

Light, Mirrors and Lenses Review

Name

Key

Check Your Answers

1. Use the following words to complete the sentences below

Transparent a desk absorbed transmitted opaque
frosted glass translucent window glass reflected

- a) Three things can happen to light when it hits matter. It can be absorbed, transmitted, or reflected.
- b) Light that is soaked in is absorbed.
- c) Light that bounces off matter is reflected.
- d) Light that passes through matter is transmitted.
- e) A substance that transmits light as well as detail is said to be transparent.
- f) A substance that blocks light is said to be opaque.
- g) A substance that transmits light but no detail of that light is translucent.
- h) An example of a transparent object is window glass.
- i) An example of an opaque object is a desk.
- j) An example of a translucent object is frosted glass.

Complete the table below. In the second column, classify each material as transparent, opaque, or translucent. In the third column, state whether light is absorbed, reflected, transmitted, or scattered when it strikes the material. In the last two boxes of the first column, write your own examples.

Material	Classification	Behaviour of light
glass	transparent	transmitted
white clouds	translucent	scattered
stained glass window	transparent	transmitted
aluminum foil	opaque	reflected
fog	translucent	scattered
cellophane (plastic wrap)	transparent	transmitted
cardboard	opaque	absorbed
wax paper	translucent	scattered
black chalkboard	opaque	absorbed
mirror	opaque	reflected
clear plastic	transparent	transmitted
frosted glass	translucent	scattered

Use the following words to complete the sentences below

Incident ✓
ray ✓
more slowly ✓
less ✓

angle of incidence ✓
normal ✓
away from ✓

equal ✓
reflected ✓
more ✓

angle of reflection ✓
is not ✓
air ✓
refraction ✓
at an angle towards ✓

- (a) A single line of light energy is called a RAY.
- (b) A ray that strikes a surface is called an incident ray.
- (c) A "bounced" ray is called a reflected ray.
- (d) A line that makes a 90° angle to a surface is called a normal.
- (e) The angle between an incident ray and its normal is called the angle of incidence.
- (f) The angle between a reflected ray and its normal is called the angle of reflection.
- (g) An angle of incidence is EQUAL to its angle of reflection.
- (h) The bending of light as it passes from one medium to another is called refraction.
- (i) ~~Refraction takes place when light strikes a surface~~ at an angle towards to the normal. ??
- (j) Light that strikes a surface in the same direction as the normal is not refracted.
- (k) Light travels at about 300 000 kilometres per second in air.
- (l) Glass and water are more dense than air.
- (m) Light travels more slowly in glass or water than it does in air.
- (n) Light that moves at an angle from a less dense medium to a more dense medium is refracted towards the normal.
- (o) Light that moves at an angle from a more dense medium to a less dense medium is refracted away from the normal.

Use the following words to complete the sentences below

Refracts smaller centre focal length concave
convex focal point larger edge

1. A lens is a transparent material that refracts light in a definite way.
2. The two main types of lenses are concave and convex.
3. A concave lens makes things look smaller.
4. A convex lens makes things look bigger (depending on distance).
5. The thickest part of a convex lens is its centre.
6. The thickest part of a concave lens is its edge.
7. A convex lens can form an image on a screen.
8. A concave lens cannot form an image on a screen.
9. The point where converging light meets is the focal point.
10. The distance between a lens and its focal point is called its focal length.

Convex & Concave Lenses

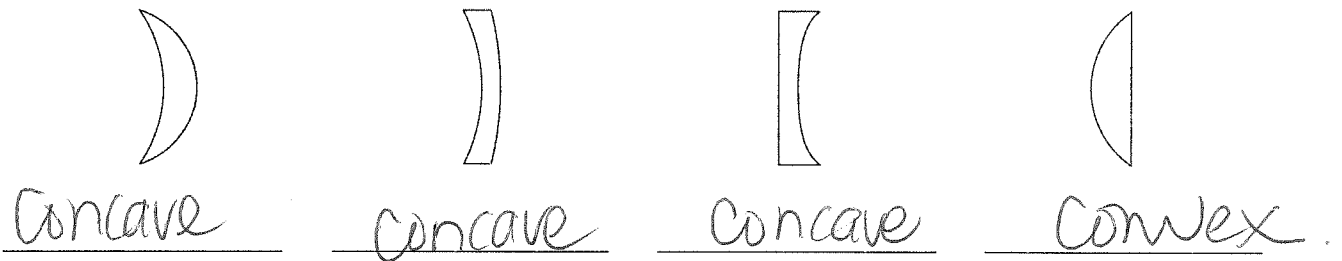
1. Describe a concave lens. *lens that curves inwards.*

2. Light rays *diverge* when passing through a concave lens.

3. Describe a convex lens. *lens that curves outwards.*

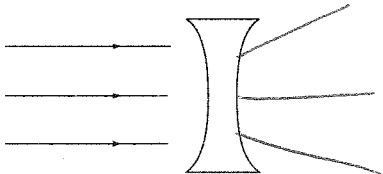
4. Light rays *converge* when passing through a convex lens.

5. Sometimes people use the phrase double convex or double concave to describe a lens. They are referring to the shape of each surface. To identify concave and convex lenses, it is the thickness of the glass in the middle compared to the thickness at the edges that counts. Classify the following lenses as convex or concave.

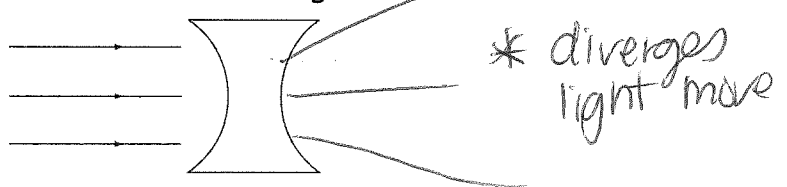


6. Draw the paths of the light through each of the following lenses.

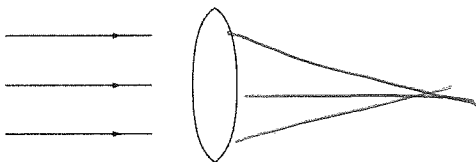
Concave lens with small curve



Concave lens with large curve



Convex lens with small curve



Convex lens with large curve

