Section 6.1 Solving Equations
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Homework Solutions

5) Solve the following by using inverse operations

a) $\frac{2s}{2} = 6$ (2)

$s = 12$

b) $\frac{x}{3} = 5$ (3) (3)

$x = 15$

c) $\frac{5e}{5} = \frac{-35}{5}$

$e = -7$

d) $\frac{x}{2} = -7$ (2) (2)

$x = -14$

e) $\frac{-9w}{-9} = \frac{2.7}{-9}$

$w = -0.3$

d) $\frac{c}{5} = -1.2$ (5) (5)

$c = -6$

6) Solve the following by using inverse operations

a) $3x + 2 = 8$

$-2 \quad -2$

$\frac{3x}{3} = \frac{6}{3}$

$x = 2$

b) $-5a - 6 = 7$

$+6 \quad +6$

$\frac{-5a}{-5} = \frac{13}{-5}$

$a = -2.6$

c) $\frac{m}{2} - 6 = 1$

$(2) \quad (2) \quad (2)$

$+12 \quad +12$

$m - 12 = 2$

$m = 14$

d) $\frac{r}{8} + 5.5 = 2$

$(8) \quad (8) \quad (8)$

$-44 \quad -44$

$r + 44 = 16$

$r = -28$

8. Solve each equation.
Which strategy did you use?
Verify the solution.

a) $\frac{4x}{4} = \frac{9.6}{4}$

$x = 2.4$

b) $10 = 3b - 12.5$ (+12.5, +12.5)

$\frac{22.5}{3} = \frac{3b}{3}$

$b = 7.5$

c) $-5.25x = -210$

$\frac{-5.25x}{-5.25} = \frac{-210}{-5.25}$

$x = 40$

d) $-0.5 = -2x + 8.1$ (-8.1, -8.1)

$\frac{-8.6}{-2} = \frac{-2x}{-2}$

$x = 4.3$

e) $250 + 3.5n = 670$ (-250, -250)

$\frac{3.5n}{3.5} = \frac{420}{3.5}$

$n = 120$

f) $-22.5 = -2c - 30.5$ (+30.5, +30.5)

$\frac{8}{-2} = \frac{-2c}{-2}$

$c = -4$

9. For each statement below, write then solve an equation to determine the number. Verify the solution.

a) Two times a number is −10.

$\frac{2x}{2} = \frac{-10}{2}$

$x = -5$

b) Three times a number, plus 6.4, is 13.9.

$3x + 6.4 = 13.9$

$3x + 6.4 - 6.4 = 13.9 - 6.4$

$\frac{3x}{3} = \frac{7.5}{3}$

$x = 2.5$

c) Four times a number is −8.8.

$\frac{4x}{4} = \frac{-8.8}{4}$

$x = -2.2$

d) Ten is equal to two times a number, plus 3.6.

$10 - 3.6 = 2x + 3.6 - 3.6$

$\frac{6.4}{2} = \frac{2x}{2}$

$3.2 = x$

10. Solve each equation. Verify the solution.

a) $\frac{c}{3} = 15$ (3)

$c = 45$

b) $\frac{m}{6} - 1.5 = -7$ +1.5

$\frac{m}{6} = -5.5$ (6)

$m = -33$

c) $-1.5 = \frac{n}{4}$ (4)

$-6 = n$

d) $5 = \frac{q}{-2} - 5$ +5

$10 = \frac{q}{-2}$ (-2)

$q = -20$

e) $\frac{2c}{5} = 1.2$ (5) (5)

$\frac{2c}{2} = \frac{6}{2}$

$c = 3$

f) $1.2 = \frac{2a}{3} + 5.1$ (3) (3) (3)

$3.6 = 2a + 15.3$ -15.3 -15.3

$\frac{-11.7}{2} = \frac{2a}{2}$

$-5.85 = a$

11. For each statement below, write then solve an equation to determine the number. Verify the solution.

a) A number divided by 4 is −7.

$\frac{x}{4} = -7$

solve

$\frac{x}{4}^{(4)} = -7^{(4)}$

$x = -28$

b) Three, plus a number divided by 5 is 6.

$3 + \frac{n}{5} = 6$

$3^{(5)} + \frac{n}{5} = 6^{(5)}$

$15 - 15 + n = 30 - 15$

$n = 15$

c) One-half of a number is 2.5.

$\frac{x}{2} = 2.5$

$\frac{x}{2}^{(2)} = 2.5^{(2)}$

$x = 5$

d) One-third of a number, minus 4, is 2.

