

June 4th

The ratio of Michael's age to Ruth's age is now 3:2, and in five years time the ratio will be 5:4.

Find their ages now, and the ratio of their ages in ten years time.

In how many years from now will the ratio become 12:11?

$$M:R = 3:2$$

$$M+5:R+5 = 5:4$$

Therefore

$$2M=3R \quad (1)$$

$$4M + 20 = 5R + 25 \quad (2)$$

Substituting (1) into (2) gives

$$6R + 20 = 5R + 25$$

$$R=5 \quad \text{and therefore } M=7.5$$

Ruth is 5, Michael is 7 ½

In ten years' time

$$R=15, M=17.5$$

$$\text{Ratio } 17.5:15 = \mathbf{7:6}$$

Since Michael is 2 ½ years older, and for the ratio to be 12:11, he needs to be $\frac{1}{11}$ older, then Ruth is $11 \times 2 \frac{1}{2} = 27 \frac{1}{2}$, which is

in 22 ½ years from now