

Time & Work

Introduction:

Time and work is assumed to be the toughest topic of the entire Quantitative Aptitude. Why...? Because of the number of the varieties of the questions in it. So what should be the strategy for handling this topic? First we will learn the underlying concept of The Time and Work and then would make a strategy to handle every type to the questions to be asked in the exams. Let us discuss the concept.

Concept of Time and Work (The Law of Time and Work):

Let M = No. of manpower having same efficiencies

D = No. of Days

T = Time in hours or minute

E = Efficiency (Work per unit time)

W = Work done

Then we always have;

$$\frac{M \times D \times T \times E}{W} = \text{Constant}$$

called the LAW OF TIME AND WORK.

How....????

Suppose 17 men having efficiency of 3, working 5 hrs. per day could complete 60 works in 20 days, then we have

$$\frac{M \times D \times T \times E}{W} = \frac{17 \times 20 \times 5 \times 3}{60} = 85 \text{ Let it be Situation (1)}$$

Now suppose we have increased the manpower to 19, then the remaining quantities (D, T, E, W) would adjust itself in such a way that (think practically which is shown with the help of arrows), to keep the overall effect to be 85.

$$\frac{M_2 \times D_2 \times T_2 \times E_2}{W_2} = \frac{19 \times D \downarrow \times T \downarrow \times E \downarrow}{W} = 85 \quad \text{Let it be Situation (2)}$$

Now supposes, if we decreased the manpower to 15, then the remaining quantities (D, T, E, W) would adjust itself in such a way that (think practically which is shown with the help of arrows), to keep the overall effect to be 85.

$$\frac{M_2 \times D_2 \times T_2 \times E_2}{W_2} = \frac{15 \times D \times T \times E}{W} = 85 \quad \text{Let it be Situation (3)}$$

From Situation (1) and Situation (2), we could draw a general conclusion as

$$\frac{M_1 \times D_1 \times T_1 \times E_1}{W_1} = \frac{M_2 \times D_2 \times T_2 \times E_2}{W_2}$$

It is the *universal equation* for time and work.