

# Solving Linear Equations

Example 1

$$\begin{aligned} \frac{2x+1}{3} + 10 &= 15 \\ \frac{2x+1}{3} &= 5 \\ 2x+1 &= 15 \\ 2x &= 14 \\ x &= 7 \end{aligned}$$

if you know  $x$

$$\begin{aligned} \times 2 \\ + 1 \\ \div 3 \\ + 10 \end{aligned}$$

reverse process to solve for  $x$

Example 2

$$\begin{aligned} 5(3k+4) - 7 &= 58 \\ 15k + 20 - 7 &= 65 \\ 15k + 13 &= 65 \\ 15k &= 52 \\ k &= \frac{52}{15} \end{aligned}$$

$k$

$$\begin{aligned} \times 3 \\ + 4 \\ \times 5 \\ - 7 \end{aligned}$$

reverse to solve for  $k$ .

Example 3

$$\begin{aligned} 3(x-2) + 4(x+1) &= 6(x+2) \\ 3x - 6 + 4x + 4 &= 6x + 12 \\ 7x - 2 &= 6x + 12 \\ x - 2 &= 12 \\ x &= 14 \end{aligned}$$

distribute!

← simplify first.

Check: LHS:  $3(x-2) + 4(x+1) = 3(14-2) + 4(14+1)$

$$\begin{aligned} &= 3(12) + 4(15) \\ &= 36 + 60 \\ &= 96 \end{aligned}$$

RHS:  $6(x+2) = 6(14+2)$

$$\begin{aligned} &= 6(16) \\ &= 96 \end{aligned}$$

∴ LHS = RHS

