CurioBuddy's

The Qurious Atom

A SARK PROMOTIONS PUBLICATION

EYES

VISION

Science of Sight

Journey from the wonders of nature to the marvels of the future, all through the lens of vision. Discover how we see the vibrant world around us, how animals have "super-eyes" & how brain "tricks" our eyes. With more than 50 facts, science news, experiment and DIYs, this issue is an encyclopaedia of its own revealing the brilliant science of vision in every colour!

ABOUT THE COVER

Gaze with wonder as our young visionary connects the vibrant natural world with dazzling scientific marvels, all through the incredible spectrum of sight! From camouflaged chameleons to futuristic cities, witness the magic and science behind everything we see.

Pg 16

FEATURED SUBMISSION - METALENSES

The Qurious Atom | Issue 25 | 30 September 2025 | Monthly | India | ₹40

CONTENTS

Meet Oddy!

Our Curious Explorer

Hey friends! I'm Oddy the Octopus—curious, clever, and full of ideas! With my eight arms, I explore mysteries, solve puzzles, and bring science to life. Did you know that on an average about 25% school going children (ages 2–17) wear glasses due to myopia?

Get in Touch

curiobuddy.com

contact@curiobuddy.com

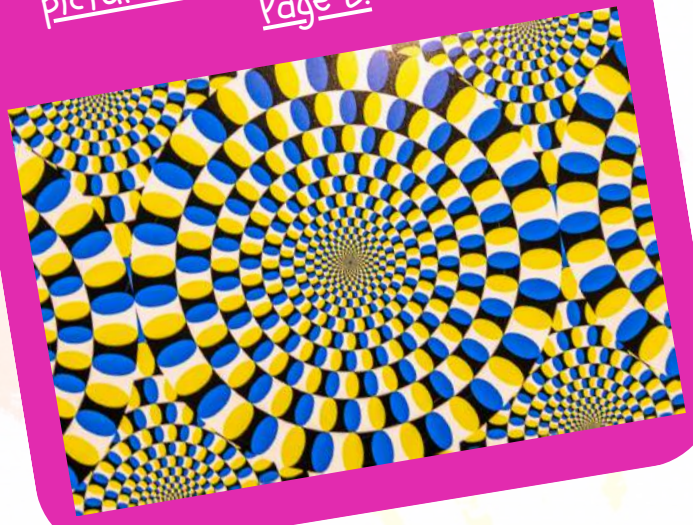
+91 91190 91954

For Parents

This special 'Vision' issue of The Qurious Atom (TQA) goes beyond the classroom, inviting your child (ages 8–15) to dive deep into the fascinating science of how we see the world. By exploring everything from natural wonders to cutting-edge futuristic technologies, this issue is designed to not only ignite their curiosity about biology and physics but also empower them with the foundational knowledge to innovate and solve the complex challenges of tomorrow through technological advancements. We believe that by nurturing this unique blend of wonder and critical thinking, your child will develop the skills essential for shaping a brighter future.

Watch Closely!

Do you see motion in this picture? Learn more about it on Page 6.



Open Your Eyes!

Hi readers! I'm really excited to welcome you to this special issue that's all about eyesight. I wear glasses with a small power (just 0.5) but to be honest, I don't actually notice much difference when I wear them! My vision isn't bad, but my eye doctor said the glasses would help me see a little more clearly, especially when reading things far away. It made me wonder: how do our eyes even work, and why do some people need glasses while others don't?

That question led to so many cool facts. Did you know that your eyes can move more than 100,000 times a day? Or that some animals can see in the dark better than we ever could? In this issue, we're diving into everything about vision like how our eyes focus, how the brain helps us see, and how different creatures view the world in their own unique ways.

Whether you wear glasses, don't need them, or just think that eyes are fascinating, there's something in here for you! Check out fun experiments, optical illusions, and amazing facts that will open your eyes (literally!) to the science of sight.

— Kanira, Editor-in-Chief, The Qurious Atom

About Us

The Qurious Atom (TQA) is an exciting science magazine designed for curious minds aged 8–16. Co-created by science explorer kids like our chief editor, Kanira Gupta (10 years) and academicians, TQA blends fun and learning through illustrated articles, hands-on experiments, brain-teasing puzzles, and fascinating science stories. Each digital issue explores themes like space, biology, chemistry, and technology. We make science easy and engaging for our primary and middle school learners. TQA also highlights real-world applications, inspiring young readers to think critically and explore solutions for a better future. With interactive activities, science news and captivating facts, TQA sparks curiosity, builds knowledge, and encourages creativity. Join us in making science fun and inspiring for the next generation of innovators!

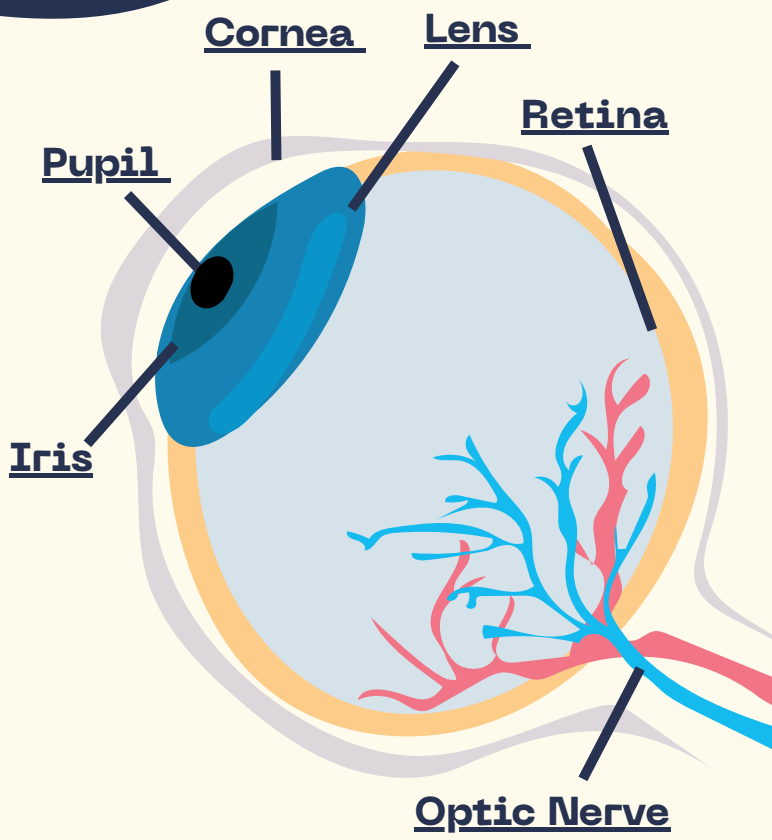
SCAN HERE

ANATOMY 101: HOW YOUR EYES WORK

Your eyes are like tiny cameras — always clicking pictures of the world around you. But instead of film, they use light, nerves, and your brain to help you see. Let's take a peek inside!

