

31 JANUARY

Tuesday

2017

MATHEMATICS - TRICKS

1) SQUARE OF A NUMBER.

a) square of a 2-digit no.

$$(42)^2$$

$$16 \mid 16 \mid 4$$

$$176 \mid 4$$

- Steps:
- 1) Divide 42 into 3 branches.
 - 2) Left most branch shows the square of the leftmost number.
 - 3) Rightmost branch shows the square of the rightmost number.
 - 4) Middle branch shows the multiplication of three numbers.

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5) Divide the answer that you get from the three branches into 3 slots.
eg: $16 \mid 16 \mid 4$.

Now, in the unit's place, write the rightmost number 4. In the ten's place, write 6 and carry forward 1. In the hundred's place, write $16 + 1 = 17$.

2

b) Similarly, find the square of 67.

Thursday

$$(67)^2$$

$$36 \mid 84 \mid 49$$

$$4489$$

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- Friday 2017
c) Alternative method for the square of a 2-digit no.

$$\begin{array}{r}
 (h^2)^2 = \\
 h^2 = 16 \\
 \times 1 \\
 \hline
 16 \\
 \end{array}
 \quad
 \begin{array}{r}
 2^2 = 04 \\
 6 \times \\
 \hline
 64 \\
 \end{array}
 \quad
 \begin{array}{r}
 = 1764 \\
 \hline
 \end{array}$$

4 sticks

Saturday

- Saturday

 - 1) Divide 62 into 2 branches -
 - 2) Leftmost branch gives the square of the leftmost number.
 - 3) Rightmost branch gives the square of the rightmost number.
 - 4) Now, $4 \times 2 \times 2 = 16$.
Write this as below leaving the leftmost & the rightmost position. You have to write 16 in the middle.
 - 5) Add the numbers.

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$$d) (67)^2$$

$$6^2 = 36$$

$$7^2 = h^q$$

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89

= 144 89

You got 84 by $(6 \times 7 \times 2)$.

e) Another method for
the square of a 3 digit
no.

6

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$$(x^2)^2$$

Step: Give them
an 2×2 digit. Draw
 $a(2 \times 2)$ table.

	1	0
4	6	8
2	0	0

- | | | | | | |
|---|---|---|---|---|---|
| | 1 | 6 | 0 | 8 | |
| 4 | | | | | 1) Write 3r 2 row with
9 column with |
| 2 | 0 | 0 | 8 | 4 | 2) Multiply row 1 x
Column 1, row 2 x
column 1 & so on. |

1 | 0 + 6 + 4 | 8 + 8 | 27 | 176

= 1 | 6 | 16 | 4 = 176

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- 3) draw the crossed lines
 2) suppose in row 1 & column 1 for $h \times h = 16$, write 1 in the upper slot & 6 in the lower slot.
 5) similarly for row 1 & column 2 for $h \times 2 = 08$, write 0 in the upper slot & 8 in the lower slot.
 6) you have to express 8 as 08 since it is a (2×2) slot.

8 total

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- 7) Finally, add the numbers diagonally.

eg:

$$\begin{array}{r} 0+6+0 \quad | \quad 8+0+8 \\ \hline 1 \quad 6 \quad | \quad 6 \end{array}$$

$$= 1 \underline{\underline{7}} 6 4$$

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Friday:

- 1) 97 is close to 100 . So, add 3 & subtract 3 to balance the equation.
- 2) Calculation becomes much easier.
- 3) $(97+3) = 100$ & $(97-3) = 94$
 So, 94×100
 $= 9400$.
- 4) Add $3^2 = 9$ to 9400
- 5) Answer is 9409 .

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- f) Another method for finding the square of a number.
- $$\begin{array}{r} 97^2 \\ 97 \times 97 \\ (+3) \quad (-3) \end{array}$$

$$\begin{aligned} &= 100 \times 94 \\ &= 9400 \\ &= 9400 + 3^2 \\ &= 9409 \end{aligned}$$

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g) square of a 3-digit number ²⁰¹⁷

$$(143)^2$$

$$= (14 \mid 3)^2$$

$$\begin{array}{r} 196 \\ \times 3 \times 2 \\ \hline 84 \end{array}$$

$$3 \times 3 = 9$$

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Sunday

$$\begin{array}{r} 196 \mid 84 \mid 9 \\ 20449 \end{array}$$

8thly:

- 1) Divide 143 into 2 numbers
14 93.
- 2) The leftmost branch gives the square of the leftmost number 12^2 .
- 3) The rightmost branch gives the square of the rightmost number 3^2 .

