A DATE WITH PUZZLES

49 INTERESTING LOGICAL PUZZLES

VIKAS GOYAL

Math buff Vikas Goyal put together 2,000-plus equations on the 365 days of the year using basic mathematics
- The New Indian Express

A Date With Puzzles

- 49 Interesting Logical Puzzles

"I am highly impressed with a date with numbers & the way they bring out the mathematical beauty"

- Jiya Shah, (Sharda) in Shakuntala Devi Movie

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"A date with numbers is an amazing & innovative concept to ignite mathematical curiosity"

- RJ Ginnie, Radio City

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"Math buff Vikas Goyal put together 2,000-plus equations on the 365 days of the year using basic mathematics"

-The New INDIAN EXPRESS

"This boy is a genius and brings out mathematical beauty in a unique way"

- RJ Namrata, Red FM

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Dedication

The book is dedicated to my schoolteacher, Mrs. Prafulla Upadhyay.

She taught me the meaning of a teacher and the book is a small gesture of my love & deep respect for her.

Happy Teacher's Day Ma'am

– 5th September, '20

About Author

An eternal math enthusiast, Vikas was the All India Topper for the Management Aptitude Test and secured 10th rank in state level Gujarat Common Entrance Test.

His work has been featured in leading media outlets such as The New Indian Express, Radio City, Red FM & Collaboration with Jiya Shah, who played Sharda in Shakuntala Devi

"A Date with Puzzles" is his second book. The first was "A Date with Numbers". A Senior Manager at an leading e-commerce company in India, Vikas lives in Noida with his family and can be reached at Instagram @adatewithnumbers OR vkas145@gmail.com

Preface

The gateway to the most prestigious careers in India is through cracking the much-feared entrance examination, that rests on four pillars: Mathematics, Reasoning, Language and General Awareness.

If we examine our current curriculum till the 10th standards, we will find mathematics, language and general awareness being taught in every school. However, one subject is noticeably absent in the education of our children during their formative years: Logical Reasoning.

Which begs the question: Why is, something as important as reasoning, absent from our education?

Curious, I spoke to a few friends and seniors from the eminent institutes regarding their views on why reasoning was necessary to be present in formal education.

Unsurprisingly, many of them agreed that reasoning was crucial for decision making, problem-solving and even creativity.

Reasoning can be taught. Reasoning can be learned and practiced to an optimal level of productivity. For the same reason, there are countless resources available on puzzles and other brain teasers, but hardly in recent times, have I encountered a resource purely dedicated to puzzles.

"A Date with Puzzles" does not focus on the conventional puzzles available everywhere. The book tries to make the reader integrate logic with daily life by solving puzzles based on the countless fascinating patterns we find around us

Let us look at some of the undiscovered patterns on our mobile keypad.

The sum of the middle column [2+5+8=15], the sum of the middle row [4+5+6=15] and the sum of both diagonals is also 15.

Such infinite puzzles with thought-provoking patterns can be found all around us in our daily life. Be it a wall clock, an odometer, even in the colours we see. A closer look is all that is needed at the mundane objects around us to find the patterns that exist all around us.

In just 100 pages, the objective of this book is to ignite an interest in reasoning. "A Date with Puzzles" takes a complex subject such as logical reasoning and uncovers the simple fun found in it through fresh puzzles.

This book can best benefit students in the secondary section and aspirants for entrances are the primary audience. However, these puzzles will be useful to all

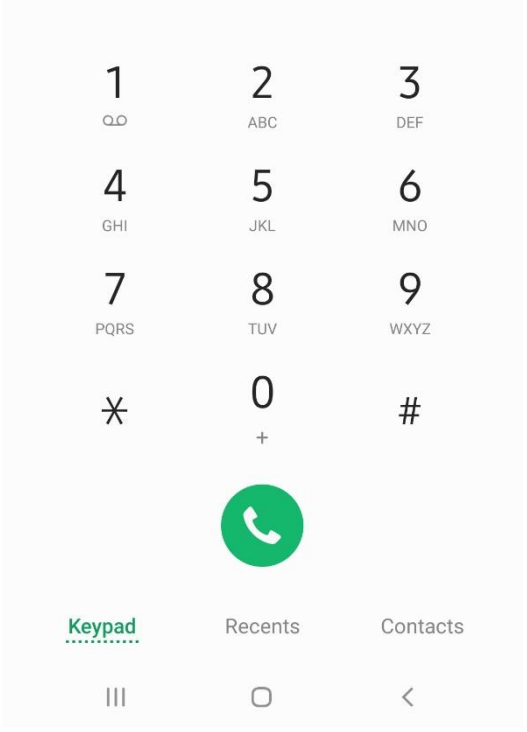
Each puzzle is categorized from one to five stars basis the difficulty level: one being easiest and five being the hardest.

So, come! Let us unbox the beauty of mathematics and logic around us!

-Vikas Goyal, 2020

Keep Ahead [Keypad]

Can you find a special pattern in the following mobile keypad?



Hint: Sum of Digits

Keep Ahead [Keypad]

One of the special patterns

a) Sum of the **middle row** [4+5+6] = 15

b) Sum of the **middle column** [2+5+8] = 15

c) Sum of the **both diagonals** [1+5+9 & 3+5+7] = 15

7 and 11

There is something which is **common** between 7 and 11

1) Both are odd numbers
2) Both are primes

Can you tell me one more?

7 and 11

Answer: Both ends in "even"

7 = S**even**

11 = El**even**

★★★★★

Not Six

Can you complete the following special pattern?

Yes, 6 fits in the pattern. But can you find something out of box pattern?

Hint: Do you drive a car?

Not Six

Answer: 'R' which stands for **Reverse**

Manual car **gears** especially in brands like Tata & Maruti

The Alpha Code

Can you find a special pattern exhibited by the following number?

0236719458

~~Hint~~: All 10 Digits are in a Certain Order

The Alpha Code

Answer: **Reverse alphabetical order**

The number consists of all 10 digits, each being used only once

If we write the numbers and see the first letters, it follows a pattern as below which is **reverse alphabetical in order.**

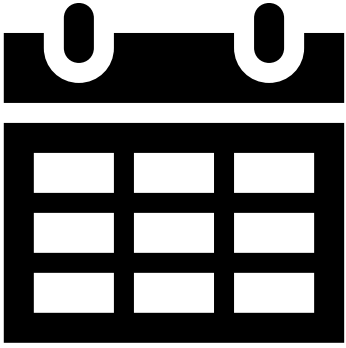
Z, Tw, Th, Si, Se, O, N, Fo, Fi, E.

