

1. Simplify the expression $10 - 3(x - 4) - 7(2x - 6)$

$$10 - 3x + 12 - 14x + 42$$

$$-17x + 64$$

2. Solve the equations for the given unknown. Clearly state the solution, if it exists. If it does not, state "no solution".

a. $3x - 4 = 2x + 11$

$$\begin{array}{r} -2x \quad -2x \\ \hline \end{array}$$

$$\begin{array}{r} x - 4 = 11 \\ +4 \quad +4 \\ \hline \end{array}$$

$$\boxed{x = 15}$$

b. $2(x - 7) + 5x = 7(x - 3) + 9$

$$2x - 14 + 5x = 7x - 21 + 9$$

$$7x - 14 = 7x - 12$$

$$\begin{array}{r} -7x \quad -7x \\ \hline \end{array}$$

$$-14 = -12 \quad \text{Contradiction}$$

$$\boxed{\text{No solution}}$$

c. $4(2x - 5) + 11 = 3(x + 6) - 12 - x$

$$8x - 20 + 11 = 3x + 18 - 12 - x$$

$$8x - 9 = 2x + 6$$

$$\begin{array}{r} -2x \quad -2x \\ \hline \end{array}$$

$$6x - 9 = 6$$

$$+9 \quad +9$$

$$\hline 6x = 15$$

$$\frac{6x}{6} = \frac{15}{6}$$

$$\boxed{x = \frac{5}{2}}$$

d. $4(x - 4) + 5 = 2x + 1 + 2(x - 6)$

$$4x - 16 + 5 = 2x + 1 + 2x - 12$$

$$4x - 11 = 4x - 11$$

identity

$$\boxed{x \text{ is all real numbers}}$$