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n) the middle branch gives $14 \times 3 \times 2 = 84$.

5) Now, the answer that you get has to be divided into slots.

$$196 \mid 84 \mid 9$$

The unit's place is 9.

The ten's place is 4 because 8 is carried forward.
The hundred's place becomes $196 + 8 = 204$.

6) So, the answer is 20449.

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h) Alternative method.

$$(143)^2$$

$$14^2 = 196 \quad \cancel{4} \cancel{3} \cancel{0} \quad 3^2 = 9$$

So, we get $\begin{array}{r} 196 \\ \times 3 \\ \hline 588 \end{array}$

$$\begin{array}{r} 196 \\ \times 3 \\ \hline 588 \end{array}$$

$$\begin{array}{r} 196 \\ \times 3 \\ \hline 588 \end{array}$$

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$$\begin{array}{r} 196 \quad 09 \\ \times 8 \quad 4x \\ \hline 204 \quad 49 \end{array}$$

steps:

- 1) Divide 143 into 2 branches
 $14/3$.
- 2) Leftmost branch gives
 $14^2 = 196$
- 3) Rightmost branch gives
 $3^2 = 09$.

16 3) Rightmost branch gives
 $3^2 = 09$.

Thursday you have to exchange 9
by 09

- 4) And now multiply
 $14 \times 3 \times 2 = 84$ and write it below the number in such a way that the rightmost position is empty.
- 5) Finally, add the numbers.

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15 16 17 18 19 20 21		22	23	24	25	26	27	28	29	30	31	-	-	-	-

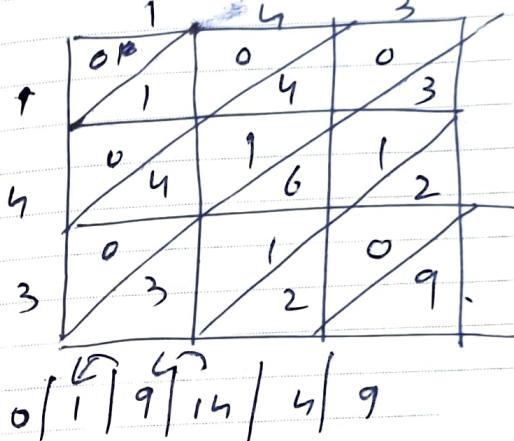
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i) Another method $(143)^2$.



0/1/9/1/4/1/4/1/9

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20449

Rows are horizontal

Columns are vertical

If 9 write (3×3) , it means there are 3 rows 9 in columns

steps: 1) Since there are 3 digits in 143, draw a (3×3) table.

2) Write 1, 4, 3 on the outside of row 9 column.

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- 3) Multiply 9 with the values in the table -

For eg: in the 1st row 9 is at column, we get $1 \times 1 = 01$. 1 is to be expressed as 01.

write 0 in the top slot and 1 in the bottom slot.

- 20 4) After multiplication add the numbers diagonally.

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For eg: in the lower diagonal, it is 9 and in a diagonal above that $2+0+2=5$ and so on.

- 5) After doing addition of 9 writing it slot with you get the number?

0|1|9|14|4|9.

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write 9 as it is in the ~~top~~ rightmost position. Before that, write 0 as it is and now for 14, write 4 and carry 1 to the next slot. Then $0+1=1$, so write 0 & carry 1 to the next slot. $1+1=2$
So, The answer is 20,449.

- j) Another method.

$$(197)^2$$

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Wednesday

$$197 \times 197$$

$$\begin{array}{r} + \\ (3) \end{array} \quad \begin{array}{r} - \\ (3) \end{array}$$

$$= 200 \times 194$$

$$= 38800 + 3^2$$

$$= 38800 + 9$$

$$= 38809$$

=====

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Style :

- 1) Now 197 is close to 200
- 2) So, we add & subtract 3 for 6 digits.
- 3) After that, we can easily multiply with 200.
- 4) Add 3^2 to the answer.

