



Vision Health Module

Workbook Answers

11

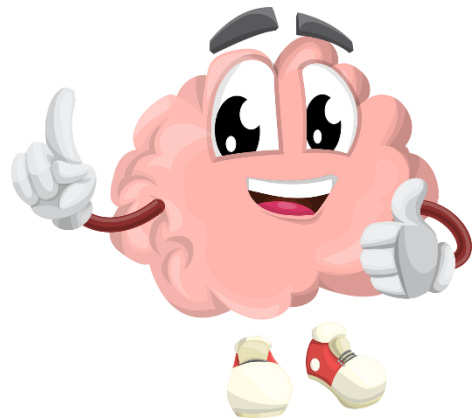
ACTIVITY 6: WORDFIND

Find and circle the words related to eye conditions - there are 16.

A M S I T A M G I T S A O T S V
P R E I O T I U G S G R N S Y I
U P R A V S L L A B E Y E I T S
I N O I S I V S E R S N O R M U
N E A R S I G H T E D A A T G A
I G G I B H A L G N E V T E U L
E H Y P E R O P I A E A A M I I
G M T I V Y O L X O P V Y O H M
L L S R R N B G E P Y O A T B P
A N I T E R V L E C P S N P L A
S T T M U E U C H I S I O O U I
S U G O H I D V A E N R O C R R
E B L X A M A N Y L A P R C R M
S O N S N O I T I D N O C E Y E
C N L S E Y N E E L O N E G S N
F A R S I G H T E D B L T H S T

- | | |
|------------------|-------------------|
| ASTIGMATISM | GLASSES |
| BLIND | HYPEROPIA |
| BLURRY | MYOPIA |
| COLOUR BLINDNESS | NEAR SIGHTED |
| CORNEA | OPTOMETRIST |
| EYEBALL | RETINA |
| EYE CONDITIONS | VISION |
| FAR SIGHTED | VISUAL IMPAIRMENT |

INSTRUCTIONS



This workbook is to help students review what they have learnt about the parts of the eye, how vision works, eye health and different eye conditions. It is designed to be used in conjunction with the Vision Health Module units.

Activity	Unit
Activity 1: Drawing and labelling an eye	How do our eyes work – part 1
Activity 2: Labelling the parts of the eye	How do our eyes work – part 1
Activity 3: Mix and match	How do our eyes work – part 1
Activity 4: Optical illusions	How do our eyes work – part 2
Activity 5: Crossword – eye health	Looking after our eyes
Activity 6: Wordfind – eye conditions	We all see differently
Extension activities	All

ACTIVITY 1: DRAWING AND LABELLING AN EYE

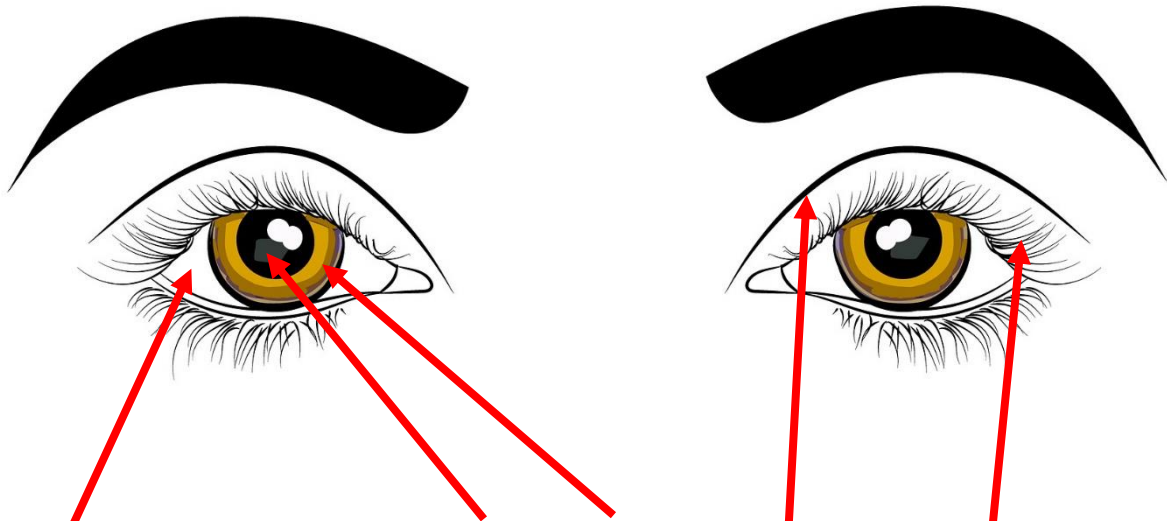
Work in pairs or threes.