Parts of Eye

Cornea - The clear "Window" at the front that lets light in.
Pupil - The little black circle that opens wider in the dark and shrinks in bright light.
Iris - The colourful ring (brown, blue, green, hazel) that controls how much light enters.
Lens - Bends and focuses light, like the lens in a camera.
Retina - The screen at the back where images form; packed with special cells called rods (for dim light) and cones (for colour).
Optic Nerve - The "Data Cable" that carries images to your brain.



Did You Know?
Your eyes can detect about 10 million different colours — more than any camera ever made!

Original CurioBuddy Content

Your eyes are amazing, but they need care to stay healthy. Just like cameras need cleaning and check-ups, so do your eyes! Turn the page to discover when and why you should get your eyes checked.

SYMPTOM BINGO

Spot when it's time for an eye check-up.

This Bingo puzzle is for readers to self-check and learn when professional help is needed. Regular eye checks catch issues early, and help you avoid headaches and distractions in school/sports.

Activity

How to Play

- Cut out or copy this bingo card.
- Each time you notice a symptom happening to YOU, mark that box.
- Get five in a row (across, down, or diagonal) → shout "BINGO!"
- Even one or two marks are a sign: it might be time to tell a parent or get an eye check-up.

BINGO

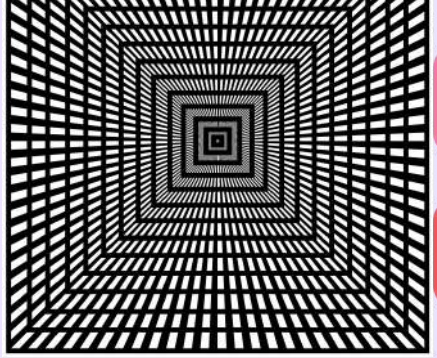
Squinting at the board or TV	Headaches after reading	Trouble copying from the board	Blinking or rubbing eyes a lot
Trouble seeing at night	Difficulty telling colours apart	Eyes feel itchy or watery	Tilting your head to read better
Words look blurry or doubled	Light feels "too bright" sometimes	Seeing halos or flashes of light	Losing your place while reading
Rubbing eyes while studying	Eyes hurt after screen time	Holding books or devices very close to face	Dry, burning, or stinging feeling in eyes
Seeing large floating spots	Trouble focusing from near to far	Letters "move" on the page	Covering one eye to see

Remember!
Bingo is fun, but eye health is serious. An eye doctor can check if your eyes need glasses, rest, or just more outdoor time!

FACT

Did you know your eyes blink about 15–20 times a minute? That's over 10,000 blinks a day! Blinking keeps eyes clean and moist; it's like their very own "car wiper".

Why We See Motion In Still Pictures ?



The BIG Qurious Question

Have you ever observed a drawing or picture looks like it's moving – even though it's completely still?

These are called **optical illusions**. They trick your brain by using patterns, colours, and shapes that confuse how your eyes send signals.

Let's dig into the fascinating connection between shapes/lines and vision, and see just how easily our **brain cheats**.

Brain vs. Eyes

Your eyes capture images like a camera, but your brain is the storyteller. It fills in gaps and guesses what should happen next. When black-and-white shapes or repeating spirals play tricks, the brain thinks it's seeing motion. This motion is called the **illusory motion**. Some artists produce dramatic illusions of motion, with basic black and white patterns, called the **optical flow**.

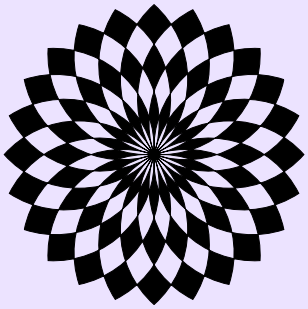
The Science Behind It

Scientists like Akiyoshi Kitaoka, a Japanese psychologist, created famous "moving" illusions using clever designs. Other researchers, such as Richard Gregory, showed that our brain uses past experiences to "predict" what it thinks should happen – even if the picture is frozen.

Test Your Eyes!

Stare at the below optical illusion pictures for 20 seconds, then look at a white wall . Does it look like it's moving? Write YES or NO.

Ask a friend if they see the same thing. Do their answers match yours?



FACT

Not everyone sees the illusion in the same way! That's how unique our brains are.

If Light Is Invisible How Can We See It?

The BIG Qurious Question

Light is a form of electromagnetic radiation. On its own, a beam of light traveling through empty space is invisible. So what makes it visible?

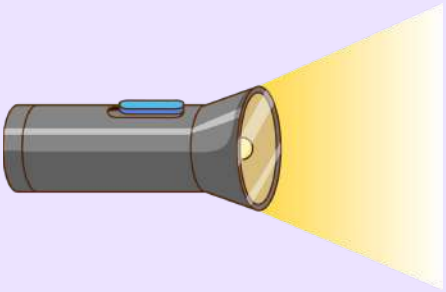
When light hits objects and bounces back (**reflection**) or bends through materials (**refraction**), the beam of light becomes visible. Our eyes pick up these signals and send them to the brain as images. *(Read details about reflection and refraction in July 2025 issue of TQA on Colour.)*

The Visible Spectrum

Out of the full electromagnetic spectrum (which includes X-rays, microwaves, and infrared), our eyes can detect only a tiny slice called the **visible spectrum**. This range (about 380–700 nanometres) includes all the colours we know—from violet to red. So, we don't see "light beams"; we see coloured reflections from objects.

Why We Don't See Air Beams

Think of sunlight streaming into your room. You only see the "shafts" of light when dust or water droplets scatter it. Without something to **scatter** or reflect it, a beam of light is completely invisible; like a silent traveller passing through space.



So, light isn't directly "seen." What we see are the interactions of **photons** with matter.

Our eyes, acting like living cameras, capture those interactions and let our brain paint the world in colour. Different tools help us bend, focus, or stretch light to see even more than our eyes alone can. *(Explore how lens/VR/AR and other inventions use this principle in our section ahead — **Beyond Human Eyes.**)*

Light Lingo

[Terms You Should Know]

Photon: Tiny particles of light, the basic unit of all electromagnetic radiation.

Scattering: When light bounces in many directions after hitting particles (why the sky looks blue).

Refraction: Bending of light as it passes through lenses or water.

Spectrum: The full rainbow of colours created by splitting light.

