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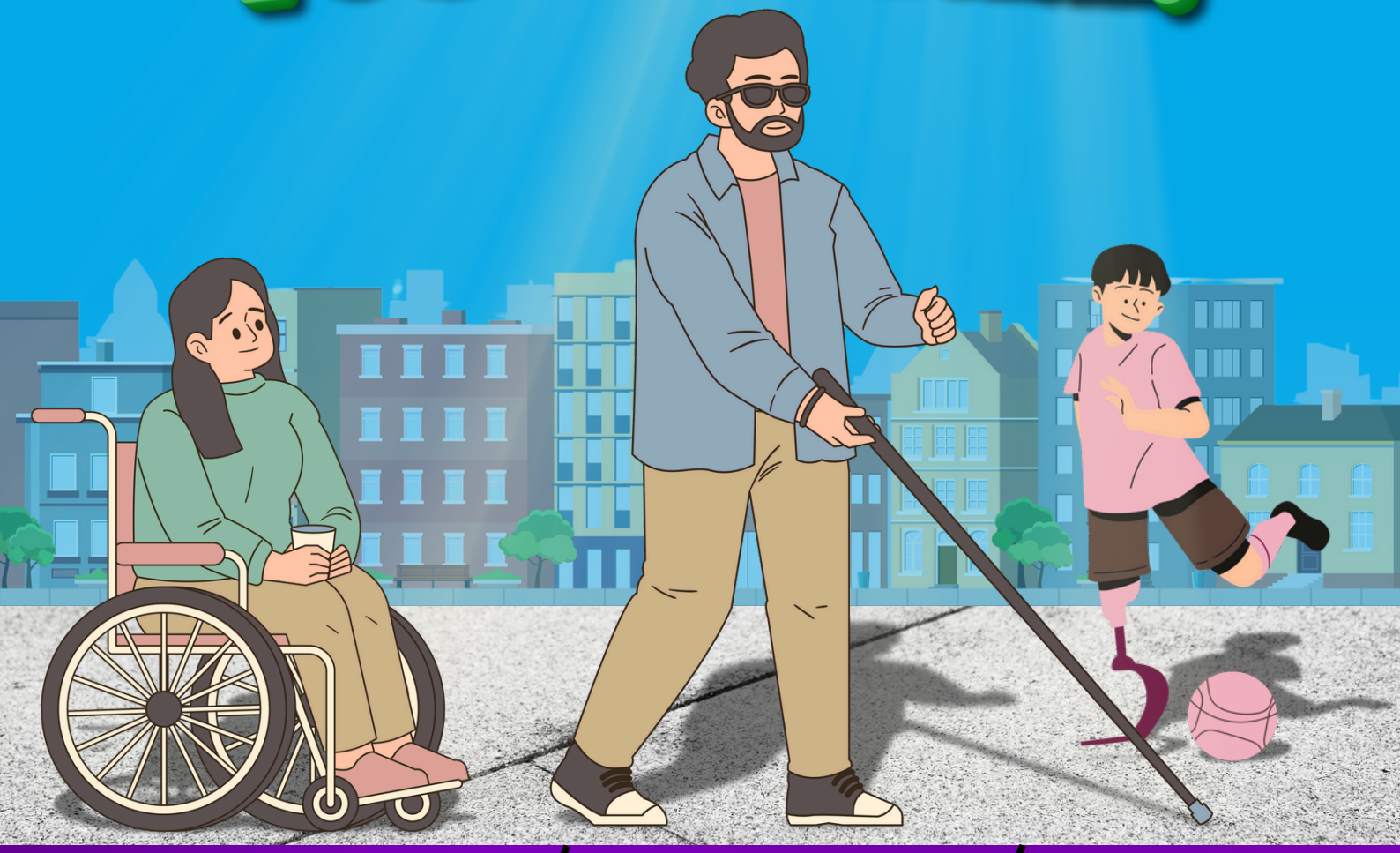
The Curious Atom

by the The KK Times

YOU'RE SPECIAL!



