

S1.1 #32 Phillip's Question

$$\frac{x-8}{5} - 1 = \frac{1}{4}(x-1)$$

Method 1: Put every thing over LCD & equate numerators, via $\frac{A}{B} = \frac{C}{B} \Rightarrow A=C$

$$\text{LCD} = 4 \cdot 5 = 20$$

$$\left(\frac{x-8}{5}\right)\left(\frac{4}{4}\right) - \left(\frac{1}{1}\right)\left(\frac{20}{20}\right) = \left(\frac{x-1}{4}\right)\left(\frac{5}{5}\right)$$

$$\frac{4(x-8) - 20}{20} = \frac{5(x-1)}{20} \quad \frac{A}{B} = \frac{C}{B}$$

$$4x - 32 - 20 = 5x - 5 \quad A = C$$

$$4x - 52 = 5x - 5$$

$$\begin{array}{r} -5x \quad = -5x \\ \hline \end{array}$$

$$-x - 52 = -5$$

$$\begin{array}{r} +52 = +52 \\ \hline \end{array}$$

$$-x = 47$$

$$\boxed{x = -47} \Rightarrow x \in \{-47\}$$

METHOD 1 is needed for INEQUALITIES in Chapter 3!

Method 2 next page

METHOD 2:

Multiply every term by LCD to clear fractions.

$$\text{LCD} = 20$$

$$\left(\frac{x-8}{5}\right)\left(\frac{20}{1}\right) - \left(\frac{1}{1}\right)\left(\frac{20}{1}\right) = \left(\frac{x-1}{4}\right)\left(\frac{20}{1}\right)$$

$$\left(\frac{x-8}{\cancel{5}^4}\right)\left(\frac{\cancel{20}^4}{1}\right) - \left(\frac{1}{1}\right)\left(\frac{20}{1}\right) = \left(\frac{x-1}{\cancel{4}^5}\right)\left(\frac{\cancel{20}^5}{1}\right)$$

$$\Rightarrow 4(x-8) - 20 = 5(x-1) \text{ and the}$$

rest is like before:

$$4x - 32 - 20 = 5x - 5, \text{ etc.}$$