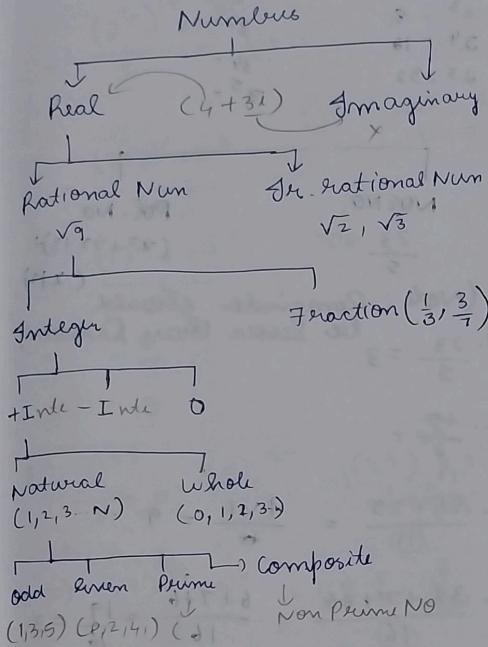


## Aptitude

\* Number System:



### Divisibility:

\* 5 → last digit 0 or 5 eg: 1605

\* 10 → last digit 0 eg: 1600

\* 2 → last digit 0 and even eg: 1658

\* 3, 9 → (Sum of digits)

$342 \Rightarrow 3+4+2 = 9/3$  so divisible by 3 and 9

$$243243 \Rightarrow 18$$

\* 4, 8 → 2 digit

$16\boxed{2}4 \Rightarrow 24/4$  so divisible

$1836\boxed{2}4 \Rightarrow 4/4$  so divisible by 8 & 4

\* 6  $\Rightarrow 2, 3$  eg:  $12\boxed{0} \Rightarrow 1+2+6=9/3$

$$\leftarrow 12 \Rightarrow 4/3$$

$$\star 14 \Rightarrow 7/2$$

$$\star 15 \Rightarrow 5/3$$

$$\star 18 = 9/2$$

$$\star 7 \Rightarrow 34\boxed{3} \times 2 \Rightarrow 34-6 = 28/1$$

$$\star 17 \Rightarrow 1904 \times 5 \Rightarrow 190-20 = 170/17$$

$$\star 13 \Rightarrow 326 \times 4 \Rightarrow 32+20 = 52/13$$

$$\star 19 \Rightarrow 36\boxed{4} \times 2 \Rightarrow 36+2 = 38/19$$

$$\star 11 \Rightarrow 9\boxed{1}74 \Rightarrow (9+7)-(1+4) \\ 0\boxed{0}60 = 16-5 = 11/11$$

Unit digit :

\* Model 1 :  $0^m = 0, 1^m = 1, 5^m = 5, 6^m = 6$

\* Model 2 :  $4^{\text{odd}} = 4 \quad | \quad 4^{\text{even}} = 6$        $9^{\text{odd}} = 9 \quad | \quad 9^{\text{even}} = 1$

\* Model 3 :

$$9451 \Rightarrow \text{Unit digit} = 1$$

$$245645 \Rightarrow \boxed{5}$$

$$\textcircled{1} \quad 936 + 972 + 221 = \boxed{9}$$

$$\textcircled{2} \quad 236\boxed{9} + 243\boxed{4} = 1\boxed{8} = \boxed{3}$$

$$\textcircled{3} \quad 93 \times 46 = 3 \times 6 = 18 = \boxed{8}$$

$$\textcircled{4} \quad 24\boxed{8} \times 98 \times 23\boxed{6} = 4 \times 8 \times 6$$

