



Facts for students

Good vision is important

Learning about your eyes, how they work and how to protect them is important. Often people think they can see fine, not knowing that, with help, they could see even better.

Everyone's eyes see things differently. Some people may have trouble seeing things up close, while some people may have trouble seeing clearly from a distance. Vision problems can also make it more difficult to learn at school.

A visit to an optometrist can be important. They examine your eyes, do a series of simple eye tests, and may provide solutions such as glasses or eye exercises that can help you see better.

Interesting facts about your eyes

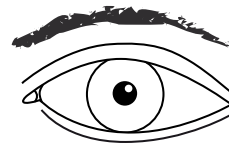
As you can see from the diagram below, the eye is made up of many elements that all play important roles in protecting your eyes and helping you see better.

Your eyes are about the same size as ping-pong balls and are positioned in a small hollow area called the eye socket. They are protected at the front by the eyelid and are kept clean by blinking. Eyes are connected to your brain by a nerve called the *optic nerve*. The optic nerve is a bundle of over one million nerve fibres that carry visual messages between the retina (a part of the eye made of light-sensitive tissue) and the brain.

The coloured part of your eye is called the iris, and the black spot in the middle of the iris is called the pupil. The pupil is an opening that enables light to enter the eye. The iris expands and contracts around the pupil to control the amount of light that enters through its opening.

In bright light the pupil becomes smaller, minimising the amount of light that enters the eye; and in dim light the pupil becomes bigger, maximising the amount of light that enters the eye, helping you to see better.

Amazingly, all of this appears to happen automatically, but it relies on a group of complicated processes between the retina, brain and muscles



Pupil in bright light

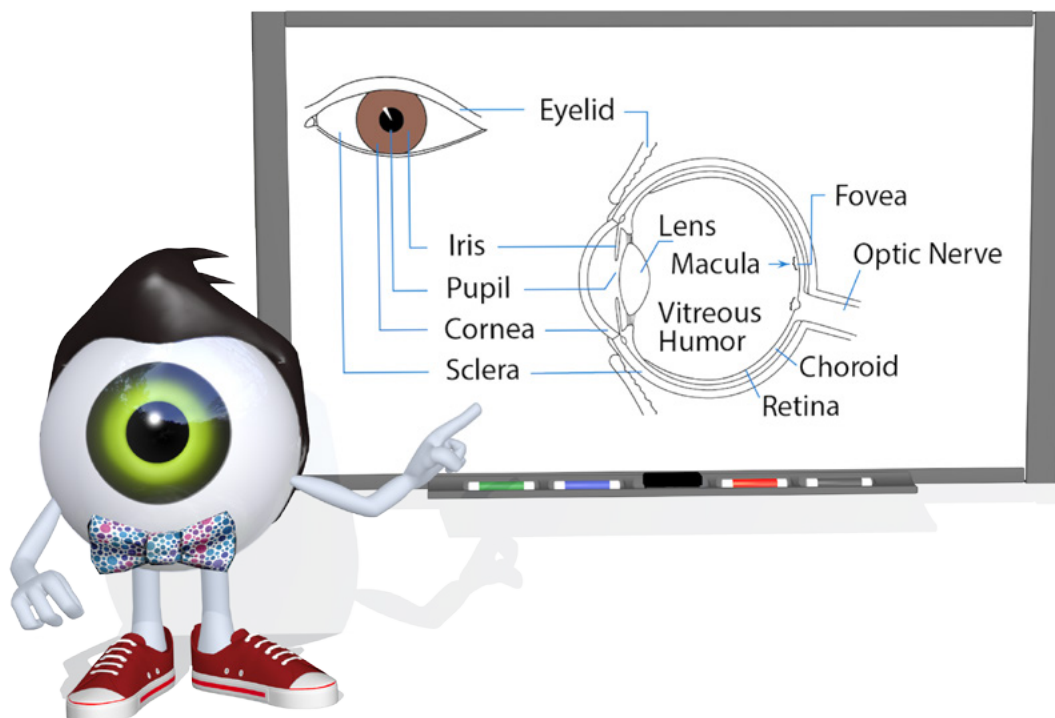


Pupil in dim light

in the eye!