Make A Droplet Magnifier

Ever wished you had a tiny magnifying glass that fits on your fingertip? You can make one using a single drop of water! The little water drop acts like a curved lens and makes letters and tiny objects look bigger. Let's make one and see how it works.

Become a curious explorer with Oddy the octopus.

Let's Understand:

This experiment explores how does the water drop make things bigger. Light rays from the letters bend (this is called refraction) when they pass from the paper into the water drop and then into your eyes. The curved shape of the drop makes the rays spread out so your brain thinks the letters are closer and bigger.

How does drop size change magnification? A larger, rounder dome focuses light differently than a tiny flat drop. Usually, a nicely rounded medium-size drop gives the clearest, biggest view.

Remember that you need light for the letters to be seen. So this experiment would not work in the dark. Try it under a desk lamp or bright window. The brighter, the easier to see!

TRY IT!

What You Need:

A small piece of cling film or a small clear plastic sheet, a dropper or a clean straw (to make drops), a bowl of clean water, a printed page with small text (newspaper / homework text), a tissue to wipe up spills, and an adult nearby (for safety).

Experiment:

- Put the printed page flat on a table under good light.
- Lay the clear plastic sheet flat over the text. Smooth out big wrinkles so the plastic sits close to the paper.
- Dip the dropper or straw into the water. Carefully place one single drop of water on the plastic, right above a small word. The drop should form a little dome.
- Lower your eye slowly toward the drop, keeping the drop between your eye and the text. Don't press the drop. Hover about 1-2 cm above it.
- Move your head a tiny bit forward and backward until the letters look biggest and clearest. That's your droplet magnifier working!

Observe:

- What happens to the letters or picture when you look through the droplet?
- Does the text look bigger or brighter? Is it sharp or fuzzy at first?
- Try bigger and smaller drops. Which size shows the biggest letters?
- Move the droplet slightly sideways. Does the area it magnifies change?

Myths ⟷ Facts

WEIRDEST EYE MYTHS BUSTED!

Myth 1: Reading in dim light ruins eyesight.

Fact : Your eyes simply have to work harder in low light to focus, which can make them tired. In dim light, your pupils get wider to let more light in. So, reading in dim light will not ruin your eyesight, but it can cause temporary eye strain and headaches.

Myth 2: Prescription glasses worsen your eyesight.

Fact : Glasses correct refractive errors, such as nearsightedness and far-sightedness, by helping light focus correctly on your retina. When you remove them, your uncorrected vision seems blurrier in comparison because your brain is used to the clear vision prescription glasses provide.

Myth 3: Sun-gazing can improve your health and vision.

Fact : Staring directly at the sun can cause severe, permanent eye damage and vision loss by burning the retina, the light-sensitive tissue at the back of the eye. It can occur even after a few seconds of direct exposure and can lead to permanent blind spots or distorted vision. Unlike a sunburn on the skin, the retina does not have pain receptors. This means damage can occur without immediate pain, and once it has occurred, it is often irreversible.

Animal Super Eyes

Who sees farther, faster, brighter, sharper?
Step into the wild world of vision champions!

Eagle – The Sky's Sharp Shooter

- Eagles can see 4–5 times farther than humans.
- They spot a rabbit over 3 km away!
- Their retinas are packed with photoreceptor cells for ultra-fine detail.
- Adaptation: Perfect for hunting while soaring high in the sky.

Mantis Shrimp – The Colour Champion

- Has up to 16 different colour receptors.
- Can detect ultraviolet light and polarised light – colours invisible to us.
- Each eye moves independently, giving almost 360° vision.
- Adaptation: Spotting prey, predators, and communicating with dazzling colours under water.

Owl– The Night Hunter

- Huge eyes gather light like powerful binoculars.
- Packed with rod cells (great for low light, but poor in colour).
- Neck rotates 270°, making up for fixed eyes.
- Adaptation: Silent, precise hunting in near-total darkness.

From sharp hunters in the sky to glowing eyes in the deep sea, animals have evolved amazing eye adaptations. Here are six (plus) creatures with vision that beats ours in spectacular ways:

Chameleon — The Swivel Eye Spy

- Eyes can move independently, giving nearly 360° view.
- Can focus both eyes together for laser- sharp depth when striking prey.
- Adaptation: Scan for predators while targeting insects with lightning-fast tongues.

Cats (and Big Cats) — Night Stalkers

- Cats' eyes have a tapetum lucidum, a mirror-like layer that reflects light back through the retina.
- This gives them sharp vision in dim light — and makes eyes "glow" in the dark.
- Big cats like tigers and lions use the same trick for hunting at dusk or night.

Deep–Sea Creatures — Glow In The Dark Eyes

- In the dark ocean, many fish have huge eyes to collect every bit of light.
- Some, like lanternfish, use bioluminescence to glow and signal.
- Adaptation: Survival in the pitch- black depths where sunlight never reaches.

CURIOBUDDY ORIGINAL

ODDY'S NEWS DESK

Science News You Can't Miss

Regrowing Snail Eyes

by the CurioBuddy Science News Team

Golden Apple Snails Can Regrow Their Eyes. Could Humans Learn the Trick?

In a remarkable discovery, researchers have found that the golden apple snail (Pomacea canaliculata) can regrow a fully functioning, camera-type eye, including lens, retina, and optic nerve, within just about a month after it's removed. Unlike humans, these snails can restore every part of their complex eye.

Scientists, led by developmental biologist Alice Accorsi at UC Davis and the Stowers Institute, have even used CRISPR tools to edit eye-development genes (like pax6) in snails to study the regeneration process. Because snail and human eyes share many similarities, these tiny creatures might one day help us understand how to trigger eye repair in humans with injuries or diseases like macular degeneration.

Super-Vision Contact Lenses

by the CurioBuddy Science News Team

Imagine seeing what's invisible to the naked eye? Now, scientists have made it real! Researchers at the University of Science and Technology of China have developed flexible contact lenses injected with super-tiny nanoparticles. These convert infrared light into visible images that your eyes (and even closed eyelids) can perceive. No bulky goggles, no batteries - just clear lenses that let you "see" infrared. These could be handy for rescue missions, night navigation, or even helping people with colour blindness by tweaking how light is seen.

Ray-Ban Meta AI Glasses

by the CurioBuddy Science News Team

Smart Sunglasses That Are Eye-Poppingly Popular

Move over phones; smart glasses are trending! Meta's Ray-Ban Meta smart glasses, created with Essilor Luxottica, are stylish and futuristic. Since the second-generation launch in 2023, over 2 million pairs have sold, with sales tripling in Q2 2025 alone.

