



THE TIMES OF INDIA

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TODAY'S EDITION

➤ Know the history of RBI and why Raja Ravi Varma was known as 'Father of Modern Indian Art' in Concepts to Classrooms
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➤ Know more about Dwarka, Lord Krishna's kingdom from a young traveller's perspective
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➤ IPL 2021: Play-off berth secured, RCB eye to remain in top-two fray
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STUDENT EDITION

WEDNESDAY, OCTOBER 6, 2021



Quote unquote

CLICK HERE: PAGE 1 AND 2

TOP 3 BUZZ OF THE DAY

HONOUR

NOBEL PHYSICS PRIZE GOES TO 3 FOR CLIMATE DISCOVERIES



The Nobel Prize for physics has been awarded to scientists from Japan, Germany and Italy. Syukuro Manabe, 90, and Klaus Hasselmann, 89, were cited for their work in "the physical modeling of Earth's climate, quantifying variability and reliably predicting global warming". The second half of the prize was awarded to Giorgio Parisi, 73, for "the discovery of the interplay of disorder and fluctuations in physical systems from atomic to planetary scales."

Starting in the 1960s, Manabe demonstrated how increases in the amount of carbon dioxide in the atmosphere would increase global temperatures, laying the foundations for current climate models. About a decade later, Hasselmann created a model that linked weather and climate, helping explain why climate models can be reliable despite the seemingly chaotic nature of the weather.

He also developed ways to look for specific signs of human influence on the climate. Parisi built a deep physical and mathematical model that made it possible to understand complex systems in fields as different as mathematics, biology, neuroscience and machine learning.

SOCIAL MEDIA

GONE IN MINUTES, OUT FOR HOURS: OUTAGE SHAKES FACEBOOK

Facebook and its family of apps, including Instagram and WhatsApp, were inaccessible for hours on Monday, taking out a vital communications platform used by billions and showcasing just how dependent the world has become on a company that is under intense scrutiny. They at least partially reconnected to the global internet after a nearly six-hour outage. The three Facebook-owned platforms were down in many parts of the world. On Twitter, people posted messages saying these platforms were inaccessible from around 9 pm IST.



Around 400 million people use one or more of these platforms in India. India has the largest user base for Facebook and its platform with over 410 million users. WhatsApp, the messaging platform has 530 million users and Instagram has 210 million users, according to government data.

MOVIES

INTO THE COSMOS: FIRST MOVIE TO SHOOT IN SPACE

In a historic first, Russia is set to launch an actor and a film director into space to make a feature film in orbit — a project the nation's space chief has hailed as a chance to raise the prestige of Russia's space programme. Actor Yulia Peresild and director Klim Shipenko blasted off for the International Space Station in a Russian Soyuz spacecraft together with cosmonaut Anton Shkaplerov, a veteran of three space missions. After 12 days on the space outpost, Peresild and Shipenko will return to Earth with another Russian cosmonaut.



The crew plans to film segments of a new movie titled 'Challenge' about a surgeon summoned to rush to the space station to save a crew member, who suffers a heart condition.

14-year-old hits the bull's eye

The 'Shooting' Star



Fourteen-year-old shooter Naama Kapoor fired her way to the gold medal in the women's 25m pistol event of the ISSF Junior world Championship at Lima on Monday. Naama became the youngest Indian shooter to win an international medal. The Delhi girl is participating in her first international tournament since making it to the Indian team after finishing second in the national trials in August. This is the first multi-discipline shooting event since the Tokyo Olympics, with as many as 32 nations and nearly 370 athletes participating in the championship.

On her way to the gold, Naama, the youngest among the eight finalists, defeated many experienced shooters, including Manu Bhaker.

YOUNG ACHIEVER

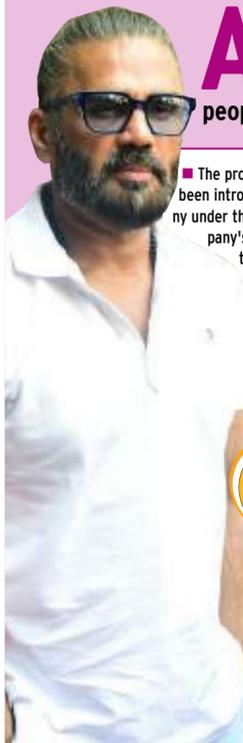
In the men's category, Aishwary Pratap Singh Tomar smashed the world record in the final to win gold in the men's 50m rifle 3 positions event. Tomar equalled the junior world record score of 1,185 in qualification to top the field on Monday.