$$= 32 \times 6$$

$$= \boxed{12}$$

$$\textcircled{5} \quad 1936 - 243 = 6 - 3 = \boxed{3}$$

$$\textcircled{6} \quad 1934 - 239 = \boxed{4}-9 = \boxed{5}$$

$$\textcircled{7} \quad 73 = 7 \times 7 \times 7$$

$$= 49 \times 7$$

$$= \boxed{63}$$

$$\textcircled{8} \quad 74 = 7^2 \times 7^2$$

$$= 49 \times 49$$

$$\Rightarrow 9 \times 9 < 8 \boxed{1}$$

$$\textcircled{9} \quad 81^3 = 81 \times 81 \times 81$$

$$= \boxed{11}$$

$$a^m = 0, 1^m = 1, 5^m = 5, 6^m = 6$$

$$1. 2 \overset{6}{\cancel{6}}^{13} + 39 \overset{5}{\cancel{5}}^{45} \Rightarrow 6+5 = 11 \Rightarrow 1$$

$$2. 23 \overset{6}{\cancel{1}}^{124} \times 64 \overset{6}{\cancel{6}}^{94} \Rightarrow 1 * 6 = 6$$

Model - 2 :

$$\begin{array}{c|c} 4^{\text{odd}} = 4 & 9^{\text{odd}} = 9 \\ 4^{\text{even}} = 6 & 9^{\text{even}} = 1 \end{array}$$

$$249^{33} + 254^{36} + 256^{133}$$

$$9+6+6 \Rightarrow 21 \Rightarrow 1$$

Model - 3 :

$$2, 3, 7, 8$$

$$①: \div 4 \text{ (Power)}$$

↓  
Remainder

$$①. 212^{79} \Rightarrow 2 \overset{3}{\cancel{2}} = 8$$

$$2. 73^{54} \Rightarrow 3^2 = 9$$

$$3. 378^{41925} \Rightarrow 8^1 = 8$$

$$4. 214^{2164} \Rightarrow 4 \overset{4}{\cancel{4}} = 16 \times 16 = 36$$

If remainder 0 then Put 4 as power

$$1. 124^{376} + 124^{375} + 124^{375} = 6+4+4 = 14$$

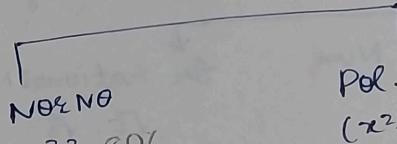
$$2. 25^{6527} + 36^{526} + 73^{54} = 5+6+3^2$$

$$3. 7^{295} \times 13^{154} \times 341^{476} = 7^3 \times 13^5 \times 341^4$$

$$4. [(29)^{98} + (21)^{29} - (106)^{100} + (705)^{36} - 16^4 + 259] =$$

Remainder Theorem

$$\begin{array}{ll} 2^1 = 2 & 3^1 = \\ 2^2 = 4 & 3^2 = \\ 2^3 = 8 & 3^3 = \\ 2^4 = 16 & 3^4 = \\ 2^5 = 32 & 3^5 = \end{array}$$



(Note : Remainder should be lesser than Denom)

$$1. \frac{23}{5} = 3$$

$$2. \frac{47}{8} =$$

$$3. \frac{86 \times 23}{11} = \frac{9 \times 1}{\cancel{11}} = 9 \quad 11 > 9 \checkmark$$

$$4. \frac{38 + 71 + 86}{16} = \frac{6+7+6}{16} = \frac{19}{16} = 3$$

$$5. \frac{123 \times 124 \times 125}{9} = \frac{6 \times 7 \times 8}{9}$$

$$\begin{aligned} &= \frac{6}{9} \times \frac{7}{9} \times \frac{8}{9} \\ &= \frac{6 \times 8}{9} = 3 \end{aligned}$$

$$6. \frac{7^5}{4}$$

$$\frac{7^3 \times 7^3 \times 7^3 \times 7^3}{4}$$

$$= \frac{3 \times 3 \times 3 \times 3 \times 3}{4}$$

$$= \frac{4}{9 \times 9 \times 3}$$

$$= 1 \times 1 \times 3$$

$$= 3$$

$$7) \frac{2^7}{5}$$

$$= \frac{(2^1)}{5}$$

$$= (16)$$

$$= (1)$$

$$8. \frac{7^{12}}{5}$$

$$9. \frac{51^5}{5}$$

$$= (1)$$

$$10. \text{ when}$$

7)  $\frac{2^{754}}{5}$

$$= \frac{(2^4)^{18} \times 2^3}{5}$$

$\begin{array}{r} 11 \\ 4 \sqrt{75} \\ 32 \\ \hline 35 \\ 32 \\ \hline 15 \end{array}$