24 a) met it.

Friday

Square of a Decimal number

- 1) $(0.067)^2$.
Forget about the decimal point

$$\begin{array}{ccc}
 & 67 & \\
 6^2 = 36 & & 7^2 = 49 \\
 & 6 \times 7 \times 2 = 84 &
 \end{array}$$

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So, we get

$$\begin{array}{r}
 36 \quad | \quad 84 \quad | \quad 49 \\
 \hline
 4489
 \end{array}$$

Now, after the decimal point, there are 3 digits. Also, there is a square -
So, $(3 \times 2) = 6$.

So, after the decimal point, there should be 6 digits, with 4489 at the end.

So, the answer becomes -

$$\begin{array}{r}
 0.004489 \\
 \hline
 \end{array}$$

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$$2) (0.0092)^2$$

Forget about the decimal point.

$$\begin{array}{r} (92)^2 \\ \hline 81 & | & 0.4 \\ & 36 & \end{array}$$

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$$\begin{array}{r} 81 \mid 36 \mid 4 \\ 846 \mid 4 \end{array}$$

Now, after the decimal point there are 2 digits and there is a square.
So, $(4 \times 2) = 8$.

So, after the decimal point there should be 8 digits with 8464 at the end.
0.00008464

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IM perfect no.
Square root of a number.

Here, you have to know the squares of numbers from 1 to 30.

$$1) \sqrt{38}$$

$$= \sqrt{36}$$

$$= 6 + \dots \quad (A)$$

$$= \frac{38 - 36}{6 \times 2}$$

$$= \frac{2}{12}$$

$$= \frac{1}{6}$$

$$= 0.16 \quad (B)$$

From A & B,
we get $6 + 0.16$
= 6.16

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stepy:

1) The number which is closest to $\sqrt{38}$ is ($\sqrt{36} = 6$)

2) write $6 + \dots$ (A)

3) Now, $\frac{38 - 36}{6 \times 2}$
 $= \frac{2}{12} = \frac{1}{6} = 0.16$ (B)

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n) Now, add 0.16 to 6
 Answer = 6.16.

2) $\sqrt{910} = \sqrt{900}$
 $= 30 + \dots$ (A)

Now, $\frac{910 - 900}{30 \times 2} = \frac{10}{60} = 0.16$ (B)

So, Answer is $30 + 0.16 = 30.16$

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Square Root of a Perfect no

$$\begin{aligned}1^2 &= 1 \\2^2 &= 4 \\3^2 &= 9 \\4^2 &= 16 \\5^2 &= 25 \\6^2 &= 36 \\7^2 &= 49 \\8^2 &= 64 \\9^2 &= 81 \\10^2 &= 100.\end{aligned}$$

6

Monday

1) $\sqrt{3969}$.

Last digit is 9.
 From the table above,
 3 9 7 are the numbers
 associated with 9, which
 is in the unit's place.

So, (3) or (7) would
 be at the unit's place.

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Now, consider the first 2 digits
39.

The perfect square less than
39 is $6^2 = 36$.

So, multiply 6 with the
next number, i.e., 7
 $6 \times 7 = 42$.

8

But $42 > 39$.

Wednesday

So, choose the smaller
number.

So, the answer is 63

9

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$$2) \sqrt{6724}$$

first digit is 6.

From the total,

2 9 8 are the nos. associated
with 6, which is in the
unit's place. — A

Now, consider the
first 2 digits,
67.

The perfect square less
than 67 is $8^2 = 64$. — B

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So, multiply 8 with the
next number, i.e. 8×9
 $= 72$.

But $72 > 67$.

So, choose the smaller no.
So, the answer is 82.

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19	20	21	22	23	24	25	26	27	28	-	-	-	-	-	-	-	-	-	-	-

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	
-	-	-	-	-	-	-	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
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8 digit root of a decimal no. 2017

$$1) \sqrt{0.342}$$

Form pairs of 2 digits

$$50, \quad \begin{array}{r} 0.3420 \\ \hline 0.58 \end{array}$$

$$\begin{array}{r}
 & 0.3420 \\
 \sqrt{108} & \overline{)108} \\
 108 & \overline{)8} \\
 8 & \overline{)64} \\
 64 & \overline{)56}
 \end{array}$$

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Answer is 0.58

Step: 1) Form the pair of
2 digits each

2) Consider the 1st pair
3h.

