

PROBLEM-OF-THE-DAY: ALGEBRA 1**WEEK:** September 10 to September 14**DAY:** Wednesday

RISD Objective: Given a first-degree equation (or word problem which can be modeled by a first-degree equation), students will use the properties of equality to solve the equation.

PROBLEM #17

The following problem appears on Nubia's algebra test:

$$3x - 2(4x - 9) = 4x - 27 - x$$

Here is her work:

$$3x - 8x - 18 = 4x - 27 - x$$

$$-5x - 18 = 3x - 27$$

$$-8x - 18 = -27$$

$$-8x = -9$$

$$x = -9/-8$$

$$x = \frac{9}{8}$$

Is Nubia's answer correct? Why or why not? If her answer is not correct, show what the correct answer should have been. How could she have checked her work to see if her answer was correct or not?

MODEL SOLUTION #17

Nubia is incorrect. The mistake was in the first step, when she was distributing. $-2 \cdot -9$ is positive 18, not negative! Here is what her work should have looked like:

$$3x - 2(4x - 9) = 4x - 27 - x$$

$$3x - 8x + 18 = 4x - 27 - x$$

$$-5x + 18 = 3x - 27$$

$$-8x + 18 = -27$$

$$-8x = -45$$

$$x = -45/-8$$

$$x = \frac{45}{8}$$

So, the correct answer should have been $\frac{45}{8}$. She could have checked her work by substituting the answer into the original equation and seeing if she got a true sentence.