0 - **Z**ero
1 - **O**ne
2 - **Tw**o
9 - **N**ine
3 - **Th**ree
4 - **Fo**ur
6 - **Si**x
5 - **Fi**ve
7 - **Se**ven
8 - **E**ight

★★☆☆☆

12 Trials Permissible

(Only) One of the 12 months exhibit a special pattern where the **sequence of the month** is equal to the **number of its letters**



Can you find out the special month?

Hint: No, it's not November as it is 9th month and it has 8 letters

12 Trials Permissible

Answer: **September**

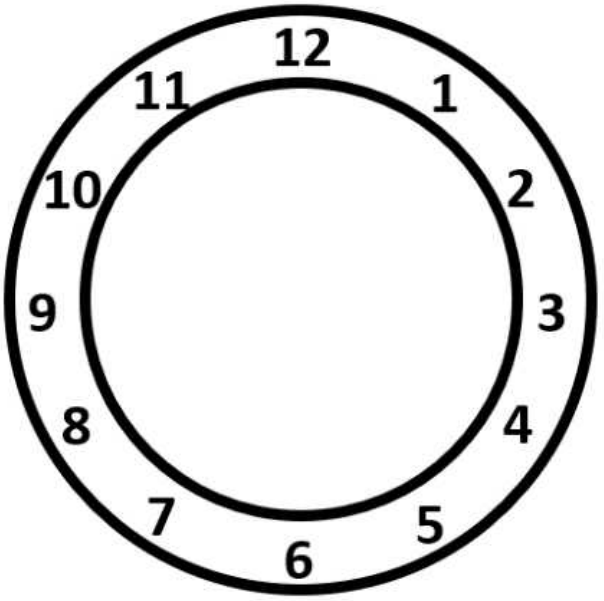
January is the first month and it has 7 letters. Hence, it doesn't exhibit the special pattern where the sequence of the month is equal to the number of its letters

If we try this for all months, then September is the **ONLY** month which exhibits this special pattern

Sequence	Month	Number of letters	Is Sequence = Number of Letters?
1	January	7	No
2	February	8	No
3	March	5	No
4	April	5	No
5	May	3	No
6	June	4	No
7	July	4	No
8	August	6	No
9	**September**	**9**	**Yes**
10	October	7	No
11	November	8	No
12	December	8	No

The Equal Wall Clock

The following figure shows an analog clock.



Can you divide the clock in 2 parts such that the **sum of numbers in each part is equal?**

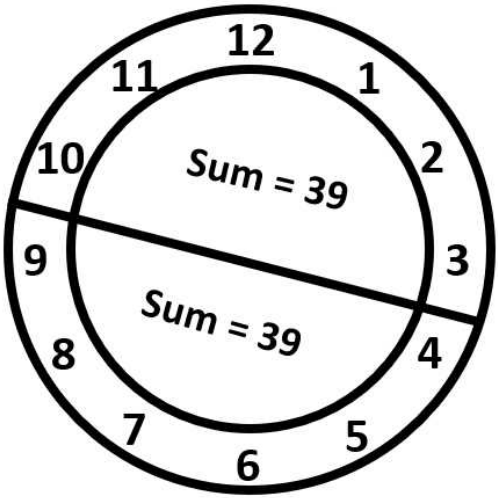
Hint: Sum of all numbers on the clock is 78

The Equal Wall Clock

Sum of all numbers on the clock is 78

⇨ 1 + 2 + 3 + … + 12 = 78

As we need to divide them into two equal parts, sum of each must be 39



1st Part: 10 + 11 + 12 + 1 + 2 + 3 = 39

2nd Part: 4 + 5 + 6 + 7 + 8 + 9 = 39

Car Number: 1369

Following car has number: DL xx xx 1369.

There is something which is very peculiar about **1369**

Can you find it out?

Hint: Perfect square is peculiar

Car Number: 1369

Answer: It is the **only 4-digit perfect square who digits are in increasing order**

1369 is a **perfect square**

⇨ $37^2 = 1369$

Plus, the digits of **1, 3, 6, and 9 are in ascending order**

$$6 + 4 = \text{Ten}\text{dulkar}$$

Can you find odd one out?

16,

25,

36,

49,

64,

81

Hint: Answer is not odd

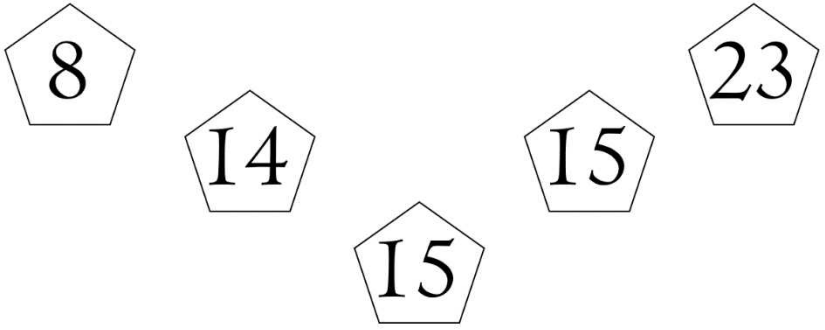
6 + 4 = Tendulkar

Answer: **64**

It is the only 2-digit perfect square whose both digits are **even**

High Five

What is something interesting about the following 5 friends?



Can you find it out?

Hint: Think about centre of gravity

High Five

Answer: Mean, Median, Mode and Range of the given 5 numbers is 15

- Mean (average) = (8+14+15+15+23)/5
- Median = 15
- Mode = 15
- Range = 23 – 8 = 15

Weight of 11 Months Old

Husband: "I want to know the weight of our baby, but he is too small to stand on a weighing machine"

Wife: "I have an idea. You will be able to find out approximate weight of him."

Can you tell what was that idea?

Hint: Form 2 equations and solve

Weight of 11 Months Old

Let's assume weight of baby is x units and weight of husband is y units

Step 1: Husband takes baby in his arms and take measurement

⇨ x + y units

Let's assume x + y is 68.3 units ---- (1)

Step 2: Husband gives baby to wife and measures only his weight

Let's assume y = 61.2 units-----(2)

Solving (1) and (2), gives weight of the baby as 7.1 units

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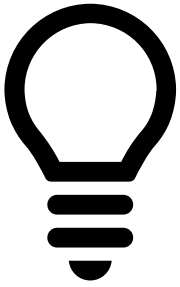
Eighty-Nine

Can you find the value of a and b such that?

