TIME & WORK

1. A B

10 15 LCM(10,15) = 30

3 2

Total units = 3+2 = 5 u/d.

No of days = 30/5 = 6 days.

2. A B C

10 12 15 LCM(10,12,15) = 60

6 5 4

Total units = 6+5+4 = 15

No of days = 60/15 = 4 days.

3. $\frac{P+Q}{6}$ $\frac{P}{10}$ $\frac{Q}{?}$

LCM(6,10) = 30

5 3

3+Q = 5

Q = 2 units/day

No of days = 30/2 = 15 days.

4. $\frac{A+B+C}{12}$ $\frac{B+C}{15}$ LCM of (12,15) = 60

5 4

$A = 5-4 = 1$ unit / day

A can do 14.28% of work.

$= \frac{60}{1} \times 14.28\%$

$= 60 * \left(\frac{1}{7}\right) = 8\frac{4}{7}$.

5. $\frac{A+B}{8}$ $\frac{B+C}{12}$ $\frac{C+A}{16}$

6 4 3 LCM of (8,12,16) = 48

$2(A+B+C) = 13$

$A+B+C = \frac{13}{2}$.

c's efficiency $= \frac{13}{2} - 6 = \frac{1}{2}$.

No of days $= \frac{48}{\left(\frac{1}{2}\right)} = 96$.

6. $\frac{A+B}{15}$ $\frac{B+C}{20}$ $\frac{C+A}{25}$ LCM of (15, 20, 25) = 300

20 15 12

$2(A+B+C) = 47$

$A+B+C = \frac{47}{2}$

No of days $= \frac{300}{\left(\frac{47}{2}\right)} = \frac{600}{47} = 12\frac{36}{47}$.

7. $A = 20$ $B = 25$ LCM of (25, 20) = 100

5 4

For 5 days $= 5(5+4) = 45$ units

Remaining work $= 100 - 45 = 55$

No of days 'A' worked more $= \frac{55}{5} = 11$.

8. $\frac{A}{20}$ $\frac{B}{30}$ $\frac{C}{60}$ LCM of (20, 30, 60) = 60

3 2 1

~~60~~

AAABC
3+3+3+2+1
12

1TP.

No of TP's $= \frac{60}{12} 5$

No of days $= 5 \times 3 = 15$

(9)

A	B	C
11	22	33
6	3	2

LCM (11, 22, 33) = 66

A A B C |
6+6+3+2
14 units
↓↓
1 TP.

No of TP's = $\frac{33}{7}$

$= \frac{66}{14} = 4\frac{10}{14}$

Remaing units = 10 (4)

1 → A – 10

2 → A – $\frac{12}{3}$

No of days = $(2\times4) + 1 + \frac{2}{3}$

$= 9\frac{2}{3}$

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(9)

A	B	C
11	22	33
6	3	2

LCM (11, 22, 33) = 66

A A B C |
6+6+3+2
17 units

$\Rightarrow \frac{66}{17} * 2 = 7\frac{13}{17}$ days

(10)

A	B
8	12
3	2

LCM = 24

$\frac{24}{5}$ = ~~LCM~~ HTP.

AB | ABABAB.

3+2

5

11

HTP

24 − 20 = 4.

Next day A do 3 parts = 1 day

Next 1 part done by 'B' in $\frac{1}{2}$ day.

No of days = (4×2) + 1 + $\frac{1}{2}$ = 9½

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(11)

R	S
20	30
3	2

⇒ 5 units

LCM (20, 30) = 60

No of days = ~~12~~

Remaining work = 60 − 6 = 54 ⇒ $\frac{54}{5} = 10\frac{4}{5}$ days

Total days $10\frac{4}{5} + 13 = 13\frac{4}{5}$ days

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(12) G = 3D ⇒ efficiency ratio ⇒ G : D = 3 : 1

Days ratio = 1 : 3

Gagan = x

dilip = 3x.

Gangan can do 8 days less

$3x - x = 8$

$2x = 8$

$x = 4$

Dilip = 3 × 4 = 12 days

(13) $(5M + 8W) * 8$

$(4M + 6W)\ 10$

$40M + 64W = 40M + 60W$

$64W = 60W$

not possible.

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(14) $(3M) * 5 = (7W) * 5$

$3M = 7W \Rightarrow M = \frac{7W}{3}$

$7m + 5W$

$7\left(\frac{7W}{3}\right) + 5W$

$\frac{49W}{3} + 5W$

$\left(\frac{64W}{3}\right) * x$

$W = \frac{3}{7} M$

$7M + 5W$

$7M + 5\left(\frac{3}{7}\right)M = \frac{43}{4} * x$

$3 * \frac{43}{4} = \frac{43}{4} * x$

$x = 1.2$

39
125
64

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(15) $M_1 D_1 = M_2 D_2$

$x * 60 = (x + 8) * 50$

$60x = 50x + 400$

$10x = 400$

$x = 40$

(16) $\frac{W_1}{W_2} = \frac{M_1 D_1}{M_2 D_2}$

$\frac{72 \times 20}{\left(\frac{1}{3}\right)} = \frac{x \times 60}{\left(\frac{2}{3}\right)}$

$x = 48$

So, $72 - 48 = 24$

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(17) $\frac{W_1}{W_2} = \frac{M_1 D_1 H_1}{M_2 D_2 H_2}$

$\frac{25 * 8 \times 12}{1/4} = \frac{x \times 10 \times 16}{3/4}$

$x = 45$

So, $45 - 25 = 20$

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(18) $A = 15$ $B = 20$ $A+B+C = 5$

LCM = 60

4 3 12

Efficiency $\Rightarrow C = 12 - (4+3) = 5$

Efficiency Ratio = 4 : 3 : 5

Money can distributed in efficiency ratio

A : B : C = 4 : 3 : 5

Total share $12x = 48 \Rightarrow x = 4$

$A = 4x = 4 \times 4 = 16$

$B = 3x = 4 \times 3 = 12$

$C = 5 \times 4 = 20$

(19)

$4M = 6W = 20$ days

$M = \frac{3}{2}W$

$6M + 11W = 6\left(\frac{3}{2}\right)W + 11W = 20W$

$6 \times 20 = 20 \times x$

$x = 6$ days.

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(26) $5M + 6B = 4$; $(4M + 3B)6$ days.

$20M + 24B = 24M + 18B$

$6B = 4M$

$B = \frac{2M}{3}$

$4M + 3B = 6$

$4M + 3\left(\frac{2}{3}M\right) = 6$

$6M = 6$

$3M + 6B = 3M + 6 * (2/3)M = 7M$

$6 \times 6 = 7 \times x$

$x = 5\frac{1}{7}$

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(21) A = 100% B = 130%.

A : B = 10 : 13

(A+B) = 26 parts = 39 days.

A alone 13 parts days

$26 * 39 = 13 \times x$

$x = 78$ days.

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(22) C = 100 B = 50 A = 75

A : B : C = 3 : 2 : 4

$A \times 30 = 5 \times x$

$x = 24$.

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(23) B = 100 A = 150 C = 250/2 = 125

A : B : C = 6 : 4 : 5

$5 \times 40 = 15 \times x$

$x = \frac{40}{3} = 13\frac{1}{3}$

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(24) $A = \frac{B}{2} \rightarrow \frac{3}{4}A = \frac{1}{2}B \Rightarrow A : B = 2 : 3$

$5 * 18 = 3 * x$

$X = 30$

(25) $A = \frac{B}{3}$

$\frac{4}{7}A = \frac{B}{3}$

$A : B = 7 : 12$

$19 * 21 = 7 \times x$

$X = 57$