Special Abilities

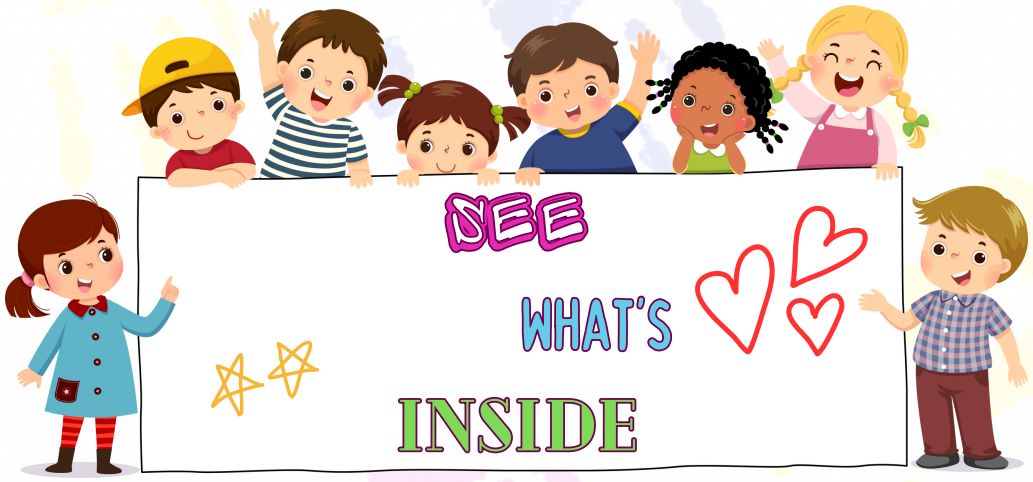
These are special abilities not disabilities symbolising the strength and resilience.

ABOUT THE COVER

Against a backdrop of towering buildings and a vibrant blue sky, there's a diverse group of individuals: a woman in a wheelchair, a blind man navigating with a cane, and a young boy with a prosthetic leg confidently playing football.

Pg 8 & 9

Article by our Reader



The Qurious Atom | Issue 14 | 30 September | Monthly | Ghaziabad | ₹30

Note from the Editor:

Hi friends! This is the 14th Edition of the Qurious Atom, the science magazine I've always dreamed of making. It's been such a long time since the first edition, I've lost track.

This edition explores devices used by the specially-abled, the science behind disabilities, a science quiz, multiple stories and much more. But I assure you this magazine is full of hard work. Hey! If you're a specially-abled kid, this is the magazine for you.

Take a look at page 4 and 5. They are my favourite pages. Though it took much effort to complete this edition, I enjoyed making it, learnt something new myself and added a few extra pages for you.

Please do read the funny science story on the last page and try to do the fun activities. Also try doing the fun science experiment on page 16. It's super fun as I tried it myself. Finish off with an amazing article from our 11-year old reader, Kavin. Bye!

Filled with love, Kanira
World's Youngest Chief Editor

Next Issue of The Qurious Atom:
31 October 2024
Theme : Seasonal Science

Children's e-Publication by Sark Promotions, Ghaziabad | Editor Miss Kanira Gupta | Published for the period Sep 30 - Oct 30, 2024

How Tech Helps The Specially-Abled

Science and technology play a big role in the lives of specially-abled. Nowadays, in the age of tech, this is a huge advantage. Some of the uses of technology for the specially-abled are as below-

1. **Assistive Devices**
   Devices like prosthetic limbs, wheelchairs and hearing aids help the specially-abled move, communicate and live a normal life.
2. **Smart Home Technology**
   Smart home systems help make work easier by adjusting temperature, locking doors or turning lights on or off. These systems do not require physical movement.
3. **Wearable Technology**
   Wearable technology such as smart watches help maintain a record of health (heartbeat, activity etc.), give reminders for medicines, alert medical facilities when needed and can give you independence.

Other Uses of Technology-

- Brain-Computer Interfaces (BCIs)
- Robotic Assistance
- VR and AR
- Telehealth Services
- Social Media Platforms etc.

WHAT'S GOING ON In The Sea?

By Kanira Gupta

Did you know, paedocypris progenetica is the smallest fish in the world? A mature female fish of this species measures around only 7.9 millimetres. That's not an even a whole centimetre! If you found this fact interesting, you'll definitely like the rest. While we're on this topic, listen to this joke- 'What do fish take to stay healthy? Vitamin sea tablets!' Not actually though. In real life, fish who live in the sea eat algae, crustaceans, plankton, insects and worms or other smaller fish to fill their stomach and stay healthy. Now, let's get ready to DIVE into the world of water and learn about the interesting underwater land.

