

# 3.4 Solving Equations using multiplication & division

EQ: How can you solve equations using multiplication and division?

\* Ask ourselves the 3 Q's from 3.3

\* When you multiply or divide by the same number to both sides of the equation, they remain equivalent.

Example 1: Solve  $\frac{x}{3} = -6$

- ①  $\times$
- ②  $\div 3$
- ③  $\times 3$

$$\frac{3}{1} \cdot \frac{1}{3}$$

$$\frac{3 \times 1}{1 \times 3} \times \frac{x}{3}$$

$$\frac{x}{3} \times 3 \mid \times 3$$


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$$x = -18$$

Check

$$\frac{-18}{3} = -6$$

$$-6 = -6 \checkmark$$

Example 2: Solve  $18 = -4y$

- ①  $y$
- ②  $\times -4$
- ③  $\div -4$

$$\frac{18}{-4} = \frac{-4y}{-4}$$


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$$\frac{-18}{4} = y$$

$$y = -4\frac{1}{2}$$

$$4 \overline{) 18}$$

$$\underline{16}$$

$$2$$

$$4\frac{2}{4} \text{ or } 4\frac{1}{2}$$

Example 3: Solve  $\frac{-5}{4}x = \frac{-8}{5}$

- ①  $\times$
- ②  $\times \frac{-5}{4}$
- ③  $\div \frac{-4}{5}$

multiply by the reciprocal  $\rightarrow$  OR  $\times \frac{-5}{4}$

check:

$$\frac{-4}{18} \cdot \frac{10}{1} = -8$$

$$\frac{-4}{1} \cdot \frac{2}{1} = -8$$

$$-8 = -8 \checkmark$$

$$\frac{-5}{4}x \cdot \frac{-4}{5} = \frac{-8}{5} \cdot \frac{-5}{4}$$


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$$1x = \frac{-2}{1} \cdot \frac{-5}{1}$$

$$x = 10$$