$2^1 = 2$   
 $2^2 = 4$   
 $2^3 = 8$   
 $2^4 = 16$

Closes to 15 which is divisible by 5

 $= \frac{(16)^{18} \times 2^3}{5}$ 
 $= \frac{(1)^{18} \times 2^3}{5}$ 
 $= \frac{8}{5}$ 
 $= 3$

$= \frac{3^{165}}{5}$ 
 $3^1 = 3$ 
 $3^2 = 9$ 
 $3^3 = 27$ 
 $3^4 = 81$ 

(+ 05) close - so total

 $= \frac{(3^4)^{41} \times 3^1}{5}$ 
 $= \frac{(81)^{41} \times 3^1}{5}$ 
 $= \frac{1^{41} \times 3^1}{5}$ 
 $= \frac{1 \times 3}{5}$ 
 $= 3$

8.  $\frac{2^{129}}{5} \Rightarrow \frac{(2^4)^{32} \times 2^1}{5} \Rightarrow \frac{(2^4)^{32} \times 2^1}{5}$

 $\Rightarrow \frac{(1)^{32} \times 2^1}{5}$ 
 $= \frac{2}{5} \Rightarrow 2$

9.  $\frac{517^{517}}{5}$

$$\begin{array}{r} 129 \\ 4 \sqrt{517} \\ 4 \quad 11 \\ \hline 11 \quad 8 \\ 8 \quad 37 \\ \hline 37 \quad 36 \\ 36 \quad 1 \end{array}$$
 $\begin{array}{r} 13 \\ 5 \sqrt{517} \\ 5 \quad 17 \\ \hline 17 \quad 15 \\ 15 \quad 2 \\ \hline 2 \end{array}$ 
 $= \frac{(2)^{517}}{5}$ 
 $= \frac{(2^4)^{129} \times 2^1}{5}$ 
 $= \frac{2}{5}$ 
 $= 2$

10. What is the remainder when  $2243^{165}$  divided by 5

$$\begin{array}{r} 2243 \\ \hline 5 \\ 448 \\ 20 \downarrow \\ 24 \\ 20 \\ 40 \\ 5 \end{array}$$
 $= \frac{(3)^{165}}{5}$

Sum of Series:

Model - 1:

Natural Number

$$(1+2+3+4+\dots+30) (1^2+2^2+3^2+\dots+n^2) (1^3+2^3+3^3+\dots+n^3)$$

$$\textcircled{1}. \left[ \frac{n(n+1)}{2} \right] (1+2+3\dots+n)$$

$$\textcircled{2}. \frac{n(n+1)(2n+1)}{6} (1^2+2^2+\dots+n^2)$$

$$\textcircled{3}. \left[ \frac{n(n+1)}{2} \right]^2 (n \text{ is the last no}) (1^3+2^3+\dots+n^3)$$

Model - 2:

$$\begin{array}{ccc} & \downarrow & \\ 1+3+5+\dots+33 & 2+4+6+\dots+50 & 51+53+\dots+65 \\ (\text{odd}) & (\text{even}) & (\text{Middle}) \\ \boxed{x^2} & \boxed{x(x+1)} & \\ x = \frac{n+1}{2} & & x = \frac{m}{2} \end{array}$$