Mega Long!

With a length of up to 160 ft (50 m), praya dubia, a species of siphonophore is one of the longest sea-creatures to exist. In comparison, it's around the length of 6 average sized school buses lined up.

160 ft (50 m)

Fin-tastically Smart!

Sea creatures are super smart and have remarkable intelligence. Dolphins for example have the ability to recognise themselves in mirrors, can solve problems and learn new skills while teaching skills to others. They have an IQ of about 45.

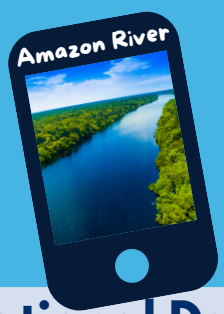
MORE ABOUT Rivers

By Kanira Gupta

Amazon River Basin is home to over 2500 species of fish.

DID YOU KNOW?

Yangtze River in China carries 500 million tonnes of sediment every year.



International Day of Rivers is celebrated on 22nd September each year.

THE ROE RIVER IN MONTANA, USA, IS CONSIDERED ONE OF THE SHORTEST RIVERS IN THE WORLD, STRETCHING ONLY ABOUT 61 METERS (200 FEET) LONG. DESPITE ITS SMALL SIZE, IT STILL SUPPORTS A LOCAL ECOSYSTEM.

Congo River in Africa is the deepest river with depths of upto 220 m (720 feet)

The Curious Chronicles of Jungle Grove

Ch-13 "Mandy's Special Specially-Abled Feat "

STORY

One sunny afternoon, Mandy the Monkey noticed a group of students teasing Sarah the Squirrel. Sarah was a specially-abled student who used a wheelchair, and while she was kind and smart, some students made fun of her because she couldn't walk like them. Mandy felt a wave of sadness for Sarah, who looked upset and embarrassed.

After school, Mandy couldn't shake the thought of what had happened. "Why do they tease her just because she's different?" she wondered. Mandy decided that she had to do something. She came up with a plan to hold a small event to teach everyone about special abilities and to help Sarah feel proud of who she was.

The next day, Mandy went to see Ms. Dorothea Deer, her science teacher. "Ms. Deer, I want to organize a campaign to celebrate students like Sarah. Can we plan something special that shows everyone that being different is okay?"

Ms. Deer smiled warmly. "That's a fantastic idea, Mandy. We can even include some facts about how science and technology help specially-abled people!"

Mandy was excited. She started planning an event called "Abilities Matter." She invited Sarah to share her story and gathered some fun facts about how science has helped people with different abilities live better lives. For example, she learned about prosthetic limbs, which can be controlled by electrical signals from a person's muscles, and how modern wheelchairs have lightweight designs made of materials like titanium to make them easier to use.

The event day finally came, but just before it started, Mandy noticed a problem: the ramp leading to the stage was too steep for Sarah to wheel herself up easily. Sarah looked nervous, but Mandy quickly remembered something her mom, Monica Monkey, had taught her. Mandy thought about how pulleys work to reduce effort, and with the help of her friends, she came up with an innovative solution.

They tied a strong rope to the back of

Sarah's wheelchair and used a pulley they had in class. With gentle pulling, they helped Sarah get onto the stage comfortably and safely. It was a great example of how science can solve problems.

"Thank you, Mandy," Sarah said, smiling.

As Sarah shared her story, Mandy presented some interesting science facts about special abilities. "Did you know that people can use brain-computer interfaces to control machines with their thoughts? It's called neural technology, and it helps people with disabilities use computers or even drive cars!"

She also talked about famous specially-abled people. "Stephen Hawking, who had ALS, used a computer to speak and continue his groundbreaking work in astrophysics. And Nick Vujicic, born without arms or legs, learned to swim and surf, thanks to amazing technology and his incredible spirit!"

The students listened closely, and by the end, they had a new perspective. They realized that being different wasn't something to laugh at—it was something to celebrate.

After the event, Sarah felt happier and more confident. The teasing stopped, and everyone understood that just because someone uses a wheelchair or has a special ability, it doesn't make them any less amazing.

Mandy felt proud as she saw her classmates talking to Sarah and asking questions about her wheelchair. She knew that with a little creativity, teamwork, and science, any problem could be solved. And she was excited to learn even more about the amazing ways science helps everyone—no matter their ability.

