Time & Work

Work done = Time taken × Rate of work

Time taken = $\frac{1}{\text{Rate of work}}$

or

Rate of work = $\frac{1}{\text{Time taken}}$

Efficiency and Time are inversely proportional to each other

Efficiency
↑ more efficiency,
↑ more work done

↓ less efficiency,
↓ less work done

Work man
Man-Day

Total work done = Number of days × Efficiency

If M_1 men can finish W_1 work in D_1 days, working T_1 time each day and M_2 men finish W_2 work in D_2 days, working T_2 time then, Relation is

$$\frac{M_1 \times D_1 \times T_1}{W_1} = \frac{M_2 \times D_2 \times T_2}{W_2}$$

If M_1 men can finish W_1 work in D_1 days and M_2 men can finish W_2 work in D_2 days then, Relation is

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

A and B need x and y days to complete the work, A & B together need $\frac{xy}{x+y}$ days

A, B and C complete the work in x, y and z days.
Together they complete the work in $\frac{xyz}{xy+yz+zx}$ days

A and B together need x days to complete the work and A need y days to complete the work.
Then B needs $\frac{xy}{4-x}$ days

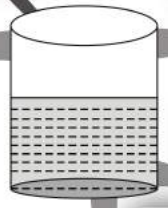
Working together A & B need x days B & C need y days & A & C need z days to complete the work together
A, B & C need $\frac{2xyz}{xy+yz+zx}$ days

A needs x days, B is k times efficient than A
Then A and B together need $\frac{x}{1+k}$ days

Similar to time & work, deals with problems on filling and emptying the tank

Pipes & Cisterns

'A' can finish a work in x hours, then work done by A in one hour = $\frac{1}{x}$



Inlet treated as +ve work

Tank

$1m^3 = 1000$ liter

Outlet treated as –ve work

When two pipes fills and one pipe empty, then $(F_1 + F_2 - E)$

Fills tank in x hours, then part filled in one hour = $\frac{1}{x}$

If x can finish $\frac{m}{n}$ part of the work in D days, then total time taken to finish the work

$$x = \frac{n \times D}{m}$$

Trace the Mind Map

▸ First Level ▸ Second Level ▸ Third Level