There are six muscles attached to the outside of the eye that help you move your eyes from side to side and up and down.

There are also special light sensitive cells in the retina that allow you to see in colour.





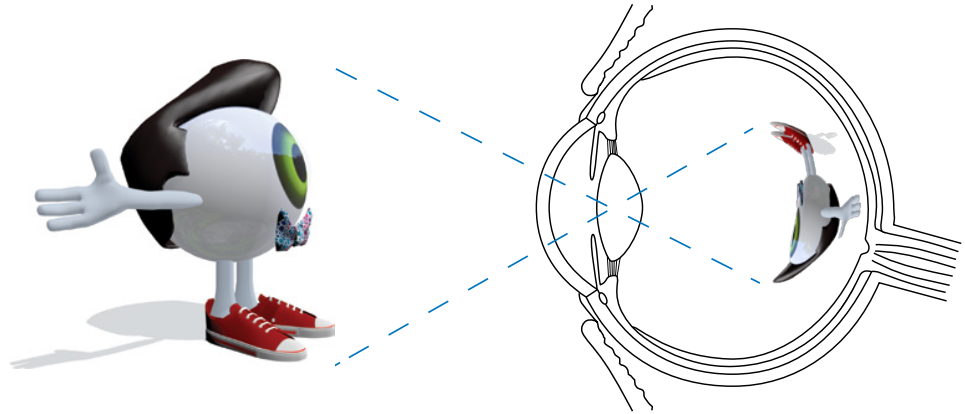
Facts for students

Interesting facts about your vision

To be able to see, you need three things: your eyes, your brain and light. Light must be reflected from an image or picture into your eye, and then focussed onto your retina, where messages or signals are then sent from your eye to your brain.

How your brain helps you see

This diagram shows how images are focussed onto your retina. The image on your retina appears upside down, and when the eye sends information about the image through the optic nerve to your brain, your brain automatically turns it right side up for you.

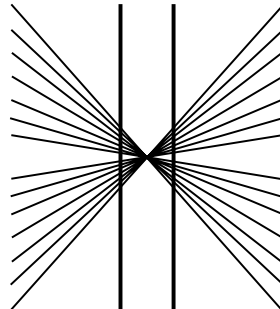


How optical illusions work

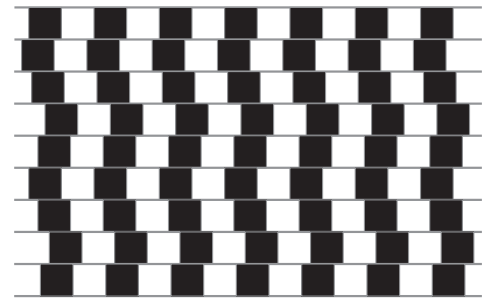
Sometimes your eyes play tricks on you by creating an optical illusion. When we look at the world we see it as three-dimensional, or having length, width and depth. Our brain uses clues such as depth, shading, lighting and position to help us understand what our eyes see. When we look at two-dimensional images, with only length and width, the brain is missing some of these clues and can be confused. The next few pictures on this page are optical illusions. They can teach us how the eyes and brain work together to create vision.



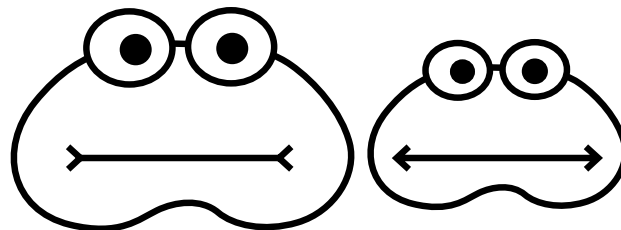
Is this a picture of a vase? Or two faces looking at each other? Do you see both?



Are the vertical lines straight or bent? Use a ruler to check.



Are the horizontal grey lines straight or angled?



Which frog has a bigger mouth? Are you sure? Measure to find out.



