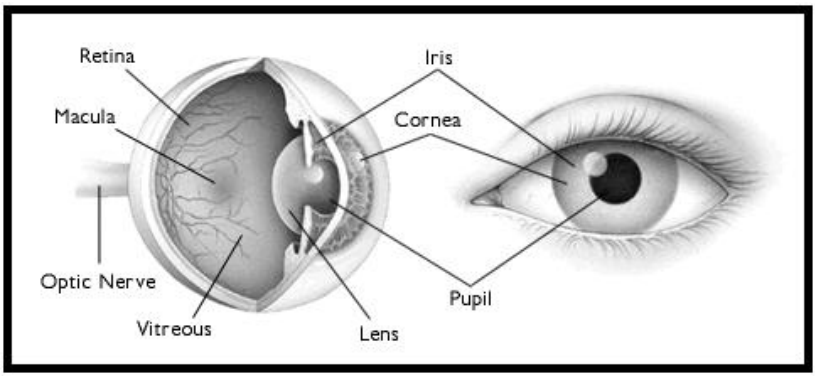
## Eye Notes




Sight, more than any of our senses, helps us _____ the world around us. In a single glance, lasting a fraction of a second, our eyes work with our_____ to tell us the size, shape, colour, and texture of an object. They let us know how close it is, whether it's standing still or coming toward us, and how quickly it's moving.
Only part of the eye is visible in a person's face. The whole eye — the eyeball — is about the size and shape of a _____.

**Protection**:

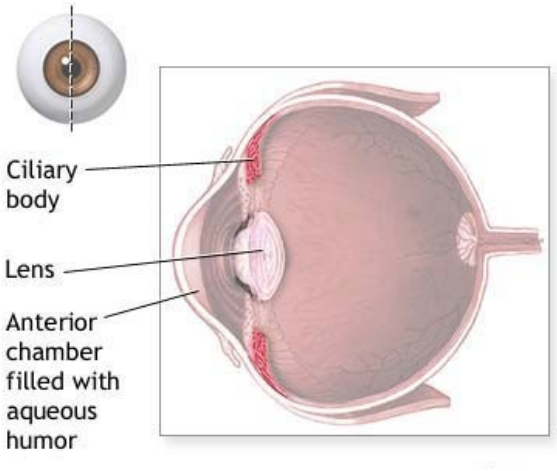
All parts of the eye are extremely delicate, so our bodies protect them in several ways. The eyeball sits in the _____ (also called the _____) in the skull, where it is surrounded by bone. The visible part of the eye is protected by the _____and the _____, which keep dirt, dust, and even harmful bright light out of the eye.

Eyes are also protected by_____, which moisten them and clean out_____, _____, and other irritants that get past the defences of the eyelashes and eyelids. Tears also help protect against _____.

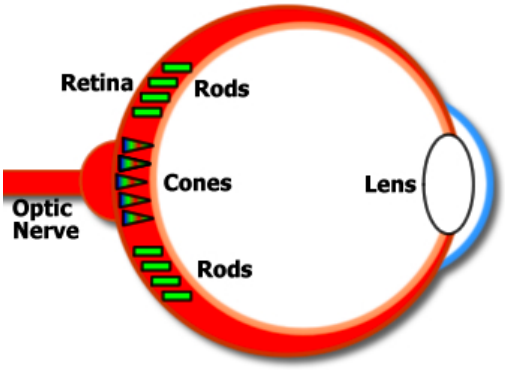
**Use:**

As in a camera, the eye's lens transmits light patterns _____ _____. The brain learns that the impulses received from the upper part of the retina are really from the lower part of the object we're seeing and vice versa.

To focus on objects clearly at varying distances, the eye's lens needs to _____. Their is a muscular structure in the eye that changes the shape of the eye's lens called the ciliary body. In people who have normal vision, the ciliary body _____ the lens enough to bring objects into focus at a distance of 20 feet or more. To see closer objects, this muscle contracts to _____ the lens. Young children can see objects at very close range; many people over 45 have to hold objects farther and farther away to see them clearly. This is because the lens becomes less elastic with age.



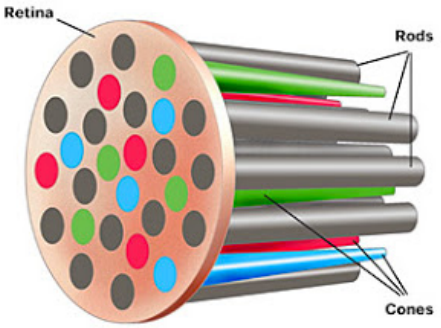

## What Creates the Range of Vision?




One of the most amazing things about human vision is the incredible range it has. We can see in very bright _____, and we can also see in nearly total _____. If you spend much time working with a camera, you know how amazing this range is. Film that works well outdoors is nearly useless indoors, and vice versa. The range that our eyes have comes from three different parts of the eye:

_____ : The pupil contracts and expands depending on the amount of light, and can physically block the amount of light entering the eye in bright situations.

_____: Our eyes sense light with two different types of cells,  rods and cones.



Cone cells can perceive _____.

Rod cells perceive _____
_____.

_____: Rhodopsin is a chemical found in the rods. Rhodopsin is the key to night vision -- it is the chemical that the rods use to absorb photons and perceive light. When a molecule of rhodopsin absorbs a photon, it splits into two different molecules. These molecules will recombine naturally back into rhodopsin but this recombination is fairly _____.

So, when you expose your eyes to bright light, all of the rhodopsin breaks down into two different molecules. If you then turn out the lights and try to see in the dark, you can't. The cones need a lot of light, so they are useless, and there is no rhodopsin now so the rods are useless, too. Over the course of several minutes, however, the split molecules recombine back into rhodopsin, and you can see again.

**Fun Fact**:
The one of the molecules rhodopsin breaks into is retinal. Retinal is derived from _____. If a person's diet is low in vitamin A, there is not enough retinal in the rods and therefore not enough rhodopsin. People who lack vitamin A often suffer from _____
_____ -- they cannot see in the dark.

Where can you get victim A from? _____
_____.