Look carefully at your partner's eye. Draw their features onto the left half of the eyes below to complete the picture.

Think about the following:

- *What colour are your partner's irises?*
- *What are their eyebrows like?*
- *Do they have long eyelashes?*
- *How big are their pupils?*

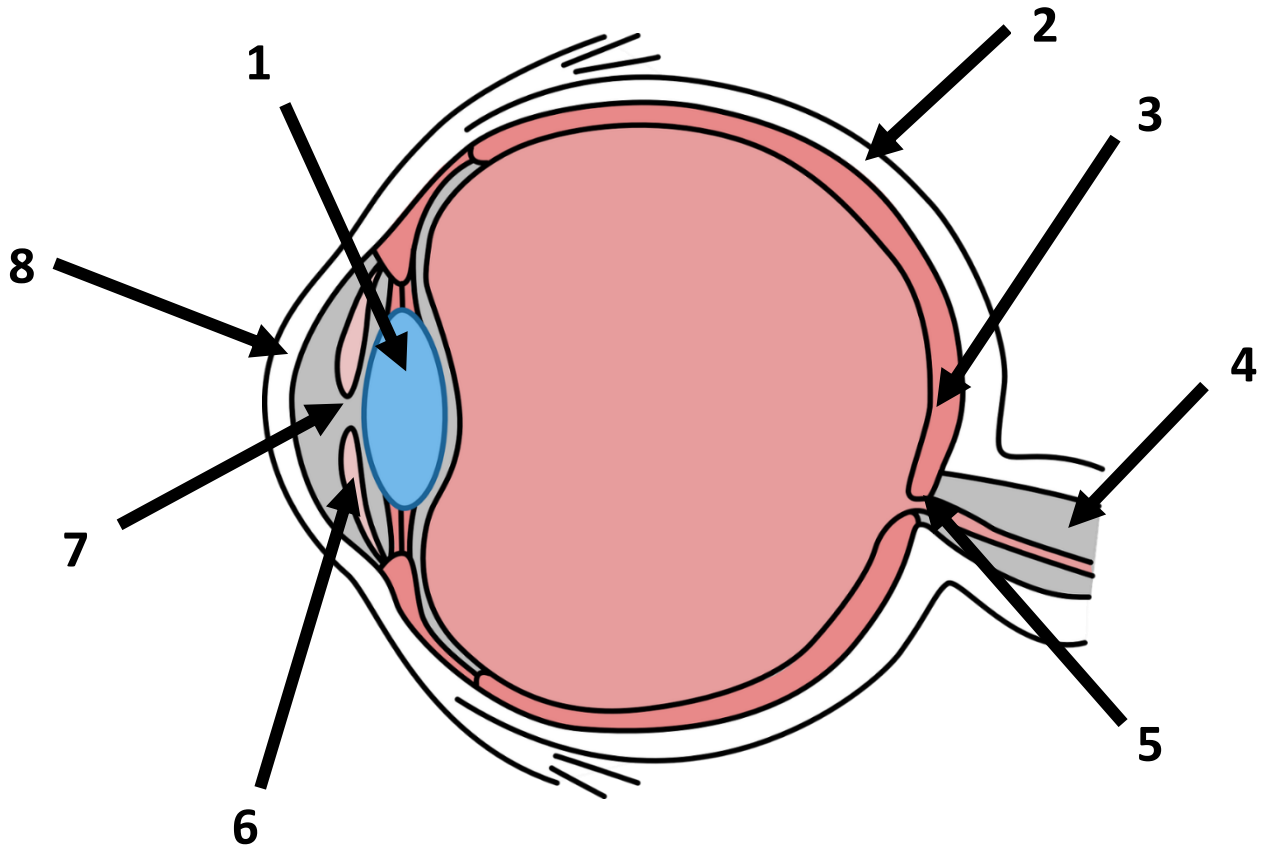
Include as much detail in your drawing as possible.



Label the following parts: PUPIL, IRIS, EYELID, EYELASHES, SCLERA.