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2017 So, the biggest number
divisible by 5.

3) $\lim_{x \rightarrow 0} \frac{\sin x}{x}$ deriviert
0.5

5) If it is an odd number,
in one division
add 5 to the original,
so that it becomes 10.

5) Bring the next
pain down which
is 20.

6) ~~35020~~ So, now, in
920 which is the
number containing 10
as the first 2 digits
is divisible.

7) so, if I do 108

$$\frac{2}{864}$$

which is smaller than
920.

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8) So, in the divisor column, I have to do $\frac{108}{116}$.

9) The quotient would become $0\overline{.}58$

$$2) \sqrt{3.78}.$$

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$$\begin{array}{r} 1.94 \\ \sqrt{3.78} \\ \hline 29 & 278 \\ 9 & -261 \\ \hline 384 & 1700 \\ 4 & -1536 \\ \hline 388 & 164 \end{array}$$

Steps: Same as above.

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Square root of 36 / .

Sq. root of 36 is 6.

$$\text{So, } 6 \times 10 = \underline{\underline{60}}$$

Square root of 10 / .

Sq. root of 10 is :

$$3 + \frac{1}{3 \times 2} = \underline{\underline{3.16}}$$

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$$\text{So, } 3.16 \times 10 = \underline{\underline{31.6}}$$

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Another method of Square Root

$$1^2 = 01$$

$$2^2 = 04$$

$$3^2 = 09$$

$$4^2 = 16$$

$$5^2 = 25$$

$$6^2 = 36$$

$$7^2 = 49$$

$$8^2 = 64$$

$$9^2 = 81$$

$$10^2 = 100.$$

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Friday

$$1) \sqrt{6724}$$

My number lies between,
 80^2 and 90^2 .

First, The unity place is 4.
 No nos. associated with
4 are 2 or 8.

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Now, ~~the~~ the middle no.
 between 80^2 & 90^2 is $\underline{\underline{85^2}}$

$$\text{So, } 85^2 = 7225.$$

But, $6724 < 7225$.
 So, consider the smaller no.

Out of 82 & 88,
 Answer is $\underline{\underline{82}}$

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$$2) \sqrt{5041}$$

The units place is 1.
 So, the nos. associated with
 1 are 1 and 9.

5041 lies between 70^2 & 80^2 .

Now, The middle no.
 between 70^2 & 80^2 is 75^2 .

$$\text{So, } 75^2 = 5625$$

$$\text{But } 5041 < 5625$$

So, Out of 71 and 79, 71 is right

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Another method of finding squares:

$$1) \quad (43)^2$$

$$\begin{array}{r} 2 \\ \times 16 \\ \hline 3^2 = 09 \end{array}$$

$$4 \times 3 \times 2 \\ = 24$$

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$$so, \quad \begin{array}{r} 1609 \\ - 24 \\ \hline 1879 \end{array}$$

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- Study: 1) Find the leftmost no i.e $4^2 = 16$.
- 2) Find the rightmost no. $i.e 3^2 = 09$.
- 3) Find the middle no. $i.e 4 \times 3 \times 2 = 24$.
- 4) write 24 leaving one position in the right.

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19 20 21 22 23 24 25 26 27 28

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$$2) \quad \begin{array}{r} 518 \\ \times 18 \\ \hline 5^2 = 25 \\ 5 \times 18 \times 2 \\ = 180 \end{array}$$

$$so, \quad \begin{array}{r} 250324 \\ 180 \\ \hline 268324 \end{array}$$

Answer is:

$$\begin{array}{r} 268324 \\ \hline \end{array}$$

Study: 3 digit numbers

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Thursday

- Find the leftmost no if $5^2 = 25$
- Find the rightmost no if $18^2 = 324$
- Find the middle no if $5 \times 18 \times 2 = 180$
- Write 180 ~~on~~ leaving two positions from the right.
- Also, express 324 in 3 digits.

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3) $(\underline{17} \underline{29})^2$

$17^2 = 289$ $29^2 = 841$

$17 \times 29 \times 2 = 986$

$$\begin{array}{r} 2890841 \\ 986 \\ \hline 2989441 \end{array}$$

So, The answer is
 $\underline{\underline{2989441}}$.