Alicia the Alpaca was absent on the day of the event. Help her confirm the below facts.

_____ makes the life of specially abled easier. [Digestion/Science]
What percent of the world's population is specially-abled? [7%/16%]
Which famous scientist was specially-abled? [Stephen Hawking/Isaac Newton]

September's Harvest Moon

Article Submission By Kavin Dalela, Age 11

Did you know, September's full moon on 17 September 2024 was a Supermoon and a Harvest Moon?

What is a Harvest Moon?

Harvest Moon isn't just a name. It denotes a time of year when the full moon – as seen from the Northern Hemisphere – has special characteristics.

In the Northern Hemisphere, the full moon closest to the September equinox (22 September) is called the Harvest Moon. This full moon occurred about five days earlier than the autumn equinox.

There are two equinoxes every year: one in September and one in March. In September, the Sun crosses the equator from north to south. On the days of the equinoxes, the Earth's axis is perpendicular to the Sun's rays, meaning that all regions on Earth receive about the same number of hours of sunlight. In other words, night and day are, in principle, the same length all over the world. This is the reason it's called an "equinox," derived from Latin, meaning "equal night."

What's special about a Harvest Moon?

As seen across Earth, the moon on average rises about 50 minutes later each day as it orbits Earth. But in mid-to-late September – for mid-latitudes in the Northern Hemisphere – that moonrise time drops to 20 minutes later each day around the time of the full moon. The higher the latitude, the shorter the interval between successive moonrises.

What is a Supermoon?

A Supermoon is a full moon that occurs when the moon is at its closest point to Earth or perigee. The average distance between Earth and the moon is 238,900 miles (384,472 km). September's full moon was 222,131 miles (357,486 kilometres) away.

Other Interesting Facts about Harvest Moon:

The September's Harvest moon always lies in front of one of the three constellations of the zodiac. During most years, it lies in Pisces the Fish, as it did this year. About every three years, though, it'll lie in Aquarius the Water Bearer. Very infrequently – once about every 20 years – it'll fall in the less-familiar constellation lying to their south, Cetus the Whale. This full moon was in front of the constellation Pisces and the golden planet Saturn.

A partial lunar eclipse also unfolded on the evening of Tuesday, September 17, 2024. It was visible across North America. Lunar eclipses happen when the Earth is positioned between the moon and the sun.

An Eclipse Never Comes Alone!

A solar eclipse always occurs about two weeks before or after a lunar eclipse. Usually, there are two eclipses in a row, but other times, there are three during the same eclipse season.

A partial lunar eclipse occurred on 17 September 2024. This was the first eclipse of the September – October 2024 eclipse season. The second eclipse this season can be seen on October 2, 2024. It's an annular solar eclipse. On October 17, 2024, the Earth, sun and moon are closely aligning but there will be no eclipse.

Images of the 2024 Harvest Moon from Katy, Texas, USA.
Pictures submitted by Kavin Dalela

THE SCIENCE BEHIND DISABILITIES

The science behind human disabilities encompasses a complex interplay of genetic, neurological, environmental, and developmental factors. Disabilities can affect physical, cognitive, sensory, and emotional functioning, and understanding their origins requires insights from multiple scientific disciplines, including genetics, neuroscience, developmental biology, and environmental science. Below is an exploration of the scientific mechanisms that contribute to human disabilities.

Genetic and Molecular Foundations

Genetic Mutations:

- Single-Gene Disorders: Mutations in a single gene can cause inherited disorders. For example, cystic fibrosis results from mutations in the CFTR gene, affecting chloride ion transport and leading to respiratory and digestive issues.
- Polygenic Disorders: Multiple genes may contribute to conditions like schizophrenia or autism spectrum disorders (ASD), where the interplay of various genetic factors increases susceptibility.

Chromosomal Abnormalities: An abnormal number of chromosomes can lead to disabilities. Deletions, duplications, or translocations of chromosome segments can disrupt gene function, as seen in conditions like Cri du Chat syndrome.

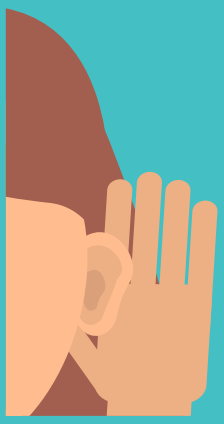
Epigenetics: Chemical modifications (e.g., DNA methylation) can turn genes on or off without altering the DNA sequence. Environmental factors influencing epigenetics can contribute to disabilities.