Decin

$$1. 1+2+3+\dots+30$$

 $\textcircled{1} \Rightarrow \textcircled{1}$ 

$$\frac{n(n+1)}{2}$$

$$= \frac{30(30+1)}{2}$$

$$= \frac{30(31)}{2}$$

$$= 15 \times 31 \Rightarrow 465$$

$$2. 1^2+2^2+3^2+\dots+12^2$$

 $\textcircled{1} \Rightarrow \textcircled{2}$ 

$$\frac{n(n+1)(2n+1)}{6}$$

$$= \frac{12 \times 13 \times 25}{6} \Rightarrow 26 \times 25$$

 $\Rightarrow$ 

$$3. 1^3+2^3+3^3+\dots+9^3$$

 $\textcircled{1} \Rightarrow \textcircled{3}$ 

$$\left[ \frac{n(n+1)}{2} \right]^3 = \left[ \frac{9(10)}{2} \right]^2$$

$$= (9 \times 5)^2$$

$$= 45^2$$

$$\Rightarrow 2025$$

$$4. 1+3+5+\dots+49$$

$$\begin{cases} x^2 \\ x = \frac{n+1}{2} \end{cases}$$

$$x = \frac{49+1}{2} \Rightarrow \frac{50}{2} \Rightarrow 25$$

$$x^2 = (25)^2$$

$$= 625$$

$$5. 2+4+6+\dots+58$$

$$x(x+1)$$

$$\boxed{x = \frac{m}{2}}$$

$$x = \frac{58}{2} \Rightarrow 29$$

$$29(29+1)$$

$$= 29 \times 30$$

$$= 870$$

$$6. 10^2+11^2+12^2+\dots+20^2$$

 $\textcircled{2} \Rightarrow \textcircled{3}$ 

we can split it into two ways

$$(1^2+2^2+3^2+\dots+20^2) - (1^2+2^2+\dots+9^2)$$

$$= \frac{n(n+1)(2n+1)}{6} - \frac{n(n+1)(2n+1)}{6}$$

$$= \frac{20(21)(41)}{6} - \frac{9(10)(19)}{6}$$

$$= 2585$$

$$7. 51+53+55+\dots+99$$

$$(1+3+5+\dots+99) - (1+3+5+\dots+49)$$

$$(x^2) - (x^2)$$

$$(50)^2 - (25)^2$$

$$2500 - 625$$

$$= 1875$$

Type 1

0.4

0.93

0.631

(whole)

Jyp

1. 0

2. 0

3. 0

Jyp

1. 0

2. 0

Decimal to Fraction:

Decimal

$$0.12 \Rightarrow \frac{0.12 \times 100}{100} = \frac{12}{100} = \frac{12}{100}$$

$$(Model-1) \quad 0.12 \Rightarrow 0.121212 \quad (Model-2)$$

(Not important)

Decimal

(Model-2)

$$\begin{array}{c} \text{Type 1} \\ \downarrow \\ 0.\bar{4} \\ 0.\bar{9}\bar{3} \\ 0.\overline{631} \end{array} \quad \begin{array}{c} \text{Type 2} \\ \downarrow \\ 0.4\bar{3} \\ 0.4\bar{8} \\ 0.\overline{633} \end{array} \quad \begin{array}{c} \text{Type 3} \\ \downarrow \\ 5.\bar{2}\bar{1} \\ 2.\bar{1}\bar{2} \\ 96.\bar{1}\bar{6} \end{array}$$

(whole bar) (one bar) Starting with No  
↓  
0.1234567890

Type - 1:

$$1. 0.\bar{4} \Rightarrow \frac{4}{9}$$

$$2. 0.\overline{93} \Rightarrow \frac{93}{99}$$

$$3. 0.\overline{631} \Rightarrow \frac{631}{99}$$

Type - 2:

