

# Watch your footprint

Carbon emissions fall by 17 per cent during the pandemic. But is it possible to look at permanent solutions to reduce our carbon footprint? Let's find out...

### What's in the news?

As the COVID-19 pandemic forced much of the world into lockdown, the daily global carbon dioxide emissions fell by 17% in April when compared to 2019 levels. This shows how human activities can impact the environment. Scientists warn that the dip is only temporary and that the emissions may return to its old levels when the lockdown is lifted.

### What is carbon footprint?

Carbon footprint is the amount of greenhouse gases—primarily carbon dioxide—released into the atmosphere by human activities. It applies to the actions of an individual, a family, an industry, an institution or even an entire nation. As far as individuals are concerned, the bulk of his/her carbon footprint comes from transportation, housing and food.

### What are greenhouse gases?

Greenhouse gases such as water vapour, carbon dioxide, methane, nitrous oxide and chlorofluorocarbons help Earth maintain its heat balance. When the sun's energy reaches Earth, these gases in the atmosphere trap some of it. They also absorb heat when that energy reflects back off the surface of Earth. Without these gases, Earth would be too cold to support life. But too much of these gases can spell trouble. When greenhouse gases are in excess in the atmosphere, they trap more energy from the sun and warm the planet.

Human activities such as burning of fossil fuel and deforestation lead to the release of more greenhouse gases into the atmosphere. Fossil fuel, which includes coal, oil, petroleum and natural gas, is an integral part of our life. Most of the vehicles on our roads run on petrol or diesel. Electricity for most of our houses, schools, offices and industries come from coal-fired power plants. So, to reduce carbon emission we have to rethink how we live and what we consume.

### Effects of Carbon emission

Carbon emissions contribute to global warming, which can have serious consequences for humans and their environment.

**Sea-level rise:** More than 90% of the excess heat retained by the Earth as a result of increased greenhouse gases has been absorbed by the oceans. When water heats up, it expands. When the ocean water expands, it takes up more space, resulting in sea level rise – causing flooding of coastal areas, soil erosion and habitat destruction.

**Climate system:** Changes in ocean temperatures also affect oceanic currents. Ocean currents help regulate Earth's climate by facilitating the transfer of heat from warm tropical areas to colder areas near the Poles. Changes in ocean currents would cause changes in rainfall

and air temperatures. They also cause extreme weather conditions.

**Forest fire:** As warmer temperatures increase evaporation, the land becomes drier, enhancing the chances of wildfires.

**Animal and bird behaviour:** The lifecycles of animals and plants are aligned with seasons and resource availability. During winters, to cope with food scarcity and to conserve energy, some animals hibernate, while birds migrate to warmer places. As rising temperature alters the length of seasons, these activities are affected.

**Water scarcity and other problems:** If global temperatures continue to rise, extreme weather events will become the order of the day with some regions experiencing long, dry spells while others encountering dangerous floods. This will affect agriculture and destroy life, property and livelihood.

### Record your carbon footprint for a week

Mark the boxes with ✓ or ✗. If you get many ticks, then you are on the right track

#### Activities

- Ensured my parents avoided using their vehicles for short trips
- Avoided using ACs and geysers as much as possible
- Used energy-efficient lights/ electrical appliances
- Turned off lights when not in use
- Reduced waste by reusing an object
- Avoided food waste

	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7
Ensured my parents avoided using their vehicles for short trips							
Avoided using ACs and geysers as much as possible							
Used energy-efficient lights/ electrical appliances							
Turned off lights when not in use							
Reduced waste by reusing an object							
Avoided food waste							

### Sources of CO<sub>2</sub> emission

The primary sources of greenhouse gas emissions are

- Transportation
- Electricity production
- Industrial emission
- Use of certain products at home and offices
- Handling of waste
- Agriculture and livestock

### How to reduce carbon footprint

1. Conserve energy. Turn off appliances when not in use.
2. Cycle, walk or use public transportation.
3. Use solar energy wherever possible. Install a solar panel at home and use it to charge appliances and electronic gadgets.
4. Plant a tree to keep your environment clean and green.
5. Reduce trash. Landfills are a major source of greenhouse gases and pollution.
6. Make 'reuse and recycle' your motto.
7. Say 'no' to plastic. Over 99% of plastic is made of chemicals sourced from fossil fuels.

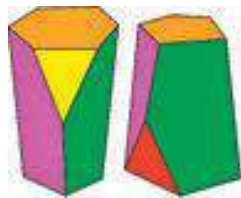
## QUEST

# Geometry and gemstones

Learn about a new geometric shape and an ancient semi-precious stone

### What is a scutoid?

Scientists have recently discovered a new geometric shape the scutoid. It is a three dimensional shape with five sides on one end, six on the other end and a triangular surface on one of its longer edges. It looks like the beetle's scutellum (shield-like part) from topdown view.



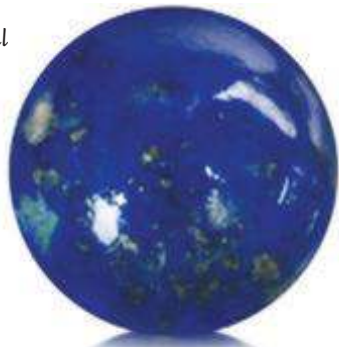
Epithelial cells, which cover the surfaces of many organs, adopt this shape in order to pack tightly into the tricky curves of organs. During the development of an embryo, it changes from a simple structure formed from a handful of cells to an organism with more complex organs. At this stage, epithelial cells begin moving and joining together to organise themselves properly and give the organs their final shape. Until now scientists believed that these cells were prism-shaped or that they looked like truncated pyramids. But after studying epithelial curves in laboratory samples, they discovered that these cells adopt other more complex shapes. This is because when tissue curves it tends to minimise energy to be more stable, and hence adopts a scutoid shape.

