

# Solving Equations

(without modeling)

Solve the following equation.

$$x - 11 = 3(4)$$

## Steps

- 1) Simplify each side of equation (if possible)

$$\begin{aligned} x - 11 &= 3(4) \\ x - 11 &= 12 \end{aligned}$$

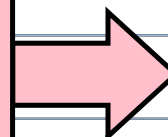
- 2) Goal: **isolate the variable** (remove "pieces" of the equation to get the variable by itself)

Perform inverse (opposite) operation to remove #s on the same side as the variable

To "undo"	Use
+	-
-	+
$\times$	$\div$
$\div$	$\times$

Inverse operations  
**"un-do"** or **cancel**  
each other!

Move this box to see why!



$$\begin{aligned} x - 11 &= 12 \\ +11 & \\ \hline x &= \end{aligned}$$

- 3) To keep the equation balanced, whatever you did to one side of the equal sign, **you must** do to the other side

$$\begin{aligned} x - 11 &= 12 \\ +11 & \quad +11 \\ \hline x &= 23 \end{aligned}$$

- 4) Check by plugging your answer into the original equation!

$$\begin{aligned} x = 23 & \rightarrow x - 11 = 3(4) \\ 23 - 11 &= 3(4) \\ 12 &= 12 \quad \checkmark \end{aligned}$$

