



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

EQUINOX

An equinox occurs when the position of the Sun is exactly over the equator. When this happens, the hours of daylight and the hours of darkness are about equal almost



everywhere on the Earth. Equinoxes take place twice a year.

Autumn, or Fall, begins with the autumnal equinox. After the autumnal equinox, the days become shorter and the nights are longer. The autumnal equinox occurs around September 23 in the Northern Hemisphere and around March 21 in the Southern Hemisphere.

The vernal equinox marks the beginning of spring. After the vernal equinox, the days become longer and the nights become shorter. The vernal equinox occurs around March 21 in the Northern Hemisphere and around September 23 in the Southern Hemisphere.



DID YOU KNOW?

The equinoxes are times of celebration for many cultures. The autumnal equinox happens at a time when crops are ready for harvest. In the Zoroastrian culture, it marks the beginning of the new year, Nowruz. Each year, on September 22/23, the Druids and Pagans gather at Stonehenge in the morning to mark the spring equinox and to see the sunrise above the stones.

ACTIVITIES TO TEACH EQUINOX

MAKE YOUR OWN CALENDAR

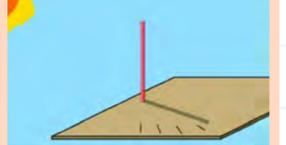
- To create changeable circles, have students fold a piece of paper into four sections. With a colour pencil and a compass, draw four circles large enough to fill each section.
- Students fold another piece of paper and divide it into four sections. To create windows, draw a rectangle in each section near an outer edge. Make three large openings (month, season and day) and a fourth a little smaller (date). Cut out the openings.
- Students decorate each section with pictures.
- Students create moveable wheels by placing each circle behind a section so that a small portion sticks out slightly beyond the edge. Hold in place with paper fasteners.
- They write January in one opening. Turn wheel so it can no longer be seen, then write February. Continue through the rest of the months and other boxes (date and days).



SUN EXPERIMENT

What to Do

- Glue the wooden stick to the cardboard square so that it stands upright (as shown in the sketch). To assure that the full shadow fits on the cardboard, you may want to glue the stick closer to one of the edges.
- Once the glue is dried and the stick can stand by itself, place the cardboard square on a flat surface where it will be exposed to the Sun. Take note of the time of day. Mark the point on the board where the tip of shadow is located and write the date.
- It is important that the board be oriented in the same direction each time you lay it on the ground. You might mark one of the edges of the cardboard square as a point of orientation.
- Repeat this daily or weekly at the exact same time each day. Tabulate the observations.



- Discuss your observations with your family. Ask them if they think that there are any days where the shadow will appear in the same place at the same exact time.

Learning Outcome

- The only two days where the Sun's location matches at any time are March 21 (vernal equinox) and September 21 (autumnal equinox).
- The only place on the Earth where the Sun's location matches every day is on the equator.

LANGUAGE

"Euphemisms are unpleasant truths wearing diplomatic cologne."
- Quentin Crisp



EUPHEMISM

By Kartik Bajoria
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Educator & Writer



English is a beautiful language that gives us the inherent opportunity to be polite and sophisticated. There are many situations in life wherein it would seem inappropriate and rude to describe a situation as it is. For instance, when a person has died. Or when a person has been sacked from their job. This is when euphemisms can assist us greatly in relieving some of that blunt edge that the news innately carries with it.

For example, if one had to say a few words at a funeral meeting, rather than saying the word 'died', you could use euphemisms such as departed or passed away. There is also an aspect of being politically correct that a euphemism helps us with. For instance, rather than calling someone 'fat', which may be interpreted as body shaming in the modern era, one could use 'big-boned'. Similarly, rather than calling someone 'old' outright, 'getting on' sounds more appropriate. Therefore, a euphemism can be a single word or a phrase. All these terms and expressions make the language more agreeable and make for a polite society and people.

My GOLDFISH PASSED AWAY... IT DIED?



EUPHEMISMS IN LANGUAGE

MATHS



EXTENDED NUMBER SYSTEM

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

The decimal number system is only unique in that it has 10 unique digits, 0-9. We use many number systems such as, 0-6 for weekdays, 0-11 for dozen, 0-59 for second/minute, besides 0-1 for binary for computers. Knowledge of these (Extended) number systems, helps us better appreciate decimals. Let's briefly learn some other number systems, which follow the same logic as decimals.

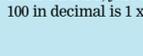
BINARY

Only two digits - 0 and 1 - can be used to represent all quantities.

