

Problem-Solving Strategy: Work Backward

In most problems, a set of conditions or facts is given and an end result must be found. However, some problems start with the result and ask for something that happened earlier. The strategy of **working backward** can be used to solve problems like this. To use this strategy, start with the end result and *undo* each step.

Example

Paco spent half of the money he had this morning on lunch. After lunch, he loaned his friend a dollar. Now he has \$1.50. How much money did Paco start with?

Start with the end result, \$1.50, and work backward to find the amount Paco started with.

Paco now has \$1.50.	→	\$1.50	
Undo the \$1 he loaned to his friend.	→	$\frac{+1.00}{\$2.50}$	← Add \$1.00 to undo giving his friend \$1.00.
Undo the half he spent for lunch.	→	$\frac{\times 2}{\$5.00}$	← Multiply by 2 to undo spending half the original amount.

The amount Paco started with was \$5.00.

CHECK Paco started with \$5.00. If he spent half of that, or \$2.50, on lunch and loaned his friend \$1.00, he would have \$1.50 left. This matches the amount stated in the problem, so the solution is correct.