

Question #25261

The ages of Arun and Mahima are in the ratio 7:5. Ten years hence the ratio of their ages will be 9:7, find their present ages.

Solution: Let the age of Arun equals x , and the age of Mahima y . We can construct the following system of linear equations with two unknowns:

$$\begin{cases} \frac{x}{y} = \frac{7}{5} \\ \frac{x+10}{y+10} = \frac{9}{7} \end{cases} \rightarrow \begin{cases} x = \frac{7y}{5} \\ \frac{x+10}{y+10} = \frac{9}{7} \end{cases}$$

Substitute the value of x into the second equation:

$$\frac{\frac{7y}{5}+10}{y+10} = \frac{9}{7} \rightarrow \frac{7y+50}{5y+50} = \frac{9}{7} \rightarrow (7y+50)7 = (5y+50)9 \rightarrow$$

$$\rightarrow 49y + 350 = 45y + 450 \rightarrow 4y = 100 \rightarrow y = 25 \rightarrow$$

$$\rightarrow x = \frac{7 \times 25}{5} = 7 \times 5 = 35.$$

Answer: Age of Arun – 35, age of Mahima – 25.