

Solving Equations with Variables on Both Sides

Lesson 16 Worksheet

Name _____

Date _____

Class _____

Section 1 — Skill Practice

Q1. Solve each equation. Show all working.

(a) $3x = 2x + 7$ (b) $5x - 3 = 2x + 6$ (c) $4x + 5 = x - 4$ (d) $7x - 2 = 3x + 10$ (e) $2x + 8 = 5x - 4$

Q2. Solve each equation. Check your answer.

(a) $2(x + 3) = x + 10$ (b) $3(x - 1) = 2(x + 4)$ (c) $4(2x + 1) = 3(3x - 2)$

(d) $5(x + 2) = 3(x + 6)$ (e) $2(3x - 1) = 4(x + 3)$

Q3. Solve each equation.

(a) $x/2 + 3 = x/4 + 5$ (b) $x/3 - 1 = x/6 + 2$ (c) $2x/5 + 1 = x/2 - 1$

Q4. Solve each equation.

(a) $3x + 2 = 3x + 5$ (b) $2x - 4 = 2(x - 2)$ (c) $4x + 1 = 4x + 1$

Section 2 — Problem Solving

Q5. Tom has $\$(3x + 5)$ and Sally has $\$(2x + 12)$. They have the same amount of money. Write and solve an equation to find x , then find how much each has. **2 marks****Q6.** The sum of two consecutive even numbers is 46. If the first number is $2x$, write and solve an equation to find the numbers. **2 marks**

Q7. A rectangle has length $(3x + 2)$ and width $(2x + 5)$. A square has side length $(2x + 4)$. If the rectangle and square have the same perimeter, find x . **3 marks**

Section 3 — Extended Response

Q8. Consider equations of the form $ax + b = cx + d$.

(a) Solve for x in terms of a , b , c and d . State any restriction. **2 marks**

(b) If $a = c$ and $b = d$, what can you say about the solution? Give an example. **2 marks**

(c) If $a = c$ but $b \neq d$, what can you say about the solution? Give an example. **2 marks**

(d) A student solves $3x + 2 = 5x - 4$ by writing $3x - 5x = -4 - 2$, giving $-2x = -6$, so $x = 3$. Verify this is correct and explain the method used. **2 marks**

► **Answer Key**