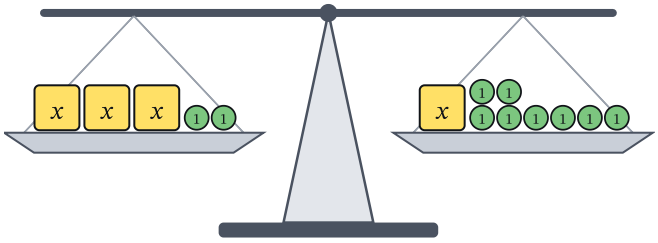
Name _____ Date _____

The Unknown on Both Sides



Example

$3x + 2 = x + 8 \quad | -x$

$2x + 2 = 8 \quad | -2$

$2x = 6 \quad | \div 2$

$x = 3$

Check: $3 \times 3 + 2 = 11$,

$3 + 8 = 11$ ✓

Remember

First collect the unknowns on one side and the numbers on the other, always doing **the same to both sides**. Write the operation next to each step (e.g. $| -x$). Finally, check by substituting into the **original** equation.

1 ON YOUR OWN Solve step by step.

$5x + 1 = 2x + 13 \quad |$ ☐

☐ | ☐

☐ | ☐

$x =$ ☐

$6x + 5 = 2x - 7 \quad |$ ☐

☐ | ☐

☐ | ☐

$x =$ ☐

2 IN PAIRS **Two ways.** Mia and Luka solve $2x + 9 = 5x - 3$. Mia collects the unknowns on the right and Luka on the left. Solve it both ways. Which way is simpler here, and why?

Mia:

Luka:

Names (pair) _____ Date _____

3 ON YOUR OWN Solve and check.

$3 - 2x = x + 9 \rightarrow x =$ ☐

$8 - x = 3x \rightarrow x =$ ☐

$0.5x + 2 = 1.5x - 1 \rightarrow x =$ ☐

$-4x + 7 = -x - 5 \rightarrow x =$ ☐

4 IN PAIRS Solve in the Balance Scales app: $-2x + 5 = x - 4$. On the left there are two $-x$ balloons: they pull upwards. How did you get rid of the $-x$ balloons?

$x =$ ☐

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5 ON YOUR OWN **Stickers.** Ana has 3 times as many stickers as Ivan. When Ana gives Ivan 10 stickers, they have the same number. How many stickers does Ivan have? Let x be the number of Ivan's stickers.

Equation: ☐ Ivan has ☐

The Balance Scales app · otooly.com/balance-scales

A parcel x and a balloon $-x$ make a zero pair: add x to both sides, then press **Remove zero pairs**.

★ ON YOUR OWN **Exit card.** $5x - 3 = 2x + 9 \rightarrow x =$ ☐