

Word problem

Five years ago, Jay was seven times older than Mary. In five years, Mary will be half as old as Jay (or Jay will be twice as old as Mary). How old is each now?

Table

People	5 years ago	In 5 years
Mary	x	$\frac{7x+10}{2}$
Jay	7x	7x + 10

Equation

$$7x + 10 = 2(x+10)$$

$$7x+10=2x+20$$

$$7x-2x=20-10$$

$$5x=10$$

$$x=10/5=2$$

Results

Now Mary's age is $x+5 = 7$, and Jay's age is $7x+5 = 19$

Reasoning

Mary's age of 5 years ago is the variable and Jay was 7 times Mary's age, 5 years ago. In 5 years Mary will be half as old as Jay and Jay will be twice as old as Mary. So the equation says that in five years from now (so ten years after Mary was X) Jays's age will be twice Mary's age (x+10).