These aren't just fashion statements, they let you take pictures, make calls, ask questions, and more, all through Meta AI and a discreet camera and mic setup. But some of Gen Z aren't thrilled. Many worry about privacy. Critics say these glasses make it too easy to record others without permission, blurring lines between public and private spaces.

Image Source: nixette.livejournal.com

Image Source: Ray-Ban

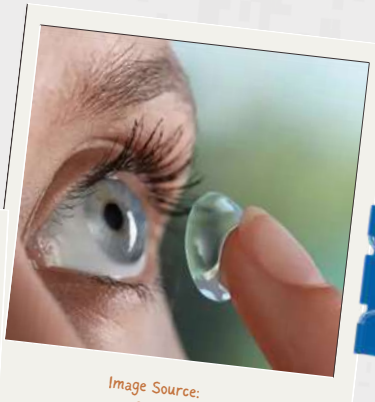


Image Source: Social

Oddly

ODDY APPROVED

ODDY'S NEWS DESK

Science News You Can't Miss

Meet the Tetrochromats

by the CurioBuddy Science Desk

The World Through 100 Million Colours!

What if the blue of the sky, the red of a rose, or the green of grass looked different and not just brighter, but a whole new shade invisible to others? For a few rare humans, this isn't imagination. It's their everyday life. They are called tetrachromats, people who see the world with a secret, hidden dimension of colour.

A Fourth Cone, A New World

Most of us see with three types of colour receptors (cones) – red, green and blue. That makes us "trichromats." But tetrachromats are born with a fourth cone, which lets them detect tiny variations in colour that escape the rest of us. Instead of 1 million shades, their eyes may capture up to 100 million colours.

The Woman Who Proved It

The idea of tetrachromacy had floated around since the 1940s. But it was Dr. Gabriele Jordan of Newcastle University who finally found proof. In her lab, a woman known as "cDa29" could consistently pick out differences between colours that looked identical to everyone else. With that, science had its first confirmed functional tetrachromat.

Why Mostly Women?

The secret lies in the X chromosome, which carries the genes for red and green cones. Women have two Xs, giving them more chances to develop an "extra" cone type. Men, with only one X, rarely win this genetic lottery.

Hidden Talent, Not Always Used

Here's the twist: not all genetic tetrachromats use their gift. Many carry four cones but still process colour like the rest of us. Only when the brain learns to tap into the fourth cone does someone become a functional tetrachromat. Scientists believe that's why confirmed cases are so rare.

How Do You Know If You're One?

No quick online test exists yet. Researchers use ultra-precise colour swatches in the lab, asking people to spot differences invisible to the average

eye. Most of us fail. A tetrachromat? They pass with flying colours. Literally.

Why This Matters

Tetrachromats remind us that human vision is still evolving. They raise exciting questions: could we design better fabrics, art, or even medical scans using their expanded palette? And what if tomorrow's eye check-ups could reveal this hidden superpower in more of us?

This news isn't just about seeing colours; it's about how much more the human body might be capable of than we realise.

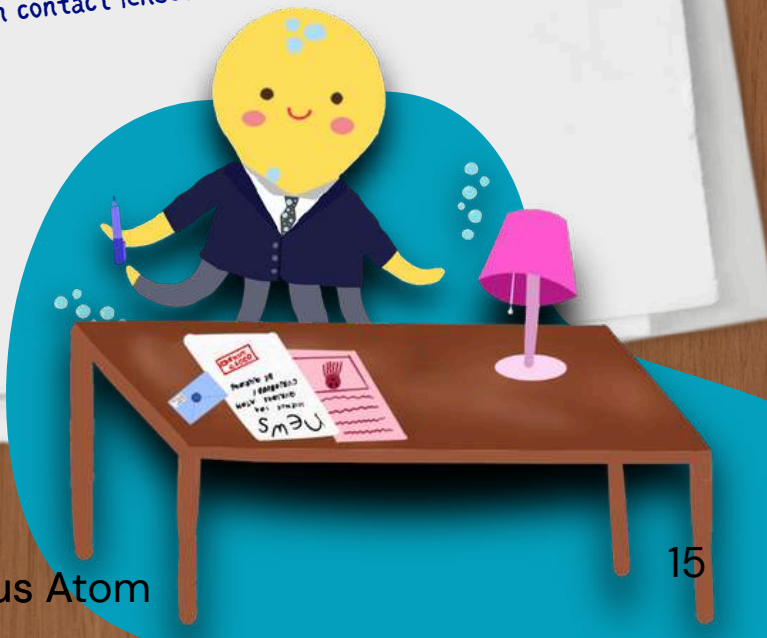
Oddly

ODDY APPROVED

QUIZ TIME

1. Snails cannot restore every part of their eye. True or false?
2. Who was the first person to find actual proof of tetrachromacy?
3. When did the second-generation launch of Ray-Ban's Meta glasses take place?
4. Researchers at the University of Science and Technology of _____ developed the super-vision contact lenses.

Answers:
1. False
2. Dr. Gabriele Jordan
3. 2023
4. China



CURIOBUDDY ORIGINAL

ODDY'S NEWS DESK

Science News You Can't Miss

Metalenses

by Dr. Shamim Haque Mondal, Physics Division, State Forensic Science Laboratory, Kolkata.

FEATURED SUBMISSION

Imagine a lens so thin and light it's practically invisible, yet powerful enough to bend light in amazing new ways. That's exactly what scientists at ETH Zurich in Switzerland have created! It's called a metalens, and it's a huge breakthrough in the world of optoelectronics

Unlike a regular lens made of curved glass, this incredible metalens is completely flat and super-thin. How thin? About forty times lighter than a single human hair! So how does it work? Instead of glass, this lens is made from a semiconductor like silicon, with tiny, artificial antennas called meta-atoms arranged on its surface. These meta-atoms are so small they can control light in ways that were once impossible.

The Zurich team discovered something incredible: when they made the lens from a special metal oxide called lithium niobate ($LiNbO_3$), it could transform light. For example, when an invisible infrared light beam with a wavelength of 800 nanometres passed through the lens, it came out as visible light with a wavelength of 400 nanometres. That's a huge step forward in optics, as it means we can now 'see' light that is usually invisible to us!

What's so special about lithium niobate?

Lithium niobate, also known as linobate, is a chemical compound formed by the chemical reaction of lithium, niobium, and oxygen. It is a very stable and tough

material, which makes it perfect for use in various linear and nonlinear optical devices. It is also used in piezoelectric sensors, which can generate an electrical charge when they are squeezed or pressed. Since its melting point is 1253 degrees centigrade, so making fine nanoparticles with its help is laborious and expensive.

