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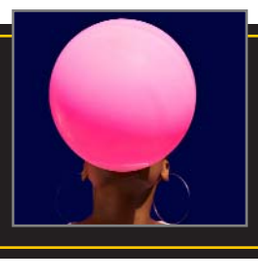
STUDENT EDITION

TIMES nie Newspaper in Education

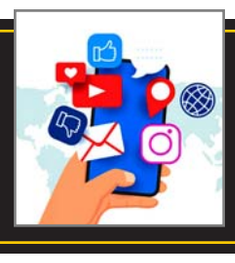
WEDNESDAY, JULY 14, 2021

TODAY'S EDITION

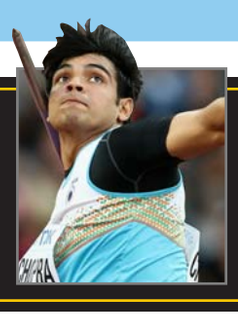
➤ Learning is fun when there are activities with it. Bringing you concepts that you can experiment with... PAGE 2



➤ Debate of the week: Has recent advances in technology influenced the way Gen Z use their leisure time? PAGE 3



➤ Tokyo 2020: Know more about Javelin thrower Neeraj Chopra, and India's medal hope PAGE 4



CLICK HERE: PAGE 1 AND 2

X-PLAINED

SUBORBITAL FLIGHT

TICKET TO SPACE NOW WIDE OPEN

WHAT As Richard Branson took flight to space and Jeff Bezos' Blue Origin's New Shepard vehicle prepare to touch the boundary of space and experience a few minutes of weightlessness, **conversations on suborbital flights have gained momentum.** So, what exactly is suborbital? It is a spaceflight in which the spacecraft reaches outer space, but its trajectory intersects the atmosphere or surface of the gravitating body from which it was launched, so that it will not complete one orbital revolution. Simply put, it means that while these vehicles will cross the ill-defined boundary of space, they will not be going fast enough to stay in space once they get there. In other words, if a spacecraft or anything else for that matter reaches a speed of 28,000 km/hr or more, instead of falling back to the ground, it will continuously fall around the Earth. That continuous falling is what it means to be in the orbit, and is how satellites and the Moon stay above the Earth. Therefore, anything that launches to space but does not have sufficient horizontal velocity to stay in space – like these rockets – comes back to Earth and hence flies a suborbital trajectory.

WHY these suborbital flights matter: Although the two spacecraft launched in July 2021 will not reach the orbit, the accomplishment of reaching space in a private spacecraft is a major milestone in the history of humanity. Those aboard these and all future private-sector, suborbital flights will for a few minutes be in space, experience a few minutes of exhilarating weightlessness, and absolutely earn their astronaut wings.

➤ Branson's flight has reinforced the hopes of space enthusiasts that routine travel to the final frontier may soon be available to private citizens, not just the professional astronauts of NASA and other space agencies

➤ The era of non-professional astronauts regularly heading to orbit may also begin in the coming year. Jared Isaacman, a 38-year-old billionaire, is essentially chartering a rocket and spacecraft from SpaceX for a three-day trip to orbit that is scheduled for September

➤ Another company, Axiom Space in Houston, is arranging a separate trip to the space station that will launch as soon as January

DID YOU KNOW?

■ Charles Simonyi, who built the first versions of Microsoft Office, was the first billionaire to go to space, and he remains the only one who has gone twice. Notably, American millionaire Dennis Tito, became the world's first space tourist in 2001

➤ **FOR THE RECORD:** Neither Blue Origin nor Virgin Galactic flights go high enough or fast enough to enter the orbit around the Earth. Rather, these suborbital flights are more like giant roller coaster rides that allow passengers to float for a few minutes while admiring a view of the Earth against the black backdrop of space

THE MECHANISM

■ A suborbital flight is like a cricket ball. When a cricket ball is thrown into the air, as no human hand can give it a speed of 28,000 km/hr (about 8 m/sec), the ball will fly in an arc until its entire kinetic energy is swapped with the potential energy, thereby losing its vertical motion momentarily, before returning to the Earth under the influence of gravity. A suborbital flight, just like a cricket ball, travel fast enough to reach the "edge of space", and with enough horizontal velocity go into the orbit

■ However, if an object travels at 40,000 km/hr, it will achieve what is known as "escape velocity", and never return to Earth

NEWS IN CLUES

WHICH DAIRY BRAND INSPIRED INDIA'S FIRST CROWDFUNDED MOVIE?

CLUE 1: The movie's star cast included Naseeruddin Shah, Smita Patil, Amrish Puri and Girish Karnad.