ACTIVITY 2: LABELLING THE PARTS OF THE EYE

Label the parts on this diagram of an eye



1. LENS

5. OPTIC DISK

2. SCLERA

6. IRIS

3. RETINA

7. PUPIL

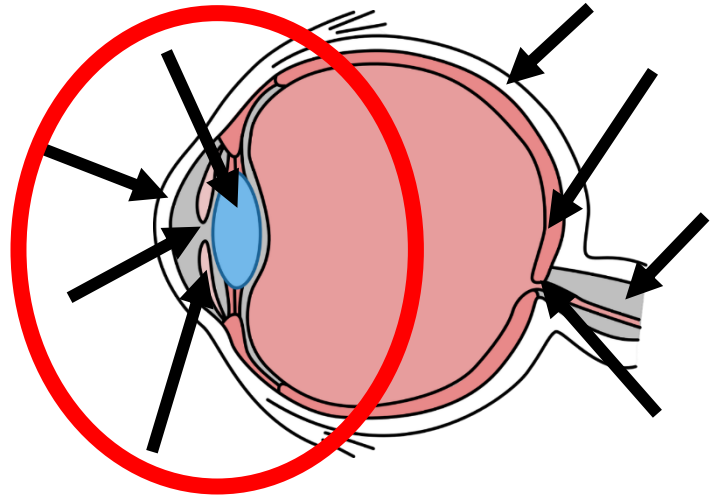
4. OPTIC NERVE

8. CORNEA

ACTIVITY 3: MIX AND MATCH

FRONT OF THE EYE

Draw a line from the part of the eye to its correct function

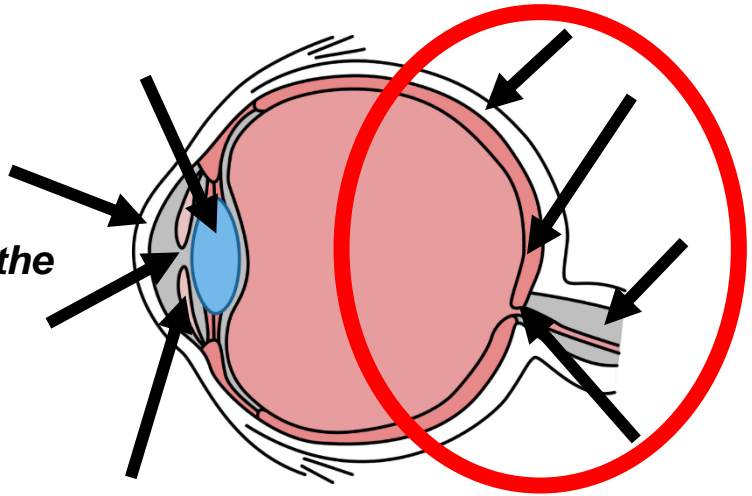


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|---------------|--|
| IRIS | The transparent front part of the eye. Helps to focus the light as it comes into the eye. |
| LENS | The black "hole" that can get bigger or smaller to let more or less light in. |
| CORNEA | The coloured part of the eye, which helps to change the size of the pupil. |
| PUPIL | Clear and colourless, focuses light rays on the retina. Changes shape to view things up close or far away. |

ACTIVITY 3: MIX AND MATCH

BACK OF THE EYE

Draw a line from the part of the eye to its correct function



OPTIC NERVE

The white part of the eyeball. Helps protect and maintain the shape of the eyeball.

RETINA

Sends the nerve signals from the back of the eye to the brain, which interprets what we see.

OPTIC DISK

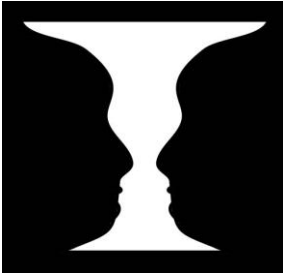
Contains millions of light cells called rods and cones, which turn the light into nerve signals.

SCLERA

Where the optic nerve "plugs in" to the retina.

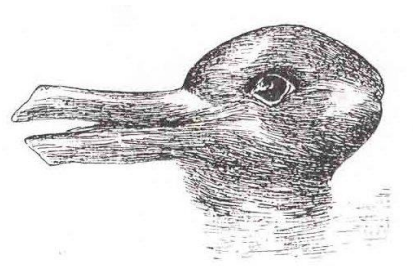
ACTIVITY 4: OPTICAL ILLUSIONS

Which do you see – two faces or a vase?