Neurological Mechanisms

Neuronal migration, the process by which neurons move to their appropriate locations in the brain, is another critical phase. Errors here can result in lissencephaly, characterized by a lack of normal brain folds, causing severe developmental delays. Once neurons are in place, synaptogenesis (the formation of synapses) and pruning (the elimination of excess synapses) refine neural networks. Imbalances in this process are linked to ASD and schizophrenia. Synaptic function, particularly involving neurotransmitters like dopamine and serotonin, is essential for normal brain activity, and disruptions can lead to conditions such as depression or Parkinson's disease.

Developmental Biology

Developmental biology provides further insight into disabilities. During embryonic development, crucial processes such as gastrulation and organogenesis establish the body plan and shape organs. Disruptions in these stages can cause congenital heart defects or limb malformations. Similarly, cell differentiation, where stem cells specialize into different types of cells, is vital for normal development. If this process is impaired, it can result in conditions like muscular dystrophy, where muscle cells fail to function correctly. Apoptosis, or programmed cell death, is another key process. It eliminates unnecessary or defective cells, and when this mechanism fails, it can lead to developmental abnormalities or conditions like cancer.



Environmental Influences

Environmental factors also play a significant role in causing disabilities. Teratogens, substances that can cause birth defects, such as alcohol, certain medications, or illicit drugs, can interfere with normal fetal development. For instance, alcohol exposure during pregnancy can result in fetal alcohol spectrum disorders. Infections, such as rubella or Zika virus during pregnancy, can cross the placenta and affect fetal development, leading to conditions like microcephaly or hearing loss.

Aging and Degenerative Processes

Aging and degenerative diseases are leading causes of disabilities in later life. Neurodegenerative diseases like Alzheimer's and Parkinson's result from the accumulation of misfolded proteins that disrupt normal brain function. Oxidative stress, caused by free radicals, further damages cells and accelerates aging, leading to cognitive decline and physical disabilities commonly associated with the elderly.

There can be several other reasons, which can be delved into details such as: psychological and cognitive factors, physical trauma, infections, social and psychological stressors.

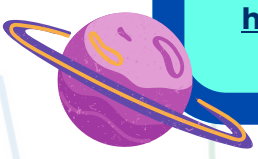
What is a Hearing Aid ?

A hearing aid is a small electronic device that helps people with hearing loss hear more clearly by making sounds louder. It consists of a few key parts: a microphone that picks up sounds from the environment, an amplifier that makes those sounds louder, and a speaker (also called a receiver) that delivers the amplified sound into the ear. The whole device is powered by a battery, allowing all the parts to work together. Hearing aids are worn either in or behind the ear and help people hear better in both quiet and noisy environments.

Air Pressure

Air pressure is the weight of air pressing down on the Earth's surface. It changes depending on altitude, temperature, and weather conditions.

Air pressure is important because it affects everything such as our ability to breathe and weather. It helps in creating storms, wind, and clouds. It affect the ability of liquids to boil and freeze and makes breathing easier.



Science Quiz

Q1. The large intestine is smaller than the small intestine. True or false?

Q2. Who discovered magnetism?
i) William Gilbert
ii) Louis Pasteur
iii) Isaac Newton

Q3. The process by which plants create food is called _ _ _ _ _ _ _ _.
a. Germanium
b. Biology
c. Photosynthesis

Click here to share your answers on this Google form - https://forms.gle/upAHsB71hcia7Dnn8

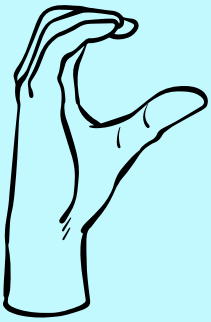
SIGN LANGUAGE

Without Words

The Future of Sign Language

Today, more and more people are learning sign language to help make the world more inclusive for everyone. In some schools, sign language is taught as a second language, just like Spanish or French. There are even sign language interpreters at concerts, sports games, and TV shows, making sure everyone can enjoy the fun!