(a and b are positive integers)

$$89 = a^1 + b^2$$



~~Hint~~ Hit & Trial

Eighty-Nine

Answer: a = 8, b = 9

The only possible value of b is 9

$$89 = 8^1 + 9^2$$

Inequality

Fill in the blanks [>, < or =]

$1^6 \_\_ 6^1$

$2^4 \_\_ 4^2$

$3^2 \_\_ 2^3$

Hint: Calculate

Inequality

$$I^6 < 6^I$$

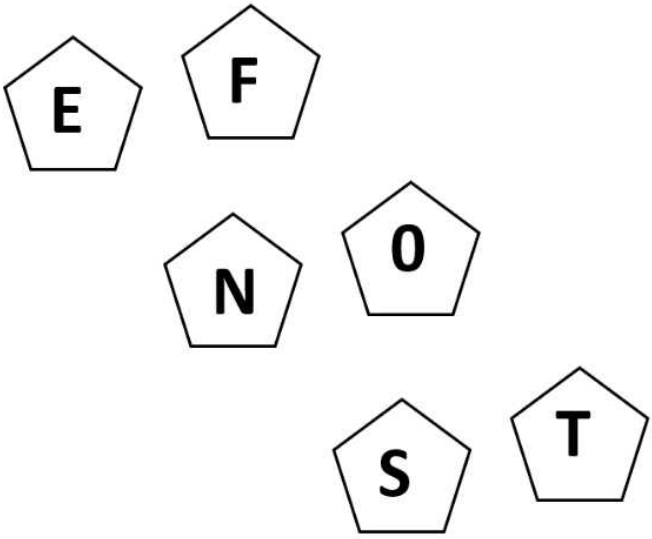
$$2^4 = 4^2$$

$$3^2 > 2^3$$

Special Six

You would have heard about the 5 special alphabets: the vowels - A, E, I, O and U

Similarly, there is something special about the following 6 alphabets



Continuous pair? No, something more

~~Hint~~: Start counting from one

Special Six

Answer: The only possible initials when we write 1 to 99

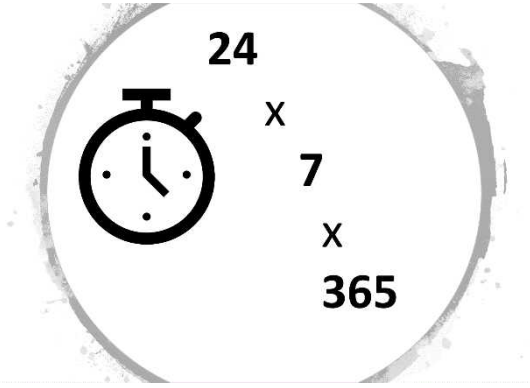
One, **T**wo, **T**hree, **F**our, **F**ive, **S**ix, … and so on

The initials consist of only six letters

E, F, N, O, S and T

24 x 7 x 365

Many brands use the communication about 24 hours a day, 7 days a week and 365 days a year



What is special about the number 24 x 7 x 365, mathematically?

Hint: Look at the digits

24 x 7 x 365

Answer: While writing 24 x 7 x 365, all digits from 2 to 7 are used once each

If we write all digits of 24 x 7 x 365 in ordered form, then it will be

2, 3, 4, 5, 6 and 7

★★☆☆☆

Time is 16:49

The digital clock is displaying time as **16:49**

The number exhibits some pattern which happens only once a day between 10:00 and 24:00 hours

What is so special about this time?

Hint: Back to Square One

Time is 16:49

Answer: HH, HM and MM; all three are perfect squares

If we write 16:49 [HH:MM] as 1649

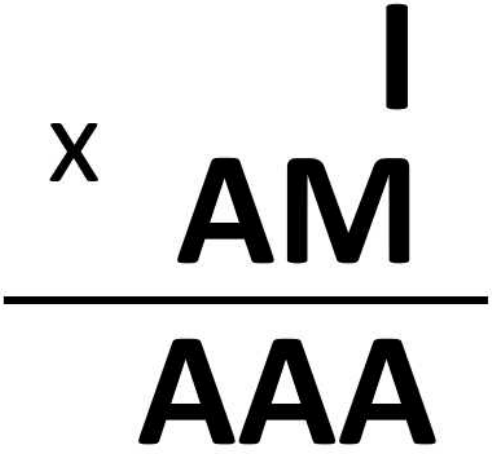
a) 16 is a perfect square
b) 64 is a perfect square
c) 49 is a perfect square

This happens only once between 10:00 and 24:00 hours.

★★★★☆

What Am I?

Each letter represents a unique and a positive digit.



Can you solve it?

Hint: Start Backwards

What Am I?

Answer: A = 3, I =9 and M = 7

Each letter represents a unique and a positive digit

We will approach it backwards from AAA

AAA = I * AM

It means the answer can be 000, 111, 222, till 999

000 is not possible as each letter is a positive digit

111 = 3*37 [Not possible as 'I' and 'A' can't be same]

222 = 6*37 [Not possible] OR 74*3 [Not Possible]

333 = 9*37

The above equation gives unique values

A = 3, I =9 and M = 7

Fortunate Number

(Only) One positive integer exhibit a special pattern where the **sequence of the number is equal to the number of its letters**

Can you find it out?

~~Hint~~: Fortunate

Fortunate Number

Answer: 4

I is the first positive integer and it has 3 letters. Hence, it doesn't exhibit the special pattern where the sequence of the number is equal to the number of its letters

If we continue this for next numbers, then we will find that 4 has four letters

Sequence	Number	Number of letters	Is Sequence = Number of Letters?
1	One	3	No
2	Two	3	No
3	Three	5	No
4	Four	4	Yes
5	Five	4	No
6	Six	3	No
7	Seven	5	No
8	Eight	5	No
9	Nine	4	No
10	Ten	3	No
11	Eleven	6	No
…	…	…	No

Section 144

Section 144 of the Criminal Procedure Code (CrPC) of 1973 is an order to prohibit the assembly of four or more people in an area[1]

There is something special about 144, mathematically.

Can you think about it?

Yeah, 144 is a perfect square of 12. Some more please.

