

# Light and Optical Systems - Section 2.0 – Quiz

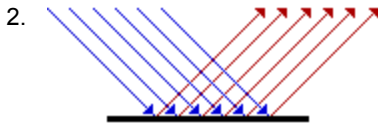
Light behaves in predictable ways.

Student Name \_\_\_\_\_

Class \_\_\_\_\_

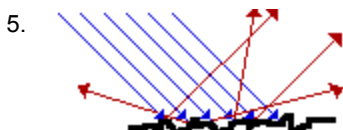
## 2.1 Light Travels in Rays and Interacts With Materials

1. When light travels, it does so in straight lines. What creates a shadow?
  - A. The absence of a light source
  - B. The absence of light
  - C. The reflection of light
  - D. The refraction of light



This illustration demonstrates how light travels and is referred to as a ...

- A. light sketch
  - B. light diagram
  - C. ray sketch
  - D. ray diagram
3. When light interacts with a substance, different things can happen to the light because of the type of material it is made of. Opaque materials do this to light ...
    - A. reflect
    - B. transmit
    - C. block
    - D. diffuse
  4. When a light bulb in a lamp receives electrical energy, it will produce light. The term that that is used to indicate that the light source produces light is ...
    - A. brilliant
    - B. electricity
    - C. luminous
    - D. intensity



This illustration demonstrates a type of reflection referred to as ...

- A. regular
- B. crooked
- C. diffuse
- D. spectacular

## 2.2 The Law of Reflection

6. Reflection is the process in which light strikes a surface and bounces off that surface. The reflected ray will bounce back directly to the light source if it is lined up with the ...
  - A. incident ray
  - B. reflected ray
  - C. normal line
  - D. reflecting surface

7. To discover the laws of reflection it is necessary to use a ...
- ray box
  - plane mirror
  - reflective material
  - normal line
8. In stating the law of reflection, that *the angle of incidence equals the angle of reflection* it is necessary to understand that this is a law because ...
- a scientist has stated it
  - this relationship happens most of the time
  - this relationship always happens
  - science is always accurate and precise
9. When you attempt to focus an image on a screen, using a concave mirror, but cannot, yet, you can see an image when are looking into the same concave mirror, the image is called a ...
- convex distortion
  - concave image
  - virtual image
  - reflected distortion

### 2.3 Reflecting Light with Curved Mirrors

10.



*Funhouse mirrors* distort the image you are looking at.  
The only practical purpose for mirrors of this type is for entertainment purposes

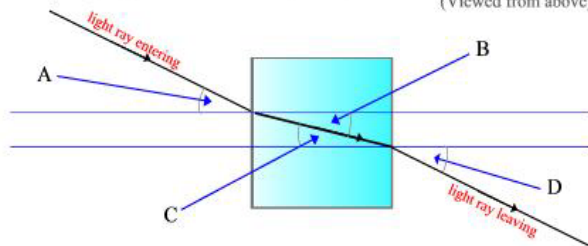
A mirror curved outward only once however, can have many practical applications and is called a ...

- bubble mirror
  - convex mirror
  - concave mirror
  - plane mirror
11. When parallel rays of light hit the surface of this type of mirror, they are reflected back to a focal point in front of the mirror. The type of mirror that does this is called a ...
- bubble mirror
  - convex mirror
  - concave mirror
  - plane mirror
12. Cosmetic mirrors, flashlights, reflecting telescopes, and the headlights in a car are all examples of practical applications for these type mirrors ...
- bubble mirror
  - convex mirror
  - concave mirror
  - plane mirror
13. If an object is placed far away from the focal point in a concave mirror, it will appear ...
- Upright and smaller
  - Upright and larger
  - Inverted and smaller
  - Inverted and larger
14. If an object is placed between the focal point in a concave mirror and the mirror itself, the image will appear ...
- Upright and smaller
  - Upright and larger
  - Inverted and smaller
  - Inverted and larger

## 2.4 Transparent Substances Refract light

15. Refraction is the bending of light when it travels from one medium to another. What direction does the light bend when it travels from a medium of greater density to one of lesser density?
- A. along the normal
  - B. along the perpendicular
  - C. towards the normal
  - D. away from the normal
16. When light is refracted, the angle of incidence increases and the angle of refraction ...
- A. depends on the intensity of the light
  - B. increases, depending on the material
  - C. decreases, but only by one half
  - D. increases by double
17. Mirages cause an illusion of a watery surface. This illusion is actually ...
- A. water drops reflecting the light
  - B. water drops refracting the light
  - C. the sky refracted by warm air
  - D. the sky reflected by warm air
18. When light strikes a surface and is absorbed, the light ...
- A. changes into another form of energy
  - B. bounces off in many different directions
  - C. travels through it in a different direction
  - D. happens only when it is a smooth shiny surface
19. During refraction, when the angle of incidence is doubled, the angle of refraction is ...
- A. also doubled
  - B. not necessarily doubled
  - C. decreased by the same amount
  - D. decreased by about half

20. Label the angles produced when a light ray goes through a refraction tank.  
(Viewed from above)



A is the angle of

B is the angle of

C is the angle of

D is the angle of

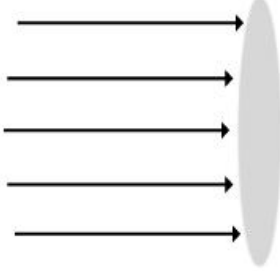
## 2.5 Lenses Refract and Focus Light

21. When light passing through a lens, the light is bent, causing the rays of light to diverge. The type of lens is a ...
- A. convex lens
  - B. concave lens
  - C. optic lens
  - D. diamond prism lens
22. When light rays pass through a convex, lens the image that is formed is ...
- A. diverted
  - B. converted
  - C. inverted
  - D. implied

- 23 Light passes through a lens and is refracted. Different lenses refract light differently. Complete the following illustrations and sentences (following each question) as directed.

Activity 1 (3 points)

Draw what happens to the light rays going through this lens.



What type of lens is it? **It is a** \_\_\_\_\_ **lens.**

What happens to the light rays? **They are** \_\_\_\_\_ .