Letter 'Y'



Letter 'C'

Letter 'W'

Letter 'O'

Letter 'I'

To know more about sign language, learn whole alphabet and do related activity - Read THE KK TIMES September Edition

BABIES DEVELOP AND LEARN THEIR OWN SIGN LANGUAGE WHICH IS UNIQUE TO THEM.

Fun Fact: The alphabet also has its own hand signs! So, if you don't know a sign for a word, you can spell it out using your fingers. It's like having your own secret code!

I WONDER WHY?

LEAVES CHANGE COLOUR IN FALL

Leaves change color in fall because they stop making chlorophyll, which is what makes them green. As it fades, the yellow, orange, and red colors that were hidden underneath start to show!

PEOPLE AGE

People age because their cells slowly stop working as well over time. As we get older, our body repairs itself less, and the cells get weaker. This causes changes like wrinkles, gray hair, and less energy. Aging happens naturally to everyone!

Special Abilities - Types and Counts

There are 4 types of disabilities or special abilities which have plagued human physique and psychology since known. Special abilities onset in early childhood though exceptions are always there and people get such abilities with time due to accidents, diseases and several other reasons. The 4 basic types are named as:

1. Visual
2. Hearing
3. Mental
4. Physical

Though there are several other categories, the above can be considered as the broadest way to categorise.

Why are people with certain disabilities are called specially-abled?

People with disabilities often have special abilities, including:

- Resilience: People with disabilities can demonstrate remarkable resilience and determination in overcoming challenges.
- Creativity: People with disabilities can bring creativity to their work.
- Problem-solving skills: People with disabilities can be good problem solvers.
- Patience and perseverance: People with disabilities can learn patience and perseverance from their disability.
- Unique strengths and talents: People with learning disabilities can have unique strengths and talents, such as creativity and problem-solving skills.
- Agility: People with disabilities can bring agility to their work.
- Openness: People with disabilities can bring openness to their work.
- Forethought: People with disabilities can bring forethought to their work.

People with disabilities can bring special skill sets to the workforce. In the September issue of The KK Times, we wrote about inspiring Paralympic athletes. Our cover page also showcases a powerful message of inclusivity and determination. By acknowledging their strengths, providing necessary support, and embracing their diverse perspectives, we can create a society that values and empowers every individual.

Editor's Experience

I had a great experience making organic lipstick with Karibo. Instead of using beeswax, they use plant-based wax, which felt smooth and natural. The colors came from fruit dyes, giving the lipstick a bright and attractive appearance. Plus, the fragrance was from essential oils, making the whole process feel fresh and eco-friendly. It was fun and sustainable!

Experiment – Cleaning Coins

Materials Needed: Vinegar, Salt, Glass, Coin

Procedure: 1. Fill 1/4th of a glass with vinegar.

2. Add 1 teaspoon salt to it.

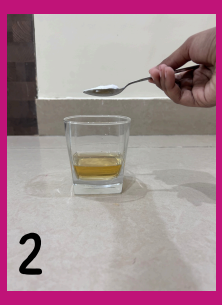
3. Stir for a few seconds.

4. Drop the coin inside and leave for 10 minutes.

5. Take it out, wipe and notice the difference.

6. Repeat steps 4 and 5 once.

Concept: Copper oxide can be dissolved using a combination of weak acid and table salt—and vinegar is one such acid. You could also use salt with lemon juice or orange juice to clean coins, as those juices are acidic as well.



