GYAN BHARATI SCHOOL

QUEST.....

Monthly Science and Mathematics magazine

Edition: DECEMBER,2019

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AND

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IDENTIFY THE SCIENTIST

She was an English chemist and X-ray crystallographer who made contributions to the understanding of the molecular structures of DNA , RNA, viruses, coal, and graphite.
She was never nominated for a Nobel Prize.
Her work was a crucial part in the discovery of DNA, for which Francis Crick, James Watson, and Maurice Wilkins were awarded a Nobel Prize in 1962.
She died in 1958, and during her lifetime the DNA structure was not considered as fully proven.
It took Wilkins and his colleagues about seven years to collect enough data to prove and refine the proposed DNA structure.

RIDDLE TIME

You measure my life in hours and I serve you by expiring. I'm quick when I'm thin and slow when I'm fat. The wind is my enemy.

Hard riddles want to trip you up, and this one works by hitting you with details from every angle. The big hint comes at the end with the wind. What does wind threaten most?

I have cities, but no houses. I have mountains, but no trees. I have water, but no fish. What am I?

This riddle aims to confuse you and get you to focus on the things that are missing: the houses, trees, and fish.

WHY ARE AEROPLANES USUALLY WHITE?

The Aeroplanes might be having different logos and decorations. But the colour of the aeroplane is usually white.Painting the aeroplane white is most practical and economical. White paint does not fade easily due to exposure to the elemenst as do darker colours. While in the sky white light reflects most of sunlight. White increases the visibility of the plane. Whether it is in the sky or on the land, night or day. In the event of a plane crash, th ewreckage is better visible in water. On the ground effects of corrosion, cracks, leaking oil etc, reveal themselves easily on white.

That Yellow Flame

It is soothening to watch the flickering flame of a candle. But why is flame always yellow?

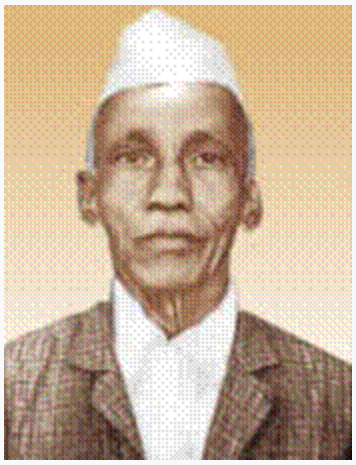
The candle is made of wax and all waxes are essentially hydrocarbons which means they are largely composed of Carbon and hydrogen. When the candle is set alight, the heat melts the wax near the wick. The liquid wax is then drawn up the wick by capillary action and catches fire. The heat of the flame vaporises the liquid wax and breaks up the hydrocarbons into moleules of hydrogen and carbon. The Hydrogen combines with Oxygen at the base of the flame to form water vapour and some of the carbon too changes into carbon dioxide. The remaining carbon turns into tiny hard soot particles that ascend up the flame where they become incandescent and radiate visible light. The human eye sees the yellow part of the spectrum the best so flame appears yellow.There is plenty of oxygen available at the top of

the flame and temperature rises to around 1400° C. The carbon particles burn up completely and as white light is no longer being radiated, the flame at the tip turns bluish.

A physicist, a biologist, and a chemist were going to the ocean for the
physicist saw the ocean and was fascinated by the waves. He said he w
research on the fluid dynamics of the waves and walked into the ocean.
drowned and never returned. The biologist said he wanted to do resear
the flora and fauna inside the ocean and walked inside the ocean.
He, too, never returned. The chemist waited for a long time and
afterwards, wrote the observation,

"The physicist and the biologist are soluble in ocean water."

Dattatreya Ramchandra Kaprekar



Born	17 January 1905 Dahanu, Maharashtra
Died	1986 (aged 80–81) Devlali, Maharashtra

Nationality	Indian
Occupation	School teacher
Known for	Results in recreational mathematics

Dattatreya Ramchandra Kaprekar (1905–1986) was an Indian recreational mathematician who described several classes of natural numbers including the **Kaprekar, Harshad and Self numbers** and discovered the **Kaprekar constant**, named after him. Despite having no formal postgraduate training and working as a school teacher, he published extensively and became well known in recreational mathematics circles.

EDUCATION :

Kaprekar received his secondary school education in Thane and studied at Fergusson College in Pune. In 1927 he won the Wrangler R. P. Paranjpe Mathematical Prize for an original piece of work in mathematics.

He attended the University of Mumbai, receiving his bachelor's degree in 1929. Having never received any formal postgraduate training, for his entire career (1930–1962) he was a school teacher at Nashik in Maharashtra, India. He published extensively, writing about such topics as recurring decimals, magic squares, and integers with special properties. He is also known as "Ganitanand".