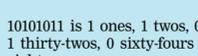
10 is 0 ones and 1 twos, shown as



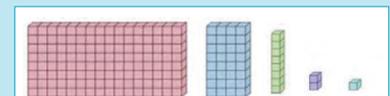
11 is -



100 is 1 x 2 x 2; just as 100 in decimal is 1 x 10 x 10.



10101011 is 1 ones, 1 twos, 0 fours, 1 eights, 0 sixteens, 1 thirty-twos, 0 sixty-fours and 1 one-hundred-twenty-eights.



Let us see conversion of a decimal into binary. Converting 13₁₀ (that is 13 in decimal) to binary -

Step	Division by 2	Quotient	Remainder
1	13/2	6	1
2	6/2	3	0
3	3/2	1	1
4	1/2	0	1

The 'Remainder' cannot be anything other than 0 and 1 - the permissible digits in binary system. Thus, we keep dividing the given quantity (1310) by 2 (binary system) to express it using 0 and 1 only.

$$13_{10} = 1101_2 (1 \times 2^3 + 1 \times 2^2 + 0 \times 2^1 + 1 \times 2^0)$$

Octal

0-7 are used to represent all quantities. 10 is 1 ones and 1 eights (1x8) - 8 ones does not exist.

101 is 1 ones, 0 eights and 1 sixty-fours (0 x 1 + 0 x 8 + 1 x 8 x 8)

111 is 1 ones, 1 eights and 1 sixty-fours (1 x 1 + 1 x 8 + 1 x 8 x 8)



Let us convert a decimal (24) to octal.

Step	Division by 8	Quotient	Remainder
1	24/8	3	0
2	3/8	0	3

$$24_{10} = 30_8 (3 \times 8 + 0 \times 8^2)$$

QUINARY

5 digits, 0-4 are used to represent all quantities. 4 is 4 ones (units) - 4 is the maximum possible quantity that can be shown using a digit.

When we show 1 thing more than 4, that one more thing becomes 1 five and is written as 10.

10 is 0 ones and 1 fives (1 x 5) - 5 ones don't exist, it's written as 1 five and 0 ones.

11 is 1 ones and 1 fives (1 x 1 + 1 x 5)

211 is 1 ones, 1 fives, and 2 twenty-fives (1 x 1 + 1 x 5 + 2 x 5 x 5)



Let us understand how to convert 100 in decimal system to a quinary number.

Step	Division by 5	Quotient	Remainder
1	100/5	20	0
2	20/5	4	0
3	4/5	0	4

$$100_{10} = 400_5$$

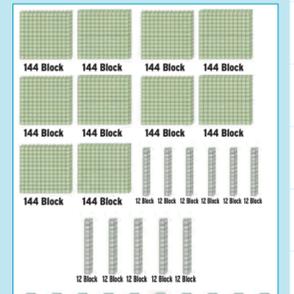
Dozenal

It is an interesting number system with 12 digits - 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, A, B. B is 11 ones (units) - 11 is the maximum possible quantity that can be shown using a digit.

When we show 1 thing more than 11, that one more thing becomes 1 twelve and is written as 10. 10 is 0 ones and 1 twelves (1 x 12).

110 is 0 ones, 1 twelves and 1 one-forty-fours (0 x 1 + 1 x 12 + 1 x 12 x 12)

ABA is 10 ones, 11 twelves, and 10 one forty-fours (10 x 1 + 11 x 12 + 10 x 12 x 12)



Let us convert 10010 to a dozenal number.

Step	Division by 12	Quotient	Remainder
1	100/12	8	4
2	8/12	0	8

$$100_{10} = 84_{12}$$

Next, we will discuss Fraction for F, the more common form of numbers.

If you have queries for Professor Srivastava, write to us on toinie175@gmail.com

CHEMISTRY

EFFERVESCENCE AND EFFLORESCENCE



Effervescence is the foaming formed as a result of a gas being evolved from a solid or liquid.

EXPERIMENT THIS

We generally see effervescence while opening a cold-drink bottle after shaking it. Similarly, this



experiment will show effervescence with erupting colored volcanoes due to a reaction by using an acid, base, water colours and dishwashing liquid.

Here is an easy, fizzy science experiment for kids that requires only a few commonly found household ingredients. This science experiment, which uses baking soda and vinegar, teaches children about chemical reactions.

A baking dish with a layer of baking soda (or baking powder),



some small bowls with 1/2 cup of vinegar with a few drops of food colouring and a dropper is all that you need.

As soon as the coloured vinegar touches the baking soda a fizzy chemical reaction occurs. Colourful bubbles begin appearing immediately once the powder and liquid make contact. The colours mix together really easily to create new colours.

Efflorescence is the process of losing the water of hydration from a hydrate compound.

