

$$1.5 + 2.5 + 3.5 + 4.5 + 5.5 + 6.5$$

200 terms

$$\frac{n}{2} (2a + (n-1)d)$$

$$\frac{200}{2} (2 \cdot (15.5) + (199) \cdot 1)$$

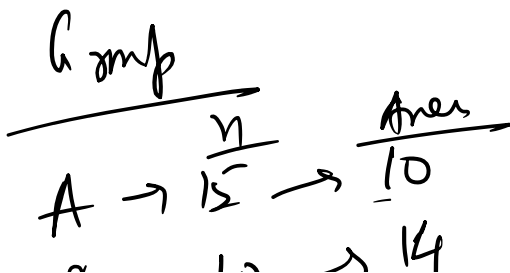
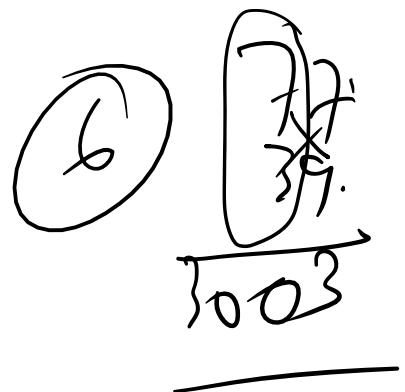
$$= 100 (230) = 23000$$

= 116

$$78 + 79 + \dots + 200$$

$$\left(\frac{100(201)}{2} \right) - \left(\frac{77 \times 78}{2} \right)$$

$$\Rightarrow 20100 - 3003$$



Total Area?

$$\begin{array}{l}
 A \rightarrow 12 \rightarrow 10 \\
 B \rightarrow 10 \rightarrow 14 \\
 C \rightarrow 5 \rightarrow 20 \\
 D \rightarrow 20 \rightarrow 4 \\
 \hline
 50
 \end{array}$$

$$\begin{aligned}
 &= \frac{\sum nA}{n_1 + n_2 + n_3 + n_4} \\
 &= \frac{150 + 140 + 100 + 80}{50} \\
 &= \frac{470}{50} = 9.4
 \end{aligned}$$

10, 15, 20, 40, X

Pr 4

Mean of $n \rightarrow a$
 1 removed \Rightarrow (6)

$$\begin{array}{l}
 10 \rightarrow 15 \\
 \rightarrow 16
 \end{array}$$

$$n(a - \bar{b}) + \bar{b}$$

$$\begin{aligned}
 &10(15 - 16) + 16 \\
 &\Rightarrow 10(-1) + 16 = \underline{6}
 \end{aligned}$$

Pr 15

Ratio X
 Difference ✓

Ratio of F : S
 2 : 1

$$\boxed{60 : 30}$$

$$\begin{array}{l}
 30 \rightarrow 0 \\
 60 \rightarrow 30 \\
 \hline
 61 : 31 \\
 70 : 40 \\
 \hline
 120 : 60
 \end{array}$$

Type 6

Consecutive number problems

2, 3, 4, ...

7, 8, ...

8

x

x+1 x+2



$x+3 + x+4 = 12$

$2x = 9$
 $x = 4.5$

Sum of all ??