Because it's so strong, it's expensive and difficult to work with. Luckily, a team led by Professor Rachel Grange from the Institute for Quantum Electronics at ETH Zurich found an economical way to make tiny particles of lithium niobate. They created a special mould, added a solution of the compound, and heated it (600 degrees centigrade) at high pressure. This allowed them to create the perfect nanoparticles for their high-quality metalenses. The best part? The mould can be reused again and again, which makes this new method much more affordable. Their work was recently published in the journal 'Advanced Materials'.

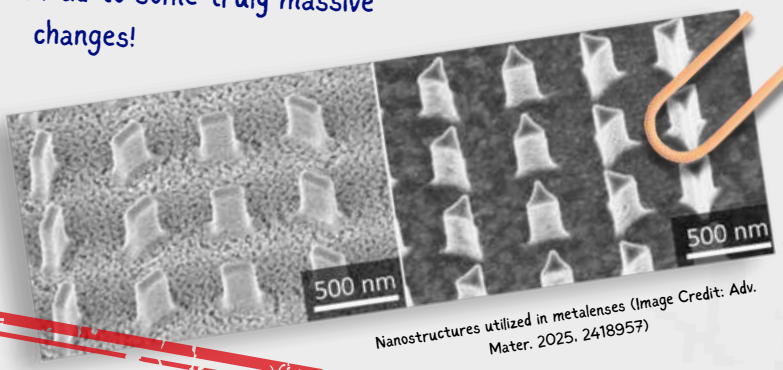
The Future of the Metalens

Right now, devices like high-quality cameras and smartphones need a combination of several thick, heavy lenses to take clear pictures. This takes up a lot of space and makes the devices bigger and heavier. The metalens could change all that!

Because these new lenses are so thin and light, they could be used to make smaller, more powerful cameras, microscopes, and telescopes. They could even be used in forensic science to detect fake documents, counterfeit money, and forged artwork. By combining physics, chemistry, and nanotechnology, this tiny lens could lead to some truly massive changes!

Guest Article

Oddly



Nanostructures utilized in metalenses (Image Credit: Adv. Mater. 2025, 2418957)

ODDY APPROVED

Beyond Human EYES

From microscopes to drones, let us explore how inventions extend our vision into hidden worlds.

1 MICROSCOPES

WINDOWS TO THE MICRO-WORLD

Microscopes allow us to see objects far smaller than the human eye can detect from cells and bacteria to tiny crystals. They have revolutionised biology, medicine, and materials science. Today's most powerful electron microscopes can zoom in to the scale of atoms, helping scientists design new drugs and nanotechnologies.

Did you know?
The first compound microscope was built by Zacharias Janssen around 1590 in the Netherlands.

Inventor & Year:
First compound microscope by Zacharias Janssen (Netherlands, 1590).

2 TELESCOPES

EYES ON THE UNIVERSE

Telescopes gather and magnify light from distant stars and galaxies, helping us explore the cosmos. They have revealed black holes, exoplanets, and the birthplaces of stars. The latest marvel, NASA's James Webb Space Telescope, peers deeper into the universe's history with infrared vision.

Inventor & Year:
First refracting telescope by Hans Lippershey (Netherlands, 1608). Improved by Galileo Galilei (Italy, 1609).

Statistics
The Hubble Space Telescope has captured over 1.5 million observations since its launch in 1990.

3 RADARS

INVISIBLE EYES OF THE SKY

Radars use radio waves to detect objects, measure their speed, and map distances. They are crucial in aviation, weather forecasting, and defence. Modern radars are smaller, more powerful, and even capable of spotting asteroids in space.

Inventor & Year:
First practical radar system by Sir Robert Watson-Watt (UK, 1935).

Did you know?
The first compound microscope was built by Zacharias Janssen around 1590 in the Netherlands.

4 3D TECHNOLOGY

BRINGING DEPTH TO LIFE

3D imaging uses two slightly different perspectives of the same scene to mimic how our eyes perceive depth. It powers blockbuster movies, medical imaging, and even gaming. Advances now include holograms and glasses-free 3D displays, making virtual worlds more realistic than ever.

Did you know?
The first 3D film, The Power of Love, premiered in 1922 in Los Angeles.

Inventor & Year:
First 3D viewing device, the stereoscope, by Sir Charles Wheatstone (UK, 1838). First 3D film, The Power of Love, (1922).

5 VIRTUAL REALITY

INVISIBLE EYES OF THE SKY

Virtual Reality (VR) immerses users in a computer-generated environment using headsets and motion sensors. It's not just for gaming; VR is now used in training surgeons, designing aircrafts, and even helping patients manage anxiety. With lighter headsets and more realistic graphics, VR is becoming a tool for both play and problem-solving.

Fact
The first VR headset, called the Sensorama, was invented by Morton Heilig in 1962.

Inventor & Year:

First AR system, the "Virtual Fixtures" project, by Louis Rosenberg at U.S. Air Force Research Lab (1992).

6

AUGMENTED REALITY

THE REAL WORLD + EXTRAS

Augmented Reality (AR) overlays digital images, sounds, or data on our real environment [think of Pokémon GO or navigation arrows appearing on your street view]. It is transforming industries from education to defence, and AR glasses may soon replace smartphones as our main information tool.

Statistics

By the end of 2025, the AR market is expected to surpass $100 billion globally.

Inventor & Year:

First military drone prototype, the "Aerial Target," by Archibald Low (UK, 1916). First modern quadcopter, by George de Bothezat (USA, 1922).

7

DRONES

FLYING EYES EVERYWHERE

Drones are unmanned flying machines fitted with cameras and sensors. They're used in filmmaking, agriculture, disaster relief, and package delivery. The latest drones are equipped with AI, night vision, and obstacle-avoiding systems, making them smarter and safer.

Fact

The global drone market is expected to reach $54 billion by 2030.

Inventor & Year:

Early concept by Morton Heilig with the Sensorama (USA, 1962). First VR headset, the Sword of Damocles, by Ivan Sutherland (USA, 1968).

Word Search

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

MICROSCOPE
TELESCOPE
RADAR
DRONE
LENS
VIRTUAL REALITY
AUGMENTED REALITY
STEREOSCOPE
AI SMART GLASSES
METALENS
INVENTION
FUTURE

The world's first 3D movie was shown in 1922, and now VR headsets let you step inside entire virtual worlds.