CLUE 2: Its annual milk handling capacity is equal to Australia's annual milk production.

CLUE 3: The world's 8th-largest milk processor, its name is an acronym for a milk producers union.

ANSWER: AMUL. The dairy brand, an acronym for Anand Milk Union Ltd, won its first trademark infringement case in a foreign country when the Federal Court of Canada upheld its claim of copyright violation against Amul Canada for using the trademark 'Amul' and the logo 'Amul-The Taste of India'.

Did you know, the movie Manthan, directed by Shyam Benegal, was inspired by Verghese Kurien and the milk cooperative movement that led to Amul's establishment. It processes 11 billion litres of milk annually, which equals Australia's yearly milk production

Ganga is Covid-free: Scientists

The Ganga river has been declared Covid-free. The finding bears significance in the backdrop of the fact that BSIP scientists had earlier found traces of the SARS-CoV2 virus in the water of Gomti river in Lucknow. After a two-month research by medical and genetic experts of Banaras Hindu University (BHU), Varanasi and Birbal Sahni Institute of Palaeosciences (BSIP), Lucknow, it has been found that the Ganga river has no trace of the pandemic causing coronavirus. BSIP scientist Niraj Rai, who heads the Covid Lab at the institute, said: "Our team extracted RNA and performed an RT-PCR test for all the samples with a true positive and negative sample. Surprisingly, none of the samples collected from the Ganga showed any trace of the viral RNA. However, samples collected from river Gomti did show the presence of viral RNA."

The finding is also important as it has been conducted amid apprehension that water of river Ganga may have been contaminated after several bodies were found floating in rivers Ganga and Yamuna. A large number of bodies were also buried on their banks during the peak of the pandemic

NEET 2021 to be held on Sep 12: Education minister

The National Eligibility cum Entrance Test for Undergraduate (NEET UG) 2021 exam will be conducted across the country on September 12 following the Covid-19 protocols. The application process for NEET (UG) 2021 started from 5 p. on Tuesday through the website(s) of the NTA, Union education minister Dharmendra Pradhan said.

Education

■ The entrance test for MBBS/BDS courses had been scheduled for August 1, but the registration process was deferred due to the surge in Covid-19 cases in April-May and subsequent lockdown

■ The education ministry had on July 6 announced fresh dates for JEE (Main)'s April and May sessions. The April session will be conducted from July 20-25 and the May session (fourth and last) fourth from July 27-August 2

Quote unquote

Delta, the most-transmissible of the variants identified so far, has been identified in at least 85 countries, and is spreading rapidly among the unvaccinated population. The only way to break the link between transmission and the emergence of new variants is mass vaccination

Tedros Adhanom Ghebreyesus, director-general, WHO

FACTOID

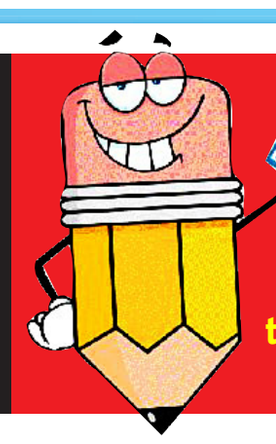
50,000 TONS

That's the amount of sand used to build the world's tallest sand castle. Situated in Denmark, the structure is 21.16 metres-high, 3 metres taller than the one built in Germany in 2019. The intricately-decorated structure, reminiscent of a pyramid in the small seaside town of Blokhus, has been created by Wilfried Stijger, a Dutch sand artist, with the assistance of 30 of the world's best sand sculptors. Interestingly, the sand contains approximately 10% clay and a layer of glue to keep the structure remain intact in chilly and windy conditions

World's TOP 10 richest people gained $209 bn in first half of 2021

World's top 10 richest people added $209 billion to their net worth in the first half of 2021, according to Bloomberg. The list includes Jeff Bezos, Elon Musk, Bernard Arnault, Bill Gates, Mark Zuckerberg, Larry Page, Sergey Brin and Warren Buffett. Notably, the combined wealth of China's richest tycoons has fallen by $16 billion in 2021's first half.