Mythology is an important part of any culture. It plays a large role in the rituals followed in society, and in the way our community thinks and functions. Actually we get to learn something new everyday. In our country, we are all thrilled when festivals arrive or when we visit some significant temples or places. We love to enjoy them but are we confident enough to explain to our coming generations? I feel such shows are institutions to educate society about our origin.

DINESH MEHTA, actor

Get ready for 'mobile spittoons' to curb a bad habit



Actor Suniel Shetty launched a range of portable spittoons in the national capital on Sunday and expressed hope that the products would prevent people from spitting in public places...

The products launched by Shetty have been introduced by a Nagpur-based company under the brand name EzySpit. The company's co-founder, Ritu Malhotra, said, the spittoons come in the forms of pocket pouches (reusable 10 to 15 times), mobile containers (reusable 20 to 40 times) and spit bins (reusable 5,000 times).

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The aim behind this start-up, according to its founders, is to spread awareness about eco-friendly 'spittoon products' and also to contain the bad habit of spitting in public places.

DID YOU KNOW?

The Indian Railways spends ₹ 1,200 crore and a lot of water every year to remove the stains and marks left by people spitting in railway stations and on the tracks.

Apart from the burden of cleaning up, spitting in public places is also a health hazard. The germs in a person's spit circulate in a radius of 27 feet around the spot where a person spits. The Disaster Management Act has made spitting in public places a punishable offence liable for fines ranging from ₹ 200 to ₹ 5,000.

Soon, horn your way to Indian musical instruments



Union Transport minister Nitin Gadkari on Monday said he was planning to bring a law under which only the sound of Indian musical instruments can be used as a horn for vehicles. Speaking at a highway inauguration ceremony, Gadkari said, he was also studying the sirens used by ambulances and police vehicles and replace them with a more pleasant tune played on the All India Radio. Gadkari said, he put an end to red beacons. "Now I want to put an end to these sirens as well. I am studying the sirens (used by) ambulances and police. "An artiste composed a tune of Akashwani (All India Radio) and it was played early in the morning. I am thinking of using that tune for ambulances so that people feel pleasant. It is so irritating, especially after ministers pass by, the sirens are used at full volume. This also harms the ears," he added.

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GLOBAL WARMING kills 14 per cent of world's CORALS IN A DECADE

Dynamite fishing and pollution — but mostly global warming — wiped out 14 per cent of the world's coral reefs from 2009 to 2018, leaving graveyards of bleached skeletons where vibrant ecosystems once thrived, according to the largest ever survey of coral health. Hardest hit were corals in South Asia and the Pacific, around the Arabian Peninsula, and off the coast of Australia, more than 300 scientists in the Global Coral Reef Monitoring Network reported. "Climate change is the biggest threat to the world's reefs," co-author Paul Hardisty, CEO of the Australian Institute of Marine Science, said in a statement.

1 Oceans absorb more than 90 per cent of the excess heat from greenhouse gas emissions, shielding land surfaces but generating huge, long-lasting marine heatwaves that are pushing many species of corals past their limits of tolerance.

2 A single so-called bleaching event in 1998 caused by warming waters wiped out eight per cent of all corals.

3 Coral reefs cover only a tiny fraction — 0.2 per cent of the ocean floor, but they are home to at least a quarter of all marine animals and plants.

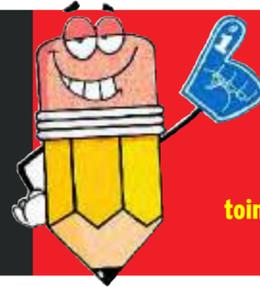
4 Besides anchoring marine ecosystems, they also provide protein, jobs and protection from storms and shoreline erosion for hundreds of millions of people worldwide.

The value of goods and services from coral reefs is about \$2.7 trillion per year, including \$36 billion in tourism. The loss of coral from 2009 to 2018 varied by region, ranging from five per cent in East Asia to 95 per cent in the eastern tropical Pacific.

DID YOU KNOW?