Facts for students

Keeping your eyes safe

It is really important to keep your eyes safe from injury. They can be injured at school or at home while doing simple everyday activities, but most eye injuries occur when playing sport or enjoying your favourite hobby. High risk sports for eye injuries include cricket, hockey, football, soccer and archery. Learning how to protect your eyes from injury, and how to treat an injury when it occurs, are both important in preventing blindness and vision problems.

Your eyes have their own built-in 'protectors' to help keep them safe.

These include:

- > bony sockets which help protect your eyes from being hit
- > eyebrows which act as 'light shades', and reduce the amount of light shining into your eyes
- > eyelashes which grow along the outside of the eyelids and prevent dust and dirt from entering your eyes
- > eyelids which also help prevent dust and dirt entering your eyes
- > tears which help keep the eyes moist and wash away anything that irritates your eyes

Items you can wear when playing sports to help protect your eyes from injury include:

- > specially designed wrap around eyewear for sports such as cricket and soccer
- > a clear polycarbonate facemask or wire shield for protection from the ball during cricket and hockey games.

If you do injure your eye, there are some important first aid tips to remember, which will help prevent serious damage to your eye:

- > Let a teacher, parent or school nurse know straight away if your eye or someone else's eye has been injured.
- > If you have sand or dust in your eye, do not rub it. Rinse your eye with clean water until it feels clear. If it does not feel clear after rinsing for a few minutes you should have an optometrist look at your eye.
- > If you receive a hit to the eye, you should have an optometrist look at your eye.
- > If an object, such as a pen or a stick, is stuck in your eye, do not pull it out, seek immediate first aid, including an ambulance or hospital emergency room.
- > If a chemical such as paint or glue splashes into your eyes, rinse your eyes continuously with water for at least 15 minutes. If your eye is still sore, or you cannot see as usual out of that eye, arrange an immediate visit to an optometrist or hospital emergency department.





Facts for students

What else can you do to help protect your eyes and vision?

There are many ways you can help protect your eyes and vision from damage.

Here are a few helpful hints:

- > Have your eyes checked regularly by an optometrist.
- > Spend a few hours each day in the outdoors. Make the most of outdoor play at school, and make time to play outside after school and on the weekends too.
- > Wear sunglasses and a broad-brimmed hat when spending time outside to reduce the amount of UV exposure to your eyes.
- > Always read in a room with plenty of light, and ensure you have regular reading breaks.
- > When watching television, playing on smartphones or computers, or playing video games, ensure there is plenty of light in the room, and stop glare and reflections from lights or windows.
- > It is also important to limit the amount of time you spend looking at a computer. Have short breaks from looking at a computer for at least five to 10 minutes every hour.
- > When watching television sit back as far as possible from the screen. It is also best to only watch television for less than two hours at a time, before having a break.
- > Eat a healthy diet, and include plenty of vegetables, fruits, nuts and fish. These foods contain important nutrients such as antioxidants, Vitamin A and omega-3s, all helpful in keeping your eyes and body healthy.



Good vision for life fast facts

- > Approximately one in five Australian children suffers from an undetected vision problem, or requires ongoing assessment.
- > Once recognised, many eye problems are easy to correct or treat.
- > Short-sightedness means that a person sees objects that are nearby more clearly than objects that are far away. Glasses or contact lenses can correct this problem.
- > The clear-gel filling the inside of the eye is called the vitreous humour.
- > More than 200,000 people in Australia are blind or have vision problems that cannot be fixed or corrected with eyeglasses. This is why it is important to do all you can to look after your eyes.
- > Long-sightedness means that a person sees objects that are in the distance more clearly than objects that are nearby. Glasses or contact lenses can correct this problem.
- > The tough, white outer coat of the eye is called the sclera.
- > The retina includes 130 million tiny light-sensitive cells that send messages to the brain.
- > Your brain combines the images, or pictures, that each eye sees and makes them into one picture.
- > An increase in time spent watching television, or playing on smartphones or on computers is leading to decreased time spent outdoors, which is being linked to short-sightedness (or myopia) in children.

