Name: _____ **Date:** _____

Bending the Beam: 10th Grade Geometric Optics Quiz

Calculate angles of incidence and identify image properties from dental mirrors to fiber optic cables.

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1. When light travels from air into a diamond, it slows down significantly. Which optical phenomenon causes the light path to change direction at the boundary?

A. Specular Reflection
B. Refraction
C. Diffraction
D. Total Internal Reflection

2. According to the Law of Reflection, if a laser hits a smooth surface at an angle of 25 degrees to the normal, the reflected ray will also be at 25 degrees to the normal.

A. True
B. False

3. A security mirror found in the corner of a grocery store aisle is typically a ____ mirror because it provides a wider field of view.

A. Concave
B. Plane
C. Convex
D. Converging

4. Which type of lens is thinner in the middle than at the edges and is commonly used to correct nearsightedness (myopia)?

A. Converging lens
B. Biconvex lens
C. Diverging lens
D. Cylindrical lens

5. Total internal reflection is the principle that allows high-speed data to travel through fiber optic cables.

A. True
B. False

6. When an object is placed very close to a _____ mirror, such as a dentist's tool, the image appears magnified and upright.

A. Convex
B. Plane
C. Concave
D. Diverging

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7. The 'Index of Refraction' (n) is a dimensionless number that describes how much light bends. What is the formula used to calculate 'n' based on the speed of light?

A. n = speed of light in vacuum / speed of light in medium
B. n = speed of light in medium / speed of light in vacuum
C. n = angle of incidence + angle of refraction
D. n = mass / volume

8. A magnifying glass uses a diverging lens to make small text appear larger.

A. True
B. False

9. If you are standing 2 meters in front of a flat plane mirror, how far away from you does your image appear to be?

A. 1 meter
B. 2 meters
C. 4 meters
D. 8 meters

10. The point on the principal axis where parallel light rays meet after passing through a converging lens is called the _____.

A. Optical Center
B. Focal Point
C. Radius of Curvature
D. Critical Angle