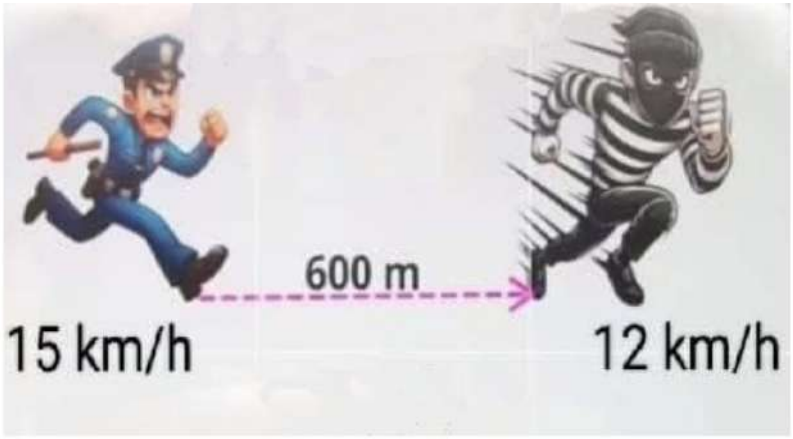
# *Solución a "Police man chase a thief"*

## Enunciado:




*A police officer sees a thief 600 m away. He runs to catch him, and after 10 seconds, the thief sees him and runs away. The thief and the police officer run at 12 km/h and 15 km/h respectively. Calculate the time (in minutes and seconds) it takes the police officer to catch the thief.*

## Solución:


After 10 seconds the policeman runs: $15\,\frac{km}{h}\cdot\frac{1000\,m}{1\,km}\cdot\frac{1\,h}{3600\,s}\cdot 10\,s=\frac{125}{3}\,m$

Just then, the thief sees the policeman and starts running.

Let's call $t$ the time in *seconds* that it takes from that moment for the thief to be caught.

In $m/s$ the two speeds would be respectively: $v_{policeman}=\frac{25}{6}\,m/s$ and $v_{thief}=\frac{10}{3}\,m/s$

Then the space covered by the police officer will be (600-125/3) plus the space covered by the thief during that time $t$ *(seconds)*; that mean:

$$\frac{25}{6}\cdot t=\left(600-\frac{125}{3}\right)+\frac{10}{3}\cdot t$$

$$\frac{25\,t}{6}=\frac{1675}{3}+\frac{10\,t}{3}\Leftrightarrow\frac{25\,t}{6}=\frac{3350+20\,t}{6}\Leftrightarrow 25\,t=3350+20\,t\Leftrightarrow t=670$$

670 seconds since the thief started running. But the policeman ran 10 seconds more, therefore: 680 seconds.

But 680 seconds are ***11 minutes and 20 seconds***. Then:

## Solution: ***11 minutes and 20 seconds***