

Tracy can paint the living room by herself in 6 hours. Working alone, Andre can paint the living room in 10 hours. If Tracy and Andre work together, how long will it take them to paint the living room?

Step 1- Make and fill in a table using Rate • Time = Work

We will make the entire table first.

	Rate	Time	Work
Tracy			
Andre			

Since Tracy would take 6 hours to paint the room, every hour she gets $\frac{1}{6}$ of the work done. This is Tracy's rate (how fast she paints the room).

Because Andre would take 10 hours to paint the room, every hour he gets $\frac{1}{10}$ of the work done. This is Andre's rate (how fast he paints the room).

	Rate	Time	Work
Tracy	$\frac{1}{6}$		
Andre	$\frac{1}{10}$		

Traci and Andre will be working for the same amount of time (nothing in the wording of the problem suggests that one will be starting later than the other). Since we don't know how long that time will be, we will call it T .

	Rate	Time	Work
Tracy	$\frac{1}{6}$	T	
Andre	$\frac{1}{10}$	T	

We can multiply Rate • Time to fill in the boxes for Work.

	Rate	Time	Work
Tracy	$\frac{1}{6}$	T	$\frac{T}{6}$
Andre	$\frac{1}{10}$	T	$\frac{T}{10}$

Step 2- Make an equation knowing that the **total work = 1** (When the work is done, it equals one- catchy, isn't it?)

$$\text{Tracy's work} + \text{Andre's work} = \text{Total work}$$

$$\frac{T}{6} + \frac{T}{10} = 1$$

Step 3- Solve the equation

Let's make the fractions disappear by multiplying everything by **30** (because 6 and 10 both go into **30**).

$$30\left(\frac{T}{6} + \frac{T}{10} = 1\right)$$

$$5T + 3T = 30$$

$$8T = 30$$

$$T = \frac{30}{8} = 3\frac{3}{4} \text{ or } 3.75$$

Step 4- Answer the question from the problem

$$3\frac{3}{4} \text{ hours (or 3.75 hours)}$$