$$1. 0.\overline{43} \quad \text{Non Bar No}$$

$$\frac{43-4}{90} \Rightarrow \frac{39}{90}$$

How many bar

$$2. 0.\overline{48}$$

$$\frac{48-4}{90}$$

$$= \frac{44}{90}$$

$$3. 0.6\bar{3}\bar{3}$$

$$\frac{633-6}{990}$$

$$\Rightarrow \frac{627}{990}$$

Type - 3

$$1. 5.\bar{2}\bar{1}$$

$$5 + 0.\bar{2}\bar{1}$$

$$5 + \frac{21}{99}$$

$$\frac{516}{99}$$

$$2. 2.\bar{1}\bar{2}$$

$$2 + 0.\bar{1}\bar{2}$$

$$2 + \frac{12-1}{90}$$

$$2 + \frac{11}{90}$$

$$\frac{180+11}{90}$$

$$\Rightarrow \frac{191}{90}$$

$$3. 96.\bar{1}\bar{6}$$

$$96 + 0.\bar{1}\bar{6}$$

$$96 + \frac{16-1}{90}$$

$$96 + \frac{15}{90}$$

$$\frac{8640+15}{90}$$

$$= \frac{8655}{90}$$

### Consecutive Numbers:

\* Con. Even No: 2, 4, 6, 8

\* Con. Odd No: 5, 7, 9, 11, 13

\* Con. Natural No: 1, 2, 3, 4

$$[x, x+1, x+2, x+3 \dots]$$

$$[x, x+2, x+4, x+6 \dots] \quad (\text{Remaining terms})$$

1. The sum of three consecutive numbers is 87. The middle number is.

$$x + x+1 + x+2 = 87$$

$$3x + 3 = 87$$

$$3x = 84$$

$$\boxed{x = 28}$$

$$\begin{array}{cccc} x & x+1 & x+2 & \\ 28 & 29 & 30 & \end{array}$$

$$\text{Middle No} = 29$$

2. The sum of three consecutive odd numbers is 147. Then the middle number is

$$x + x+2 + x+4 = 147$$

$$3x + 6 = 147$$

$$3x = 141$$

$$\boxed{x = 47}$$

$$\begin{array}{ccc} x & x+2 & x+4 \\ 47 & 49 & 51 \end{array}$$

$$\text{Middle No} = 49$$

3. The sum of four consecutive even numbers is 748. The smallest among them

$$x + x+2 + x+4 + x+6 = 748$$

$$4x + 12 = 748$$

$$4x = 736$$

$$\boxed{x = 184}$$

$$x = 184 \Rightarrow \text{Smallest}$$

$$x+2 = 186$$

$$x+4 = 188$$

$$x+6 = 190$$

4. Out of six consecutive natural numbers, if the sum of first three is 27, what is the sum of the other three.

$$x \quad x+1 \quad x+2 \quad x+3 \quad x+4 \quad x+5$$

Given:

$$x + x+1 + x+2 = 27$$

$$3x + 3 = 27$$

$$\boxed{x = 8}$$

$$\text{Ans} = 36$$

### Finding a Number:

(x)

$$17 - 10 = 7$$

\* Difference

\* More (1st no more than 2nd as 7)

\* Exceeds (x)

What is  
half of

$\frac{2}{3} \times$

2. If  
of a nu  
three

$\frac{1}{3} \times \frac{1}{2}$

x =

$\frac{3}{10} \times$   
= 5

3. 1/2 of

of 10.

$\frac{1}{2} \times$

$\frac{1}{2}$

$\frac{1}{2}$

If the  
one of  
the o  
numb

four  
en numbers is  
lllest among them

$$x+6 = 748$$

$$= 748$$

36

84

malllest

Consecutive  
ws, if the  
three is 27,  
m of the

$$x+3 \quad x+4 \quad x+5$$

$$11 + 12 + 13$$

$$= 36$$

num:

no more than  
and as 7)

What is two-third of  
half of 369?

$$\frac{2}{3} \times \frac{1}{2} \times 369$$

$$= 123$$

2. If one-third of one-fourth  
of a number is 15, then  
three-tenth of the number is

$$\frac{1}{3} \times \frac{1}{4} \times x = 15$$

$$x = 15 \times 3 \times 4$$

$$x = 180$$

$$\frac{3}{10} \times 180$$

$$= 54$$

3.  $\frac{3}{4}$  of a number is  $2(1\frac{1}{2})$  of 10. What is the number?

