



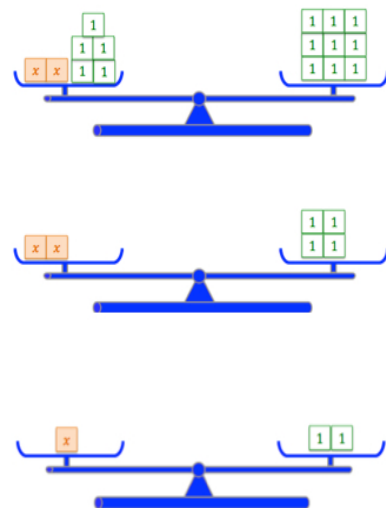
In the previous tutorial, we explored different approaches for solving 2-step equations.

$$2x + 5 = 9$$

The example below shows how *substitution* can be used to solve the equation $2x + 5 = 9$. How would *you* explain the steps performed in this solution path?

$$\begin{aligned} 2x + 5 &= 9 \\ 2(2) + 5 &= 9 \\ 4 + 5 &= 9 \\ 9 &= 9 \end{aligned}$$

How would you explain using a *balance scale model* to solve the equation $2x + 5 = 9$?





Solving the equation $2x + 5 = 9$ using algebra involves performing *inverse* or *opposite operations*.

How would you use the facts shown below to explain how inverse or opposite operations help you solve?

$$x + 5 = 9 \dots \textit{What's the opposite of addition?}$$

$$2 \times x = 4 \dots \textit{What's the opposite of multiplication?}$$

A student has solved the equation $2x + 5 = 9$ using algebra. How would you explain each step in their solution path?

$$2x + 5 = 9$$

$$2x + 5 - 5 = 9 - 5$$

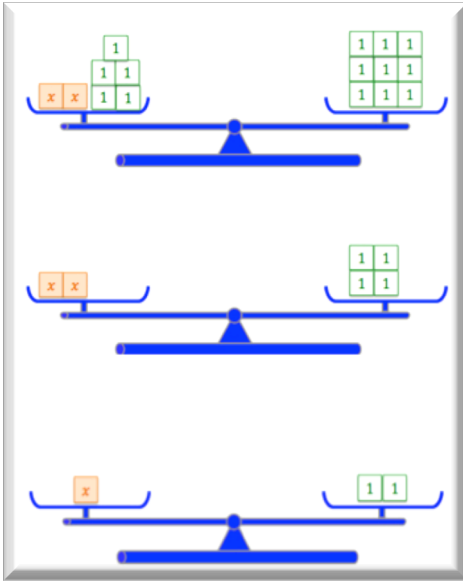
$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$



How is solving the equation $2x + 5 = 9$ using algebra similar to the balance scale solution?

How would you describe the similarities between the two solution paths?



$$2x + 5 = 9$$

$$2x + 5 - 5 = 9 - 5$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$



How does the earlier *substitution* approach for solving allow you to verify your *algebra* solution?

$$2x + 5 = 9$$

$$2x + 5 - 5 = 9 - 5$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$

Let's try solving more 2-step equations...

How would you summarize an *algebra* solution path for solving all four problems shown below?

$$6a - 15 = 45$$

$$\frac{m}{4} + 2 = 18$$

$$3.2 + 4.5d = 18.5$$

$$7 = \frac{m}{6} + 1.5$$



How would you explain and demonstrate using algebra to solve $6a - 15 = 45$?

How would you explain and demonstrate using algebra to solve $\frac{m}{4} + 2 = 18$?

How would you explain and demonstrate using algebra to solve...
 $3.2 + 4.5d = 18.5$?

How would you explain and demonstrate using algebra to solve $7 = \frac{m}{6} + 1.5$?

Solving 2-step equations - Skills Checklist

- I can define an equation
- I can read an equation
- I can use a balance scale model to represent and solve an equation
- I can solve an equation using algebra
- I can verify my solution for an equation using substitution

Solving 2-step equations - Worksheet



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