Accelerated 7 · Unit 3 Worksheet

Equations and Inequalities

Name: _____ Date: _____

Part A · Representing Situations

1. For each situation, write an equation of the form $p(x+q)=r$ OR $px+q=r$. Then explain what x represents.

a. A taxi charges a $3 flat fee plus $2 per mile. The total cost was $19.

b. Three friends each contributed the same amount, plus an extra $4 from a parent. The total was $25.

c. A sale takes $5 off, then triples the result (e.g., for 3 items). A customer paid $48.

Part B · Solving Equations Two Ways

2. Solve $4(x + 7) = 32$ in TWO different ways.

Way 1. Divide first.

Way 2. Distribute first.

Which way did you find easier? Why?

3. Solve. Show each step.

a. $5x - 12 = 23$

b. $-2(x - 5) = 18$

c. $(x + 9)/4 = 7$

4. Diego solves $3(x - 4) = 21$ as follows: $3x - 4 = 21$, so $3x = 25$, $x = 25/3$.

What is Diego's error?

What is the correct solution? Show your work.

Part C · Inequalities

5. Solve each inequality. Show your work.

a. $3x + 5 \geq 14$ x _____

b. $-2x + 7 > 1$ x _____

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c. $4(x - 2) \leq 12$ x _____

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6. Han claims: "When you multiply or divide both sides of an inequality by a negative number, you flip the sign. That's just a weird rule." Use specific numbers to JUSTIFY why this rule must be true.

Part D · Word Problems

7. The perimeter of a rectangle is 64 cm. The length is 8 cm more than the width. Write an equation, solve, and find the dimensions.

My equation:

Solution work:

Width = _____ cm, Length = _____ cm

8. A phone plan costs $25 per month plus $0.10 per text. Another plan costs $40 per month with unlimited texts. For how many texts is the unlimited plan cheaper? Express as an inequality and solve.

Part E · Thinking Deeply

9. Write THREE different equations whose solution is x = -5. At least one must have the form p(x + q) = r.

Equation 1:

Equation 2:

Equation 3:

10. Inequality A: $2x + 3 < 11$. Inequality B: $-2x - 3 > -11$. Are these inequalities equivalent? Show your work and explain.

11. Write a real-world situation that could be modeled by $2(x + 5) \leq 30$. Then describe what x could represent, what the solution set means, and what limits the values of x in the real-world context.