For 4 digit numbers

- 1) Find the leftmost no
 $i.e. 17^2$
- 2) Find the rightmost no
 $i.e. 29^2$
- 3) Find the middle no -
 $i.e. 2 \times 17 \times 29 = 986$
- 4) write 986 clearing 2 position
 from the right
- 5) Also, express 841 in 4 digits

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CUBE OF A NUMBER

i) When the first digit
is 1.

$$(12)^3 \cdot$$



$$\begin{array}{r}
 & 1^3 & 2^1 & 2^2 & 2^3 \\
 = & 1 & 2 & 4 & 8 \\
 \times & & 4 & 8 & \times \\
 \hline
 & 1 & 6 & 12 & 28
 \end{array}$$

$$\Rightarrow \underline{\underline{1728}} \quad \text{Sunday}$$

- Step:
- 1) Write 1^3 on the extreme left and 2^3 on the extreme right.
 - 2) Before 2^3 , write 2^2 and before 2^2 , write 2^1 .
 - 3) Find the value of all the numbers.

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	1	2	3	4	5	6	7	8	9	10	11	12	13
21	22	23	24	25	26	27	28	29	30	31	-	-	-

MAY
2017

3

APRIL

Monday

2) In the 2 middle values just below them, write the double of the value.

5) Now, using the carry forward technique, find the answer.

ii) When the last digit is 1.
 $(21)^3$.

4

Tuesday

$$\begin{array}{r} 2^3 \quad \xrightarrow{\hspace{1cm}} \\ 2^2 \quad \quad \quad 2^1 \\ 2^1 \quad \quad \quad 1^3. \end{array}$$

$$\begin{array}{r} = \quad 8 \quad 4 \quad 2 \quad 1. \\ \times \quad 8 \quad 4 \quad \quad \quad \times \\ \hline 9 \quad 2 \quad 6 \quad 1 \end{array}$$

$= 9261.$

Step: 1) Write 2^3 on the extreme left and 1^3 on the extreme right.

2) ~~copy 2² also~~. After 2^3 , write 2^2 and after 2^2 , write 2^1 .

MAR 2017	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	15	16	17	18	19	20	21	22	23	24	25	26	27	28

5

APRIL

Wednesday

2017

3) Find the values of all the four numbers.

4) Below the two middle values, write the double of the value.

5) Now, what is the answer?
 Here, no carry forward was required.

iii) same number.

$$(22)^3.$$

6

Thursday

$$\begin{array}{r} 2^3 \quad 2^3 \quad 2^3 \quad 2^3 \\ \xrightarrow{\hspace{1cm}} \quad \quad \quad \quad \quad \end{array}$$

$$\begin{array}{r} = \quad 8 \quad 8 \quad 8 \quad 8. \\ \times \quad 16 \quad 16 \quad \quad \quad \times \\ \hline 10,648 \end{array}$$

Step: 1) Write 2^3 four times side by side.

2) Find the values of all the four numbers.

3) Below the two middle values, write

MAY 2017	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
	1	2	3	4	5	6	7	8	9	10	11	12	13	14
	15	16	17	18	19	20	21	22	23	24	25	26	27	28

7

APRIL

Friday

- 5) the double of the values.
 Now, use the carry forward technique to get the answer.

i) different numbers.

$$(24)^3.$$

$$\begin{array}{r}
 2^3 & 2^2 \times 4 & 2 \times 4^2 & 4^3 \\
 & 8 & 16 & 32 & 64 \\
 8 = & 8 & 16 & 32 & 64 \\
 & \times & 32 & 64 & \times \\
 & 8 & 48 & 96 & 64 \\
 \hline
 & 13,824
 \end{array}$$

- Steps : 1) Write 2^3 on the extreme left and 4^3 on the extreme right.
 2) After 2^3 , write $2^2 \times 4$ and after that write 2×4^2 .