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



TEACHERS, IF YOU HAVE A CONCEPT THAT CAN CHANGE A CLASSROOM, SHARE IT ON

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CLASSROOMS TO EXPERIENCE ZONES

ECONOMICS

RESERVE BANK OF INDIA

Reserve Bank of India is the central banking institution, which controls the monetary policy of the Indian rupee. **IT WAS ESTABLISHED ON APRIL 1, 1935**, under the Reserve Bank of India Act, 1934. It was conceptualised based on the guidelines presented by Dr BR Ambedkar in his book titled 'The Problem of the Rupee - Its Origin and Its Solution'. RBI was set up based on the recommendation of Royal Commission on Indian Currency & Finance in 1926. This commission was also known as Hilton Young Commission. It was nationalised on January 1, 1949.

THE EMBLEM

The emblem of RBI is panther and palm tree. RBI's logo was derived from East India Company's 'Double Mohur'



THE FUNCTIONING

- RBI is fully owned by the Government of India
- RBI is a member bank of the Asian Clearing Union
- The Central Office of RBI was initially established in Kolkata (then Calcutta) and permanently moved to Mumbai in 1937. It is controlled by a central board of directors
- The directors are appointed for a 4-year term by the Government of India in keeping with the Reserve Bank of India Act
- The general superintendence and direction of the RBI is entrusted with 21-member Central Board of Directors

THE ORGANISATIONAL STRUCTURE

- Governor
- 4 deputy governors
- 2 finance ministry representatives
- 4 directors to represent local boards headquartered at Mumbai, Kolkata, Chennai and New Delhi
- 10 government-nominated directors to represent important elements
- The executive head of RBI is Governor
- The governor is associated with 4 deputy governors

The Governor of RBI pre-Independence was Sir Osborne Smith (1935 - 1937)

The First Indian Governor of RBI was CD Deshmukh (1943 - 1949)



The only Prime Minister who was the Governor of RBI was Manmohan Singh (1982 - 1985)

The First women deputy Governor of RBI was KJ Udeshi

Do you know when the financial year for RBI starts? It starts every year on July 1

RBI CAN ISSUE CURRENCY NOTES AS MUCH AS THE COUNTRY REQUIRES, PROVIDED INDIA HAS SECURITY DEPOSIT OF ₹200 CRORES--15 CR MUST BE IN GOLD & 85 CR IN FOREX RESERVES



LANGUAGE

REPETITION

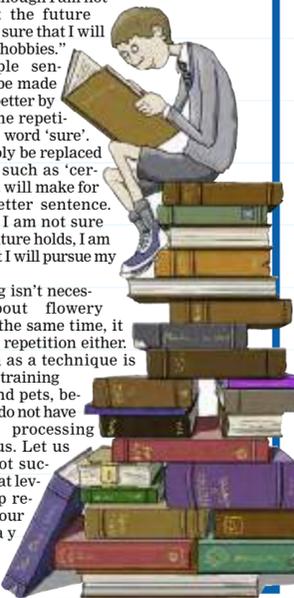
By Kartik Bajoria
Jaipur-based
Communication Skills
Educator & Writer



Many of us are prone to repetition. It is no different when it comes to language, and writing in English. We tend to repeat ourselves unconsciously while talking as well as writing, thinking perhaps that what we are saying will be better heard or registered permanently, if we repeat the information again and again.

Even our teachers at school tend to do this sometimes. Joking aside though, in terms of writing, repetition for the most part, is a bad and avoidable thing. Repetition in writing doesn't only refer to repeating entire sentences, rather, it is the tendency to repeat key words in close proximity of one another, or in successive and consecutive sentences. This should be avoided. Let us look at an example. "Although I am not sure what the future holds, I am sure that I will pursue my hobbies." This simple sentence can be made infinitely better by avoiding the repetition of the word 'sure'. It can simply be replaced by a word such as 'certain' and it will make for a much better sentence. "Although I am not sure what the future holds, I am certain that I will pursue my hobbies."

Writing isn't necessarily about flowery words. At the same time, it isn't about repetition either. Repetition as a technique is used while training animals and pets, because they do not have the same processing power as us. Let us humans not succumb to that level and stop repeating in our everyday speaking and writing!



MATHS

ROOT

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



Root/solution of a polynomial equation are value of 'x' for which the equation is valid. 13 is the root of the equation $2x = 26$. Roots are the solution of the equation.