Efflorescence is a whitish crystalline deposit on surface of the



bricks. Usually magnesium sulphate, calcium sulphate and carbonate of sodium and potassium are found in efflorescence. The movement of groundwater into the foundations of buildings and by capillary action into brickwork is very often the cause of efflorescence.

EXPERIMENT THIS

Fill distilled water in shallow dish and place one end of brick in dish. Water should fill in dish such that bricks should be immersed in water up to 25 mm depth.

Place this whole arrangement in a warm ventilated room such that

whole water is absorbed by the specimen and the surplus water will get evaporated.

Cover the dish containing brick with suitable glass cylinder so that there will not be excessive evaporation from dish.

When whole water get absorbed and brick appears to be dry, place a similar quantity of water in the dish and allow it to evaporate as before.

After this process, examine the bricks for efflorescence and report results.



Results Of Efflorescence Test

Results of efflorescence test shall be reported as nil, slight, moderate, heavy or serious.



WILL DHONI LEAD FROM THE FRONT?

Chennai Super Kings would look for inspiration from skipper Mahendra Singh Dhoni and a much-improved bowling effort when they take on a power-packed Punjab Kings in the IPL in Mumbai on Friday



In CSK's opening match against Delhi Capitals Dhoni batted for just two balls before he was cleaned up by Avesh Khan. The former India skipper looked to play a pull shot, but only managed to get an inside edge back onto the stumps

CSK eye improved bowling effort

The two sides experienced contrasting fortunes in their respective tournament opener. While CSK lost by seven wickets against Delhi Capitals, Punjab Kings eked out a four-run win over Rajasthan Royals in a high-scoring thriller.

With the dew playing a crucial role at Wankhede, the side winning the toss would want to bowl first. In their first match here, CSK posted a competitive 188 for seven, riding on fine contributions from Suresh Raina

(54), Moeen Ali (36), Sam Curran (34), Ravindra Jadeja (26) and Ambati Rayudu (23).

Despite failures from the opening duo of Rituraj Gaikwad and Faf du Plessis besides skipper Dhoni, CSK managed to put up a decent total on the board.

But the Chennai outfit's bowling unit looked completely out of sorts and clueless against the DC opening duo of Shikhar Dhawan and Prithvi Shaw, who were ominous from the word go and stitched a 138-run stand to take the game away from CSK.

The likes of Deepak Chahar, Sam Curran, Shardul Thakur, Jadeja and Moeen Ali all

went for big runs and looked rusty. Come Friday, the onus would be on master tactician Dhoni to inspire his teammates to lift their performance and give Punjab a run for their money.

But for that to happen, the CSK skipper himself needs to lead from the front after failing to score against DC.

Question mark on Punjab's overseas pacers

Punjab Kings, on the other hand, had a narrow escape against RR despite posting a mammoth 221 for 6 on the board.

Opening the batting, KL Rahul played a captain's knock of 91 off just 50 balls. He was ably supported by big-hitting Chris Gayle (40 off 28) and Deepak Hooda (64 off 28).

For Punjab Kings and Rahul, batting is not at an area of concern as they showed with their performance in the opener, but just like CSK, the bowling unit remains a major worry despite spending big money at the auction.

RR skipper Sanju Samson almost single-handedly took the game away from Punjab Kings with his whirlwind 63-ball 119-run knock in their opener, but fell short just by four runs in the end. And Rahul definitely

won't be a happy man with the performances of his bowlers.

Young Arshdeep Singh (3/35) eventually emerged as Punjab's saviour. Needing 13 runs off the last over, the left-arm pacer gave away just eight runs to pull off a fine win for his team.

Besides Arshdeep, veteran Mohammad Shami (2/33) too had a decent outing with the ball but the performance of Australian pace duo of Jhye Richardson (1/55) and Riley Meredith (1/49) should be a concern for Punjab, having shelled out ₹22 crore for their services.

'BIG SHOW' IS BACK



When it rains, it pours. The adage holds true for Glenn Maxwell who is on a run-making spree in this edition of the Indian Premier League (IPL) after less than average performances with the bat over the last few years

Glenn Maxwell, who scored his first IPL half-century on Wednesday after three barren seasons, is relishing a new-found form and confidence with his new franchise, Royal Challengers Bangalore that has pushed him into a role he plays for Australia.

'Kohli's good at keeping me on task'

Maxwell, who aggregated just 108 in 13 matches at an average of just over 15 in IPL 2020 and was therefore released by the Punjab franchise ahead of this season, has been pushed up to the No. 4 batting slot this season by RCB.