Before

After 1

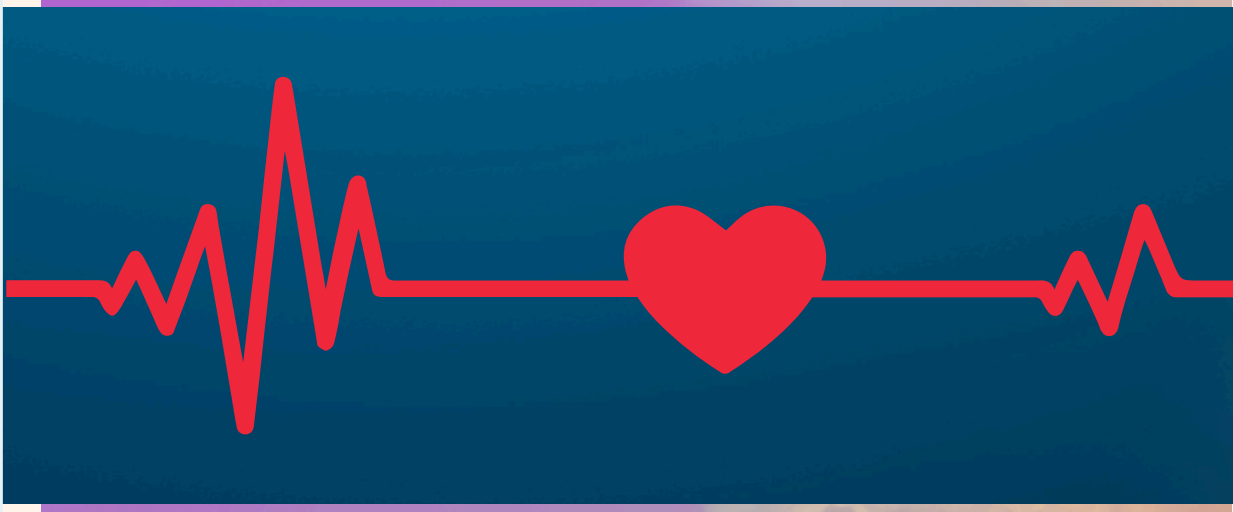
After 2

PUMP UP THE LOVE: KEEP YOUR HEART HAPPY ON WORLD HEART DAY!

World Heart Day - 29th Sept

WORLD HEART DAY: LET'S KEEP OUR HEARTS HAPPY!

Did you know your heart is like a superhero inside your body? It works hard every single day, pumping blood to keep you strong and healthy. That's why we celebrate World Heart Day every year on September 29th—to remind everyone to take care of their hearts!



HEALTHY HABITS FOR A HAPPY HEART

Eat lots of fruits and veggies! They give your heart the vitamins and minerals it needs to stay strong.
Drink plenty of water! Staying hydrated helps your heart pump blood more easily.
Exercise and play! Running, jumping, or even dancing keeps your heart in shape.
Say no to too much sugar or junk food! These foods can make your heart work harder than it needs to.

FUN FACT

Your heart beats about 100,000 times a day! That's a lot of work, so it's important to help it out by living healthy. Let's all celebrate World Heart Day by taking care of our hearts every day. After all, a happy heart means a happy you!

On World Heart Day, let's remember: A healthy heart beats for a lifetime of love, laughter, and adventure. Take care of it today, and every day!

How Old Can We Really Get?

Have you ever wondered, how old is the oldest person you've met? Have you ever thought about what it takes to live for 100 years? People who reach 100 years of age are known as "centenarians." But how common are they, and what helps them live such long lives? Is there a true maximum age for us?

In the year 2000, there were just about 170,000 centenarians worldwide, but guess what? By 2100, that number is expected to soar to over 20 million! According to the latest figures from the United Nations, in 2024, there are estimated to be around 722,000 centenarians. That's a lot of people reaching the 100-year mark, don't you think?

Places like Okinawa in Japan are famous for having many centenarians. Okinawa has about 500 centenarians per million people. Bulgaria and Sardinia are also known for their high numbers, with 199/million and 136/million, respectively. While the general population grows by about 1% per year, the centenarian population is growing much faster – about 8% per year!

Why Do Some People Live So Long?

Scientists are curious about what allows people to live for 100 years or even more. They have found that lifestyle, genetics, environment, and mindset all play important roles. Some key factors that may help people live longer include:

- Staying active through regular exercise
- Eating a balanced diet rich in fruits and vegetables
- Not smoking and avoiding harmful substances
- Managing stress and maintaining a positive attitude
- Staying connected with family and friends

It's not just about what we eat or how much we exercise; our attitude towards life can also play a big part in how long we live. A positive mindset and a strong sense of community can work wonders!

[We also have shared why people age in our other section, "I WONDER WHY" of this edition on page 14. So turn the pages to know the science behind ageing.]

International Day of the Older Persons

Each year, on October 1, the United Nations observes this day to widen public understanding of the opportunities and difficulties faced by the ageing population.

The five countries with the largest centenarian populations

Estimated number of centenarians in ...

	2024		2054	
	TOTAL	PER 10,000 PEOPLE	TOTAL	PER 10,000 PEOPLE
Japan	146,000	12	402,000	40
U.S.	108,000	3	513,000	14
China	60,000	<1	767,000	6
India	48,000	<1	402,000	2
Thailand	38,000	5	326,000	49

Note: Population projections show a medium variant scenario.
Source: United Nations population projections.