Polynomials are algebraic expression that states the relationship between constants, and variables using arithmetical symbols. Algebraic expressions can be monomial expression, binomial expression, or polynomial expression.

$3x$ $5y$ $2x^2$ $2xy+3$ $xy+x^2$
Monomial expressions (Having one term) Binomial expressions (Having two term)

$2x^2+3x+2$ $3x+2xy+5y$
Polynomial expressions (Having more than one term)

In an algebraic expression has constants, variables, and whole numbers as exponents are combined by arithmetical operations. A polynomial equation equates an algebraic expression to '0'.

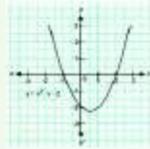
$7x^2+4x^2-3x^2+x$ $5x+6y-300=0$
Algebraic expression Algebraic equation

Degree of a polynomial is the exponent of the term with the highest degree. Coefficient is a number used for multiplying variables.

Degree Variable
 $4x^2-2x^2+8x-21$
Coefficient Constant

The algebraic expression has infinite values, area of a square, x^2 can have infinite value, but algebraic equation for area of a square $x^2-9=0$, solves for the value of x as 3, and area of square as 9.

Zero of a polynomial, is an input value of the variable in the polynomial that



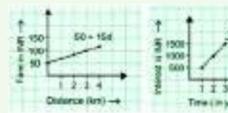
produces an output value of zero, e.g., zero of the polynomial $x-5=0$ is 5

Graphically, zero of a polynomial is the x-coordinate(s) (x,0) of the points where the graph of the polynomial meets the x-axis or the x-intercept.

The x-intercept are -1 and 2. Therefore, zeroes of the polynomial for $p(x) = x^2-x-2$ are -1 and 2.

Linear equations in one variable

A linear equation always shows itself as a straight line when graphically represented. A linear equation with one variable is a polynomial with degree 1, and has only one root. Linear equations with one variable can be solved using a graph.



When a and b are real numbers and $a \neq 0$

$$ax + b = 0, \text{ root } x = \frac{-b}{a}$$

Linear equations with two variables

A linear equation in two variables is a polynomial with degree 1.

$$ax + by + c = 0$$

General expression for a linear equation with two variables

Where a, b, and c are real numbers ($a, b \neq 0$). The two variables are x and y. The numbers a and b represent the co-efficient of the variables x and y, where as c is the constant.

$$10x - 6y = 10 \quad -2x + 3y = 35 \quad 4x + 6y = -12$$

Linear equation with two variables

A linear equation with two variables can have infinite solution. Let us solve the equation $3x + 4y = 12$

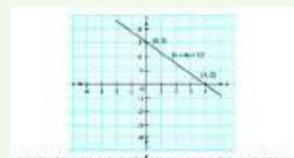
To get a set of solutions for this equation, we rewrite the equation as

$$y = \frac{12 - 3x}{4}$$

Slope of this equation is $-\frac{3}{4}$ and a y intercept is 3. The set of solution is

x	-2	-1	0	1	2	3	4	5	6
y	4	15/4	3	9/4	6/4	3/4	0	-3/4	-6/4

This set of solution makes a straight line.

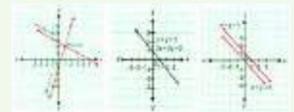


Simultaneous linear equations

A set of related linear equations is called a system of simultaneous linear equations. These equations can be 'combined' to get a common solution which is simultaneously applicable to them. The solution can be obtained by elimination, substitution, or graphical method.

Graphically, when simultaneous equations in two variables:

- Do not intersect and have no solution are called inconsistent.
- Intersect at one point, thus have one solution, are consistent and homogeneous.
- Coincide with each other, thus have infinite solutions are consistent/dependent/non-homogeneous.



The general form of a pair of simultaneous equations is

$$a_1x + b_1y + c_1 = 0; a_2x + b_2y + c_2 = 0; \text{ where } a_1, b_1, c_1 \neq 0$$

$$\text{Equation 1: } a_1x + b_1y + c_1 = 0; \dots (i)$$

$$\text{Equation 2: } a_2x + b_2y + c_2 = 0; \dots (ii)$$

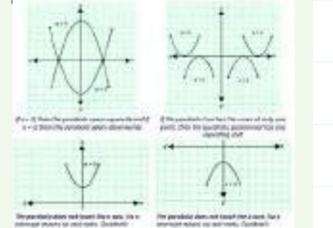
Quadratic polynomials

Quadratic polynomials are expressions where the highest degree of the terms is two.

$$ax^2 + bx + c, a \neq 0$$

General expression for a quadratic equation

Graphically quadratic equations are represented by parabola, and its shape



'Solve' quadratic equations

Quadratic equation can be solved by factorising, completing the squares, and quadratic formula.