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

$\frac{x}{3}^{(3)} - 4^{(3)} = 2^{(3)}$

$x - 12 + 12 = 6 + 12$

$x = 18$

13. Erica is thinking of a number.
If you divide her number by 3 then subtract 13.5, the result is 2.8.

a) Let b represent Erica's number. Write an equation to determine this number.

$\frac{b}{3} - 13.5 = 2.8$

b) Solve the equation.

c) Verify the solution.

(1) (2) (3)

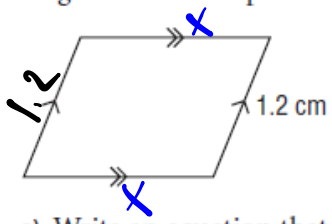
$\frac{b}{3} - 13.5 = 2.8$

$+40.5 \quad +40.5$

$b - 40.5 = 8.4$

$b = 48.9$

14. A parallelogram has one shorter side of length 1.2 cm and perimeter 6.6 cm.



a) Write an equation that can be used to determine the length of the longer side.

b) Solve the equation.

c) Verify the solution.

P = side + side + side + side

$P = 2x + 2.4$

$6.6 = 2x + 2.4$

b) $-2.4 \quad -2.4$

$6.6 = 2x + 2.4$

$\frac{4.2}{2} = \frac{2x}{2}$

$2.1 = x$

c) Verify

$6.6 = 2x + 2.4$

Same

$2(2.1) + 2.4$

$4.2 + 2.4$

6.6

16. Stephanie has a job in sales. She earns a monthly salary of $2500, plus a commission of 8% of her sales. One month, Stephanie earns a total of $2780. This can be represented by the equation $2780 = 2500 + 0.08s$, where s is Stephanie's sales in dollars.

a) Solve the equation to determine Stephanie's sales for that month.

b) Verify the solution.

$$2780 = 2500 + 0.08x$$

$$\frac{280}{0.08} = \frac{0.08x}{0.08}$$

$$3500 = x$$

b) RHS

2780

LHS

$2500 + 0.08(3500)$

$2500 + 280$

2780

18. Solve each equation. Verify the solution.

a) $5(x - 7) = -15$

$5x - 35 = -15$ (+35, +35)

$\frac{5x}{5} = \frac{20}{5}$

$x = 4$

b) $2(m + 4) = 11$

$2m + 8 = 11$ (−8, −8)

$\frac{2m}{2} = \frac{3}{2}$

$m = \frac{3}{2}$

c) $-3(t - 2.7) = 1.8$

$-3t + 8.1 = 1.8$ (−8.1, −8.1)

$\frac{-3t}{-3} = \frac{-6.3}{-3}$

$t = 2.1$

d) $7.6 = -2(-3 - y)$

$7.6 = 6 + 2y$ (−6, −6)

$\frac{1.6}{2} = \frac{2y}{2}$

$0.8 = y$

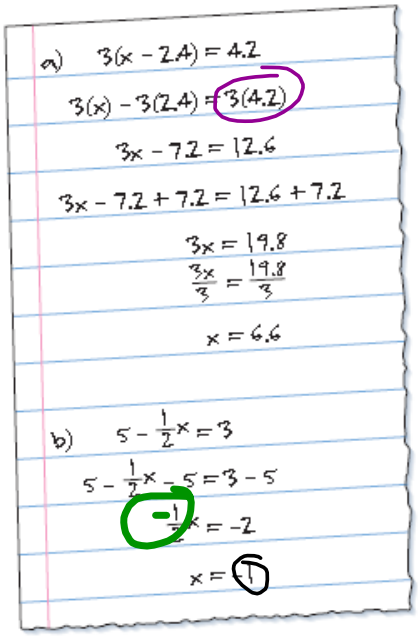
e) $8.4 = -6(a + 2.4)$

$8.4 = -6a - 14.4$ (+14.4, +14.4)

$\frac{22.8}{-6} = \frac{-6a}{-6}$

$-3.8 = a$

20. On a test, a student solved these equations:



$3(x-2.4) = 4.2$

$3x - 7.2 = 4.2$ (+7.2 +7.2)

$\frac{3x}{3} = \frac{11.4}{3}$

$x = 3.8$

b) $5 - \frac{x}{2} = 3$ (−5 −5)

$\frac{-x}{2} = -2$ (2)

$\frac{-x}{-1} = \frac{-4}{-1}$

$x = 4$