- 2.5 ✓
- 3.5 ✓
- 4.5 ✓
- 5.5 ✓
- 6.5 ✓
- 7.5 ✓
- 8.5 ✓
- 9.5 ✓

$44 + 4 = 48$

$48 / 8 = 6$

Hard Level

*

$a, \frac{1}{a}$

\rightarrow

M

$a^2, \frac{1}{a^2} = ?$

- $1 - m^2$
- $1 - 2m$
- $2m^2 - 1$
- $2m^2 + 1$

$\frac{a^2 + \frac{1}{a^2}}{2}$

$= \frac{(a + \frac{1}{a})^2 - 2 \cdot a \cdot \frac{1}{a}}{2}$

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

$= M$

$= \frac{(2M)^2 - 2}{2}$

$\frac{x^2 + 1}{2x} = M$

$x^2 + 1 = 2Mx$

$= \frac{4M^2 - 2}{2}$

$= \frac{2(2M^2 - 1)}{2}$

$a^2 + 2ab + b^2 = (a+b)^2$
 $= (a-b)^2 + 4ab$

$$= \frac{4r}{2}$$

$$= \frac{2(2M)}{2}$$

$$= (a-b) + \dots$$

$$a^2 + b^2 = (a-b)^2 + 2ab$$

$$= (a+b)^2 - 2ab$$

$$a^2 - b^2 = (a+b)(a-b)$$

$$(4)^1 = 4$$

Even + Even = Even
2 + 4

$$(6)^3 = 216$$

(Even) odd = Even

(odd) Even = odd

$$(3)^4 = 81$$

$$(3)^2 = 9$$

(odd) odd = odd

2 (6)

$$30 - 35 - 40$$

★★

$$2 + 4 + 6 + 8 + 10 + 12 + \dots + 120$$

$$2(1 + 2 + 3 + \dots + 60)$$

$$2(1+2+3+\dots+60) \Rightarrow \frac{60 \times 61}{2} \Rightarrow \frac{60 \times 61}{2} = 1830$$

Age

5 y	10 m	0 d	→ 70
6 y	11 m	0 d	→ 83
2 y	7 m	0 d	→ 31
<hr/>			183
13 y	28 m		

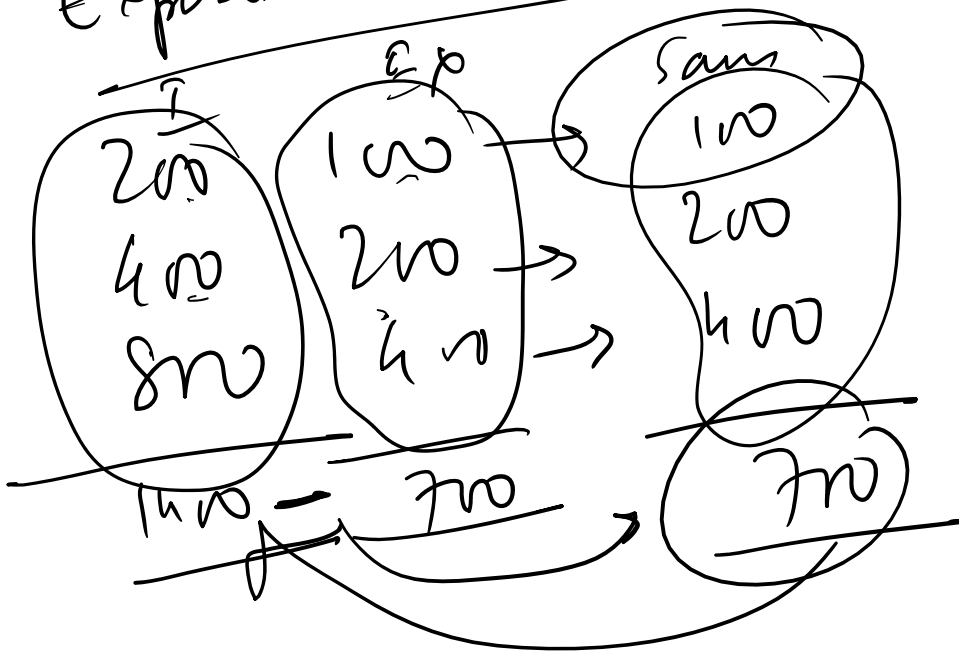
15 y	4 m		
<hr/>			3

$$\frac{60 \times 61}{2} = 1830$$

$$\frac{1830}{3} = 610$$

$$\frac{1}{3} \times 1830 = 610$$

Expendure vs income



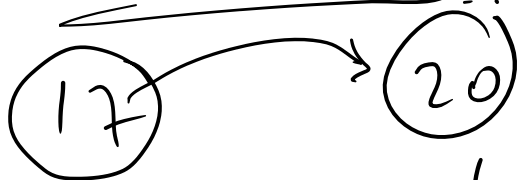
$$\begin{array}{r|l} 70 & 35 \\ 40 & 5 \end{array} \quad \begin{array}{l} 35 \\ 35 \end{array}$$

