# Solving for a given variable

I can rewrite (rearrange) an equation or formula for a given variable.

\[ 2x + y = 4 - 2x \]

### Group Work:
Rearrange the following equations so that they equal "x"

<table>
<thead>
<tr>
<th>Equation</th>
<th>3x + 2y = 8</th>
<th>( \frac{x}{a} + b = c )</th>
</tr>
</thead>
<tbody>
<tr>
<td>( \frac{a}{a} - bx = c )</td>
<td>( 3x + 2y = 8 )</td>
<td>( \frac{x}{a} + b = c )</td>
</tr>
<tr>
<td>( \frac{-b}{b} = \frac{c-a}{b} )</td>
<td></td>
<td>( \frac{x}{a} = (c-b)a )</td>
</tr>
<tr>
<td>( x = \frac{c-a}{b} )</td>
<td></td>
<td>( x = a(c-b) )</td>
</tr>
</tbody>
</table>
Purpose:
* Solve an equation for another variable.

* This is just like solving an equation ... you still use the same steps and inverse properties.

\[ F = \frac{9}{5} C + 32 \]

Solve for \( C \).

\[ \frac{5}{9} (F - 32) = \left(\frac{9}{5} C\right) \]

Solve for \( C \).

\[ \frac{x - a}{b} = c \]

Solve for \( x \).

\[ bc = x - a \]

\[ H = 2\sqrt{J} \]

Solve for \( J \).
<table>
<thead>
<tr>
<th>2x + y = 7  For y.</th>
<th>a(x + b) = c  For x.</th>
</tr>
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<tbody>
<tr>
<td>18x - 2y = 26  For y.</td>
<td>c = $\frac{x+a}{b}$  For x.</td>
</tr>
<tr>
<td>3 + 6x = 11 - 4y  For y.</td>
<td>$\frac{3x}{a} + 4b = c$  For x.</td>
</tr>
</tbody>
</table>

12 = 9x + 3y

A. 4 - 3x = y
B. 3x + 4 = y
C. $\frac{12}{3} - \frac{9}{3}x = y$
$2 + 6y = 3x + 4$

- **A**: $y = \frac{1}{2}x + 2$
- **B**: $y = 0.5x + 0.33$
- **C**: $y = \frac{1}{2}x + \frac{1}{3}$

$c = ax - bx$

- **A**: $x = c(a - b)$
- **B**: $x = \frac{c}{a - b}$
- **C**: $x = \frac{c}{b - a}$
Today's Target

Check 3.7 answers

3) 36%
5) 28
7) 150
9) 70%
11) 6%
13) 69
15) 25
17) 95
22) 85%
24) 33.8
26) 16%
28) 72%
13) 48.0 people per square mile