# 6.1 Solving Equations by Using Inverse Operations – Notes

Example (1): For each statement below, write then solve an equation to determine each number.

a) Three times a number is $-3.6$

n =

$\frac{3n}{3} = \frac{-3.6}{3}$

$\boxed{n = -1.2}$

b) a number divided by 4 is 1.5

n =

$\frac{n}{4}^{\times 4} = 1.5^{\times 4}$

$\boxed{n = 6}$

Example (2): Solve, then verify each equation.

a) $4.5d - 3.2 = -18.5$

$+3.2 \quad +3.2$

$\frac{4.5d}{4.5} = \frac{-15.3}{4.5}$

$\boxed{d = -3.4}$

Check:

$4.5d - 3.2 \stackrel{?}{=} -18.5$

$4.5(-3.4) - 3.2 \stackrel{?}{=} -18.5$

$-15.3 - 3.2 \stackrel{?}{=} -18.5$

$-18.5 = -18.5$ ✓

b) $\frac{r}{4} + 3 = 7.2$

$-3 \quad -3$

$\frac{r}{4}^{\times 4} = 4.2^{\times 4}$

$\boxed{r = 16.8}$

Check:

$\frac{16.8}{4} + 3 \stackrel{?}{=} 7.2$

$4.2 + 3 \stackrel{?}{=} 7.2$

$7.2 = 7.2$ ✓

c) $12 = -2(-1.5 - 7y)$

$12 = 3 + 14y$

$-3 \quad -3$

$\frac{9}{14} = \frac{14y}{14}$

$\boxed{y = \frac{9}{14}}$

Check:

$12 \stackrel{?}{=} -2\left(-1.5 - 7\left(\frac{9}{14}\right)\right)$

$12 \stackrel{?}{=} -2(-1.5 - 4.5)$

$12 \stackrel{?}{=} -2(-6)$

$12 = 12$ ✓

d) $\frac{3}{5}(m - 2) = \frac{2}{3}$

$\frac{3}{5}^{\times 3}m_{\times 3} - \frac{6}{5}^{\times 3}_{\times 3} = \frac{2}{3}^{\times 5}_{\times 5}$

$\frac{9}{15}m - \frac{18}{15} = \frac{10}{15}$

$9m - 18 = 10$

$+18 \quad +18$

$\frac{9m}{9} = \frac{28}{9}$

$\boxed{m = \frac{28}{9}}$

Example (3): A rectangle has length 3.7 cm and perimeter 12.2 cm.

$P = 2L + 2W$

a) Write an equation that can be used to determine the width of the rectangle.

$12.2 = 2(3.7) + 2W$

$12.2 = 7.4 + 2W$

b) Solve the equation.

$12.2 = 7.4 + 2W$

$-7.4 \quad -7.4$

$\frac{4.8}{2} = \frac{2W}{2}$

$\boxed{W = 2.4}$

c) Verify the solution.

$12.2 \stackrel{?}{=} 7.4 + 2(2.4)$

$12.2 \stackrel{?}{=} 7.4 + 4.8$

$12.2 = 12.2$

Example (4): Seven percent of a number is 56.7

a) Write, then solve an equation to determine the number.

7% of a number is 56.7

0.07 × n = 56.7

$\frac{0.07n}{0.07} = \frac{56.7}{0.07}$

$\boxed{n = 810}$

b) Check the solution.

$0.07n \stackrel{?}{=} 56.7$

$0.07(810) \stackrel{?}{=} 56.7$

$56.7 = 56.7$ ✓

Textbook (p. 272-274) #8 – 11, 13 - 22