~~Hint~~: More Squares

1 - Wikipedia

Section 144

A) If we **reverse** Left Hand Side, Right Hand Side also gets reversed

$12^2 = 144$

$21^2 = 441$

B) **Sum** of digits is a perfect square [1 + 4 + 4 = 9]

C) **Product** of digits is a perfect square

[1 x 4 x 4 = 16]

If we write 144 as **One** Hundred and **Forty-Four**

i) **One** is the only number which can be written in reverse alphabetical order

ii) **Forty** is the only number which can be written in alphabetical order

iii) **Four** is the only number which is equal to its number of letters

★★☆☆☆

Complete the series

1,

2,

9,

730,

?

Hint: Cube

Complete the series

Answer: 389017001

Logic is cube of the number + 1 (n^3+1)

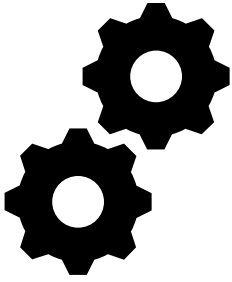
Number	Cube	Next Term (Cube + 1)
1	1	2
2	8	9
9	729	730
730	389017000	389017001

Majestic Month

If we write a date in DD/M, format then you get the following interesting equation for all dates of the entire month

$$DDM = DD \times M + DD + M$$

The above equation is true for only one month.



Can you find out the majestic month?

Hint: Plug and Play

Majestic Month

Answer: **September**

Let's take 14th September and if we write the date as 14/9 (DD/M) format, then

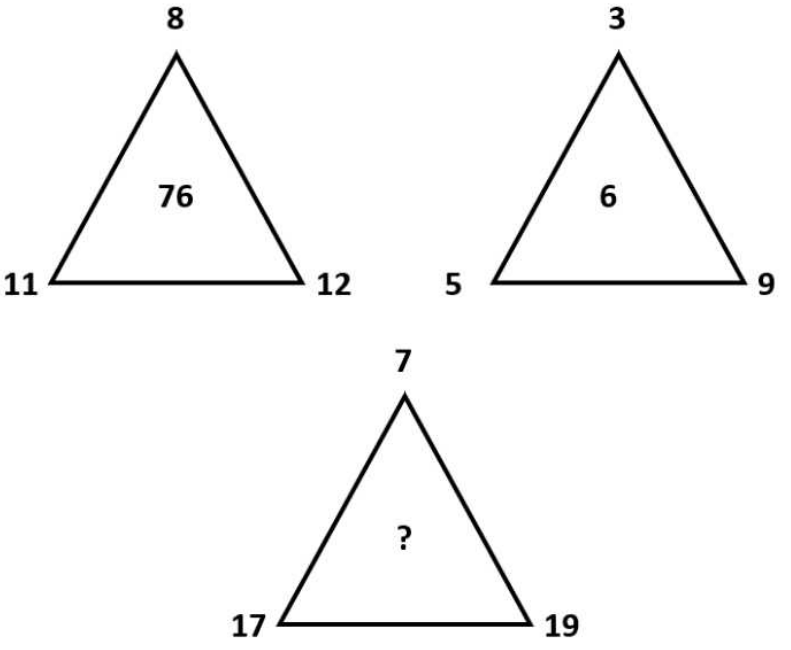
149 = 14 x 9 + 14 + 9

The same is true for all dates of the month.

Let's take one more as 20th September

209 = 20*9 + 20 + 9

Three Triangles



Can you solve the bottom triangle?

Hint: Basic Arithmetic operations

Three Triangles

Answer: 100

- ⇨ (17 x 7) – 19 = 100
- ⇨ Logic: Product of 2 smaller numbers – highest number

First Triangle

- ⇨ (11 x 8) – 12 = 76

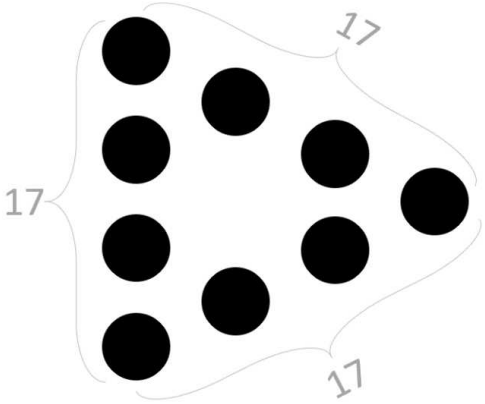
Second Triangle

- ⇨ (5 x 3) – 9 = 6

9 Navratnas

There are 9 navratnas (*gems*) in the court of emperor Akbar and each navratna represents unique digit from 1, 2, 3, 4, 5, 6, 7, 8 and 9

They are seating in the following arrangement making a symbol of "play" button such that all four ratnas on each side adds to 17.

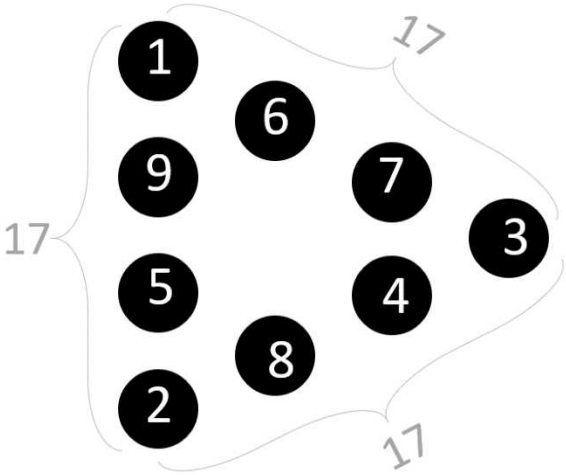


Can you find their unique digit?