3) Find the values of all

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
-	-	-	-	-	-	-	1	2	3	4	5	6	7
19	20	21	22	23	24	25	26	27	28	29	30	31	-

9

APRIL

Sunday

2017

- 5) the numbers below the two middle values, with the double of the values.
 Now, use the carry forward technique to find the answer.

ii) Alternative Method

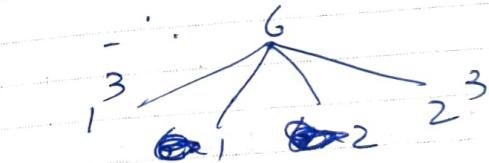
$$a) (12)^3$$

now,

$$1 \times 2 \times 3 = 6.$$

10

Monday



$$1 \mid 6 \mid 12 \mid 8.$$

$$\underline{\underline{1728}}$$

- Steps : 1) $1 \times 2 \times 3 = 6$.
 2) Four branches would come out of 6.

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
-	-	-	-	-	-	-	1	2	3	4	5	6	7
-	-	-	-	-	-	-	8	9	10	11	12	13	14

MAY
2017

11 APRIL

Tuesday

2017

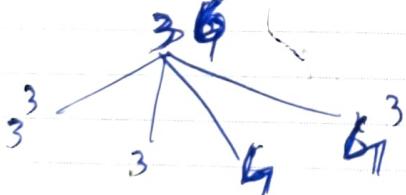
- 3) On the extreme left, it would be 1^3 , and on the extreme right, it would be 2^3 .
- 4) The second branch from left would evaluate to 6×1 , and the second branch from right would evaluate to 6×2 .

12 5) Using the carry-forward method, you will get

Wednesday The answer.

6) 34^3 .

Now, $3 \times 4 \times 3 = 36$.



$$\Rightarrow 27 \mid 36 \times 3 \mid 36 \times 4 \mid 64 -$$

$$\Rightarrow 27 \mid 108 \mid 144 \mid 64 .$$

MAR
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	1	2	3	4	5	6	7	8	9	10	11	12	13
19	20	21	22	23	24	25	26	27	28	29	30	31	-

APRIL 13

Thursday

2017

So, answer is:
39304

- Study: 1) $3 \times 4 \times 3 = 36$
 2) Four branches would come out of 36.
 3) On the extreme left, it would be 3^3 and on the extreme right, it would be 4^3 . (You can see the main question) 14

- 4) The second branch from the left would evaluate to 36×3 and the second branch from the right would evaluate to 36×4 .
 5) Using the carry-forward method, you will get the answer.

Friday

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Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	1	2	3	4	5	6	7	8	9	10	11	12	13
21	22	23	24	25	26	27	28	29	30	31	-	-	-

15 APRIL

Saturday

$$c) (103)^3.$$

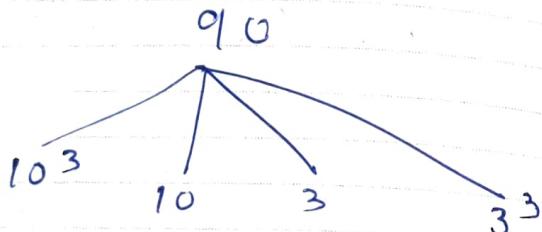
divide it into 2 nos.

$$(10/3)^3.$$

so, we have

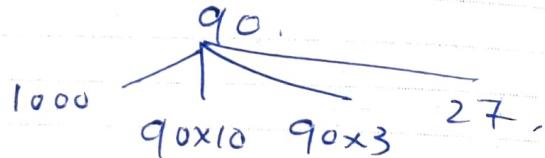
$$10 \times 3 \times 3 = \underline{9}0$$

Now,



16

Sunday



so,

$$\begin{array}{r} 1000 | 900 | 270 | 27 \\ \hline 1092727 \end{array}$$

\Rightarrow

MAR
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
19	20	21	22	23	24	25	26	27	28	29	30	31	-	-	-	-	-	-	-	-

2017

APRIL

17

Monday

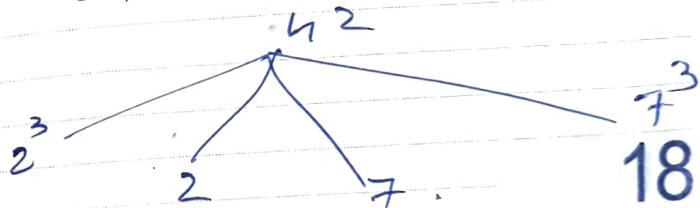
vi) Another method

$$a) (2007)^3.$$

$$= (\underline{2000} + \underline{7})^3.$$

$$\text{Now, } 2 \times 7 \times 3 = 42.$$

so, we have



Tuesday

$$\Rightarrow 8 | 42 \times 2 | 42 \times 7 | 343.$$

$$\Rightarrow 8 | 84 | 294 | 343.$$

REMEMBER:

In this type of problem, no carry forward is required. But make sure each no, except by first no is expressed in 3 digits.