The discovery of this shape will contribute to the field of tissue engineering, particularly the development of artificial organs. It will be useful in other fields besides biology, like engineering and mathematics.

### What is lapis lazuli?

Lapis lazuli is a rare rock, valued for its intense blue colour and widely used as a semi-precious stone. The gem, whose name literally means 'blue stone' in Arabic, is created when lime gets transformed into marble. The finest lapis lazuli can be found in Afghanistan. In ancient times, people believed that lapis lazuli had magical powers and signet rings, amulets and figurines were fashioned out of it. It was ground and processed to create ultramarine pigment for tempera and oil paints before synthetic colours were created. It was even used in the past to coat the walls and columns of churches. Today, this beautiful gemstone is used to make jewellery, small ornamental boxes, mosaics, carved artefacts and vases.

(Content provided by Amrita Bharati)



## ARTIVITY



Artwork by Janvi, Class 10, St Paul's School, Kanonda

Read the newspaper and create an original artwork based on a news item that interests you and send your entry to school@thehindu.co.in with the subject - Artivity. Select entries will be published. Please mention your name, class, school and city.

## TECH BYTES

# What is web cache?

Sometimes referred to as an HTTP cache, web cache is a technology used for temporary storage of web documents. These documents can be images, texts or web pages.

A web cache stores copies of documents and pages you visit. When you access a website, the browser sends a HTTP request to your web cache. If what you are trying to access is stored in the cache, it will load immediately, however, if it is not, then the cache will request the origin server for the web document you want to access and send it to your browser. Hence, when the documents are cached, it is faster to access them, thereby improving your browsing speed and experience.

Sometimes, cache data can be outdated. In such cases, you can clear your web cache by accessing the browser history through the settings. Alternatively, you can press Ctrl+F5 to clear the cache, but this does not guarantee a cache refresh all the time.

## LEISURE CORNER

# Today is Towel Day!

Douglas Adams' fans celebrate by wearing a white towel

A towel is the most essential piece of cloth - you can wrap it around your head to ward off toxic fumes, you can use it to sail down the River Moth, use it as a distress signal in emergencies and finally, if it's still clean, you can use it to dry yourself.

These are some of the uses of a towel listed by Douglas Adams in his iconic 'The Hitchhiker's Guide to the Galaxy' series. "A towel is about the most massively useful thing an interstellar hitch-hiker can have," says the book.

And so fans around the world pay tribute to the genius of Adams by celebrating May 25 - two weeks after the author died at the age of 49 in 2001 - as Towel Day. What do you do on towel day? Why, carry or wear a towel, of course!

Across the world, the day is marked with pictures posted by people of their towels with a #TowelDay hashtag on social media. Some rabid fans even go to



K. Murali Kumar

work with their towels and host parties based on different themes from the "Hitchhiker" series.

"The Hitchhiker's Guide to the Galaxy" started off as a radio series in 1978. Following its popularity, it was adapted into "a trilogy in five parts" and television series. It chronicles the adventures of Arthur Dent, who hitch-hikes across space after planet Earth is demolished to make way for an interstellar expressway.



Sakshi Malik  
 PHOTO: LARS BARON/GETTY IMAGES

# Sakshi's special feat

Here, we will sharpen our sports quotient by taking a look at one iconic moment from sporting history. This week, we revisit Sakshi Malik's bronze medal winning feat from the 2016 Rio Olympics...

After 11 days without anything to show for their efforts, India finally got on the medals table at the 2016 Rio Olympics on the 12th day, courtesy of Sakshi Malik's bronze in the 58kg category in wrestling. Sakshi didn't have it easy though, but she produced a remarkable comeback in the bronze medal play-off to clinch the medal.

## REMEMBER THIS?

Sakshi won her Round of 32 bout against Sweden's Johanna Mattson and then dispatched Moldova's Mariana Cherdivara in the Round of 16 clash. She, however, lost to Russia's Valeria Koblova in the quarter-finals.

As Koblova made it to the final, Sakshi qualified for the repechage rounds. She defeated Mongolia's Purevdorjin Orkhan in the first bout to make it to the bronze medal play-off against reigning Asian champion Aisuluu Tynybekova of Kyrgyzstan.

Tynybekova raced to a 5-0 lead before Sakshi found her range. She then scored eight points to win the bout 8-5 in dramatic fashion and became the first Indian woman to win an Olympic medal in wrestling.

### DID YOU KNOW?

Sakshi Malik's bronze was India's first medal at the 2016 Rio Olympics.

Sakshi became just the fourth Indian woman to win an Olympic medal after weightlifter Kamam Mallehwari (2000 Sydney), boxer Mary Kom (2012 London) and shuttler Saina Nehwal (2012 London).

India won two medals at the 2016 Rio Olympics. After Sakshi's bronze in wrestling, P V Sindhu won a silver medal in women's singles badminton.