Beginning the journey of learning in an alphabetical order, Times NIE takes you through one concept from each subject every fortnight



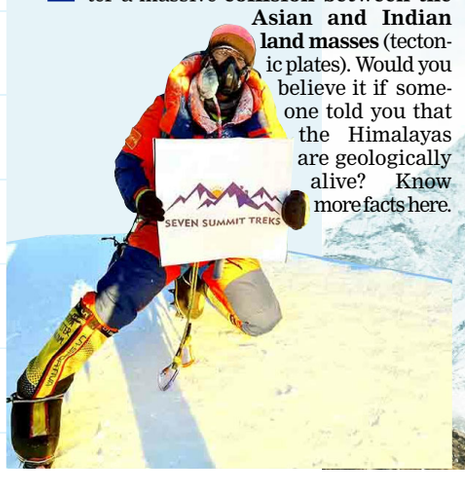
TEACHERS, IF YOU HAVE A CONCEPT THAT CAN CHANGE A CLASSROOM, SHARE IT ON toinie175@gmail.com WITH YOUR PHOTOGRAPH

CLASSROOMS TO EXPERIENCE ZONES

GEOGRAPHY

HIMALAYAS

The Himalayan range, as believed by many, was formed some 70 million years ago after a massive **collision between the Asian and Indian land masses** (tectonic plates). Would you believe it if someone told you that the Himalayas are geologically alive? Know more facts here.



Highest mountain range in the world

The Himalayas has 30 peaks that tower over 24,000 feet and average about 200 miles in width. In fact, the Himalayas cover about 0.4 per cent of the surface area of the Earth.

They're getting taller!

Scientific tests have led to the discovery that the Himalayas are geographically alive. Research has shown that the Indo-Australian plate moves about 20 mm per year, causing the mountains to continuously grow in size. This means the mountains are going to be even taller.

Geographical Variation

Due to the length, breadth and height of the mountain range, the Himalayas have a variety of landscapes. From snow-capped mountains to lush green valleys and dense jungles, you will find different geographical variations at different heights.

Rivers that flow from the Himalayas

The Ganges, the Indus, the Brahmaputra, the Mekong, the Yangtze and the Yellow Rivers all originate in the Himalayas. This water supplies three primary river systems in Southeast Asia: Indus Basin, Yangtze Basin and Ganga-Brahmaputra. Interestingly, those rivers are actually older than the Himalayas!

Mountain Names

Mount Everest was named by Sir Andrew Waugh in 1865 in honour of his predecessor, Sir George Everest, who was the Surveyor General of India from 1830 to 1843. However, the Tibetans and Sherpas call it Chomolungma, which means the 'Goddess of Earth'.

DID YOU KNOW?
Col RS Jamwal is the first Indian to summit the seven highest mountains across the seven continents, including Mt Everest 3 times

BUILD MOUNTAINS IN CLASS!

1. Make a peak
The lesson uses a pile of brightly-coloured towels to represent the different strata of sedimentary rock in an ocean basin, and two cardboard boxes as tectonic plates. Put the two together and push it up to form a peak.

2. Invite a geologist/ mountaineer
Have a geologist to come to your class and answer student queries related to subject or invite a mountaineer and let students interact with them about the trekking experience.

3. Climb every mountain
A student decides which peak to climb and then the class has to think of interesting facts about that peak. Turn by turn, students get to share one unique fact about the mountain. Do that from country to country. And see how much you learn the play-way.

CHEMISTRY

HETEROGENEOUS REACTION

Heterogeneous reaction is caused when the reactants are components of two or more phases (solid and gas, solid and liquid, two immiscible liquids) or in which one or more reactants undergo chemical change at an interface, e.g., on the surface of a solid catalyst. The reaction of metals with acids, the electrochemical changes that occur in batteries and electrolytic cells, and the phenomena of corrosion are part of the subject of heterogeneous reactions. Heterogeneous reactions are of considerable practical interest. A reaction between a gas and a liquid, as between air and seawater (see sulphur lake in pic), is heterogeneous. Iron rusting when it comes in contact with water, sodium metal reacting with water are examples too.

DID YOU KNOW?
Oceans absorb carbon dioxide from the atmosphere, creating carbonic acids in the water. Carbonic acid steals carbonate needed by some marine animals for their shells. Marine life uses carbonate from the water to build shells and skeletons. As seawater becomes more acidified, carbonate is less available for animals to build shells and skeletons. Under conditions of severe acidification, shells and skeletons can dissolve

LANGUAGE

HYPERBOLE

By Kartik Bajoria
Jaipur-based
Communication Skills
Educator & Writer

The simplest way of understanding the term 'hyperbole' is exaggeration. It is used quite often in writing and spoken language. However, hyperbole statements and expressions are to be taken with a pinch of salt.

A classic example of a hyperbole is 'My school bag feels as heavy as a ton of bricks'. While the conclusion to be drawn from this statement is that the school bag is very heavy, or needlessly heavy, it does not literally/precisely weigh a ton of bricks! Hence, hyperbolic statements sometimes tend to be in the realm of the absurd or the outrageous but make for interesting reading and listening when used astutely as part of communication.