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21
21	22	23	24	25	26	27	28	29	30	31	-	-	-	-	-	-	-	-	-	-

MAY
2017

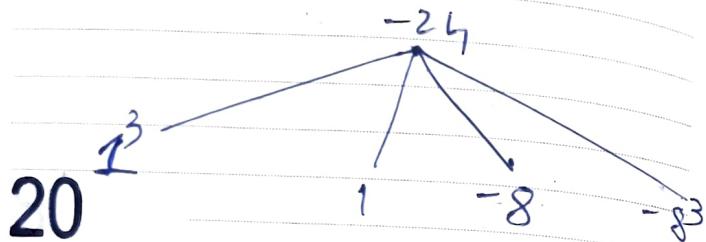
19 APRIL

Wednesday

b) $(992)^3$. 2017
 $\Rightarrow (1000 - 8)^3$

Now,
 $1 \times -8 \times 3 = -24$.

so, we have



20

Thursday

$$\Rightarrow 1 \mid -24 \mid +192 \overbrace{-512}^{\text{Ans}}$$

$$\Rightarrow 1 \mid -24 \mid +191 \mid 1000 - 512.$$

$$\Rightarrow 1 \mid -24 \mid 191 \mid 488$$

$$\Rightarrow 0 \mid 1000 - 24 \mid 191 \mid 488$$

$$\Rightarrow 0 \mid 976 \mid 191 \mid 488$$

$$\Rightarrow 976 \mid 191 \mid 488$$

MAR		Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
2017		-	1	2	3	4	5	6	7	8	9	10	11	12	13
19		20	21	22	23	24	25	26	27	28	29	30	31	-	-

APRIL 21
 Friday

2017 CUBE ROOT OF A NUMBER

REMEMBER

$$\begin{aligned} 1^3 &= 1 \\ 2^3 &= 8 \\ 3^3 &= 27 \\ 4^3 &= 64 \\ 5^3 &= 125 \\ 6^3 &= 216 \\ 7^3 &= 343 \\ 8^3 &= 512 \\ 9^3 &= 729 \\ 10^3 &= 1000. \end{aligned}$$

Any no. ending in
 1, 4, 9, 6, 5, then
 same number
 will be used for
 calculation.

22

Saturday

$$1) \sqrt[3]{39304}$$

first between $\underline{3}$

$$3^3 \ 9 \ 4^3$$

so, take the
 smaller no.

$$\underline{3}$$

so, the answer
 $\underline{\underline{34}}$

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	1	2	3	4	5	6	7	8	9	10	11	12	13
21	22	23	24	25	26	27	28	29	30	31	-	-	-

MAY
 2017

23 APRIL

Sunday

$$2) \sqrt[3]{68921}$$

\downarrow \downarrow
68 lies between
 4^3 and 5^3 .

Always take
the smaller no.
So, 4 is chosen

So, answer is 41

24

Monday

Cube root of a 6-digit no.

$$\sqrt[3]{592703}$$

- Form pairs of 3.
- Last digit in the second pair is 7.
- So, by rule, 7 is shown previously, we will use

MAR	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
2017	-	1	2	3	4	5	6	7	8	9	10	11	12	13

2017

APRIL

25

Tuesday

It's only for calculation.

Now, look at the first pair.
It is 592. It lies between
 8^3 and 9^3 .
So, always take the smaller
number.
So, 8.

∴ The no. is 84

Cube root of a 9-digit no. - 26

Wednesday

$$a) \sqrt[3]{324252703}$$

Form three pairs

Last digit of the last pair = 3.
So, from the table it corresponds
to 3.
So, L = last digit = 7. — ①

First pair = 324.

It lies between 6^3 & 7^3 .
Consider the smaller no. = 6 — ②

SUN	MON	TUE	WED	THU	FRI	SAT	SUN	MON	TUE	WED	THU	FRI	SAT
-	1	2	3	4	5	6	7	8	9	10	11	12	13

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2017

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Thursday

$$\text{So, } F = \text{first no} = 6$$

2017

$$L = \text{last no} = 7.$$

We have to find the middle number.

