reflects —

- A black waves
- B no waves
- C green waves
- D all waves
Which path shows the way light will travel after hitting a mirror?

A Path 3  
B Path 1  
C Path 2  
D Path 4

35 **Objects are seen as different colors, because** —

A objects do not reflect certain wavelengths  
B objects cannot be seen in different colors  
C objects reflect certain wavelengths and absorb others  
D objects reflect wavelengths and do not absorb others

36 **A student noticed the seashell looked closer than it really was when placed in water. This is caused by** —

A reflection  
B being translucent  
C delection  
D refraction