Applications of Rational Equations

Goal: To solve work and constant motion apps



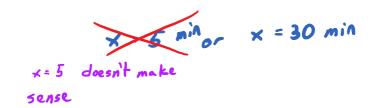
Work App

15. Filling a pool. The San Paulo community swimming pool can be filled in 12 hr if water enters through a pipe alone or in 30 hr if water enters through a hose alone. If water is entering through both the pipe and the hose, how long will it take to fill the pool?



21. Hotel management. The Austin Healthmate 400 can purify the air in a conference hall in 15 fewer minutes than it takes the Airgle 750 Air Purifier to do the same job. Together the two machines can purify the air in the conference hall in 10 min. How long would it take each machine, working alone, to purify the air in the room?

Source: Based on information from manufacturers' and retailers' websites



So, it takes the Airgle 30 min and the Austin 15 min to finish individually.



Constant Motion App

36. Train speed. The A train goes 12 mph slower than the E train. The A train travels 230 mi in the same time that the E train travels 290 mi. Find the speed of each train.

$$\frac{0}{R} = \frac{R \cdot T}{R}$$
Train A 230 (r-12) $E = \frac{230}{r-12}$

$$T = \frac{0}{R}$$
Train E 290 (p) $E = \frac{230}{r-12}$

$$\frac{290}{r} = \frac{290}{r}$$

$$\frac{290}{r-12} = \frac{290}{r}$$

Train E goes 58 mph, and Train A goes 46 mph.