So, look at the last pair!

It is 703 -

Now it corresponds to the last no = 7.

28

Friday

$$\begin{array}{r} \text{So, } 703 \\ - 7^3 \\ \hline \end{array}$$

$$\begin{array}{r} = 703 \\ - 343 \\ \hline - 6. \end{array}$$

(You have to look only at the middle column)
So, middle no = 6.

So, number = 6.

2017

now, use the formula.

$$\begin{array}{l} 3L^2 M = \text{number} \\ / \quad \quad \quad \backslash \\ \text{Last no} \quad \text{middle no}. \end{array}$$

$$3(7)^2 M = 6.$$

$$3 \times 49 \times M = 6.$$

$$147 \times M = 6$$

In 147, take the last digit.
 $7 \times M = 6$.

30

Now, the value of M which when multiplied with 7, giving a number which ends in 6.

So, we have $7 \times 8 = 56$

So, the Middle number = $M = 8$.

∴ The answer is 687

MAR
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	-	1	2	3	4	5	6	7	8	9	10	11	12

MAY
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	1	2	3	4	5	6	7	8	9	10	11	12	13

1

MAY

Monday

$$\text{b) } \sqrt[3]{994 \ 011 \ 992}.$$

2017

In 992, the last digit is 2 which corresponds to 8^3 .

So, $L = 8$. —①

2

Tuesday

Now, P first pair, 994 lies between 9^3 & 10^3
So, consider the smaller no.

$$F = 9. \quad \text{—②}$$

For finding M, let us consider the last pair

$$\begin{array}{r} 992 \\ - 8^3 \\ \hline \end{array}$$

$$\begin{array}{r} 992 \\ - 512 \\ \hline \end{array}$$

(B) consider only the

APR
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
16	17	18	19	20	21	22	23	24	25	26	27	28	29

3

MAY

Wednesday

2017

middle column.

Now, the formula is

$$3L^2 M = \text{number}$$

$$3 \times 8^2 \times M = 8$$

~~$18 \times 8 \times M$~~

$$192 \times M = 8$$

or 192, take the last digit

$$2M = 8$$

4

Thursday

Now, the value of M which when multiplied with 8 or 9 gives a number which ends in 8.

Now, F, which is 994 lies between 9^3 & 10^3 . i.e. 729 and 1000.

so, 994 is closer to 1000.

so, we have to take the bigger no.

so, consider the bigger no. 9. So, answer is 9981

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7	8	9	10	11	12	13	14

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2017

5

MAY

Friday

Tables from 1 to 99. 2017

1) 27.

We might not know the table of 27 by heart.

So we divide 27 into two parts.

2 7.

6

Saturday

2	7	ANS
$2 \times 1 = 2$	$7 \times 1 = 7$	27
$2 \times 2 = 4$	$7 \times 2 = 14$	54
$2 \times 3 = 6$	$7 \times 3 = 21$	81
$2 \times 4 = 8$	$7 \times 4 = 28$	108
$2 \times 5 = 10$	$7 \times 5 = 35$	135
$2 \times 6 = 12$	$7 \times 6 = 42$	162
$2 \times 7 = 14$	$7 \times 7 = 49$	189
$2 \times 8 = 16$	$7 \times 8 = 56$	216
$2 \times 9 = 18$	$7 \times 9 = 63$	243
$2 \times 10 = 20$	$7 \times 10 = 70$	270

APR
2017

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	-	-	-	-	-	-	1	2	3	4	5	6	7

MAY

7

Sunday

2017

So, we got pre-crown by using carry-forward method.

Tables from 100 to 999.

1) 267.

Answer.

2	6	7	267
4	6	7	937
8	12	14	1401
12	18	21	1868
16	24	28	2335
20	30	35	2802
24	36	42	3269
28	42	49	3736
32	48	56	4203
36	54	63	4670
40	60	70	

Monday

8

So we will get the answer by using the carry forward method.

Sun	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Mon	Tue	Wed	Thu	Fri	Sat
-	-	-	-	-	-	-	1	2	3	4	5	6	7

JUN
2017