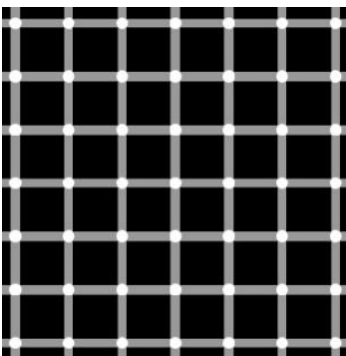
Some people see the black faces, others see the vase.

How many animals do you see?



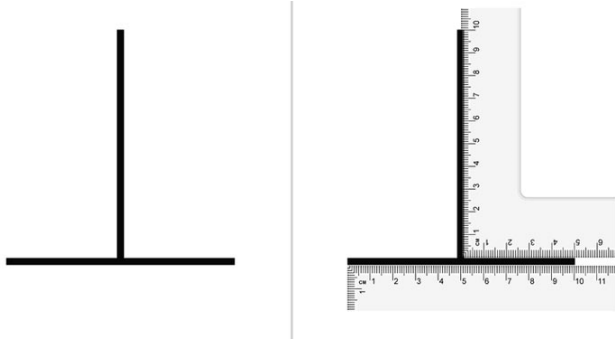
This can be either a duck or a rabbit (or both), depending on which way you look at it.

How many black dots can you see?



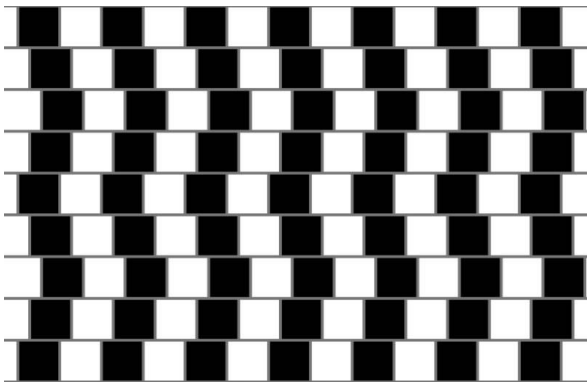
This is called a Scintillating Grid Illusion. Black dots seem to randomly appear and disappear when you look at the grid.

Which line is longer?



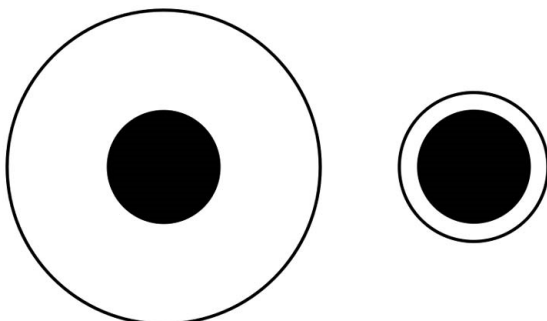
This is a vertical and horizontal line length illusion. The lines are actually exactly the same length!

Are these lines straight or curved?



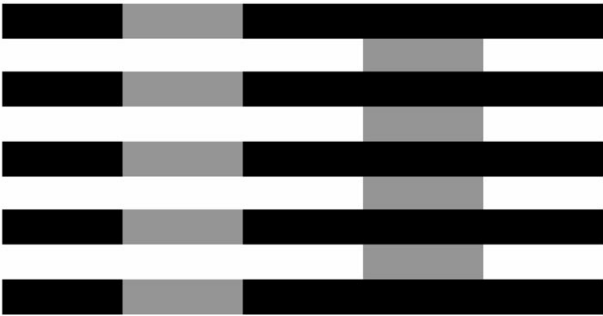
This is a parallel lines café wall illusion. The lines are actually completely straight even though they appear to be bent.

Which black circle is bigger?



This is a Delboeuf Illusion, which is about size perception. The black circles are actually the same size, even though the circle on the right seems larger. This is because the outer ring is closer to the black circle in the image on the right.

