

3.5 Solving Two-Step Equations

EQ: How can we solve 2 step equations?

* Two step equations involve more than 1 operation "being done" to the variable.

* When solving, always start with the operation furthest from the variable.

Example 1. Solve. $-3x + 5 = 2$

- ① x
- ② $x - 3$
- ③ $+ 5$
- ④ $\div -3$ 2nd step
- ⑤ $- 5$ 1st step

Check

$$\begin{aligned} -3(1) + 5 &= 2 \\ -3 + 5 &= 2 \\ 2 &= 2 \checkmark \end{aligned}$$

$$\begin{aligned} -3x + 5 &= 2 \\ \underline{-5} \quad \underline{-5} & \\ -3x &= -3 \\ \underline{-3} \quad \underline{-3} & \\ x &= 1 \end{aligned}$$

Example 2: Solve

Is my expression simplified?

$$3y - 8y = 25$$

combine like terms

$$\begin{aligned} -5y &= 25 \\ \underline{-5} \quad \underline{-5} & \end{aligned}$$

$$y = -5$$

Example 3: Solve.

$$4 - \frac{x}{3} = 2$$

$$\frac{-x}{3} + 4 = 2$$

- ① x
- ② $\div -3$
- ③ $+ 4$
- ④ $x - 3$ 2nd step
- ⑤ $- 4$ 1st step

$$\begin{aligned} 4 - \frac{x}{3} &= 2 \\ \underline{-4} \quad \underline{-4} & \\ -\frac{x}{3} &= -2 \\ \underline{-3} \quad \underline{-3} & \cdot -3 \\ x &= 6 \end{aligned}$$