There are primarily two reasons why hyperbole is used. First is to really grab a reader's/listener's attention and draw it to the 'thing' being described using the hyperbole, in order to ensure it registers and stands out. If for instance, you were describing a windy morning, you could say, 'The wind howled like a thousand wolves'. Your point would definitely be noted.

The other usage is to persuade someone. Say you were making a request to the city council for the roads need cleaning-up, perhaps you could say, 'The roads are littered like a battlefield'.

Exaggerating the truth makes it more noticeable, and that is the crux of hyperbole. Used in the correct situation and context, it is a powerful language tool

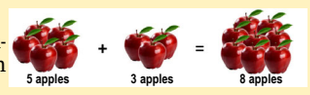
MATHS

Higher (Addition)

By Sandeep Srivastava
Educator since 20 yrs, he specialises in making Maths easy and fun

Let us emphasise for the last time — counting is how we know quantity of things. But counting (and measurement) of large quantities are tedious and error-prone, we use operations on numbers (quantities we already know) to know quantities without having to count.

Addition



It's the most natural, uncomplicated operation — aggregates things.
Putting together sets of 5 apples and 3 apples into one set of 8 apples is an instance of addition.

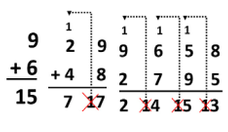
Adding is faster counting

Addition makes counting quantity of things faster. Think of counting each student in a school versus just adding the strength of students in each section, to get the sum, the count of students in the school.

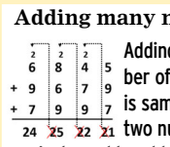
Carry in the sum of numbers

Recall, at each place in a number there can be only one digit, (0 - 9, not 10, 11, …). Carry happens when sum of digit at a place in addend is more than 9. Carry from a place has to move to the left — the bigger place.

Adding two numbers, getting sum (number)

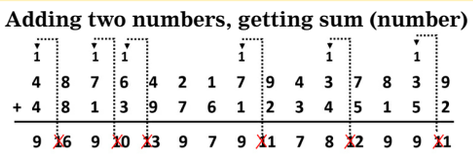


Adding many numbers



Adding any number of numbers is same as any two numbers, we just need to add the like quantities, all units together, all tens together, etc.

Adding two numbers, getting sum (number)

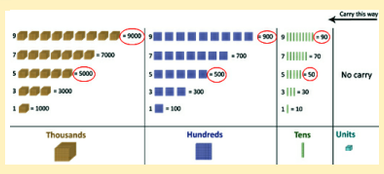


Adding these two numbers is same as adding many one-digit numbers. It's NOT any more complicated, arithmetically

Values of carry

9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 + 9 = 117
Tens place carry
Hundreds place carry

Carry at different places



A carry '9' at tens place is 90, at hundreds place is 900, at thousands place is 9,000, etc.

Why carry is in multiples of 10?

Recall, each place in a number has a definite type of quantity:
If there are 11 units in the sum, a carry to tens place is possible if the carry is tens. Thus, 1 ten (= 10 units) will go as carry and 1 unit will be left in the sum.
Similarly, if there are 19 hundreds in the sum, a carry of 1 thousand (= 10 hundreds) will go thousands place, and 9 hundreds will be left in the sum.

Commutative property of addition

Unique to addition operation, the order of things (add ends) in operation doesn't change the sum.

How exactly are 6 balls + 3 balls = 9 balls?

6 + 3 = 9 because we can count 9 things together.

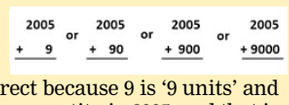
How 6 balls + 3 erasers ? 9?

Because counting them doesn't reach the count of 'Ninth' — there is nothing 'Ninth' in 6 balls and 3 erasers.
School math essentially expects us to memorise that 6 + 3 = 9. It is not counting 3 beyond 6 to get 9.

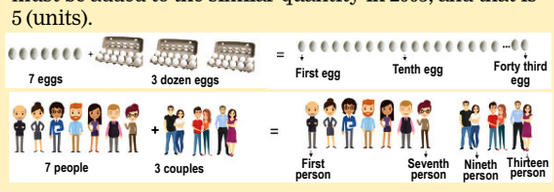
How exactly are 9 balls + 7 balls = 16 balls?

9 balls + 7 balls = 16 balls because there is one 10 and six ones (units) in the sum.
Most properties of operations are due to the property of numbers.

How to add 2005 + 9 = ?