Hint: Form and solve 3 equations

9 Navratnas

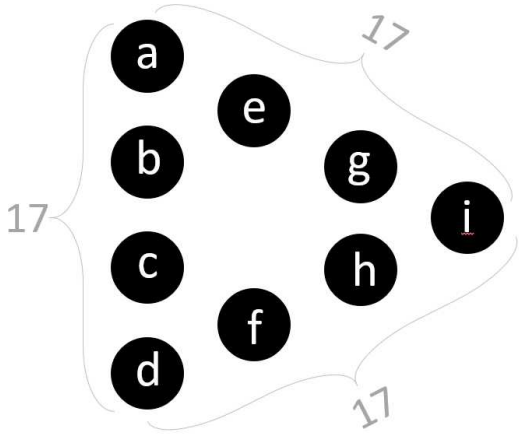
Following is one of the **multiple possible** solutions



Let's assume each digit from 1 to 9 as 'a' to 'i' and form 3 equations each adding to 17

- ⇨ a + b + c + d = 17 -----(i)
- ⇨ a + e + g + i = 17 -----(ii)
- ⇨ d + f + h + i = 17 -----(iii)

- ⇨ a + b + c + d + e + f + g + i + (a+d+i) = 51



[adding LHS and RHS]

Since each of 'a' to 'i' represents 1 to 9, solving the above equation

1 + 2 + 3 + 4 + 5 + 6 + 7 + 8 + 9 + (a+d+i) = 51

45 + (a+d+i) = 51

a+d+i = 6 -------- (iv)

The only possible solution for (iv) is 1+2+3 = 6

Hence, one of the multiple possible solution is a = 1, d = 2 and i = 6

The Missing Number

Can you find the missing number?

3	9
7	12
4	8
2	5
4	6
?	1

Hint: Check the difference

The Missing Number

Answer: 0

Take the difference of 2nd Column from 1st Column

Difference follows a pattern: 6, 5, 4, 3, 2, 1 and 0

1st Column	2nd Column	Difference (2nd – 1st)
3	9	**6**
7	12	**5**
4	8	**4**
2	5	**3**
4	6	**2**
0	1	**1**

Last Minute

It often happens that we keep watching the clock when it is about to strike 00:00 hours so we wish our loved ones a happy birthday. 23:59 is the last minute of the day.

The time **23:59 has one more speciality mathematically.**

Can you think about it?

Hint: Prime Time

Last Minute

When we write the time in HH:MM format, we get a time when **all four digits are prime individually**

At 23:59, all 4 digits [2, 3, 5 and 9] are prime, and it is **largest possible number** possible in HH:MM format

- ⇨ Also 23 and 59 both are primes
- ⇨ 2 + 3 + 5 + 9 = 19 is also prime!

Prime time before we wish our loved ones!

Special Sum

SUM is a 3-digit number with each digit representing a non-zero unique digit.

SUM is a special number with the following two properties related to sum

- ⇨ SUM = SU + UM + MS
- ⇨ SUM = SS + UU + MM

$$\begin{array}{r} SS \\ UU \\ +\ MM \\ \hline SUM \end{array}$$

Can you find this special SUM?

~~Hint~~: Answer has to be less than 300 as it consists of three 2 digit numbers

Special Sum

Answer: 198

- ⇨ 198 = 19 + 98 + 81
- ⇨ 198 = 11 + 99 + 88

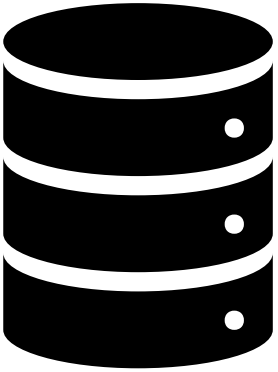
Since SUM consists sum of three 2-digit numbers, it can't be more than 300

By solving the equation SUM = SS + UU + MM, we will get 198 as the answer

Captivating Cube

PQR is a 3-digit number such that

$$(P + Q + R)^3 = PQR$$



Can you find the captivating cube?

Hint: Hit & Trial

Captivating Cube

Answer: 512

PQR = 512

⇨ $(5+1+2)^3 = 512$

Sum of Digits	Number	Cube
1+2+5 = 8	5	125
2+1+6=9	6	216
3+4+3=10	7	343
5+1+2=8	8	512
7+2+9=18	9	729

WAR of 16:9

16:9 is **WAR** (**W**idescreen **A**spect **R**atio) mostly used for televisions and computer screens

What is special* about the number 16:9?

Hint: Square

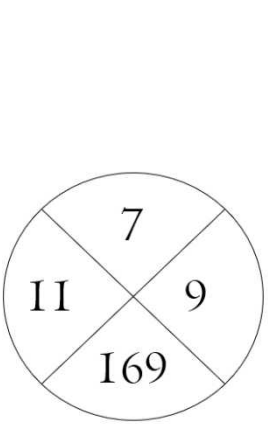
*Non technical

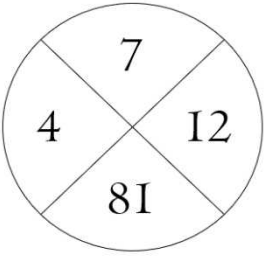
WAR of 16:9

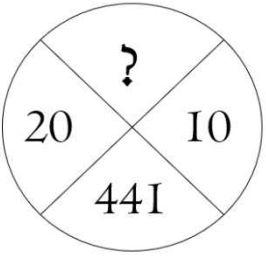
- 16 & 9 both are perfect squares
- 16 + 9 = 25 is a perfect square
- 16*9 = 144 is a perfect square
- 169 is a perfect square
- 961 (reverse of 169) is a perfect square
- 196 (re-order of 169) is a perfect square
- 169 = 16*9 + 16 + 9

Missing Mark

Can you find the value of missing mark?







Hint: Can you see a square in the circle?

Missing Mark

Answer: 9

- ⇨ Square of $[(11 + 9) - 7] = 169$
- ⇨ Square of $[(4 + 12) - 7] = 81$
- ⇨ Square of $[(20 + 10) - 9] = 441$

AP = GP

Arithmetic Progression = Geometric Progression

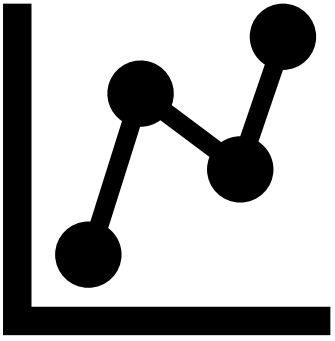
Can you find a series which is both AP and GP?

Example of AP

2,5,8,11 (common difference of 3)

Example of GP

2,4,8,16 (common ratio of 2)



~~Hint~~: Neither Prime nor Composite

AP = GP

Answer: Many solutions exist.

One of them is

I, I, I

(any series with same number getting repeated a, a, a)

I, I, I... is in AP with common difference of 0

I, I, I…is in GP with common ratio as I

Tantalizing Truck Number

A truck had a unique last 4-digit number.

$$pqrs = (p + q + r + s)^4$$

Can you find this unique and interesting number?

