### Solving Multi-step Equations

Solve each multi-step equation showing all steps.

<table>
<thead>
<tr>
<th></th>
<th>Equation</th>
<th>Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>[3f + 5 = 5f - 19]</td>
<td>[f = 12]</td>
</tr>
</tbody>
</table>
|   | \[
\begin{align*}
-3f &= 5 - 5f + 19 \\
2f &= 2f - 19 + 19 \\
2f &= 2f \\
12 &= f
\end{align*}
\] |                  |
| 2 | \[3(u - 7) = 15\]                                                      | \[u = 12\]        |
|   | \[
\begin{align*}
3u - 21 &= 15 + 21 \\
3u &= 36 \\
3 &= 3 \\
4 &= 4
\end{align*}
\] |                  |
| 3 | \[3x + 6 = 7x - 18\]                                                    | \[x = 6\]         |
|   | \[
\begin{align*}
-3x &= 7x - 6 - 18 \\
6 &= 4x - 18 + 18 \\
24 &= 4x - 4 \\
6 &= 6
\end{align*}
\] |                  |
| 4 | \[w - 1 = 2w + 9\]                                                      | \[w = -10\]       |
|   | \[
\begin{align*}
-w &= 2w + 9 - 1 \\
-w &= w + 9 - 9 \\
-10 &= w
\end{align*}
\] |                  |
| 5 | \[y - 6 = 1 + 3\]                                                       | \[y = 40\]        |
|   | \[
\begin{align*}
\frac{y}{4} - 6 &= 4 + 6 \\
\frac{y}{4} &= 10.4 \\
y &= 40
\end{align*}
\] |                  |
| 6 | \[5(h + 1) = 4(h + 8)\]                                                 | \[h = 27\]        |
|   | \[
\begin{align*}
5h + 5 &= 4h + 32 - 4h \\
h + 5 &= 32 - 5 \\
h &= 27
\end{align*}
\] |                  |

7) Tristan solved the equation \[2x - 1 = 3x + 8\] and got an answer of \[x = 10\]. **Verify** if Tristan is correct or incorrect. Show your work to **justify** your answer.

\[
\frac{2(10) - 1}{20 - 1} = \frac{3(10) + 8}{30 + 8}
\]

\[
\frac{19}{19} = \frac{38}{38}
\]

Tristan is incorrect because when I evaluated each side of the equation with 10 for \(x\), the equation is no longer equal.