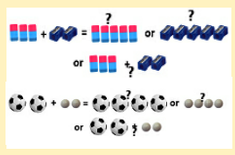


There are four possibilities –
The leftmost option is correct because 9 is '9 units' and must be added to the similar quantity in 2005, and that is 5 (units).



7 + 3 =?

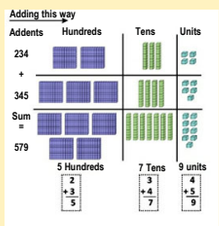
7 + 3 is rarely 10 in real life, it is 10 only when units of 7 and 3 are the same.



Adding unlike things

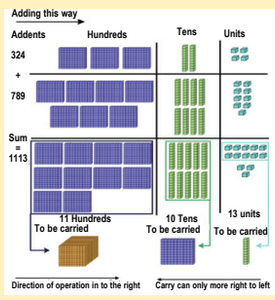
Pick the right sum option in the following addition expressions - Yes, unlike things can't be summed together to be expressed as one number, as they cannot be added. Sum of unlike things are expressed as they are (e.g., 2 footballs and 2 golf balls).

Can we add from the left?



Observe the two examples -

We can add from the left.
There is no problem.
Now let us add another pair of numbers from the left.



CARRY CANNOT MOVE LEFT as addition is moving right. Addition remains incomplete.

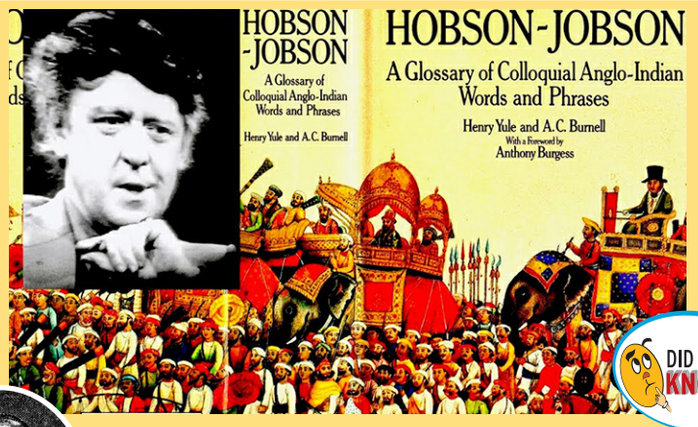
The verdict

We can add from left, as long as there is no carry. Adding from the right doesn't create that conflict.

HISTORY

Mahia Bashir writes for Times NIE about interesting events and terms from history. The author is pursuing BA prog at St Stephen's College, and interning at the 'History Diaries' – an initiative to revamp the current pedagogical system of history through tours and drama in schools

HOBSON-JOBSON

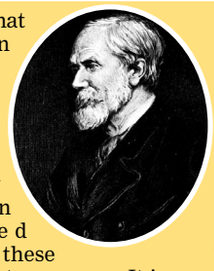


A Glossary of Colloquial Anglo-Indian Words and Phrases, and of Kindred Terms, Etymological, Historical, Geographical and Discursive. is the name of a historical dictionary which was composed by British officers **HENRY YULE** and **ARTHUR COKE BURNELL** in the 19th century to document the Anglo-Indian words and terms from Indian languages that had made way into the English language during the colonial period, and were widely used in British India.

Burnell was stationed in the Madras presidency, and was well-versed in Sanskrit and Dravidian. In addition, he was also familiar with Arabic, Javanese, Coptic and Tibetan. Henry Yule was a Scottish scholar and geographer, who had translated works of Marco Polo and the European friar Jordanus. Yule was initially posted in present day Meghalya circa 1840s, and later transferred to Karnal. He returned to England sometime later. In 1852, he returned to India and was posted in Calcutta.

A cultural mix

Hobson-Jobson is a dictionary of surprisingly vast range, including words introduced by Arab and Portuguese in India. From Charpoy to loot to Juggenaut to nautch to creole, the book has succeeded in cataloguing the wide range that Anglo-Indian lexicon exhibited. Despite its racial undertones, the dictionary has been reprinted throughout these years without any pause. It is undoubtedly a prime repository of the cultural exchanges and knowledge production that animated the British Raj in India.



DID YOU KNOW?
In 1872, the two authors decided to work together on their shared idea. The dictionary was first published in 1886. Another edition was prepared by William Crooke in 1903. Rumour has it that the title Hobson-Jobson is an inflection of the terms 'Ya Hassan, Ya Hussein' chanted by the mourners during the Islamic holy month of Muharram

ACTIVITY TIME
Make a compilation of Hinglish words and trace the history of the word. Present the dictionary in class. Don't miss to brighten up your work with pictures!