QUANT 8-2-2024

08 February 2024 09:41

Time & work

More time → less efficient.

Less time Same work more effort.

Assumptions

all are equal

10 → 1

50 → 1/5

10/50

25 people 6hr 9 days

50 people 4 hr ?

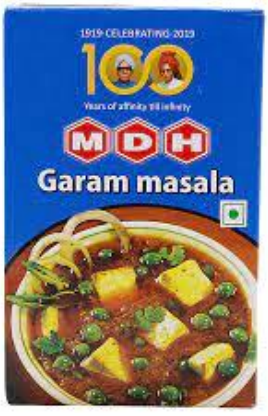
$M_1P_1H_1 = M_2D_2H_2$

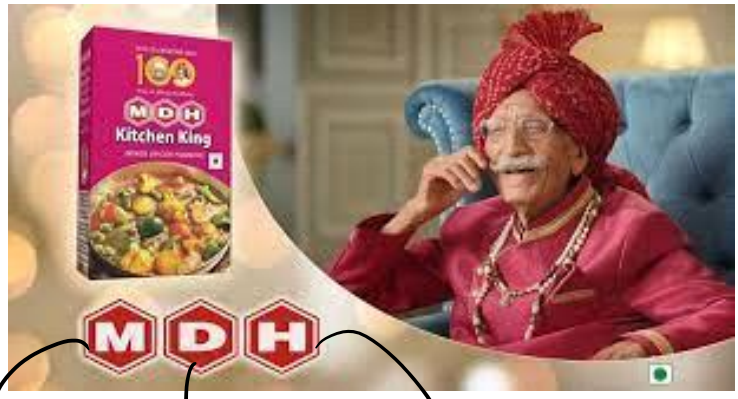
$25 \cdot 6 \cdot 9 = 50 \cdot 4 \cdot D_2$

$\frac{25 \times 6 \times 9}{50 \times 4} = \frac{27}{4} = D_2$

$6.75 = D_2$

MASALA Bylanes MDH





MAN → DAY → HOUR

$M_1D_1H_1 = M_2D_2H_2$

100 People → 100 days

2 people → ??

$M_1D_1H_1 = M_2D_2H_2$

$10 \times 100 = 2 \times D_2$

$\frac{100 \times 10}{2} = D_2$

500 days

15 | 60, 45, 30

2 | 4, 3, 2

2 | 2, 3, 1

Type: 2 — 1 day spend..

A 60

B 45

C 30

$\frac{1}{60} : \frac{1}{45} : \frac{1}{30}$

$\frac{180}{60} : \frac{180}{45} : \frac{180}{30}$

3 : 4 : 6

Type: 3 — water top

10 hr

Both taking

Both emptying

h_1h_2

$h_1 + h_2$

8 hr

3 taps

$\frac{h_1h_2h_3}{h_1h_2 + h_1h_3 + h_3h_2}$

4 taps

$\frac{h_1h_2h_3h_4}{h_1h_2h_3 + h_1h_2h_4 + h_3h_4h_1 + h_3h_4h_2}$

$h_1h_2h_3 + h_1h_2h_4 + h_3h_4h_1 + h_3h_4h_2$

$\frac{h_1 h_2}{h_1 - h_2}$

IN + OUT together..

Type: 4 separate working patterns..

A → x days
B → y days
C → z days

3 people $\Rightarrow \frac{(xyz)}{(xy+yz+zx)} \Leftarrow$ (A+B+C)

5 2 7

2 people $\frac{5 \times 2 \times 7}{10+14+35} = \frac{70}{59}$

$\frac{xy}{x+y}$