TOPIC: OUR SENSE ORGANS

The Eye

- The organ of sight is the **eye**.
- It is a firm, soft ball set in orbits.
- The eye is protected by the bones of the cheek and forehead.
- Light comes into the eye from an object. Without light, we cannot see.
- The eye has many parts that must work together to produce clear vision.
- The primary function of our eyes is to provide us with vision. It has the ability to receive and process visual detail.
- The eyes also produce tears which are important for healthy eyes.

Parts of the eye.

- The white part of the eye is called the **sclera** or eye ball.
- The coloured part is the **iris**.
- In the middle of the eye is an opening called the **pupil**.
- Behind the pupil is the **lens**.
- Covering the eye is a transparent material called the **cornea**.
- At the back of the eye ball (sclera) is a lining called the **retina**.
- The **optic nerve** is located in the back of the eye.
- The **vitreous humor** (also known simply as the **vitreous**) is a clear, colourless **fluid** that fills the space between the lens and the retina of your eye. 99% of it consists of water and the rest is a mixture of collagen, proteins, salts and sugars. Despite the
water-to-collagen ratio, the vitreous has a firm jelly-like consistency.

- The **conjunctiva** is the clear, thin membrane that covers part of the front surface of the eye and the inner surface of the eyelids.

**Structure of the Eye**

<table>
<thead>
<tr>
<th>Parts of the Eye</th>
<th>Functions</th>
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</thead>
<tbody>
<tr>
<td><strong>sclera</strong></td>
<td>- The sclera, or the white part of the eye, protects the eyeball.</td>
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<tr>
<td><strong>pupil</strong></td>
<td>- The pupil, or black dot at the centre of the eye, is an opening through which light can enter the eye.</td>
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<tr>
<td><strong>iris</strong></td>
<td>- The iris, or coloured part of the eye,</td>
</tr>
</tbody>
</table>
surrounds the pupil. It controls how much light enters the eye by changing the size of the pupil.

| cornea | • The cornea, a clear window at the front of the eye, covers the iris and the pupil.  
• It protects the eye from dirt and dust. |
<table>
<thead>
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<tbody>
<tr>
<td>lens</td>
<td>• A clear lens, located behind the pupil, acts like a camera lens by focusing light onto the retina at the back of the eye.</td>
</tr>
</tbody>
</table>
| retina | • The retina is a light-sensitive inner lining at the back of the eye. Special cells called cones and rods are located in the retina. These cells are known as photoreceptors and help absorb light and turn it into electrical impulses.  
• Cone cells help us see the colour and detail.  
• Rod cells allow us to see in poor lighting and give us our night vision. |
<p>| Optic nerve | The job of the <strong>optic nerve</strong> is to transfer visual information from the retina to the vision centers of the brain via electrical impulses. |
| Vitreous humor | The vitreous performs a vital role in protecting your eye. |</p>
<table>
<thead>
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<tbody>
<tr>
<td></td>
<td>Most importantly, it helps it to hold its ‘spherical' shape.</td>
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<tr>
<td></td>
<td>The vitreous also comes in contact with the retina (the light-sensitive tissue at the back of the eye that acts like the film of a camera).</td>
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<tr>
<td></td>
<td>The pressure of the vitreous humour helps to keep the retina in place.</td>
</tr>
<tr>
<td>conjunctiva</td>
<td>The conjunctiva of the eye provides protection and lubrication of the eye by the production of mucus and tears.</td>
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<td></td>
<td>It prevents microbial entrance into the eye and plays a role in immune surveillance.</td>
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<td></td>
<td>It lines the inside of the eyelids and provides a covering to the sclera.</td>
</tr>
<tr>
<td>choroid</td>
<td>The choroid supplies the outer retina with <strong>nutrients</strong> and maintains the temperature and volume of the eye.</td>
</tr>
<tr>
<td>Ciliary muscle</td>
<td>The ciliary body is a circular structure that is an extension of the iris, the coloured part of the eye.</td>
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<tr>
<td></td>
<td>The ciliary body produces the fluid in the eye called <strong>aqueous humor</strong>.</td>
</tr>
</tbody>
</table>
|                | It also contains the ciliary muscle, which changes the **shape** of the **lens** when your
<table>
<thead>
<tr>
<th>eyes focus on a near object.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aqueous humor</td>
</tr>
</tbody>
</table>

**How does the eye work?**

1. Light reflects off the object we are looking at.
2. Light rays enter the eye through the **cornea** at the front of the eye.
3. The light passes through a watery fluid (**aqueous humor**), and enters the **pupil** to reach the **lens**.
4. The **lens** can change in thickness to bend the light, which will focus it onto the **retina** at the back of the eye.
5. On the way to the retina, the light passes through a thick, clear fluid called a **vitreous humor**. The vitreous humor fills the eyeball and helps maintain its round shape.
6. The light then reaches the back of the eye and hits the retina. The retina translates the light into electrical impulses which are then carried to the **brain** by the **optic nerve**.
7. Finally, the visual cortex (or centre) of the brain interprets these impulses as what we see.

**Did you know?**

- Light rays travel in a straight line to the eye balls.
- Eyelids shut down automatically to protect the eye.
- Tears keep your eye from becoming dry and also helps to keep out dust and wash away germs.

**Caring for our eyes.**

1. Never push things into your eyes.
2. Avoid rubbing your eyes with your hands.
3. Wear sunglasses in very bright light to protect your eyes.
4. Do not look at welding flashes or directly at the sun.
5. If you cannot see things clearly see the eye specialist.
6. Have regular checks of your eye by a doctor.
7. If you need spectacles wear them.

**ON YOUR OWN**

1. Identify the organ of sight then list the main function of this organ. __________________________________________________________
   ____________________________________________________________

2. Name the white part of the eye.______________________________

3. Which part of the eye allows us to see black and white?
   __________________________________________________________

4. Name the part of the eye that focuses light.___________________

5. Explain what is meant by ‘dry eye’.
6. Name two diseases associated with the eye.

**HOMEWORK**

1. Complete the table below by filling in the missing information.

<table>
<thead>
<tr>
<th>Part of the eye</th>
<th>Description</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>The coloured part of the eye.</td>
<td></td>
<td>Light is focused unto this part of the eye which is found at the back of the eye.</td>
</tr>
<tr>
<td>The largest part of the eye.</td>
<td>It is this part that gives the eye its shape.</td>
<td></td>
</tr>
<tr>
<td>Optic nerve</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
2. Draw a simple diagram of the eye and label its parts.

3. In about four lines explain how the eyes work for us to see.

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