

$$10/ \frac{3}{k-3} + \frac{4}{k-4} = \frac{25}{k^2-7k+12}$$

$$(k-4)(k-3)$$

$$\frac{LCD}{(k-4)(k-3)}$$

$$(k-4)(k-3) \left( \frac{3}{k-3} + \frac{4}{k-4} = \frac{25}{(k-4)(k-3)} \right)$$

$$\frac{3(k-4)(\cancel{k-3})}{\cancel{k-3}} + \frac{4(\cancel{k-4})(k-3)}{\cancel{k-4}} = \frac{25(k-4)(\cancel{k-3})}{(k-4)(\cancel{k-3})}$$

$$3(k-4) + 4(k-3) = 25$$

$$3k-12 + 4k-12 = 25$$

$$7k - 24 = 25$$

$$+24 \quad +24$$

$$\frac{7k}{7} = \frac{49}{7}$$

$$\boxed{k=7}$$

Check

$$\frac{3}{7-3} + \frac{4}{7-4} = \frac{25}{(7-4)(7-3)}$$

$\begin{matrix} 3 & 4 \\ 3 & 4 \end{matrix}$

$$3 \cdot \frac{3}{3} + \frac{4 \cdot 4}{3 \cdot 4} = \frac{25}{12}$$

$$\frac{9}{12} + \frac{16}{12} = \frac{25}{12}$$

$$\frac{25}{12} = \frac{25}{12} \quad \checkmark \quad \Downarrow$$