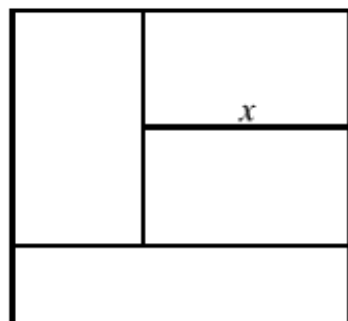12. The diagram, which is not to scale, shows a square with side length 1, divided into four rectangles whose areas are equal. What is the length labelled x?

A $\dfrac{2}{3}$ B $\dfrac{17}{24}$ C $\dfrac{4}{5}$ D $\dfrac{49}{60}$ E $\dfrac{5}{6}$

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12. **A**   As the square has side length 1 its area is $1 \times 1 = 1$.
Thus the area of each of the four rectangles is $\frac{1}{4}$.
The length of the bottom rectangle is 1 hence its width is $\frac{1}{4}$.
Thus the width of each of the two congruent rectangles is $\frac{1}{2}\left(1 - \frac{1}{4}\right) = \frac{3}{8}$.
Hence the area of one of these congruent rectangles is $\frac{3}{8}x$.
But we know this area is $\frac{1}{4}$, therefore $\frac{3}{8}x = \frac{1}{4}$ and hence $x = \frac{2}{3}$.