$$\frac{1}{2} \times \frac{3}{4} \times x = 2\frac{1}{2} \times 10$$

$$\frac{1}{2} \times \frac{3}{4} \times x = \frac{5}{2} \times 10$$

$$\frac{1}{2} \times \frac{3}{4} \times x = 25$$

$$x = 25 \times \frac{2}{1} \times \frac{4}{3}$$

$$x = \frac{25 \times 2 \times 4}{3}$$

$$x = \frac{200}{3}$$

If the sum of two numbers,  
one of which is  $2\frac{1}{5}$  times  
the other is 50, then the  
numbers are?

$$F = x \quad S = \frac{2}{5}x$$

$$x + \frac{2}{5}x = 50$$

$$\frac{5x + 2x}{5} = 50$$

$$x = \frac{250}{7}$$

$$S = \frac{250 \times 2}{5}$$

$$S = \frac{100}{7}$$

5. If  $\frac{3}{4}$  of a number is 7 more  
than  $\frac{1}{6}$  of the number, then  
 $\frac{5}{3}$  of a number is

$$\text{more} = (-)$$

$$F - S = 7$$

$$\frac{3}{4}x - \frac{1}{6}x = 7$$

$$\frac{3x}{4} - \frac{x}{6} = 7$$

$$\frac{9x - 2x}{12} = 7$$

$$7x = 7 \times 12$$

$$x = 12$$

$$\frac{5}{3}x = ?$$

$$\frac{5}{3}(12)$$

$$= 20$$

6. If  $\frac{1}{2}$  is added to a number  
and the sum is multiplied  
by 3, the result is 21. Then the  
number is:

$$(x + \frac{1}{2}) \times 3 = 21$$

$$\frac{2x + 1x}{2}$$

$$3x + \frac{3}{2} = 21$$

$$\frac{3x}{2} \times 3 = 21$$

$$3x = 21 - \frac{3}{2}$$

$$3x \times$$

$$3x = \frac{39}{2}$$

$$x = \frac{13}{2}$$

7. If  $\frac{4}{5}$  th of a number exceeds its  $\frac{3}{4}$  th by 8, then the number is:

$$\frac{4}{5}x - \frac{3}{4}x = 8$$

$$\frac{16x - 15x}{20} = 8$$

$$\frac{x}{20} = 8$$

$$x = 160$$

8.) The sum of three numbers is 2, the 1st number is  $\frac{1}{2}$  times the second number and 3rd number is  $\frac{1}{4}$  times of the second number. Then the second number is.

$$\underbrace{\frac{x}{2}}_{\frac{1}{2}} + \underbrace{x}_{\frac{1}{2}} + \underbrace{\frac{x}{4}}_{\frac{1}{4}} = 2$$

$$\frac{x}{2} + x + \frac{x}{4} = 2$$

$$\frac{2x + 4x + x}{4} = 2$$

$$\frac{7x}{4} = 2$$

$$7x = 8$$

$$x = \frac{8}{7}$$

\* Numbers

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

\*

### Lesson - 9: Miscellaneous,

1. A person gives  $\frac{1}{4}$  of his property to his daughter,  $\frac{1}{2}$  to his son and  $\frac{1}{3}$  for charity. How much has he given away.

$$\frac{1}{4} + \frac{1}{2} + \frac{1}{3}$$

(son) (D) (Ch)

$$= \frac{5 + 10 + 4}{20}$$

$$= \frac{19}{20}$$

4	1, 2, 5
2	2, 1, 5
5	1, 1, 5

$$2 \times 2 \times 5$$

2. In an office, there are 108 tables and 132 chairs. If  $\frac{1}{6}$  of the tables and  $\frac{1}{4}$  of chairs are broken. How many people can work in the office, if each person requires one table and one chair?

$$T = 108$$

$$C = 132$$

$$\frac{108}{6} \Rightarrow 18 \text{ tables (broken)}$$

$$108 - 18 \Rightarrow 90 \text{ tables (good)}$$

$$\frac{132}{4} \Rightarrow 33 \text{ chairs (broken)}$$

$$132 - 33 \Rightarrow 99 \text{ chairs (good)}$$

If each person requires a table and chair then,

So = 90 (Because 90 chairs only their

3. In a School, the number of boys and girls are same i.e. 100. The ratio of the number of boys to the number of girls is 3 : 2. The number of boys is

