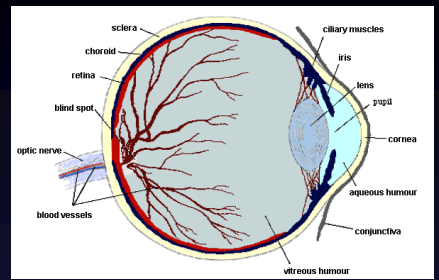


# MODEL EYE

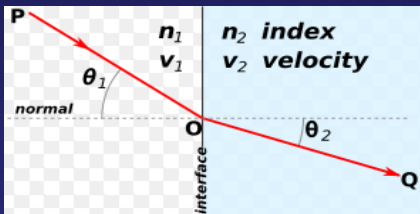
The model eye is labelled and can be taken apart. The legend for the labels on the eye is given at the bottom right of this page.



The refractive index of a material is related to the speed at which light travels in that material, given by:

$$n = c/v$$

Where  $n$  is the refractive index,  $v$  is the velocity at which light travels in the material and  $c$  is the speed of light in a vacuum. This also determines the extent to which light is refracted, or bent, on entering that material. The refractive index of the eye's cornea is 1.38. This, along with the shape of the cornea, bends incoming light at the cornea-air interface so that with the lens the light is focussed within the eye.



The pupil is the aperture, or opening, which allows light to enter the eye. The pupil is black because the eye captures all of the light which enters it, allowing no light to reflect back out. Once light has passed through the pupil, the image formed by the light is flipped both vertically and horizontally from the original image. The human brain compensates for this so that the image that we actually 'see' is the right way round.

The iris changes its size to allow variable amounts of light into the eye. Thus, in dim lighting the iris contracts letting more light enter the eye through the now enlarged pupil. In bright light the iris relaxes, shrinking the aperture through which light enters.



## Model Eye

### Extra-ocular muscles

- I Superior rectus
- II Inferior rectus
- III Medial rectus
- IV Lateral rectus
- V Tendon of superior oblique
- VI Inferior oblique

### A Fibrous layer of eyeball

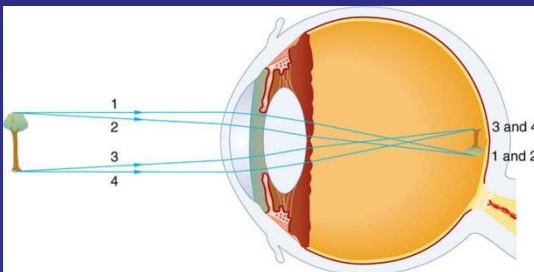
- 1 Cornea
- 2 Sclera

### B Vascular layer of eyeball

- 3 Iris with pupil
- 4 Ciliary muscle
- 5 Corona ciliaris
- 6 Choroid
- 7 Ciliary nerves
- 8 Vorticose vein
- 8a Ciliary arteries

### C Inner layer of eyeball

- 9 Retina
- 10 Ciliary part of retina
- 11 Retinal arterioles
- 12 Retinal venules
- 13 Macula and fovea centralis
- 14 Optic disc
- 15 Lens
- 16 Vitreous body



The ciliary muscles alter the shape of the eye's lens, changing the curvature of the cornea at the front of the eye. This changes the refraction that the incoming light experiences, which changes the focal length of the eye. This is used to bring the image formed by objects at different distances into focus at the back of the retina.

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