

Essential Question

How do I solve a formula for the variable I need?

Solve First, Then Plug In

- Find the variable the problem asks for
- Get it alone on one side
- Then substitute the numbers

Before you put any numbers into a formula, find the variable the problem asks for and get it by itself on one side of the equals sign.

Same Thing to Both Sides

- An equation is a balance
- Do the same step to both sides
- Use the opposite operation

An equation works like a balance: both sides are equal, so whatever you do to one side, you must do to the other.

Undo Steps in Reverse Order

- Last step done is the first step undone

When a formula has more than one operation, undo them in the **reverse order** they were done to the variable.

Variable on the Bottom

- Multiply both sides by the bottom
- Then divide to get it alone
- Example: $V = m/D$

If the variable you want is in the denominator, first multiply both sides by it to move it off the bottom.

The Triangle Shortcut

- Only for three-letter formulas
- Use it to check your algebra
- Algebra works for every formula

Cover the letter you want:
letters stacked mean
divide, and letters side by
side mean multiply.

Example: Mass of Mercury

Try it first!

Mercury has a density of 13.6 g/mL. What is the mass of 5.00 mL of mercury? Use $D = m/V$.

Example: Specific Heat

Try it first!

A 50.0 g metal sample absorbs 269 J and warms by 12.0 °C. Use $q = mc\Delta T$ to find c .

Example: Car Speeding Up

Try it first!

A car speeds up from 5.0 m/s to 25.0 m/s in 4.0 s. Solve $v_f = v_i + at$ for a , then find a .

Big Ideas

- Rearrange before plugging in
- Same step to both sides
- Undo in reverse order
- Triangle: a check only