Boys =  
Girls =

$$\frac{1}{10} x$$

$$\frac{2x}{10} =$$

$$\frac{x}{y} =$$

$$\frac{x}{y} =$$

4. Two boxes contain 640 oranges. The ratio of the number of oranges taken out from the first box to the number left in it is 1 : 4. The number of oranges left in the first box is

$$B_1 = x$$

$$x =$$

$$x -$$

$$\frac{x}{5}$$

$$\frac{4x}{5}$$

$$4x$$

$$5$$

illaneous:  
 $\frac{1}{4}$  of his  
daughters,  $\frac{1}{2}$  to  
or charity.  
e given away.

$$\begin{array}{|c|c|c|} \hline & 4, 2, 5 \\ \hline 2 & | 2, 1, 5 \\ \hline 5 & | 1, 1, 5 \\ \hline 2 \times 2 \times 5 & \\ \hline \end{array}$$

There are  
2 chairs. If  
d  $\frac{1}{4}$  of chairs  
many people  
office, if each  
table and

$$\begin{array}{|c|c|} \hline n. & \frac{1}{6} \\ \hline \frac{1}{4} & \\ \hline \text{ables (Broken)} & \\ \hline \end{array}$$

bles (good)

chains (Broken)

hairs (good)  
gives a table

90 chains  
their

3. In a School  $\frac{1}{10}$  of the boys  
are same in Number as  $\frac{1}{4}$  of the  
girls. The ratio of the Boys of  
the girls in that school is

$$\text{Boys} = x$$

$$\text{Girls} = xy$$

$$\frac{1}{10}x = \frac{1}{4}y$$

$$\frac{x}{10} = \frac{y}{4}$$

$$\frac{x}{y} = \frac{10}{4}$$

$$\frac{x}{y} = \frac{5}{2} \Rightarrow 5:2$$

4. Two Basket together have  
640 Oranges. If  $\frac{1}{5}$  of the  
oranges in the first basket be  
taken out to the second basket  
The number of oranges on the  
first basket is.

$$B_1 = x$$

$$B_2 = 640 - x$$

$$x - \frac{1}{5}x = 640 - x + \frac{x}{5}$$

Taken Orange      Added Orange

$$x - \frac{x}{5} = 640 - \frac{5x+x}{5}$$

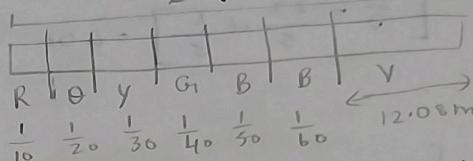
$$\frac{4x}{5} = 640 - \frac{4x}{5}$$

$$4x = 640 \times 5 - 4x$$

$$8x = 640 \times 5$$

$$x = 400$$

5.  $\frac{1}{10}$  of a rod is coloured  
red,  $\frac{1}{20}$  orange,  $\frac{1}{30}$  yellow,  $\frac{1}{40}$   
green,  $\frac{1}{50}$  blue,  $\frac{1}{60}$  black and  
the rest is violet. If the  
length of the violet portion  
of the rod is 12.08 meters,  
then the length of the rod?



$$\text{Length of the Rod} = x$$

$$x - \left[ \frac{x}{10} + \frac{x}{20} + \frac{x}{30} + \frac{x}{40} + \frac{x}{50} + \frac{x}{60} \right] = 12.08$$

$$x \left[ 1 - \frac{147}{600} \right] = 12.08$$

$$x \left[ \frac{453}{600} \right] = 12.08$$

$$x = \frac{12.08 \times 600}{453}$$

$$x = 16 \text{ m}$$

6. A man read  $\frac{2}{5}$  th of the  
book on the first day. He read  
 $\frac{1}{3}$  rd more on the second day  
then he read on the first  
day. 15 pages are left for the  
third day. The number of  
pages in the book is:

$$\text{Book} = x$$

He read books for 3 days,

$$\frac{2x}{5} + \frac{2x}{5} + \left( \frac{2x}{5} \times \frac{1}{3} \right) + 15 = x$$

