Solving Practical Problems Using One-Step Equations

STRAND: Patterns, Functions and Algebra

STRAND CONCEPT: Equality/Solving Equations

SOL: 6.13

Remediation Plan Summary

Students solve one-step linear equations in one variable involving practical problems.

Common Errors and Misconceptions

Students may confuse the operations when translating the equations.

Materials

- "Warm-up" handout
- "Algebra Practice" handout

Introductory Activity

Distribute the "Warm-up" handout and have students work in teams of two to solve and translate the equations. Engage students in a whole class discussion to review the answers

Plan for Instruction

- Ask a student to read the following problem aloud to the group: **The Yankees and the Red Sox played a baseball game. The Yankees scored 5 runs. The sum of the two scores was 12. What was the Red Sox' score?** Explain that the first step in solving the problem is choosing a variable to represent the unknown, e.g., the Red Sox' score. Write "r = the Red Sox' score" on the board for reference. Then, write an algebraic equation for the problem: $5 + r = 12$, which means "the Yankees' score of 5 runs plus the Red Sox' score, r, is 12." Solve this equation on the board with student input. State clearly in writing at the end that the Red Sox scored 7 points.

- Ask a student to read the following problem aloud to the group: **John has 10 pairs of socks in his drawer. Some are dress socks and some are athletic socks. He has 3 pairs of dress socks. How many pairs of athletic socks are in his drawer?** Demonstrate that the first step in solving the problem is choosing a variable to represent the unknown, e.g., the number of pairs of athletic socks in the drawer. Write "w = the number of pairs of athletic socks in the drawer" on the board for reference. Then, write an algebraic equation for the problem: $w + 3 = 10$. Solve the equation with input from the students. State clearly in writing at the end that there are 7 pairs of athletic socks in the drawer.

- Ask a student to read the following problem aloud: **Maggie picked up 4 times as many golf balls on the golf course as Ron. The total number of golf balls in Maggie's bucket is 36. How many golf balls did Ron find?** Let r represent the number of golf balls Ron found. Write "r = the number of golf balls Ron found" on the board for reference. Remember that

the word *times* means "to multiply." Write an algebraic equation to solve the problem: $4r = 36$. Solve the equation with student input.

- Distribute the "Algebra Practice" handout and allow students to work with a partner to solve the problems and show their work. Assist students who have difficulty.

Pulling It All Together (Reflection)

Have students write a real-life problem that they can express and solve with an algebraic equation. Be sure they include the equation and its solution.

Note: The following pages are intended for classroom use for students as a visual aid to learning.

Virginia Department of Education 2018

Name:

Warm-up

Solve the following algebraic equations. Check each solution.

1. $x + 5 = 10$

2. $x - 7 = 10$

3. $x - 2 = 5$

Write a verbal translation for each of the following:

4. $x + 8 = 9$

5. $x + 4 = 6$

6. $x - 6 = 11$

Name:

Algebra Practice

Write an algebraic equation for each problem and solve the equation.

1.   Wanda lost 4 pounds this week on her weight-loss program. If her present weight is 160 pounds, what was her weight when she started?

2.   Terry mows 5 lawns every week. How much money must he make on each lawn job in order to make a total of $115 per week?

3.   Tonya's math average is 8 points higher than Joe's. If Tonya has an 87 average in math, what is Joe's math average?