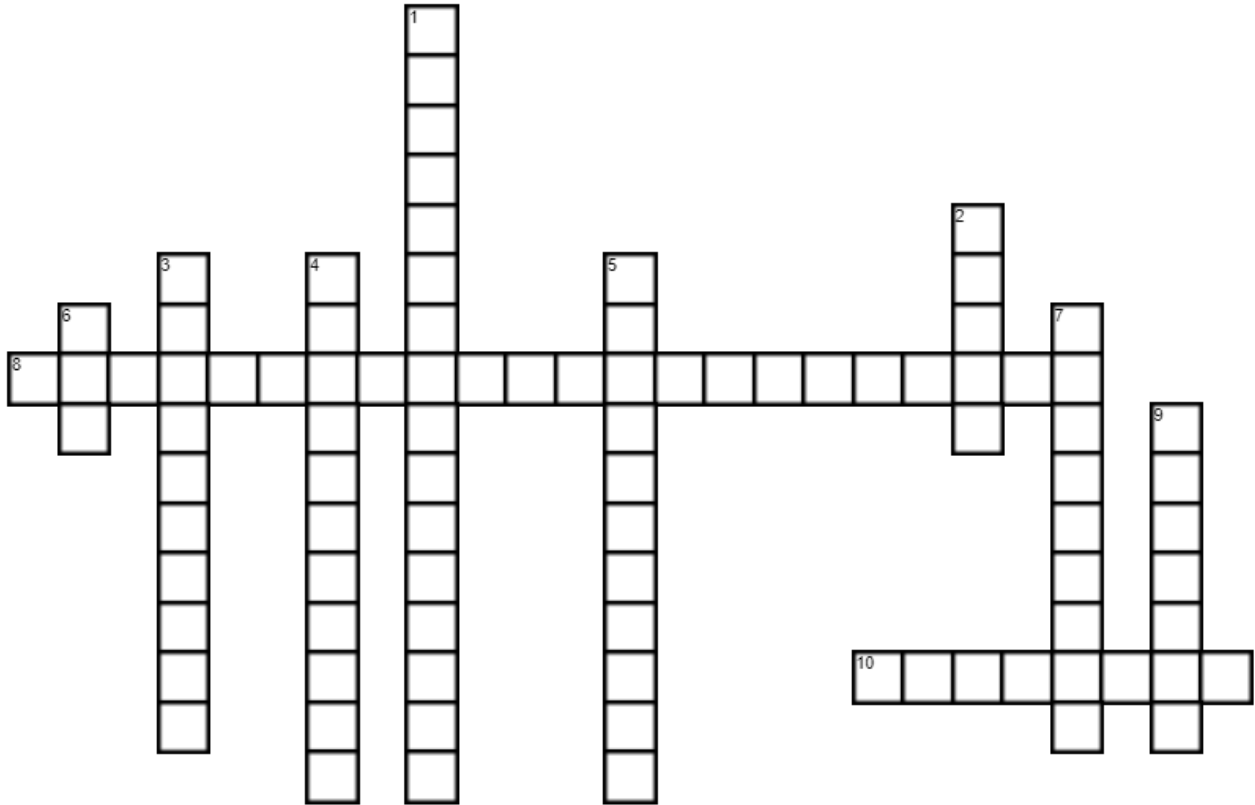
Which grey rectangles are lighter?



This is a white illusion. The grey rectangles are actually the same shade. However, they appear brighter on the left side of the image because of the colours surrounding them and their placement.

ACTIVITY 5: CROSSWORD

Use the clues to fill in the blanks for this crossword about eye health.



ACROSS

8. The rule for looking after your eyes when spending time looking at a screen (4 words) **(Twenty twenty twenty rule)**
10. A common symptom of digital eye strain (2 words) **(sore eyes)**

DOWN

1. The name for the group of symptoms that can develop from too much screen-time (3 words) **(digital eye strain)**
2. To learn, your eyes need to be able to do this. **(focus)**
3. Something you can wear to protect your eyes from the sun. **(sunglasses)**
4. The type of light that can damage your eyes. **(ultraviolet)**
5. The name of the person you go to see to get your eyes tested. **(optometrist)**
6. The number of hours you should spend outdoors every day to prevent myopia. **(two)**
7. Another common symptom of digital eye strain. **(headaches)**
9. Something you can wear on your face to help you see. **(glasses)**

ACTIVITY 6: WORDFIND

Find and circle the words related to eye conditions - there are 16.