Hint: Write down the number and their respective 4^{th} power

Tantalizing Truck Number

Answer: 2401

⇨ $2401 = (2 + 4 + 0 + 1)^4$

If we take 4^{th} power of numbers, then only 4 numbers follow the required equation

⇨ 1296

⇨ 2401

⇨ 4096

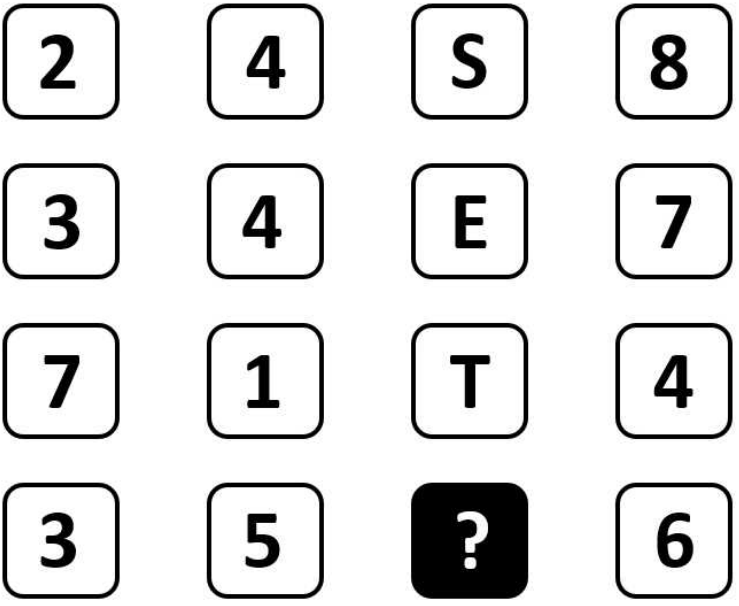
⇨ 6561

Out of 4, the equation holds true only for 2401

Number	4^{th} Power	Remarks
5	625	3 digits
6	**1296**	**4 digits**
7	**2401**	**4 digits**
8	**4096**	**4 digits**
9	**6561**	**4 digits**
10	10000	5 Digits

SET ?

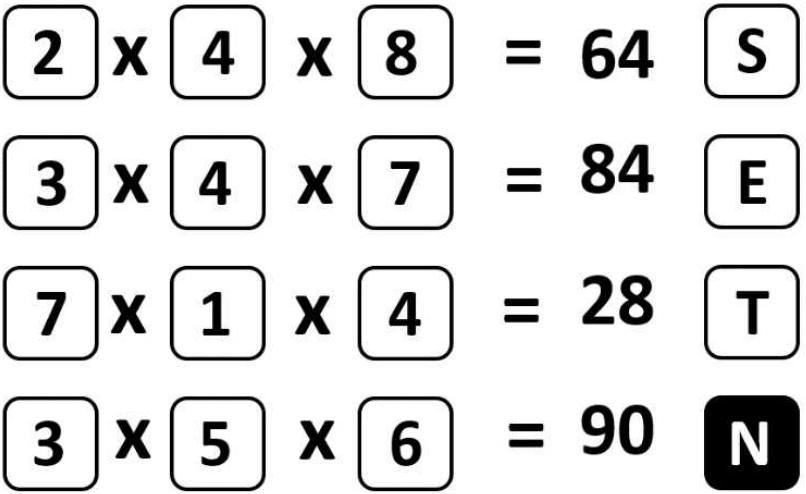
Find the missing number



Hint: Multiply

SET ?

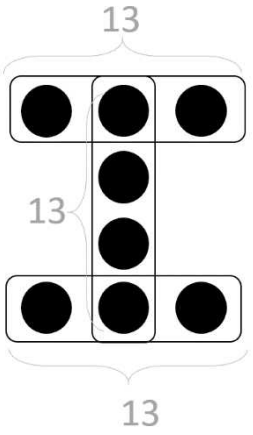
Answer: N for Ninety



I for India

The following shape represents 8 circles organized in a shape of 'I'

Each circle represents a distinct digit from 1 to 8

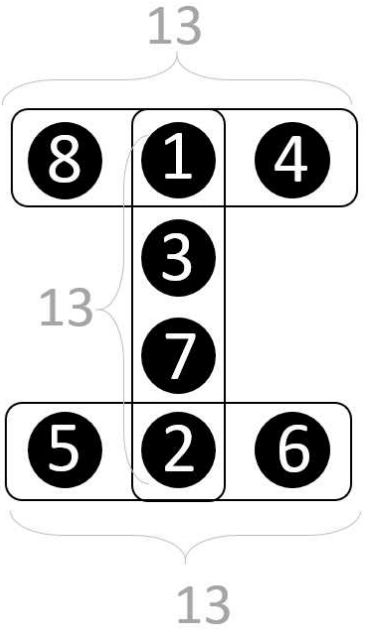


Can you arrange 8 digits such that sum of each highlighted circle is 13?

Hint: Form and solve 3 equations

I for India

Following is one of the **multiple solutions**



We can assign variables to each of the 8 circles and form the following equation

- ⇨ a + b + c = 13
- ⇨ b + d + e + g = 13
- ⇨ f + g + h = 13

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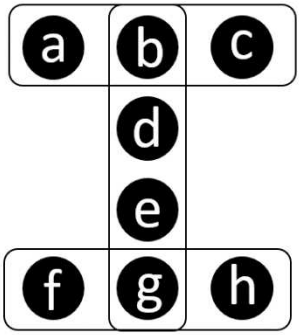
a + b + c + d + e + f + g + h + (b+g) =39



Since, 'a' to 'i' are 1 to 8, the above equation becomes

- ⇨ 1+2+3+4+5+6+7+8+ (b + g) = 39
- ⇨ 36 + (b + g) = 39
- ⇨ b + g = 3

  Only possible solution is

- ⇨ 1 + 2 = 3

Hence, b can be either 1 or 2 and we can get the respective values of other

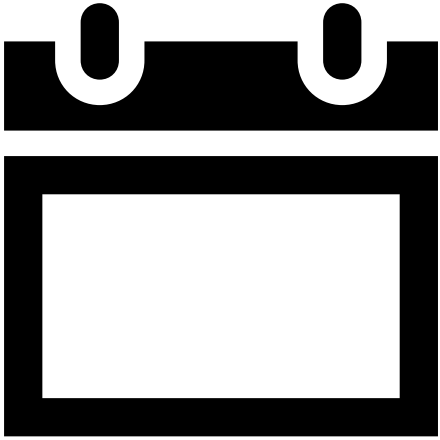
★★☆☆☆

14th March

14th February = Valentine's Day

14th November = Children's Day

14th March ?