FACTS

Activity Time

Scrambled Letters

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

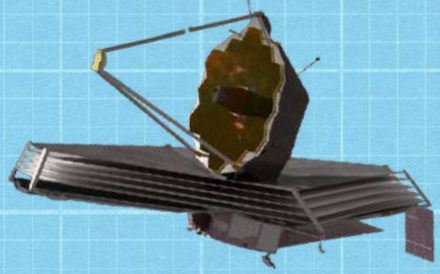
Now, find the mystery word made by unscrambling the highlighted letters. _____

FUN FACT

The first microscope lenses could magnify only about 10x, while today's electron microscopes can zoom up to 10 million times!

Timeline of Visionary Inventions

FROM THE MICRO TO THE COSMOS



2030 **FUTURE – ?? WHAT'S NEXT ??**

NEXT-GEN VISION TECH
2020s From James Webb Space Telescope to AI-driven drones, holographic 3D, and wearable AR/VR glasses, our eyes keep stretching further into hidden worlds.

AUGMENTED REALITY
1992 First AR system "Virtual Fixtures" by Louis Rosenberg (USA).

SWORD OF DAMOCLES (VR HEADSET)
1968 By Ivan Sutherland (USA). First head-mounted display.

SENSORAMA (VR CONCEPT)
1962 By Morton Heilig (USA). Immersive cinema precursor to modern VR.

RADAR
1935 Developed by Sir Robert Watson-Watt (UK). Became critical during World War II and beyond.

FIRST 3D FILM
1922 The Power of Love screened in Los Angeles.

FIRST DRONE PROTOTYPE
1916 "Aerial Target" by Archibald Low (UK). Modern drones evolved into multipurpose flying eyes.

3D STEREOSCOPE
1838 Invented by Sir Charles Wheatstone (UK). Foundation of 3D vision and later cinema.

TELESCOPE
1608 Built by Hans Lippershey (Netherlands). Improved by Galileo Galilei (1609). Humanity's first look at the universe beyond naked eyes.

MICROSCOPE
1590 Invented by Zacharias Janssen (Netherlands). First compound microscope revealed tiny hidden worlds.

1500

Pinhole Camera Eye

Ever wondered how your eyes capture images? Let's build a simple model of the human eye using the concept of a pinhole camera!

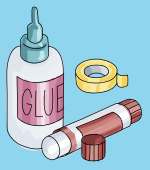
MATERIALS

Scissors or craft knife (adult supervision needed!)

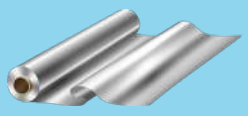
Black paper or black paint (to darken the inside)

A piece of thin cardboard or thick sheet for the "screen"

A small cardboard box or a shoebox

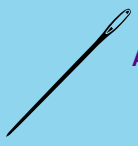


Tape or glue



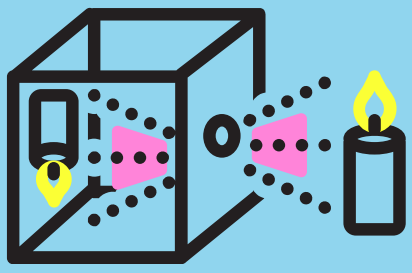
Aluminium foil or stiff white paper

A flashlight or a sunny window for testing



A sharp pin or needle

WHAT TO DO:



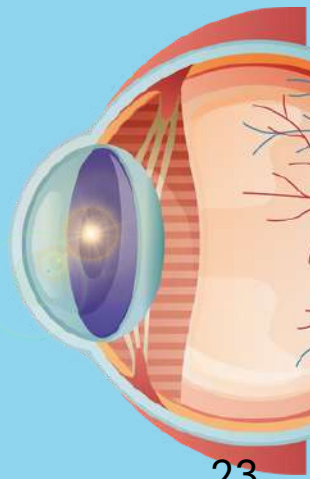
Formation of an inverted image in the pinhole camera

1. **Prepare the box:** Paint or line the inside of the box with black paper to prevent light reflection.
2. **Make the pupil:** On one side of the box, cut a small square opening and cover it with aluminium foil. Carefully poke a tiny hole in the centre with a pin. This hole acts like the eye's pupil.
3. **Set up the retina (screen):** On the opposite side inside the box, tape a piece of stiff white paper. This is where the image will form just like the retina in your eye.
4. **Seal the box:** Close the box tightly so no stray light can enter. You should only have the pinhole letting light in.
5. **Test your model:** Point the pinhole side towards a bright object or window. Looking carefully at the white paper inside, you'll see an inverted image of what's outside!

WHAT IS HAPPENING?

Your eye works just like this pinhole camera model. Light from an object enters through the pupil (the pinhole) and projects an upside-down image onto the retina (the screen). Your brain then flips the image right-side up, helping you see the world normally.

This simple DIY model shows how our amazing eyes use light, focus, and inversion to help us make sense of what we see every day.



SEEING WITHOUT SIGHT

The Braille Story

Imagine if your eyes couldn't see the beautiful world around you. How would you read words, signs, or your favourite books? This is where braille comes to the rescue. It is a brilliant system that helps people who can't see read with their fingers!

HOW BRAILLE WORKS

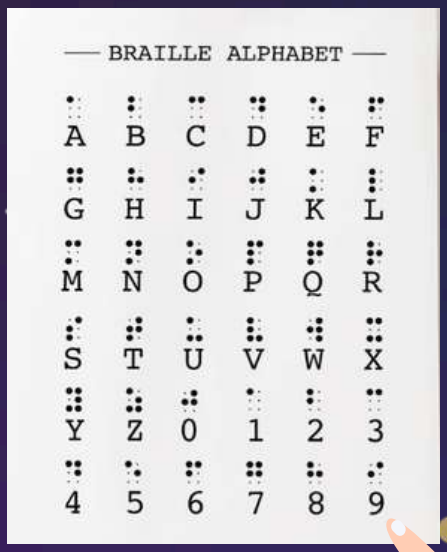
Braille is a special kind of writing made of raised dots arranged in tiny cells. Each cell has six possible spots for dots in three rows and two columns. Different combinations of these dots stand for letters, numbers, and even punctuation marks. By running their fingers over these bumps, blind or visually impaired people can "**feel**" the words and read just like you do with your eyes.

THE BRAIN'S AMAZING POWER

When eyes can't see, the brain rewires itself and adapts. It starts to use the sense of touch in a super powerful way. The part of the brain that usually processes sight helps interpret the braille dots felt on fingertips. It's almost like the brain learns to "**see with fingers**" thus turning touch into words and meaning. This incredible brain change is called ***neuro-plasticity***.

Activity

DIY Braille Alphabet Chart



You'll need:

Thick cardboard or foam sheet, small beads or puff paint dots, glue.

What to do:

Stick the dots in the right spots for each letter, let dry, and slowly feel the patterns with your fingers!

