Opener

1. Does the equation $y = 3x - 9$ represent a proportional relationship? Why or why not?
   - goes through origin
   - straight line
   - a nonproportional
   Not proportional b/c of the $-9$

2. If you deposit $4000 into an account that earns 5% simple interest annually, how much interest will you earn in 2 years?

3. Simplify: $2(x + 2) - (3x + 1)$

   $I = \frac{P \times r \times t}{100}$
   $\begin{array}{c}
   2 \frac{2x + 4}{2x + 4} \\
   (2x + 4) + (3x + 1)
   \end{array}$

   $-x + 3$

   $4000 \times 0.05 \times 2 = 360$
Learning Target
I can set up and solve two-step equations.

Two-Step Equations
Solving a two-step equation is just like solving a one-step equation, with more steps! The goal is the same: _______________ _______________. To solve a two-step equation, we first undo _______________ or _______________ and then undo _______________ or _______________. Remember, what you do to one side you do to the other!!

Practice Examples:
1. \(2x + 6 = 8\)
   \[
   \begin{align*}
   2x + 6 & = 8 \\
   2x & = 2 \\
   x & = 1
   \end{align*}
   \]

2. \(-4x - 9 = -3\)
   \[
   \begin{align*}
   -4x - 9 & = -3 \\
   -4x & = 6 \\
   x & = 15
   \end{align*}
   \]
3. \(-\frac{2}{3}x + 6 = -1\)

\[
\begin{array}{c|c|c|c}
\textbf{D} & \textbf{U} \\
\hline
x & \frac{2}{3} & \div -\frac{2}{3} \\
6 & -6 & \\
\end{array}
\]

\[-\frac{2}{3}x + 6 = -1 \\
-\frac{2}{3}x = -7 \\
x = 10.5
\]

4. \(4 + \frac{1}{2}x = -1\)

\[
\begin{array}{c|c|c|c}
\textbf{D} & \textbf{U} \\
\hline
x & \div 5 & \div -\frac{1}{5} \\
4 & -4 & -4 \\
\end{array}
\]

\[
\frac{1}{5}x = \frac{5}{1} \\
x = -25
\]

5. \(2r - 3.1 = 1.7\)

\[
\begin{array}{c|c|c|c}
\textbf{D} & \textbf{U} \\
\hline
x & \div 2 & + 3.1 \\
2r & 2r & + 3.1 \\
\end{array}
\]

\[2r - 3.1 = 1.7 \\
2r = 4.8 \\
r = 2.4
\]

6. \(4x + \frac{1}{3} = \frac{3}{4} \div \frac{1}{3}\)

\[
\begin{array}{c|c|c|c}
\textbf{D} & \textbf{U} \\
\hline
x & \div 4 & + \frac{1}{3} \\
4x & 4x & - \frac{1}{3} \\
\end{array}
\]

\[
\frac{3}{4} - \frac{1}{3} = \frac{5}{12} \\
x = \frac{5}{12} \cdot \frac{1}{4}
\]

\[
x = \frac{5}{48}
\]
7. Tonya had her birthday party at the movies. It cost $27 for pizza and $8.50 per friend for the movie tickets. How many friends did Tonya have at her party if she spent $78?

\[ 8.50x + 27 = 78 \]

\[ \frac{8.50x + 27}{8.50} = \frac{78}{8.50} \]

\[ x = 6 \]
Check your work!

-3/6  4  -1.5  -3
4  -2.4  3.5
17.35  7  12
4.4 -1.05  -1
7.6  -4

SUMMARY

TABLE DISCUSSION: How does the order in which you solve a two-step equation compare to the order of operations?