To solve equations using backtracking, construct a flow chart and then use inverse operations to find the value of the unknown. Remember that the inverse of addition is subtraction, the inverse of subtraction is addition, the inverse of division is multiplication and the inverse of multiplication is division.

**WORKED EXAMPLE**

Solve the following equations, using backtracking.

\( a \ x + 25 = 90 \)

\( b \ x + 2x - 30 = 180 \)

**THINK**

\( a \)

1. Write the equation.
2. Construct a flow chart and build up an expression beginning with \( x \).

\( b \)

1. Copy the equation and simplify by gathering like terms together.
2. Construct a flow chart and build up an expression beginning with \( x \).

**WRITE**

\( a \)

\[ x + 25 = 90 \]

\[ x + 25 \]

\[ 90 \]

\[ x \]

\[ 65 \]

\[ 90 \]

\[ x = 65 \]

\( b \)

\[ x + 2x - 30 = 180 \]

\[ 3x - 30 = 180 \]

\[ x \]

\[ 70 \]

\[ 210 \]

\[ 180 \]

\[ x = 70 \]
Try these
Solve the following equations, using backtracking.

1. \( x + 55 = 90 \)
2. \( x + 72 = 180 \)
3. \( x + 15 + 20 = 90 \)
4. \( x + 40 + 62 = 180 \)
5. \( x + 148 = 360 \)
6. \( x + 50 + 140 = 360 \)
7. \( x + x + x + x = 180 \)
8. \( 2x + 3x = 90 \)
9. \( x + 3x - 20 = 180 \)
10. \( 2x + 3x + 50 = 360 \)
11. \( x + 5x - 60 = 180 \)
12. \( x + x + x + x + x = 360 \)