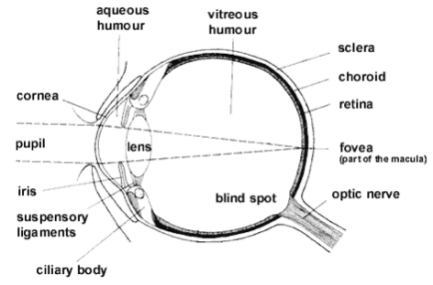
Parts of the eye

Iris	Controls the amount of light entering the eye
Pupil	A hole in the centre of the iris where light enters
Cornea	Transparent layer, refracts light rays into pupil
Humour	Refracts light rays (aqueous/vitreous)
Lens	Transparent, circular, biconvex structure, elastic, change shape to refract and focus light onto the retina
Ciliary body	Contains ciliary muscles that contract/relax to control the curvature of the lens
Choroid	Pigmented black to prevent internal reflection of light, contains blood vessels to bring nutrients/oxygen and remove metabolic wastes
Retina	Cones; colours in bright light. Rods; black and white in the dark
Fovea	Largest concentration of cones, where images are usually focused
Blind spot	Devoid of photo-receptors and is insensitive to light
Eyelids	Protects eye from physical damage, prevents excessive light from damaging tissues inside the eye
Sclera	Tough, white outer covering, protects the eyeball from physical damage, covered by conjuctiva

Parts of the eye (cont)

Tear glands	Secretes tears to wash away dust particles, lubricate the eye, keep conjuctiva and cornea moist

Structure

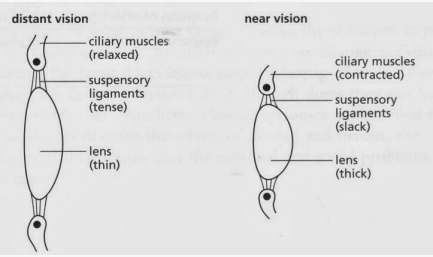


Side view

Pupil reflex

Reflex action is an **involuntary response** to a specific stimulus, without conscious control. It involves the brain as the reflex centre.
Pathway: Stimulus -> photo-receptors in retina -> sensory neurone in optic nerve -> brain -> motor neurone -> effector

Lens shape



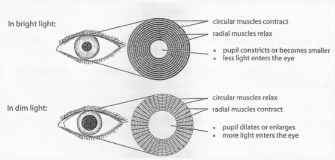
Distance

1 Focusing on a *distant/near* object
2 Ciliary muscles *relax/contract*
3 Suspensory ligaments become *taut/slacken*
4 *Pulling/relaxing* on the edge of the lens
5 Lens become *less/more* convex, *increasing/decreasing* focal length
6 Light rays from the object are sharply focused on the retina
7 Photo-receptors are stimulated

Distance (cont)

8 Nerve impulses produced are transmitted by the optic nerve to the brain, which then interprets the impulses and the person sees the object.
Distant; ciliary relax, lens becomes thinner
Near; ciliary contract, lens becomes thicker

Iris muscles



Brightness

1 Change in light intensity
2 **Stimulus** is detected by **photo-receptors** located in the retina
3 An electrical impulse is generated, transmitted by sensory neurones in the optic nerve to the brain
4 At the brain, the impulse is transmitted across a synapse to the relay neurone, then across another synapse to the motor neurone
5 Motor neurone transmits the impulse to the **circular and radial** muscles of the iris
6 Circular muscles *contract/relax*, while radial muscles *relax/contract*. This causes the pupil to *constrict/dilate*, thereby *reducing/increasing* the amount of light entering the eye
Bright: Circular contract, radial relax, pupil constrict
Dim: Circular relax, radial contract, pupil dilate

Sponsored by **CrosswordCheats.com**
Learn to solve cryptic crosswords!
http://crosswordcheats.com