

# Questions/Reflections

- If children don't understand the "balance" meaning of the equals sign, what do they probably think it means?
- What is another helpful word or phrase teachers can use besides "equals" when reading the "=" sign in an equation?
- How can you "fix" these unbalanced equations?

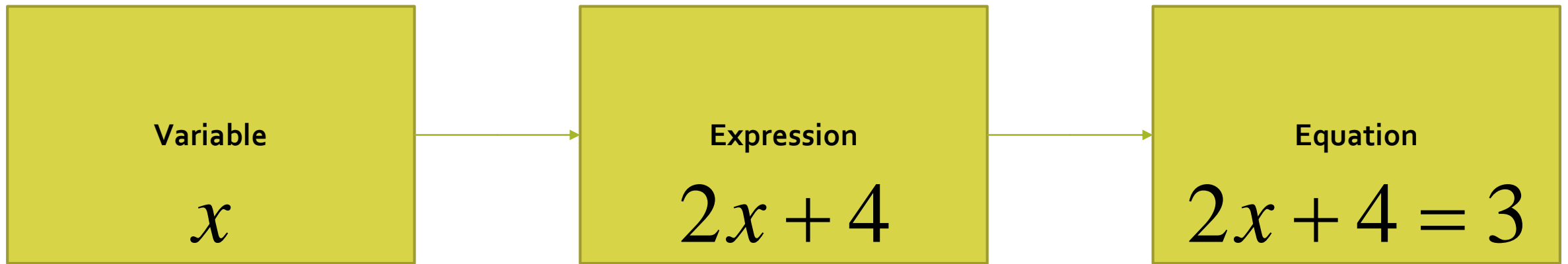
$$(a) \quad 7 \times 5 = 35 + 7 = 42$$

$$(b) \quad 3 \times 4 = 12 \div 2 = 6 \times 4 = 24 + 16 = 40$$

# PROBLEM SOLVING WITH ALGEBRA

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# Basic Idea

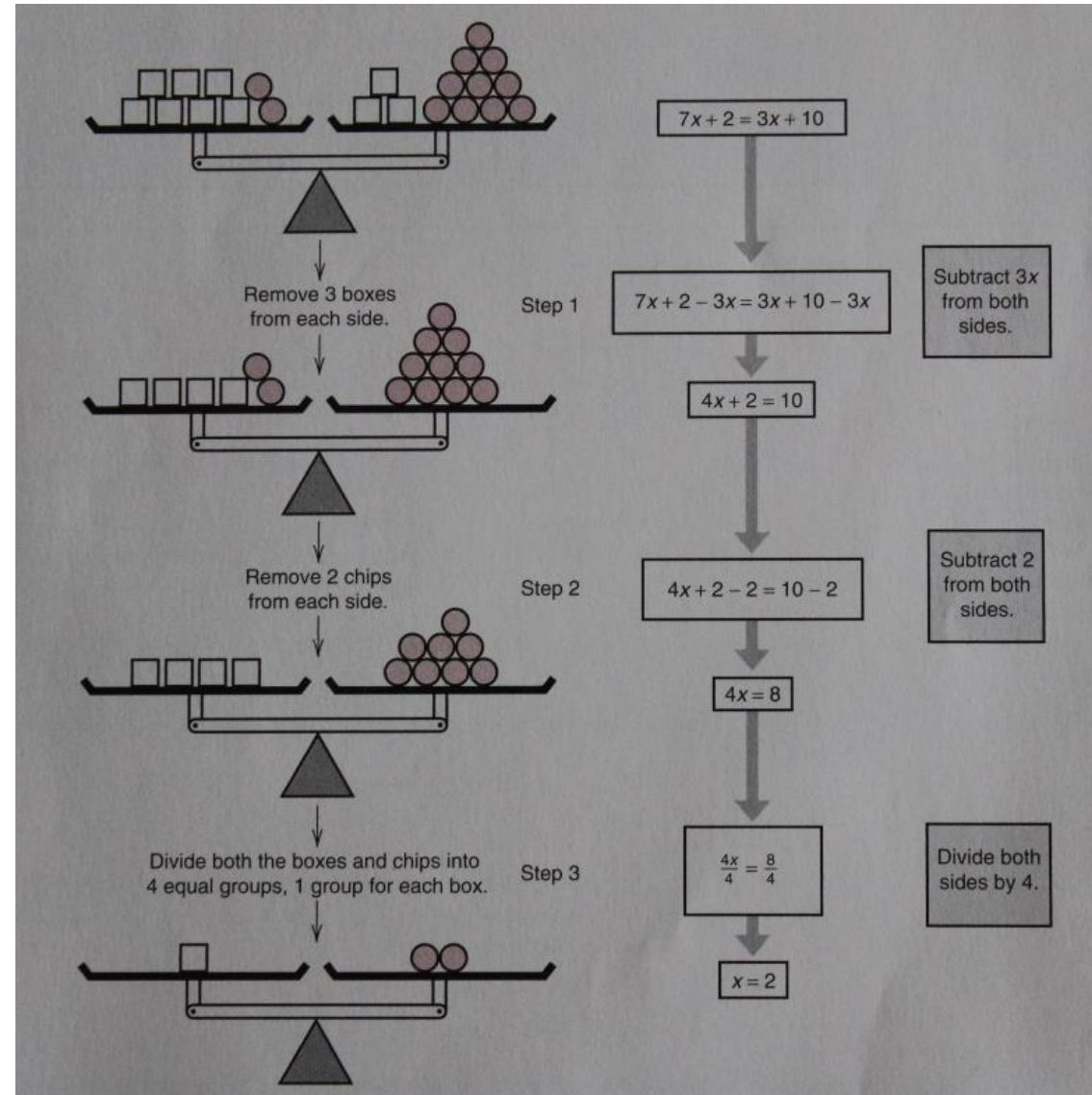


# Balance Scale Model

## Visual Representation

VS.

## Algebraic Representation



Source: Bennett & Nelson, 2004

## Problem

Mike has 360 feet of fence. He builds a square pen with the fence and has 80 feet remaining. What is the length of one side of the square of the pen?

## Algebra “Tricks”

Pick a number. Add 4 to it. Multiply the answer by 6. Subtract 9. Divide by 3. Add 13. Divide by 2. Subtract your original number.

**I know your number!**

A 1981 study showed that more than 33% of engineering students answered this question incorrectly:

Write an equation using variables  $s$  and  $p$  to represent the following statement:

“At this university there are 6 times as many students as professors.”

Use  $s$  for the number of students and  $p$  for the number of professors.

- (a) What is the correct equation?
- (b) The most popular (erroneous) answer was  $6s = p$ . Give a possible explanation for this.

Source: Rosnick, 1981