

Activity 3

Solving One-Variable Equations

TEACHER NOTES

Topic Area: Algebra

NCTM Standard: Write equivalent forms of equations, inequalities, and systems of equations and solve them with fluency.

Objective: Given two equivalent one-variable algebraic statements, the students will be able to enter these statements as an equation into the Equation Menu of the Casio fx-9750G Plus to solve the variable.

Introduction: Approximately 40% of most state exams at the high school level contain algebra questions. The low-achieving math student has difficulty solving multi-step one-variable equations. This activity will give these students an alternative method of solving algebraic equations using the Casio fx-9750G Plus.

You may want to write the following equation on the board:

$$4(-3x + 1) = -10(x - 4) - 14x$$

Discuss with the class how to solve for x , algebraically, before demonstrating the alternative calculator method. When the low achieving math student has either solved this equation or has become totally frustrated, demonstrate the ease of solving this equation using the Equation Solver. Demonstrate an equation where the degree of x is greater than 1.

Calculator Notes for Activity 3

Objective

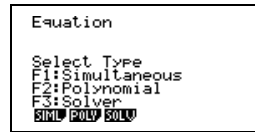
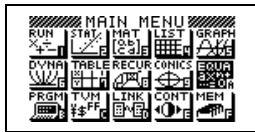
Given a one-variable equation, the students will be able to enter the equation into the Equation Menu of the Casio fx-9750G Plus, using the equation solver, and solve for the variable.

Example

Solve the equation: $4(-3x + 1) = -10(x - 4) - 14x$

Steps for Using the Equation Solver

1. From the main menu, use the arrow keys to highlight the EQUA Menu and press the EXE key. The screens should look like the ones below.

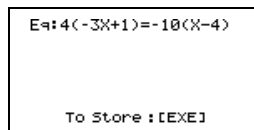


2. Choose **F3: Solver** by pressing the **F3** key at the top of the calculator. The screen should look like the screen below.

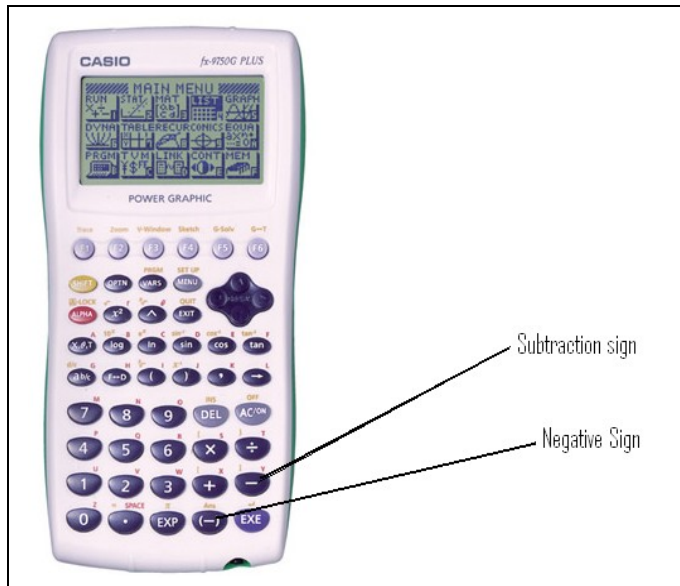


NOTE: If the screen has an equation listed on the screen, it **MUST** be deleted. If you try to write the correct equation over the old equation, you will get the wrong solution. To delete the wrong equation press the **DEL (F2)** and then press **YES (F1)**. You will now have the screen above.

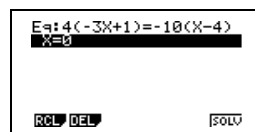
3. Enter the equation, $4(-3x + 1) = -10(x - 4) - 14x$, into the calculator.



NOTE: Be sure not to confuse the negative sign with the subtraction sign.

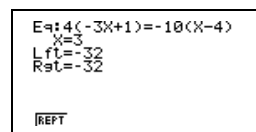


Press the **EXE** key. You should see the following screen.



Note: If the screen does not read $x=0$, then just change the number to 0.

4. Press the **SOLV (F6)** key. The calculator screen should look like the one below.



The calculator displays the answer $x = 3$. Following the answer, you will see $Lft = -32$ (which means if $x = 3$ is substituted on the left side of the equation, the answer is -32) and $Rgt = -32$ (which means if $x = 3$ is substituted on the right side of the equation, the answer is -32).

5. Press the **REPT (F1)** key to solve another equation. Make sure you follow the steps above and don't forget to delete the old equation before entering a new equation.

Name _____ Class _____ Date _____

Activity 3: Worksheet

Solving One-Variable Equations

Solve for x:

1. $5 - 5x = 4(3 - x)$

2. $-x + 6 = 7x + 4$

3. $5x + 4 = -2(x + 3)$

4. $-(x - 1) + 10 = -3(x + 2)$

5. $2(3 + x) = 8(x - 2)$

6. $4x + 21 = 7(x + 9)$

7. $13 + 2x = 8$

8. $12 - 5x = 4(x + 1)$

9. $2(3x - 5) = 3(4x + 2) - 7$

10. $5x - 2 = 8$

Screen Shots for answers to Activity 3 Worksheet

1.

```
Eq: 5-5X=4(3-X)
X=-7
Lft=40
Ret=40

|REPT
```

2.

```
Eq: -X+6=7X+4
X=0.25
Lft=5.75
Ret=5.75

|REPT
```

3.

```
Eq: 5X+4=-2(X+3)
X=-1.428571429
Lft=-3.142857143
Ret=-3.142857143

|REPT
```

4.

```
Eq: -(X-1)+10=-3(X+2)
X=-8.5
Lft=19.5
Ret=19.5

|REPT
```

5.

```
Eq: 2(3+X)=8(X-2)
X=3.666666667
Lft=13.33333333
Ret=13.33333333

|REPT
```

6.

```
Eq: 4X+21=7(X+9)
X=-14
Lft=-35
Ret=-35

|REPT
```

7.

```
Eq: 13+2X=8
X=-2.5
Lft=8
Ret=8

|REPT
```

8.

$$\begin{aligned} \text{Eq: } 12 - 5X &= 4(X + 1) \\ X &= 0.888888889 \\ \text{Lft} &= 7.555555556 \\ \text{Rst} &= 7.555555556 \end{aligned}$$

REPT

9.

$$\begin{aligned} \text{Eq: } 2(3X - 5) &= 3(4X + 2) - 7 \\ X &= -1.5 \\ \text{Lft} &= -19 \\ \text{Rst} &= -19 \end{aligned}$$

REPT

10.

$$\begin{aligned} \text{Eq: } 5X - 2 &= 8 \\ X &= 2 \\ \text{Lft} &= 8 \\ \text{Rst} &= 8 \end{aligned}$$

REPT