DISCOVERIES :

Working largely alone, Kaprekar discovered a number of results in number theory and described various properties of numbers. In addition to the Kaprekar constant and the Kaprekar numbers which were named after him, he also described self numbers or *Devlali numbers*, the Harshad numbers and Demlo numbers. He also constructed certain types of magic squares related to the Copernicus magic square. Initially his ideas were not taken seriously by Indian mathematicians, and his results were published largely in low-level mathematics journals or privately published, but international fame arrived when Martin Gardner wrote about Kaprekar in his March 1975 column of *Mathematical Games* for *Scientific American*. Today his name is well-known and many other mathematicians have pursued the study of the properties he discovered.

KAPREKAR CONSTANT :

In 1949, Kaprekar discovered an interesting property of the number 6174, which was subsequently named the Kaprekar constant. He showed that 6174 is reached in the limit as one repeatedly subtracts the highest and lowest numbers that can be constructed from a set of four digits that are not all identical. Thus, starting with 1234, we have:

4321 − 1234 = 3087, then
8730 − 0378 = 8352, and
8532 − 2358 = 6174

Repeating from this point onward leaves the same number (7641 – 1467 = 6174).

KAPREKAR NUMBER :

Another class of numbers Kaprekar described are the Kaprekar numbers. A Kaprekar number is a positive integer with the property that if it is squared, then its representation can be partitioned into two positive integer parts whose sum is equal to the original number (e.g. 45, since 45^2=2025, and 20+25=45, also 9, 55, 99 etc.) However, note the restriction that the two numbers are positive; for example, 100 is not a Kaprekar number even though 100 =10000, and 100+00 = 100. This operation, of taking the rightmost digits of a square, and adding it to the integer formed by the leftmost digits, is known as the Kaprekar operation. Some examples of Kaprekar numbers in base 10, besides the numbers 9, 99, 999, …, are

Number	Square	Decomposition
703	$703^2 = 494209$	494+209 = 703
2728	$2728^2 = 7441984$	744+1984 = 2728
5292	$5292^2 = 28005264$	28+005264 = 5292
857143	$857143^2 = 734694122449$	734694+122449 = 857143

DEVLALI OR SELF NUMBER :

In 1963, Kaprekar defined the property which has come to be known as self numbers, which are integers that cannot be generated by taking some other number and adding its own digits to it. For example, 21 is not a self number, since it can be generated from 15: 15 + 1 + 5 = 21. But 20 is a self number, since it cannot be generated from any other integer. He also gave a test for verifying this property in any number. These are sometimes referred to as Devlali numbers (after the town where he lived); though this appears to have been his preferred designation, the term self number is more widespread. Sometimes these are also designated *Colombian number*s after a later designation.

HARSHAD NUMBER :

Kaprekar also described the Harshad numbers which he named harshad, meaning "giving joy" (Sanskrit *harsha*, joy + *da* taddhita pratyaya, causative); these are defined by the property that they are divisible by the sum of their digits. Thus 12, which is divisible by 1 + 2 = 3, is a Harshad number. These were later also called *Niven numbers* after 1977 lecture on these by the Canadian mathematician Ivan M. Niven. Numbers which are Harshad in all bases (only 1, 2, 4, and 6) are called *all-Harshad*

numbers. Much work has been done on Harshad numbers, and their distribution, frequency, etc. are a matter of considerable interest in number theory today.

DEMLO NUMBER :

Kaprekar also studied the Demlo numbers, named after a train station 30 miles from Bombay on the then G. I. P. Railway where he had the idea of studying them. The best known of these are the Wonderful Demlo numbers 1, 121, 12321, 1234321…, which are the squares of the repunits 1, 11, 111,1111 …..

PUZZLE 1 : There are 5 houses in a row, each of different colour and inhabitied by 5 persons of different nationalities, with different pets, favourite drinks and favourite sports. Use the clues given below to determine who owns monkey and who drinks water.

1. The Englishman lives in the red house.
2. The Spaniard owns the dog.
3. Coffee is drunk in the green house.
4. The Russians drink tea.
5. The green house is immediately to the right of white house.
6. The hockey player owns hamsters.
7. The football player lives in the yellow house.
8. Milk is drunk in the middle house.
9. The American lives in the first house on the left.
10. The table tennis player lives in the house next to the man with the fox.
11. The football player lives next to the house where the horse is kept.
12. The basketball player drinks orange juice.
13. The Japanese like baseball.
14. The American lives in the house next to the blue house.

ANSWERS :

MATHS PUZZLE 1 :

American drinks water and Japanese owns monkey.

SCIENCE :

Name of the Scientist : ROSALIND FRANKLIN