

A i. Retina

ii A - cornea; lets light into eye

B - iris; controls how much light will enter Pupil and go through the lens

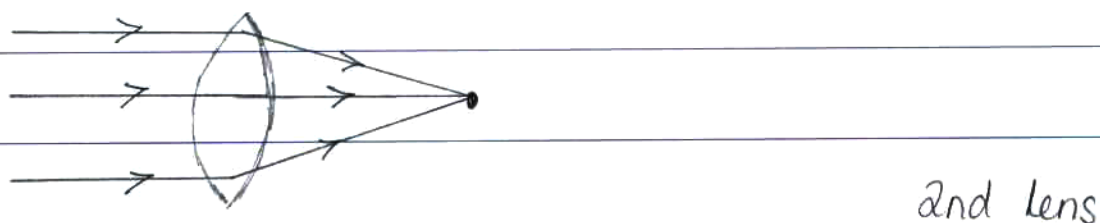
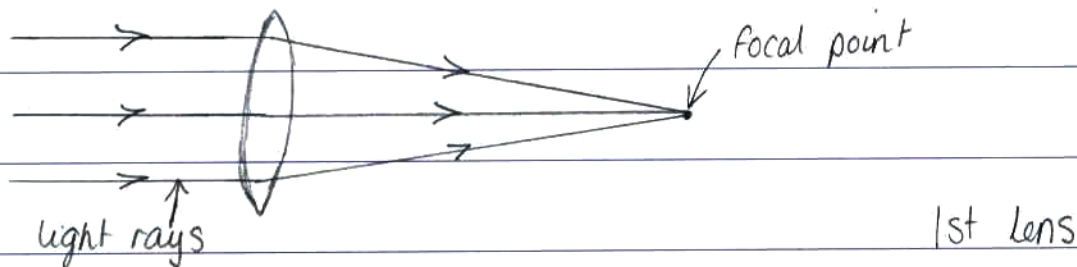
b) i) Information would be gathered by dissection of an animals vocalcords. Information could also be gathered from text books as well as models of animals. Other information could be gathered from observations. For example, observing grasshoppers and crickets that produce sound by the friction between their hind legs.

ii) You could assess that the information was relevant and reliable by comparing the information

you have gathered with information other people have gathered. Your information could also be compared to that of text books. Other strategies used could be experiments. If the results are similar to the information gathered than the results would be relatively relevant and reliable.

c) Advancing technology provides new techniques in which to deal with diseases. For cataracts the lens in the eye is removed and is replaced with a plastic lens. This removes the protein clouded lens so that the patient can see but the plastic lens is unable to expand and contract like the real lens. Technology is now being used to produce a simple injection that prevents the protein from growing across the lens & so prevents cataracts.

- d) To model the process of accommodation we carried out a first-hand investigation. To do this we used a ray box and various different glass/plastic shapes to model the lens. We used the ray box with the three slits in it and focused it onto one of the lens - a convex lens. We then had to move the lens around to we found the focal point. A second lens was then used to do the same thing, except this lens was fatter than the first. The results were then drawn:



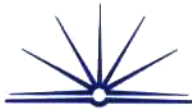
From these results the conclusion was drawn that the lens in the eye needs to be adjusted to focus on different things at different points. To focus on far objects the lens is thin, to focus on close objects, the lens is fat. The lens is altered by the ciliary muscles around the lens.

e) Two devices designed to assist people with different types of hearing impairment include hearing aids, and cochlear implants.

Hearing aids: These are used for people who have damage to their outer or middle ear. They can be used for people with mild to severe hearing loss. The hearing aid consists of a microphone and an amplifier. The microphone picks up the sounds, and amplifies them into the inner ear. The ear piece is not very visible and helps many people such as the elderly. The hearing aids are adjustable to change the loudness of the ear piece.

Cochlear implants: This is a relatively new technology, and is used for people who have damage to their inner ear. The organ of Corti is damaged and sensory hair cells don't work or they might be dead. This consists of a microphone to pick up the sound and speech processor to transfer the sound into electrical signals to the brain.

Surgery needs to be undertaken for the cochlear implant to be inserted. It ^{can} take a long time to adjust to this 'bionic ear', and get used to it. The costs are extremely high,



and it is most successful in people who have lost their hearing, and are regaining it. This device is appropriate as it tries to replace the hair cells in the organ of corti.