STRAND: Computation and Estimation

STRAND CONCEPT: Rational Number – Estimation and Operations

SOL 6.6c

Remediation Plan Summary

Students move from solving single step numerical equations with integers to up to three-step numerical expressions involving integers and order of operations.

Common Errors and Misconceptions

Students mis-apply the order of operations.
Students confuse signs on integers when performing operations.

Materials

- Round Robin Integer Game
- Practice Sheet
- Reflection

Introductory Activity

> Organize students in groups to play a game that practices integer operations.   Give each group 1 copy of the Round Robin Integer Game. To begin, the first student in the group solves the first equation and then passes the sheet to the second person. The second person checks the first equation, corrects any errors if needed, then solves equation 2 and passes the sheet to the third student. The third student checks equations 1 and 2, corrects any errors, and solves the third equation. This continues until all the equations on the sheet are completed and each student has had at least one opportunity to correct equations and solve one. Once all the teams complete the sheet, go over the answers. Discuss any equations that were corrected and what those corrections were. Teams receive one point for each correct equation (even if it was a corrected equation). No calculators are allowed during the game.

Plan for Instruction

- Explain to the class that they were just solving numeric equations. Now they are going to work with expressions. Discuss the difference between an equation and an expression.

- Build up from a 1 step, 2 integer expression by displaying -4 - 2. Ask the class for the answer. Have a student demonstrate and explain.

- Take the original expression, add to it and display: 3 (-4 -2). Ask the class for the answer. Have a student demonstrate and explain. If the student does not mention the order of operations, insert it into the discussion yourself.

- Alter the expression again by displaying 3(-4 – 2) – 2. Ask the class for the answer. Have a student demonstrate and explain. If the student does not mention the order of operations, insert it into the discussion yourself.

- Repeat with the class at least 3 more times creating your own numerical expressions that contain absolute value symbols, exponents and the division bar. Point out to the students that they are doing 2 or 3 steps. During the warm-up they were only doing one step. (Note: Students should have learned order of operations before this lesson).
- Allow students to work with a partner to complete the practice worksheet. Walk round and check answers as the students complete them so you can intervene when needed.

Pulling It All Together (Reflection)

Distribute the reflection sheet to each student to complete.

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

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Round-Robin Integer Game

$$-7 \times 6 =$$

$$9 \div (-9) =$$

$$-7 + (-7) =$$

$$-5 - (-5) =$$

$$-6 \times (-6) =$$

Practice

Simplify each of the following expressions. Show your work.

$$\frac{3+4}{7+7}$$

$$\left|-4\right|-(5+2)$$

$$9\left(3+2^2\right)$$

$$5+3(2-5)$$

$$4(9+1)-39$$

$$-7-3^2$$

$$5^2+\left(-25\right)$$

$$\left|-20\right|+\left(-19\right)$$

Reflection

Princess simplified an expression. Here is her work:

$$5 + 3(16 - 10)$$
$$8(16 - 10)$$
$$8 \cdot 10$$
$$80$$

Princess made a mistake. Find her error and do the following:

1) Write Princess a letter telling her what she did incorrectly
2) Include the correct answer and the work you did to get it.