

Work Problems

Probably, one of the more confusing types of word problems is the problems involving two people doing one job. In this type of problem, you generally know how long it takes each of the people to complete the job alone and are asked to determine the time it will take to complete the job together.

In this type of problem, it is helpful to look at how much of the job each can do in one hour(minute) and determine the number of hours(minutes) x it takes together.

Ex.

It takes Tom 3 hours to plow a mall parking lot and it take Joe 4 hours to plow the same lot. How long will it take them to plow the lot together(assuming they don't stop for coffee and to talk)?

Let x = the number of hours it takes to complete the job

Tom completes the job in 3 hours so he completes $\frac{1}{3}$ in 1 hour

Tom completes $\frac{x}{3}$ of the job in x hours

Joe completes the job in 4 hours so he completes $\frac{1}{4}$ in 1 hour

Joe completes $\frac{x}{4}$ of the job in x hours

Together they perform 1 job (together = addition)

$$\frac{x}{3} + \frac{x}{4} = 1 \quad \text{multiply both sides by 12 to eliminate the fractions}$$

$$4x + 3x = 12$$

$$7x = 12$$

$$x = 12/7 \text{ hours} \quad \text{remember to include the units for the answer}$$