A M S I T A M G I T S A O T S V
P R E I O T I U G S G R N S Y I
U P R A V S L L A B E Y E I T S
I N O I S I V S E R S N O R M U
N E A R S I G H T E D A A T G A
I G G I B H A L G N E V T E U L
E H Y P E R O P I A E A A M I I
G M T I V Y O L X O P V Y O H M
L L S R R N B G E P Y O A T B P
A N I T E R V L E C P S N P L A
S T T M U E U C H I S I O O U I
S U G O H I D V A E N R O C R R
E B L X A M A N Y L A P R C R M
S O N S N O I T I D N O C E Y E
C N L S E Y N E E L O N E G S N
F A R S I G H T E D B L T H S T

ASTIGMATISM

BLIND

BLURRY

COLOUR BLINDNESS

CORNEA

EYEBALL

EYE CONDITIONS

FAR SIGHTED

GLASSES

HYPEROPIA

MYOPIA

NEAR SIGHTED

OPTOMETRIST

RETINA

VISION

VISUAL IMPAIRMENT

EXTENSION ACTIVITIES

Use the iPad to research the following:

Which creature has the largest eyes?

- Answer: colossal squid (each eye is up to 30cm diameter, like a soccer ball!)
- Insect: dragonfly – has 30,000 lenses in each eye!
- Mammal: horse
- Bird: ostrich (some of their eye is concealed in their skull)



What creature has the best eyesight?

- Best distance vision: eagles (can see about 8 x further than humans)
- Best night vision: owls (more rods)
- Best colour vision: blue bottle butterfly
- Best visual acuity (how sharp things are): humans! We see 7x sharper than a cat, and 40-60x sharper than a rat or a goldfish.

If our eye was a camera, how many megapixels would it be?

576

How many times do we blink on average per minute?

15-20 times per minute

How many different colours can our eyes see?

Each type of cone cell can see about 100 different colours. Scientists estimate that we can see about a million different colours in total, but this varies between people. Some people, called Tetrochromats have a fourth type of cone cell and can see about a hundred million different colours! People with colour blindness may only be able to see about 10,000 different colours.

Why does your nose run when you cry?

We have tear glands in the inner corners of our eyelids, which help to keep our eyes moist and clean it. These tear glands are connected to our nasolacrimal ducts which drain into each side of our nose. When we cry, tears come out of these tear glands and drain through our nose, mix with the mucus/snot there and come out of our nostrils, making our nose run.

List four musicians who wear glasses

- Selina Gomez
- Lady Gaga
- Justin Bieber
- Liam Payne (One Direction)
- Lisa Loeb
- Justin Timberlake
- * Stevie Wonder
- * John Lennon
- * Bono
- * Elton John
- * Alicia Keys
- * Kanye West

- Jay-Z
- Eminem
- * Madonna

List four actors/actresses who wear glasses

- Johnny Depp
- Kim Kardashian
- Nicole Kidman
- Jennier Aniston
- Brad Pitt
- Lindsay Lohan
- Hugh Jackman
- Rashida Jones
- Megan Fox
- Ryan Gosling
- Emma Watson
- * Joe Jonas
- * Emma Stone
- * Demi Moore
- * Julia Roberts
- * Jennifer Garner
- * Ryan Kwanten
- * Joseph Gordon-Levitt
- * Anne Hathaway
- * Robert Downey Jr.
- * Jessica Alba

List four famous fictional characters who wear glasses

- Harry Potter
- Albus Dumbledoore
- Velma (Scooby Doo)
- Clark Kent (Superman)
- Piggy (Lord of the Flies, William Golding)
- Johnny Bravo
- Wonder Woman
- Barb (Stranger Things)
- * Indiana Jones
- * Spongebob Squarepants
- * Penfold (DangerMouse)
- * Peter Griffin (Family Guy)
- * Hans Moleman (Simpsons)
- * Milhouse (Simpsons)

Look up the following parts of the eye. Where are they located and what do they do?

- **Fovea:** Full name is fovea centralis. It is a part of the macula in the retina where our vision is clearest. There are a high number of cones here.
- **Choroid:** this is the area of the eye which contains blood vessels. It provides oxygen to the inner parts of the eye, and also helps to maintain the temperature of the eye. It lies between the retina and the sclera.
- **Vitreous humor:** this is a clear jelly-like fluid. It helps to maintain the shape of your eyeball and lets light pass through it to the retina. This sits behind the lens in the back of the eye.
- **Aqueous humor:** this is clear, watery fluid that sits near the front of the eye, between the cornea and the iris. It is 99.9% water but also contains some nutrients. It helps to nourish the cornea and lens and to maintain the shape of the eye.