Hint: MM/DD

14th March

Answer: Pi Day

If we write March 14 as MM/DD, then it becomes 3/14, the first three digits of value of Pi

Hence, it is celebrated as **Pi Day**

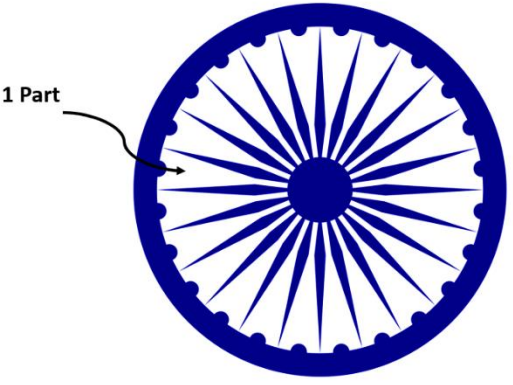
14th March is also the birthdate of

A) Albert Einstein

B) Father of Vedic Mathematics - Jagadguru Shankaracharya Shri Bharati Krishna Tirthaji Maharaja

The Ashoka Chakra

Ashoka Chakra is a depiction of Dharma Chakra; a wheel represented with 24 spokes.



Can you tell how many parts it has?

Hint: One diameter divides the circle in 2 parts

The Ashoka Chakra

Answer: 24

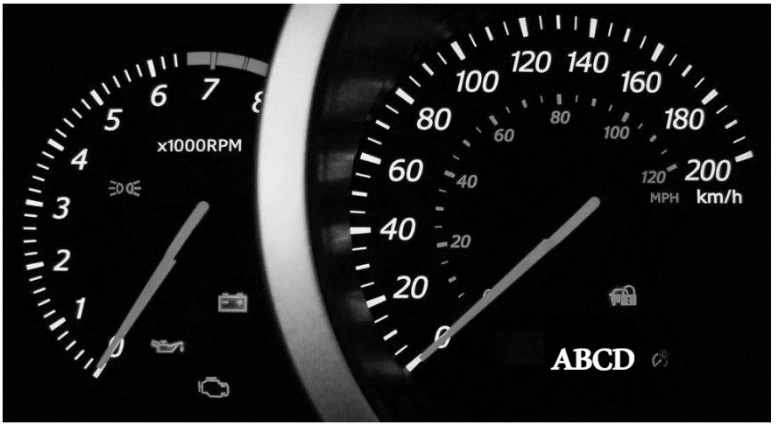
It's neither (n-1) nor (n+1)

An analog clock divides the circle in 12 parts

Owsome Odometer

An odometer is displaying a special number ABCD which is a 4-digit number and a perfect square.

Palindrome of ABCD (If we reverse it to DCBA), it is also a perfect square.



$ABCD^2$ & $DCBA^2$ both are perfect squares

Only one such pair exists; can you find this special number?

Hint: Start from Last 2 Digit of Perfect Square

Owsome Odometer

Answer: 1089 and 9801 is only such pair

- ⇨ $33^2 = 1089$ and
- ⇨ $99^2 = 9801$

For a perfect square, last 2-digits must be either

01, 04, 09, 16, 25, 36, 49, 64, 91 [Can't be 00 as it is 4-digit number]

If we take 01 as last two digits, then by reverse we get 10 as first 2 digit and plugging 89, we get 1089 as perfect square. Check the reverse, we get 9801.

Straight Forward Series

Can you complete this simple series?

64,

16,

32,

8,

16,

4,

?

Straight Forward Series

Answer: 8

Divide by 4, Multiply by 2

64, 16, 32, 8, 16, 4, 8

Series to be Noted

Following is a special series of something which we use in our routine life

117,

123,

129,

135,

142,

146,

150,

?

Hint: Money will help not math

Series to be Noted

Answer is **166**.

The series consists of the **width*** (dimension) of the existing Indian currency

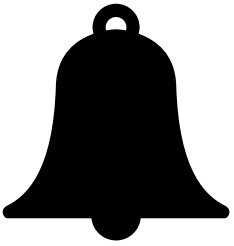
Value (₹)	Width (mm)
₹5	117
₹ 10	123
₹ 20	129
₹ 50	135
₹ 100	142
₹ 200	146
₹ 500	150
₹ 2000	166

*Wikipedia: Indian Currency and Reserve Bank of India

Unusual Equation

Can you write an equation showing 9 minus I is equal to 10?

$$9 - I = 10$$



Hint: Rome was not built in a day

Unusual Equation

Answer: IX – I = X

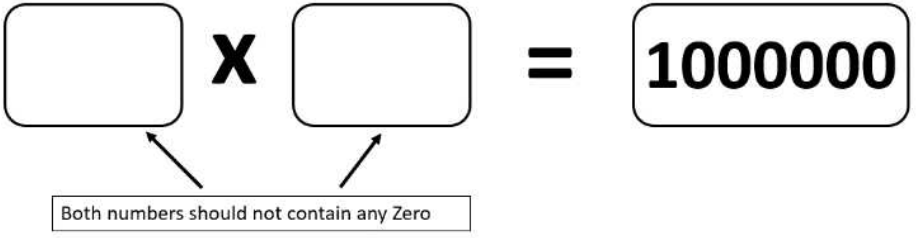
When written in roman,

9 = IX, 1 = I and X = 10

A Million Rupee Question

Can you complete the following equation?

L.H.S of the equation doesn't contain any zeroes



~~Hint~~: 2x5 = 10

A Million Rupee Question

Answer:

64 X 15625 = 1000000

Logic is as below

2^1 x 5^1	2 x 5	10
2^2 x 5^2	4 x 25	100
2^3 x 5^3	8 x 125	1000
2^4 x 5^4	16 x 625	10000
2^5 x 5^5	32 x 3125	100000
2^6 x 5^6	64 x 15625	1000000

A to Z

Can you complete the series?

A,

D,

G,

J,

M,

P,

T,

?

