

Review: Equation Solving

When solve (linear) equations, the goal is to isolate the variable. Some general steps:

- Clear fractions (to make life easier!)
- Distribute brackets
- Get all terms containing the variable on one side of the equation
- Get all constant terms on the other side of the equation
- Divide by the co-efficient of the variable.

Example 1: Solve!

$$\begin{aligned} \text{a) } x + 4 &= 9 \\ x + 4 - 4 &= 9 - 4 \\ x &= 9 \end{aligned}$$

$$\begin{aligned} \text{b) } x - 6 &= 2 \\ x - 6 + 6 &= 2 + 6 \\ x &= 8 \end{aligned}$$

$$\begin{aligned} \text{c) } 16 &= 6x \\ \frac{16}{6} &= \frac{6x}{6} \\ \frac{16}{6} &= x \\ \frac{8}{3} &= x \end{aligned}$$

$$\begin{aligned} \text{d) } 2x + 3 &= 17 \\ 2x + 3 - 3 &= 17 - 3 \\ 2x &= 14 \\ \frac{2x}{2} &= \frac{14}{2} \\ x &= 7 \end{aligned}$$

$$\begin{aligned} \text{e) } 10 &= 20 - 4x \\ 10 - 20 &= 20 - 20 - 4x \\ -10 &= -4x \\ \frac{-10}{-4} &= \frac{-4x}{-4} \\ \frac{10}{4} &= x \\ \frac{5}{2} &= x \end{aligned}$$

$$\begin{aligned} \text{f) } 7x - 5 &= 2x \\ 7x - 7x - 5 &= 2x - 7x \\ -5 &= -5x \\ \frac{-5}{-5} &= \frac{-5x}{-5} \\ 1 &= x \end{aligned}$$

$$\begin{aligned} \text{g) } 3k + 5 &= 4k - 6 \\ 3k - 3k + 5 &= 4k - 3k - 6 \\ 5 &= k - 6 \\ 5 + 6 &= k - 6 + 6 \\ 11 &= k \end{aligned}$$

$$\begin{aligned} \text{h) } 2(y - 3) &= 5(y + 6) \\ 2y - 6 &= 5y + 30 \\ 2y - 2y - 6 &= 5y - 2y + 30 \\ -6 &= 3y + 30 \\ -6 - 30 &= 3y + 30 - 30 \\ -36 &= 3y \\ \frac{-36}{3} &= \frac{3y}{3} \\ -12 &= y \end{aligned}$$

$$\begin{aligned} \text{i) } \frac{x+2}{5} &= \frac{x-1}{6} \\ 6(x+2) &= 5(x-1) \\ 6x + 12 &= 5x - 5 \\ 6x - 5x + 12 &= 5x - 5x - 5 \\ x + 12 &= -5 \\ x + 12 - 12 &= -5 - 12 \\ x &= -17 \end{aligned}$$

Practice: pg. 8 #11, 12