FACT

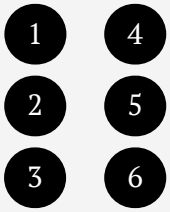
Despite all our screen-based tools, Braille remains vital. It's still used by about 6 million blind people worldwide. That's millions of kids, students, and readers touching their way into stories, science, and learning every day!

FACT

Who Invented Braille? Who Helped It Grow?

Braille was invented in the 1820s by **Louis Braille**, a young Frenchman who lost his sight as a child. While still a teenager, he created a system of tiny raised-dot cells that could be read by touch. This was a fast, simple, and revolutionary system. His idea was based on an earlier military code by **Charles Barbier**, but Braille simplified it into six-dot patterns that your fingertip can feel all at once. Support from teachers like **Alexandre-René Pignier** helped champion Braille in schools; making sure it wasn't shelved, even when others resisted.

A BRAILLE CELL



BRAIN GYM

Use the Braille alphabet on facing page and write the mystery word from page 21 in Braille language.

QUIZ TIME!

BLINK & TEAR

1. Count how many times you blink in 1 minute. (Tip: Ask someone else to count for you. You'll blink less if you focus too much!)
2. Do your eyes feel dry after staring at a screen for a long time? Try blinking 10 times quickly — does it help?
3. True or False: Tears are all the same? (Answer: False. Everyday, reflex, and emotional tears are different!)

FACT BURST!

- A single photon can travel for billions of years across space without ever colliding with anything until it enters an eye or a telescope.
- The human eye can detect a candle flame from nearly 1.6 kilometres away in perfect darkness.
- The fastest thing in the universe is 'Light'. It zips at 299,792 km per second. But it slows down when passing through water or glass.
- Some animals, like mantis shrimp, can see ultraviolet light that's invisible to us.
- Your eyes spend about 10% of your waking hours closed just from blinking!
- Galileo's telescope in 1609 showed the craters of the Moon (something no human eye had ever seen before).

THE GREAT DRONE DISASTER

SCIENCE STORY

Oshan, a self-proclaimed super-sleuth, was getting a terrible feeling. The scent of roasted peanuts, not butter chicken, was wafting through his window. The delivery drone hovering outside wasn't carrying his family dinner. It was a complete puzzle.

“Grandpa!” Oshan yelled, holding up the mysterious package. “My food is not my food!”

Grandpa Anuj squinted at the drone, then at the package, a slow grin spreading across his face. He lived in the same future Bangalore of 2050 as Oshan, but he refused to “reboot” his eyes. He preferred to see the world a little fuzzy around the edges, calling it a "low-resolution life."

"Maybe it's a cosmic mystery," Grandpa said with a chuckle. "What's the scent?"

"It's a peanut allergy!" Oshan said, holding the bag away from him. He then grabbed his ‘Eye-Pal’ and zoomed in on the drone's flight logs, which were stored on a cloud server. "Look! It flew straight here, no detours, no glitches." Oshan's perfect, high-tech vision showed everything in crisp, clear detail. "This whole disaster makes no sense."

Oshan remembered the conversation at the Game Zone with his friends from the society. They had all complained about the weird deliveries. He had brushed it off then, thinking it was just a technical glitch. Now he knew it was something more. All over their building block, drones were delivering the wrong stuff. The neighbours who ordered samosas got chicken soup, and the family who wanted dosa got cheesecake. The whole neighbourhood was in chaos.

Oshan spent the next hour reviewing all the drone logs, searching for a single clue. He looked for a virus in the flight code, a hacking signature, anything. But every log showed a perfectly normal flight path. It was as if the drones were flying exactly where they were supposed to go, yet ending up in the wrong place.

"It's not a hack, Grandpa," Oshan mumbled, defeated. "It’s a mystery."

Grandpa Anuj wandered to the window and pointed outside. "What are those?"

Oshan looked. Outside, a string of delivery drones zipped by. He zoomed in on them with his 'Eye-Pal'. "They're just drones, Grandpa. Nothing to see here."

"Not the drones," Grandpa said, his eyes unfocused. "The trails. The trails they're leaving behind."

Oshan squinted. He couldn't see anything special. Just the humid monsoon air of Bangalore, thick with moisture and heat. He rebooted his eyes for even higher resolution, but still nothing.

"Look, Oshan," Grandpa said. "Look with your own eyes, not with your fancy tech. Let your vision get a little bit blurry."

Reluctantly, Oshan half-closed his eyes, letting his vision lose its perfect focus. The world around him softened, colours blending together. And that's when he saw it.

Behind each drone, a faint, shimmery trail of condensation was forming. It was almost invisible to perfect vision, but when things were a little out of focus, the trails became clear. And they

weren't straight. They were curving, swerving in strange patterns, like a secret map drawn in the air.

"The heat from their motors is making the air condense!" Oshan gasped, his eyes wide with surprise. "And someone is creating fake condensation trails to trick the drones' optical sensors! The drones think they're following the right path, but they're being led to the wrong addresses!"

Oshan and Grandpa Anuj started following the confusing condensation trails. They were able to map out the clever, mischievous delivery-drone hacker's path. Oshan grabbed his hoverboard keeping his eyes slightly out of focus, and Grandpa followed on his vintage e-scooter to track the misty clues. The shimmering lines led them in a looping, zigzagging chase across the rooftops of their society, over solar panels, and around the huge water tanks. The trails twisted into what looked like a clumsy arrow pointing toward the last building in the complex.

Following the arrow, the misty path led them right to a rooftop down the street where they found a kid named Rohan using a powerful fan to blow misty trails of vapour through the air, creating the false flight paths. Rohan was laughing as he tried to get a drone to land on a banana peel.

"Well, well. We've been following your misty trail all over the neighbourhood," Grandpa Anuj said, his voice calm.

"Looks like you're the master of our delivery drone chaos."

Rohan looked up, startled to be caught. "It's not chaos," he explained, "it's... a puzzle! Everything is so boring now. The food drones, the package drones, they just fly in a straight line, beep, and drop off a delivery. It's so predictable."

"So you decided to make things a little more interesting?" Grandpa Anuj asked with a smile.

"Exactly," Rohan said. "I just wanted to see if anyone would be smart enough to figure it out."

Grandpa just chuckled. The "Great Drone Disaster" was solved. Oshan learned that day that sometimes, the most effective way to solve a problem wasn't to look harder, but to look differently. And maybe, just maybe, his grandpa's slightly blurry vision was the best superpower of all in 2050●

I WONDER WHY?