$\frac{1}{1st} \quad \frac{1}{1st+2nd} \quad 3rd$

$$\frac{2x}{5} + \frac{2x}{5} + \frac{2x}{15} + 15 = x$$

$$\frac{4x}{5} + \frac{2x}{15} + 15 = x$$

$$12x + 2x + 225 = 15x$$

$$x = 225$$

7. A man spends  $\frac{1}{3}$  of his income on food,  $\frac{2}{5}$  of his income on house rent and  $\frac{1}{5}$  of his income on clothes. If he still has Rs. 400 left with him. Then his income is.

$$\text{Income} = x$$

$$x - \left[ \frac{x}{3} + \frac{2x}{5} + \frac{x}{5} \right] = 400$$

Income	$\downarrow$	His Spend	Savings
--------	--------------	-----------	---------

$$x - \left[ \frac{15+6+3}{15} x \right] = 400$$

$$x \left[ \frac{15-(5+6+3)}{15} \right] = 400$$

$$x \left[ \frac{1}{15} \right] = 400$$

$$x = 400 \times 15$$

$$x = 6000$$

In a class  $\frac{3}{5}$  of the students are girls and rest are boys. If  $\frac{2}{9}$  of the girls and  $\frac{1}{4}$  of the boys are absent. What part of the total number of students are present?

$$\text{Total} = x$$

$$G_r = \frac{3}{5} x$$

$$B = x - \frac{3x}{5} = \frac{2x}{5}$$

Abs:

$$G_r = \frac{3x}{5} - \frac{2}{9} \times \frac{3x}{5} = \frac{2x}{15}$$

$$B = \frac{2x}{5} \times \frac{1}{4} = \frac{x}{10}$$

$$x - \frac{2x}{15} - \frac{x}{10} = \frac{13x}{30}$$

$$\frac{30x - 4x - 3x}{30} = \frac{23x}{30}$$

$\frac{23}{30} x$  = (Part of the students are present)

Place & Face Value

P	F
1. $6\boxed{5}2 \rightarrow 50$	5
2. $71\boxed{6} \rightarrow 6$	6
3. $\boxed{3}517 \rightarrow 3000$	3
4. $\boxed{7}86 \rightarrow 700$	7

$n^{\text{th}}$  Terms:

(Two types)

①. Find the sum

$$1+3+5+7+9+\dots+15$$

(1 to 15) ( $x^2$ )  $\Rightarrow$  Formula

②. Find the sum

$$1+3+5+7+9+\dots \text{ to } 15 \text{ terms}$$

(15 terms)

$$\text{A.P} \Rightarrow S_m = \frac{n}{2} [2a + (m-1)d]$$

a  $\Rightarrow$  1st term

d  $\Rightarrow$  difference ( $t_2 - t_1$ )

$$S_{15} = \frac{15}{2} [2(1) + (15-1)2]$$

$$= \frac{15}{2} [2 + (14)2]$$

$$= \frac{15}{2} [2 + 28]$$

$$= \frac{15}{2} [30]$$

$$= 225$$

2. Find the Sum of first  
19 terms of the sequence

$$2, 7, 12, 17 \dots ?$$

$$a = 2$$

$$d = 5$$

$$\begin{aligned} S_{19} &= \frac{19}{2} [2(2) + (19-1)5] \\ &= \frac{19}{2} [4 + 90] \\ &= \frac{18}{2} [94] \\ &= 893 \end{aligned}$$

3. Find the Sum of first 30  
terms of the sequence.

$$17 + 19 + 21 + \dots ?$$

(1380)

$$[2a + (n-1)d]$$

$$-(t_2 - t_1)$$

$$+(15-1)27$$