

29 a) i) Photoreceptor cells are located on the retina.

ii) A: Protects the eyeball

B: Controls the amount of light let into the eye

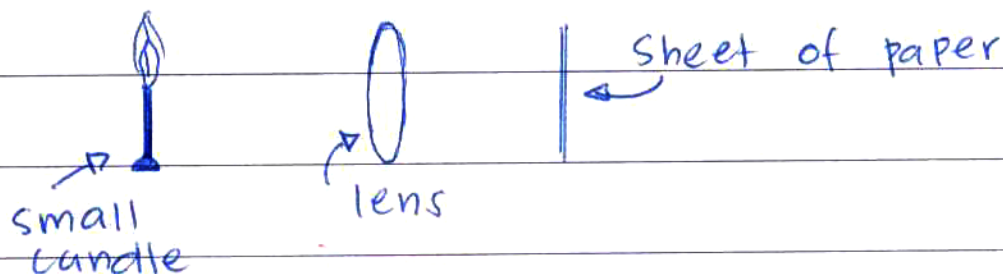
b) i) You would gather information from different sources such as books, the internet and particular magazines to find out information on the structures used by animals to produce sounds. You could also perform a first hand investigation on specific animals to find out about the structures they use to produce sound.

ii) If a first hand investigation was done, you know that the information was reliable, as you discovered it yourself. You could ask a professional eg science teacher to make sure that your observations were correct. If you got your information from sources such as books, you would need to check that the book is professional and identify where it was published and the author, to make sure they are relevant. If information was gathered from the internet, you would need to check that

c) Cataracts are the ~~eyes~~ opaque or clouding of the eye lens which interferes with the vision of individuals. If cataracts are not too bad, they can be overcome by the use of stronger prescription glasses. When the cataracts get so bad that they <sup>interfere</sup> interfere with the everyday life of an individual the only cure is surgery. Cataract extraction surgery involves the removal of the <sup>affected</sup> ~~affected~~ lens and replacing it with new, artificial, inocular lenses. After surgery, individuals may still require the use of bifocals for close up activities.

D. accommodation - focusing of the eye from near to distant objects.

Experiment; 2 lens of varying width were used. A prac was set up as below;



This gave a representation of the eye. By moving the lens back towards or away from the paper (a retina), and depending on the width of the lens used, an image of the candle would be reflected on the ~~screen~~ paper. <sup>the conclusions found</sup> The closer the lens to the paper, ~~the~~ <sup>a</sup> closer ~~an~~ object could be reflected. This only worked if the lens was fatter because less light was needed to bend. In the eye, ~~a fat~~ the ciliary muscles relax the lens (causing it to be fatter) in order to see a near object. The opposite occurs for far objects, ~~the~~





©

The hearing aid helps people who ~~are deaf due to~~ <sup>have hearing</sup> impairments due to the damage of the middle ear. ~~and~~ The hearing aid consists of a ~~microphone~~ <sup>transmitter</sup>, an amplifier and an earpiece. The ~~microphone~~ transmitter helps funnel sound into the ear and directs sound waves. The amplifier works like a microphone that makes the sound loud enough for the person to hear. The earpiece funnels <sup>amplified</sup> sound into the sound receptors of inner ear. As the middle ear its ossicles have been damaged, the ear can no longer vibrate and amplify sound through these small bones and thus sound is lost before reaching the inner ear. Thus the hearing aid allows for the sound vibrations to be amplified in order to reach the inner ear so the optic nerve can relay the message to the ~~brain~~ <sup>auditory</sup> centre in the brain. The cochlea implant or bionic ear is used to treat profoundly and ~~the~~ totally deaf people. ~~and~~ The inner ear ie organ of Corti has been damaged in this case. The cochlea implant has components outside the ear like the radio transmitter on the belt and the magnet to hold the inside parts in place. ~~and~~ ~~inside~~ The cochlea implant also has components ~~at~~ that must be inserted by surgery into the skull itself. These sit just below the cranial bone. The cochlea implant serves to bypass the organ of Corti and stimulate the auditory nerve itself. In this way, sound waves can pass



through the auditory nerve to the auditory centre on the brain to detect sound. It is appropriate as it can help those who cannot hear by bypassing the damaged region and allowing sound waves to transmit to the brain directly. Thus stimulating auditory nerves.