WHY DO WE BLINK

We blink to wash and moisturize our eyes with tears, which keeps them wet, brings them oxygen and nutrients, and helps them see clearly. Blinking also acts like window wipers for our eyes, clearing away dust and dirt. It also works like a quick shield, protecting our eyes from bright lights and things that might fly into them.

WHY DO OUR EYES PRODUCE TEARS

Our eyes make different kinds of tears for three main jobs: cleaning, protecting, and communicating how we feel. Everyday tears, called basal tears, are always in our eyes to keep them wet and wash away tiny bits of dirt. When something big gets in our eye, like an eyelash, we make extra "reflex tears" to flush it out, like a mini firehose. Then there are emotional tears, which come out when we feel really strong things, like being sad or super happy.

CurioBuddy ORIGINAL

Simba is the Swahili word for lion. Mufasa is also a Swahili word. It means "king".

Lion cubs are born with spots on their body. It is thought that the spots are to help the cub camouflage in the grass. However, these spots eventually fade out.

There are 2 recognised subspecies of lions- the African lion (*Panthera Leo Leo*) and the Asian Lion (*Panthera Leo Persica*).

Fast and Furious!

Lions are one of the fastest and fiercest animal reaching speeds of up to 81 km/h.

Lazy Lions

Lions sleep up to 21 hours a day. That might sound really lazy, but there is a reason behind it. Sleeping preserves their energy for the most tiring part of their routine - the hunt!

Chomp, Chomp!

Lions can eat up to an astonishing 40 kgs of meat in a single meal. That's almost a quarter of their weight!

Lions

A group of lions is called a pride.

THE TUSK OF AN ELEPHANT KEEPS GROWING THROUGHOUT THE ANIMAL'S LIFETIME. THEIR TUSKS CAN WEIGH MORE THAN 90 KILOGRAMS.

Remember?

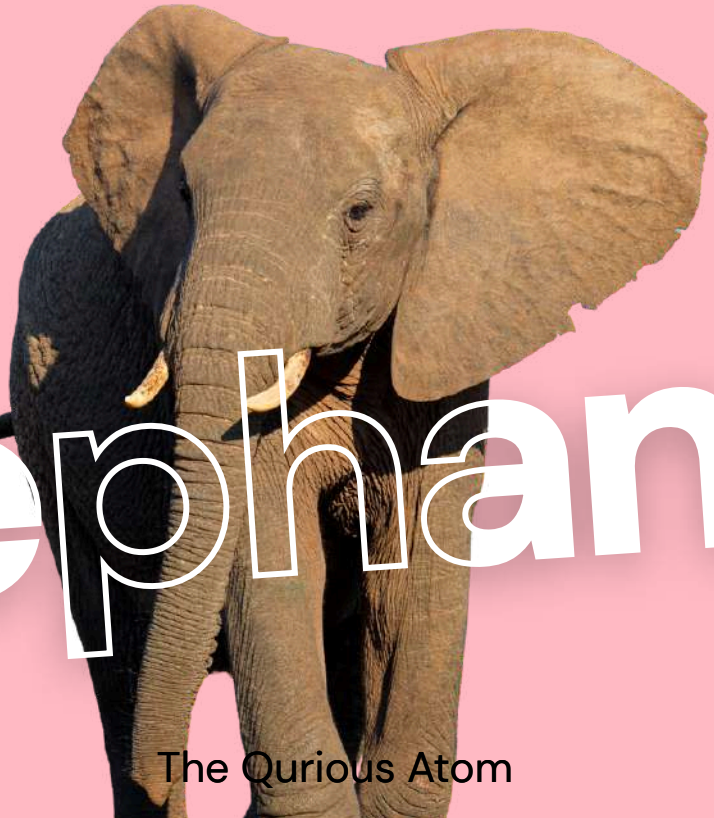
Elephants have extremely good long-term memory. They can remember locations, migration routes and fellow elephants for decades.

CurioBuddy ORIGINAL

There are three species of elephants: African savannah, African forest and Asian elephants. There are an estimated 415,000 to 463,000 elephants in the world as of 2025, consisting of approximately 415,000 African elephants and 40,000–50,000 Asian elephants.

Elephants' hearts can weigh over 20 kilograms. That's more than the weight of a healthy 5 year old!

The trunk of an adult Asian elephant can hold up to 10 litres of water! 10 times the volume of an average water bottle!



Elephants

Rhinos do not have good vision. They heavily depend on their strong sense of smell and hearing to locate surrounding objects.

Is It The Same?

The white rhino's name comes from a mistranslation of the Afrikaans word for "wide," describing its mouth. Both white and black rhinos are gray, with black rhinos possibly named for the mud they wallow in.

Family Reunion

The closest relatives of rhinoceroses are perissodactyla such as horses, zebras and tapirs.

There are five species of rhino: the African white and black rhinos, and the Asian greater one-horned, Javan, and Sumatran rhinos.

White rhinos are classified as Near Threatened under IUCN while the greater one-horned rhino is vulnerable. In contrast, Javan, Sumatran and black rhinos are critically endangered!

CurioBuddy ORIGINAL

Rhinoceroses

World Rhino Day is observed on 22 September

World Gorilla Day is observed on 24 September

CurioBuddy ORIGINAL

Male Gorillas are about twice as heavy as females and may attain a height of about 5.5 feet and weight of 135–275 kg.

Females however generally weigh 70– 90 kg with a height of around 4 feet 9 inch.

Gorillas are native to tropical and sub-tropical forests in Africa. Their habitats vary ranging from rainforests to swamps to mountains. Approximately 316,000 western gorillas and around 5,000 eastern gorillas are left in the world.

Gorillas

One of a Kind

Gorilla noseprints are as unique as humans' fingerprints. Scientists can identify individual gorillas by just the shape of their nose.

There are 2 gorilla species - the eastern gorilla (Gorilla beringei) and the western gorilla (Gorilla gorilla) - both having two subspecies.

Gorillas typically eat the leaves, stems, roots, fruits and seeds of a plant as their main appetite.

There is 98% genetic similarity between gorillas and humans.

Brought to You By:

CurioBuddy

Read our other kids magazine - THE KK TIMES - a monthly newsmagazine for school students (7-15 years). Send your submissions for publication on our email - submissions@curiobuddy.com

Want to be part of our magazines' editorial board? Write to us at contact@curiobuddy.com

Published By:

Let Us Help You Shine

SARK PROMOTIONS

WEBSITE, BRANDING, GRAPHIC, DIGITAL MARKETING

Follow CurioBuddy on social media and check out our interactive games, learning resources and CurioCamps at curiobuddy.com

Scan To Read More

The Qurious Atom and The KK Times are also available on Magzter website and app. Join our thriving WhatsApp Community for more engaging content.