Geometric Optics

AP Physics 2 · Vocabulary in context

Word	Example
magnifying glass /ˈmægnɪfaɪŋ glæs/	Hold a **magnifying glass** close to the page to make the words look bigger.
Geometric optics /ˌdʒiːəˈmetrɪk ˈɒptɪks/	**Geometric optics** uses straight rays to show how light travels.
law of reflection /lɔː ɒv rɪˈflekʃn/	The **law of reflection** says the angle of incidence equals the angle of reflection.
angle of incidence /ˈæŋgl ɒv ˈɪnsɪdəns/	The **angle of incidence** is measured from the normal, not from the surface.
angle of reflection /ˈæŋgl ɒv rɪˈflekʃn/	The **angle of reflection** equals the angle of incidence.
normal /ˈnɔːml/	The **normal** is a line at 90° to the surface. 90°
wavefront /ˈweɪvfrʌnt/	Each **wavefront** joins points on the same crest.
specular reflection /ˈspekjʊlə rɪˈflekʃn/	A mirror gives **specular reflection**.
diffuse reflection /dɪˈfjuːz rɪˈflekʃn/	Paper gives **diffuse reflection**: light scatters in all directions.
plane mirror /pleɪn ˈmɪrə/	A flat **plane mirror** forms a virtual, upright image the same size as the object.
principal axis /ˈprɪnsɪpl ˈæksɪs/	A ray along the **principal axis** passes through the lens without bending.
spherical mirror	A **spherical mirror** is shaped like part of a ball.

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focal point /ˈfəʊkl pɔɪnt/	Parallel rays meet at the **focal point** of a concave mirror.
mirror equation	Use the **mirror equation** to find where the image forms.
concave mirror /kɒnˈkeɪv ˈmɪrə/	A **concave mirror** curves inwards, like the inside of a spoon.
real image /rɪəl ˈɪmɪdʒ/	A **real image** can be shown on a screen.
inverted /ɪnˈvɜːtɪd/	The real image from one lens is **inverted**: it is upside down.
convex mirror /kɒnˈveks ˈmɪrə/	A **convex mirror** curves outwards, like the back of a spoon.
virtual image /ˈvɜːtʃuːəl ˈɪmɪdʒ/	A **virtual image** cannot be shown on a screen.
upright /ˈʌpraɪt/	A convex security mirror always gives an **upright** image.
magnification /ˌmægnɪfɪˈkeɪʃn/	A **magnification** of −0.5 means the image is upside down and half the size. −0.5
centre of curvature	The **centre of curvature** of a mirror is at twice the focal length.
sign convention /saɪn kənˈvenʃn/	With this **sign convention**, a virtual image has a negative distance.
refraction /rɪˈfrækʃn/	**Refraction** makes a straw look bent in water.
index of refraction /ˈɪndeks ɒv rɪˈfrækʃn/	Glass has an **index of refraction** of about 1.5. 1.5

Word	Example
Snell's law /snelz lɔ:/	**Snell's law** links the angles of the rays.
medium /'mi:dɪəm/	Sound needs a **medium**, such as air, to travel.
critical angle /'krɪtɪkl 'æŋgl/	The **critical angle** for glass is about 42°. 42°
total internal reflection /'təʊtl ɪn'tɜ:nl rɪ'flekʃn/	**Total internal reflection** keeps light inside an optical fibre.
optical fibre /'ɒptɪkl 'faɪbə/	An **optical fibre** carries internet data as light.
wavelength /'weɪvleŋθ/	The **wavelength** is the distance from one crest to the next.
frequency /'fri:kwənsi/	A **frequency** of 50 Hz means 50 waves every second. 50 Hz 50
lens /lenz/	A camera **lens** forms a real image on the sensor.
thin-lens equation	The **thin-lens equation** has the same form as the mirror equation.
converging /kən'vɜ:dʒɪŋ/	A **converging** lens brings parallel rays together at a point.
diverging /daɪ'vɜ:dʒɪŋ/	A **diverging** lens spreads rays apart.
→ **ray diagram**	Use a **ray diagram** to locate a lamp's image.
→ **undeviated**	The ray through the centre of a thin lens is **undeviated**: it does not bend.
focal length /'fəʊkl leŋθ/	A diverging lens has a negative **focal length**.

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