

**Working backward** in problem solving is a technique where you start with the desired outcome or goal and then work your way backward to determine the steps needed to achieve that goal. It involves breaking down the problem into smaller, more manageable parts and identifying the necessary actions or conditions that must be met at each step. By starting from the end and working backward, this approach helps to identify the logical sequence of steps required to reach the desired solution. The "Work Backward" method works well for problems where a series of operations is done on an unknown number and you're only given the result. To use this method, start with the result and apply the operations in reverse order until you find the starting number.

Example:

1. ***Anne has a certain amount of money in her bank account on Friday morning. During the day she writes a check for \$24.50, makes an ATM withdrawal of \$80 and deposits a check for \$235. At the end of the day she sees that her balance is \$451.25. How much money did she have in the bank at the beginning of the day?***

### **Step 1: Understand**

We need to find the money in Anne's bank account at the beginning of the day on Friday.

She took out \$24.50 and \$80 and put in \$235.

She ended up with \$451.25 at the end of the day.

### **Step 2: Strategy**

We start with an unknown amount, do some operations, and end up with a known amount.

We need to start with the result and apply the operations in reverse.

### **Step 3: Apply Strategy/Solve**

Start with \$451.25.

Subtract \$235, add \$80, and then add **\$24.50**.  $451.25 - 235 + 80 + 24.50 = 320.75$

Anne had \$320.75 in her account at the beginning of the day on Friday.

Anne starts with	<b>\$320.75</b>
She writes a check for \$24.50	<b><math>\\$320.75 - 24.50 = \\$296.35</math></b>
She withdraws \$80	<b><math>\\$296.25 - 80 = \\$216.25</math></b>
She deposits \$235	<b><math>\\$216.25 + \\$235 = \\$451.25</math></b>