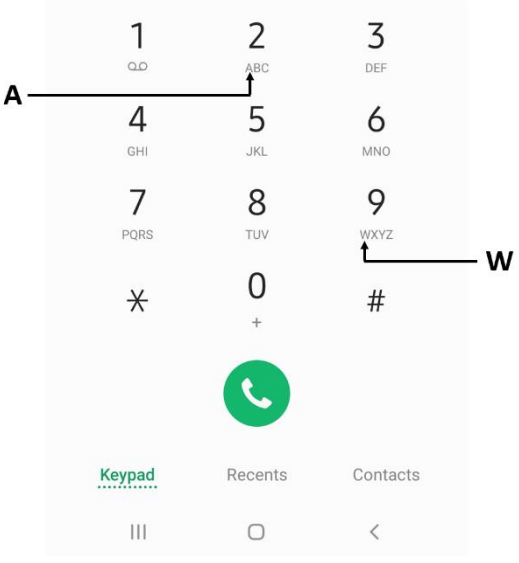
Hint: Mobile

A to Z

Answer: W

The pattern consists of I[st] letter of the alphabets shown on the mobile keypad

A, D, G, J, M, P, T, **W**



Solve Time

Each letter represents a distinct positive integer

$$\begin{array}{r} TIME \\ \times \quad 4 \\ \hline EMIT \end{array}$$

Can you solve the equation?

Hint: Form and solve the equation

Solve Time

Answer: 2178 x 4 = 8712

- ⇨ TIME x 4 = EMIT
- ⇨ (1000T + 100I + 10M + E) * 4 = 1000E + 100M + 10I +T
- ⇨ 4000T + 400I + 40M + 4E = 1000E + 100M + 10I +T
- ⇨ 4000T – T + 400I -10I + 40M -100M + 4E – 1000 E = 0
- ⇨ 3999T + 390I – 90 M – 996 E = 0

Since T has be less than 2500, it can be 1 or 2. T has to be even, hence value of T = 2.

By solving, we get 2178 x 4 = 8712

Special Seven

Following represents a beautiful pattern.

R,

O,

Y,

G,

B,

I,

?

Hint: It's in the title itself

Special Seven

Answer: V

Reverse of the famous VIBGYOR

V – Violet

I – Indigo

B – Blue

G – Green

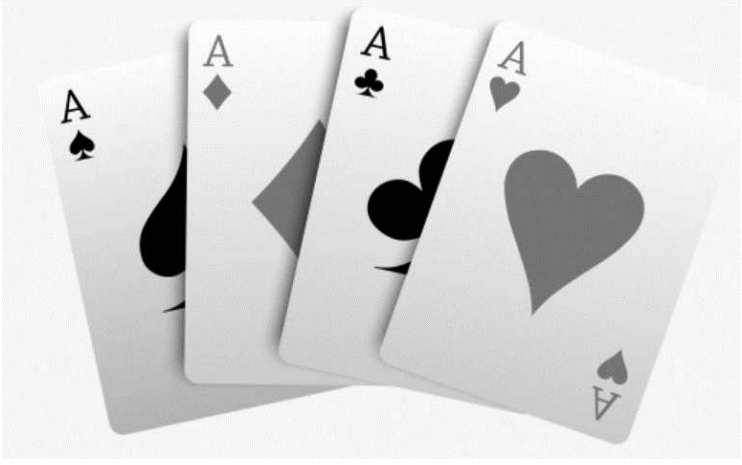
Y – Yellow

O – Orange

R - Red

The 4 Aces

If the value of each Ace is 1, then can you get 100 by using 4 aces (All mathematical operations are allowed)



Hint: Division

The 4 Aces

Answer

11/.11 = 100

P for Play

The answer might be easy to identify, but can you tell the logic?

R,

K,

B,

Q,

K,

B,

K,

?

Hint: Game

P for Play

Answer: R

The series consists of arrangement of pieces in Chess

Rook, Knight, Bishop, Queen, King, Bishop, Knight and Rook

★★★★★

What's the Time?

A 24-hour digital clock is displaying the time as 16:40

Can you find what is something peculiar about this time?

Hint: Find nth minute

What's the Time?

Answer: 1000th minute of the day

There are 24 x 60 = 1440 minutes in a day

At 16:40, 999 minutes have past for the day starting midnight – 00:00

Without Using Formula

Can you find the average of the following without using the formula of average?

18	36	23	32	17
32	34	19	28	29
22	21	36	34	20
26	20	25	30	21
28	19	35	23	18

Hint: Assume average

Without Using Formula

Answer: 26

Step 1: Let's assume average as 25 [You can choose any number preferably which falls in the range]

Step 2: We will take difference of each observations from the assumed average – 25 and note down the difference

-7	11	-2	7	-8
7	11	-6	3	4
-3	-4	11	9	-5
1	-3	0	5	-4
3	-6	10	-2	-7

Step 3: Take the sum of all observations in the above table which comes as 25

Step 4: Divide the sum by number of observations which comes to be 1

Step 5: Average is assumed average + sum

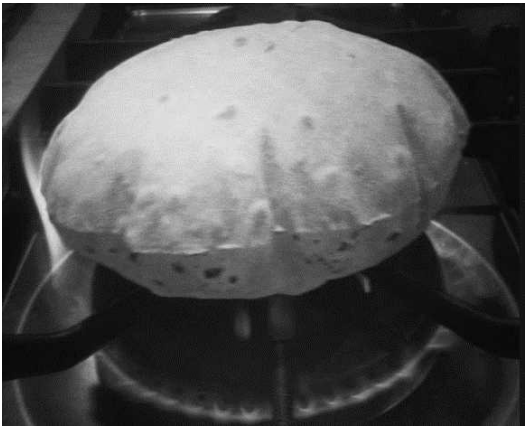
⇨ 25 + 1 = 26

Radius of Roti

Husband, who wants to reduce weight, asked his wife to reduce the number of rotis from 5 to 4

Wife thought of playing a prank. She reduced the number of rotis as asked but increase the radius and width of rotis slightly; say 8% each

Assuming the shape of roti to be constant and circular, what is approximate net change % in the amount of roti consumed by husband?



Hint: Volume of cylinder

Radius of Roti

Answer: Increase by ~1%

Let us assume the radius (r) and width (h) of roti to be 10 units and new radius be R and new width be H

Old Volume = No. of Rotis x $\pi r^2 h$

- ⇨ 5 x π x 10 x 10 x 10
- ⇨ 5000 π

New Volume = No. of rotis x $\pi R^2 H$

- ⇨ 4 x π x 10.8 x 10.8 x 10.8
- ⇨ 5039 π

% Change = [(New – Old)/Old] x 100

- ⇨ ~1%