Example

There are 22 more women than men in a math class of 250 students. How many women and men are there in the class?

Solution steps:

• Let \( x \) denote the number of men and \( y \) denote the number of women. It must be that 
  \[ x + y = 250. \]

• In order to write the last equation in terms of a single variable, we can use the fact that there are 22 more women than men, or that 
  \[ y = 22 + x, \]
  which we substitute into the equation \( x + y = 250 \) to obtain 
  \[ x + (22 + x) = 250, \]
  or 
  \[ 2x + 22 = 250. \]

• Subtract 22 from both sides of the equation so that only terms involving \( x \) are on the left-hand side of the equation:
  \[ 2x = 250 - 22 = 228 \quad \Rightarrow \quad x = \frac{228}{2} = 114, \]
  so there are 114 men in the class.

• Now go back and determine the number of women in the class using the relationship \( y = 22 + x \) found earlier:
  \[ y = 22 + x = 22 + 114 = 136. \]

Therefore the number of men in the class is \( \boxed{114} \) and the number of women is \( \boxed{136} \).