The quadratic formula for solving quadratic equation is:

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \text{ or } x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a} \text{ where } b^2 - 4ac = D$$

Here 'D' is called discriminant, thus $x = \frac{-b \pm \sqrt{D}}{2a}$

The discriminant determines the nature of the roots of a quadratic equation.

- $D > 0$, there are two real solutions
- $D < 0$, there are no real solutions
- $D = 0$, there is one real solution

Relationship between zeroes and coefficients of a quadratic polynomial

$$\text{Sum of the zeroes} = -\frac{b}{a} = \frac{\text{coefficient of } x}{\text{coefficient of } x^2}$$

$$\text{Product of the zeroes} = \frac{c}{a} = \frac{\text{constant term}}{\text{coefficient of } x^2}$$

Cubic polynomials

A polynomial of degree 3 is called a cubic polynomial.

$$3x^3 + 1 \quad 4x^3 - x^2 + 4x^2 + 6x + 7 \quad 7x^3 + 4x - 12$$

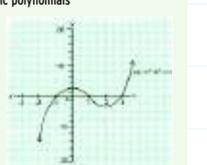
The graph of a cubic polynomial intersects the x-axis at a maximum of three points. A cubic polynomial has a maximum of three zeroes, which may not be unique.

Let a, b, c be the zeroes of a cubic polynomial

$$f(x) = ax^3 + bx^2 + cx + d, a \neq 0 \text{ and } a, b, c \text{ and } d \text{ are coefficients of } x^3, x^2, x \text{ and } x^0$$

Then, by factor theorem, factors of f(x) are $(x-a)(x-b)(x-c)$

Also remember, f(x) being a cubic polynomial cannot have more than three linear factors.



HISTORY

RAJA RAVI VARMA

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

Raja Ravi Varma (1848-1906) is considered to be one of the most prolific painters of the subcontinent. Varma was born into an aristocratic family in the princely state of Travancore. Ravi Varma grew up in the dynamic environs of the Kilimanoor Palace.

ROYAL ART

Ravi Varma's grandeur however does not lie in his affinity with the aristocracy, but due to his profound contributions to the development

Adopting realism, Ravi Varma focused much on the details, the play of light and shadows, adding depth by using perspective in his paintings. Suddenly the folds of a sari fluttered, the hair coiled, and the eyes expressed a longing. With thicker strokes, the jewels that generously adorned his subjects shimmered in a perceived angle of light. He was feted as 'Father of Modern Indian Art'



of and proliferation of Indian art. The prince painter employed European techniques of painting like three dimensional quality and impression of depth and incorporated them into emotive sensibilities and storytelling traditions of Indian art. His work drew from the Puranas and the epics. Ravi Varma received patronage from the Maharaja of Travancore in the 1860s, and began formal training thereafter. He learned the basics from Madurai, and received tutelage from Rama Swami Naidu, and the Dutch artist Theodor Jenson.

HIS FAMOUS WORKS

Over the span of his career, Varma produced a large corpus of paintings of unsurpassable quality. Some estimates put the total number of paintings at 7,000. Some of the iconic paintings that he created include Shakuntala, There Comes Papa, Portrait of a Lady, Radha Krishna, Savitri, Sita Bhumi Prवेश, among others. Ten of his paintings were exhibited at the Chicago Exposition of 1893 where Swami Vivekananda also represented India.

In 1894, Ravi Varma established his own lithographic press, which produced lithographs of his art works and made cheap prints available for consumption to the common man. Interestingly enough, the lithographs of gods and goddesses, had a huge impact on making the divine figures accessible to the lower castes. Varma therefore not only democratised art, but his endeavour to make art available to all sections



of the population had an enduring and perhaps incidental impact on the practice of popular religion. In 1885, Maharaja Thiruvalluvar commissioned 'Draupadi at the Court of Virat' for the picture gallery. The prince painter was decorated with the Kaiser-i-Hind Gold medal by Viceroy Curzon in 1904.