

Reflection of Light

A. Fill in the Blanks

Complete the sentences with the correct terms.

1. An image that can be formed on a screen is called a _____ image.
2. The imaginary line drawn perpendicular to the reflecting surface at the point of incidence is called the _____.
3. Reflection from a rough or uneven surface is known as _____ reflection.
4. A plane mirror always forms an image that is the _____ size as the object.
5. A _____ mirror is used in car headlights to produce a powerful, parallel beam of light.

B. Match the Following;

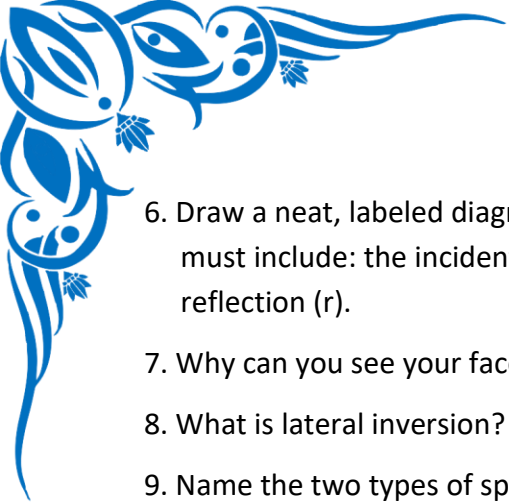
Match the term in Column A with the best description or example in Column B.

Column A	Column B
1. Plane Mirror	A. Used as a security mirror in shops
2. Concave Mirror	B. The phenomenon of 'left' appearing as 'right'
3. Convex Mirror	C. Reflection from a wooden table
4. Lateral Inversion	D. Used by dentists for magnification
5. Diffuse Reflection	E. Forms a virtual image of the same size

C. Practice Problems

Apply your knowledge to solve these problems.

1. If a ray of light strikes a plane mirror at an angle of incidence of 40° , what will be the angle of reflection?
2. A ray of light makes an angle of 60° with the surface of a plane mirror. What is the angle of incidence?
3. List three main characteristics of the image formed by a plane mirror.
4. Differentiate between regular reflection and diffuse reflection.
5. What is the difference between a real image and a virtual image?



6. Draw a neat, labeled diagram showing the reflection of a light ray from a plane mirror. Your diagram must include: the incident ray, the reflected ray, the normal, the angle of incidence (i), and the angle of reflection (r).
7. Why can you see your face clearly in a calm pool of water but not in a flowing river?
8. What is lateral inversion? Give a common example.
9. Name the two types of spherical mirrors.
10. Which type of mirror is known as a "converging" mirror and which is known as a "diverging" mirror?

D. Warm-up Questions

Answer these quick questions to refresh your memory.

1. What is the bouncing back of light from a surface called?
2. What kind of path does light travel in?
3. According to the first law of reflection, the angle of incidence is equal to the _____.
4. Name one object that shows regular (specular) reflection.
5. Is the image formed by a plane mirror real or virtual?

E. Challenge Questions

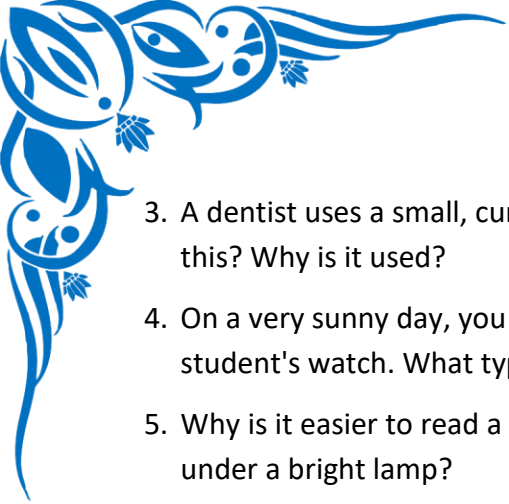
Think critically to answer these challenging questions.

1. A ray of light strikes a plane mirror, making an angle of 20° with the mirror's surface. What is the total angle between the incident ray and the reflected ray?
2. You are standing 2 meters away from a large plane mirror. How far away from you is your image?
3. What happens when a ray of light hits a plane mirror perpendicularly (at 90° to the surface)? What are the values of the angle of incidence and the angle of reflection?
4. Two plane mirrors are placed parallel to each other, with a small candle placed in the middle. How many images of the candle will be formed? Explain why.
5. The laws of reflection are true for all surfaces, including rough ones like cardboard. Why, then, do we not see an image in a piece of cardboard?

F. Word Problems & Application

Connect the science of reflection to the real world.

1. The word AMBULANCE is often written as ƎOꞤAꞤUǝꞤMA on the front of emergency vehicles. Explain the scientific reason behind this.
2. Why are convex mirrors preferred as rear-view mirrors in cars and motorcycles? Give two reasons.



3. A dentist uses a small, curved mirror to get a magnified view of a patient's tooth. What type of mirror is this? Why is it used?
4. On a very sunny day, you might see a bright, moving spot of light on a classroom wall, reflected from a student's watch. What type of reflection is causing this bright spot?
5. Why is it easier to read a book with a matte (non-shiny) paper finish than one with a very glossy finish under a bright lamp?

G. True or False

1. The image formed by a plane mirror is upside-down. _____
2. A convex mirror can form a real, magnified image. _____
3. The angle of incidence is measured between the incident ray and the mirror surface. _____
4. Diffuse reflection does not obey the laws of reflection. _____
5. A concave mirror always diverges light rays. _____