HCF & LCM

4, 8, 12

HCF → 4 ✓

LCM → 24 ✓



$HCF \times LCM = a \times b = \underline{\underline{320}}$ ✗

- 4 = ~~1, 2, 4~~ (1, 2, 4)
- 8 = (1, 2, 4)
- 12 = (1, 2, 3, 4, 6, 12)

30, 15, 60 HCF

LCM

1, 5, 15, 2, 30

1, 3, 5, 15

1, 2, 3, 5, 4, 6, 10, 20, 15, 12, 30

15

HCF 15 } ✓
LCM 60 } ✓

15 { 30, 15, 60
2 { 2, 1, 4
1, 1, 2

2, 2, 2

NAD

~~LCM~~ ~~HCF~~

NAD

$$\frac{4}{5}, \frac{3}{10}, \text{ \& } \frac{7}{20}$$

$$\text{HCF} \rightarrow \frac{\text{HCF}(4, 3, 7)}{\text{LCM}(5, 10, 20)} = \frac{1}{20}$$

$$\text{LCM} \rightarrow \frac{\text{LCM}(4, 3, 7)}{\text{HCF}(5, 10, 20)} = \frac{84}{5}$$

Proves of HCF & LCM

$$P = 2^{\text{\&}} \times 3^{10} \times 5^x$$
$$Q = 2^5 \times 3^1 \times 7^x$$

$$\text{HCF} = 2^3 \times 3^1$$
$$= \text{\&}$$

$$a = 2^4 \times 3 \times 5^3$$

LCM =

$$b = 2^3 \times 3^2 \times 5$$

$$c = 2^5 \times 3^2 \times 5^2$$

$$\text{HCF} = 2^3 \times 3^1 \times 5^1 \Rightarrow 8 \times 15 = \underline{120}$$

$$\text{HCF} \begin{matrix} 1 & 2 \\ 2 \times 3 \end{matrix} \left[\begin{matrix} 2^3 \times 3^2 \\ 2^1 \times 3^1 \end{matrix} \right]$$

(18)

$$\text{HCF LCM} = 2^3 \times 3^3$$

$$2^1 \times 3^2 \times 7^1$$

$$2^2 \times 3^4 \times 5^2 \times 7^3$$

$$2^2 \times 3^1 \times 7^1$$

$$\text{HCF} \Rightarrow 2^1 \times 3^2 \times 7^1$$

$$\text{LCM} \rightarrow 2^2 \times 3^4 \times 5^2 \times 7^3$$

$$\Rightarrow \frac{1 \times \dots}{2 \times 3^2 \times 7^2 \times 5^2}$$

$$\Rightarrow \boxed{2 \times 3^2 \times 7^2 \times 5^2} \Rightarrow \frac{1 \times \dots}{2 \times 9 \times 49 \times 25}$$

250

$$\begin{array}{r} 500 \\ - 50 \\ \hline 450 \end{array}$$

$$\Rightarrow \underline{49 \times 25 \times 18}$$

$$\begin{array}{r} 45 \\ - 45 \\ \hline 2205 \end{array}$$

$$\frac{1}{2205}$$

2205 2
4

$$\begin{aligned} a &= 2^1 \times 11 \times 7^5 \times 5^4 \times 13^3 \\ b &= 2^1 \times 7^6 \times 5^6 \\ c &= 2^3 \times 7^6 \times 13^3 \times 5^2 \\ d &= 7^4 \times 2^5 \times 5 \times 17^1 \end{aligned}$$

$$2^1 \times 5^1 \times 7^1$$

70

HCF \Rightarrow