I think Maxwell's innings was the difference for us. It's about getting momentum in the first six overs, but for us Maxi (Glenn Maxwell) gave us that momentum and got us closer to 150 (against SRH).

Virat Kohli, RCB captain

"It's a very nice start, a new franchise for me and they have given me a specific role. To start like this is really nice. It's nice to have batters behind you, you have freedom with AB to come and it's a very similar role I have in the Australian cricket team," said Maxwell, who was awarded Man of the Match for his 41-ball 59.

"Kohli's good at keeping me on task. Having those guys behind me is a nice little luxury. It's my fourth IPL team and

there is pressure on me to turn up and make an impact," added Maxwell.

In the 2020 season, Maxwell couldn't hit a single six

In the first match, his 39 played a key role in helping RCB win. In his second match of the season, Maxwell top-scored for RCB with 59 off 41 balls. While he hit two sixes in the tournament opener against Mumbai Indians, he hit three sixes on Wednesday night. In the 2020 season, he couldn't hit a single six.

The last time Maxwell hit a half-century was back in 2016. Since then, his highest had been 47 each in 2017 and 2018 and 32 in 2020. He didn't play the 2019 edition.

VERY BITTER PILL TO SWALLOW: WARNER

SunRisers Hyderabad (SRH) skipper David Warner was deeply hurt after his side lost to Royal Challengers Bangalore (RCB) from a winning position. Warner's half-century had put SRH in the driver's seat but Shahbaz Ahmed ran through their middle order to help RCB register a thrilling six-run win at the MA Chidambaram Stadium. The SRH skipper feels his side needs a big partnership in the middle overs to get over the line. "It was just about building a partnership and I was quite disappointed with how we went, cross-batted shots against left-arm orthodox. It just hurts," Warner said. "We have another three games here, the wickets are going to get better. We need powerplay wickets and have one big partnership in the middle," he added.



QUIZ TIME!

Q1: In 2011, David Warner made his Test debut against which country?

- a) South Africa b) India
c) England d) New Zealand

Q2: Which player has made the most football Premier League appearances?

- a) Ryan Giggs b) Frank Lampard
c) David James d) Gareth Barry

Q3: Which was the first international cricket tournament played in the bio-bubble?

- a) New Zealand in Aus b) Eng in Sri Lanka
c) West Indies in Eng d) Pakistan in Eng

Q4: Golfer Miguel Angel Jimenez broke the European Tour record for most career starts. Who was the previous record holder?

- a) Seve Ballesteros b) Sam Torrance
c) Bernhard Langer d) Barry Lane

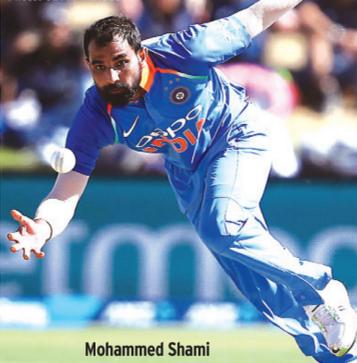
Q5: Name the para athlete who won the Rajiv Gandhi Khel Ratna Award in the recently announced National Sports Awards 2020?

- a) Rani b) Devendra Jhajharia
c) Purushotham Rai d) Mariyappan T

Q6: How many wickets has Mohammed Shami taken in ODIs?

- a) 178 b) 156 c) 134 d) 148

Photo: GETTY IMAGES



Mohammed Shami

Q7: Kyle Edmund won the New York Open 2020. Who did he beat in the final?

- a) John Isner b) Milos Raonic
c) Andreas Seppi d) Rafael Nadal

Q8: Which player was the most expensive Premier League import in the summer of 2020?

- a) Kai Havertz b) Thomas Partey
c) Timo Werner d) Lionel Messi

Q9: Who has been named as 'India's Most Valuable Test Player of the 21st Century' by Wisden?

- a) Mahendra Singh Dhoni b) Virat Kohli

- c) Ravindra Jadeja d) R Ashwin

Q10: Which Indian Grand Master recently won the Cannes Open Chess Tournament?

- a) Praggnanandhaa b) D. Gukesh
c) Harshavardhan d) Sasi Kiran

Q11: Who is the first super heavyweight (+91kg) Indian boxer to qualify for the Olympic Games?

- a) Amit Panghal b) Sakshi Chaudhary
c) Manish Kaushik d) Satish Kumar

ANSWERS: 1. d New Zealand 2. d. Gareth Barry
3. c West Indies in Eng 4. b. Sam Torrance
5. d. Mariyappan T 6. d. 148 7. c. Andreas Seppi
8. a. Kai Havertz 9. c. Ravindra Jadeja
10. b. D Gukesh 11. d. Satish Kumar