PEW RESEARCH CENTER

People Are Living Longer Than Ever

Over the past century, advances in medicine, nutrition, and healthcare have made it possible for people to live longer than ever before. More centenarians and even super-centenarians (people who live to 110 or more) are living today compared to 50 or 100 years ago.

The longest verified lifespan belongs to Jeanne Calment from France, who lived for 122 years and 164 days. She was born in 1875 and passed away in 1997. Currently, the world's oldest living person is 117-year-old Fusa Tatsumi from Japan. Will anyone surpass Jeanne's record soon? Only time will tell!

What Does the Future Hold?

It's amazing to think about how much the world has changed in the last century. What do you think the future will look like for centenarians in the next 100 years? Will advances in technology, healthcare, and lifestyle mean that even more people will reach 100 or beyond? Could we even see people living on Mars or flying cars by the time you're 100?

Now, take a moment and make a list of five incredible changes or inventions you think you'll witness in your lifetime. The future is full of possibilities!

Why Does Hair Turn Grey?

As we age, our hair turns grey because the pigment-producing cells in our hair follicles gradually stop working. Each hair starts with a root, anchored in the scalp, and a shaft, the coloured part we see. The colour comes from a pigment called melanin, which is produced by special cells in the hair follicles. The melanin also gives colour to skin and eyes. Over time, these cells die off, leading to less melanin and faded hair colour. This results in hair appearing grey, silver, or white as we get older.

Science Story

Who Stole The Moon?

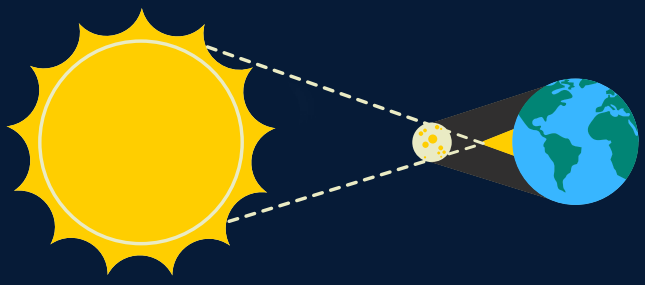
It was evening in Jigyasa Nagar. A cool breeze was blowing. But something wasn't right; the moon was missing! The scientists working in Jigyasa National Science Laboratory were studying to find out how this was possible. They knew today wasn't a no moon night so how could this be possible? Benny the Bear, a 5 year old, was scared at the sight of no moon. It was getting dark out and nothing was illuminating the night sky. Still, there was no sign of who stole the moon. By now, everyone was sleeping in their house, but the scientists were still up. "What if..." said Chris the Chimpanzee who was rudely interrupted by another scientist, Pandora the Panda. "I say we tell the police that someone stole the moon." Chris tried to complete his sentence, "But it is..." Pandora interrupted again, "Someone must have painted the moon black!" Finally, Chris gave up. He went home and slept like a baby. The next night, the moon was back in its place. At the Jigyasa National Science Laboratory, Chris said - "Yesterday was a lunar eclipse. It happens when the sun, the moon and the earth are in perfect alignment. The sun faces the earth while the moon is in the shadow of the earth. This causes the moon to get darkened as it stops the sun's light from shining on the moon."

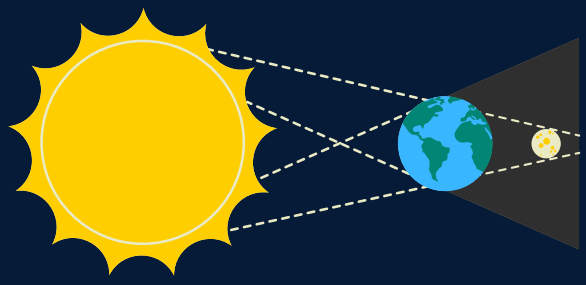
Facts Related to the Story

1. Chimpanzees are one of the smartest animals while giant pandas are one of the dumbest.
2. Lunar eclipses occur approximately 1-2 times a year. The latest lunar eclipse was a partial eclipse which occurred on September 17th-18th.

Activity Time

1. Identify the type of eclipse.





2. Join the dots and colour.

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