

# Activity 1: Order, Order, Order!

Linda Wallace

CALCULATORS: Casio: *fx-260 Solar* • Casio: *fx-260 Solar School*

## Teaching Notes

**Grade Level:** Middle School **Topic:** Problem Solving/Order of Operations

**Objective:** To develop a user's ability to enter expressions using a *fx-260* scientific calculator's first and 2nd function keys.

### Using the Activity:

The *Casio fx-260* scientific calculators possess algebraic logic. Hence, when evaluating expressions, a user may enter an expression as written to determine a solution. A user does not need to know Order of Operations to enter and obtain the solution, but the user should understand this process to verify the solution obtained.

In this activity, students are given an expression and the correct answer for the simplification of the expression using operational order. Students are asked to determine how the expression should be entered into the *fx-260* scientific calculator.

A comparison to a four-function calculator is helpful in extending students understanding of how the *fx-260* scientific calculator differs in its ability to process number and operational information. A discussion of these differences may help students understand and appreciate the value the scientific calculator has in helping them compute more complicated expressions.

Determining the number of key strokes for each calculator and the order in which they are completed will help students understand when a scientific calculator is preferred for use in problem solving versus the relevance of using a four-function calculator for more basic operational tasks.

As students become more familiar and comfortable with using the *fx-260*, you may wish to invite students to share which calculator they prefer using for specific tasks and why to help them differentiate when each calculator is suitable for use and why one may be preferred over the other.

	<b>Problem</b>	<b>Enter</b>	<b>Solution</b>
1.	$36 \div 9 \times 4$	$36 \div 9 \times 4 =$	16
2.	$78 \times 6 - 52$	$78 \times 6 - 52 =$	416
3.	$45 + 778 \div 8$	$45 + 778 \div 8 =$	142.25
4.	$(54 \times 33) \times 7 + 9$	$(54 \times 33) \times 7 + 9 =$	12483
5.	$460 \div 2 + 35 \times 222$	$460 \div 2 + 35 \times 222 =$	8000
6.	$(398 - 389)^3 \div 81$	$(398 - 389) \text{ shift } x^3 \div 81 =$	9
7.	$\sqrt{49} \times (36 \div 3) + 3^3$	$49 \text{ shift } \sqrt{\phantom{x}} \times (36 \div 3) + 3 \text{ shift } x^3 =$	111
8.	$\sqrt{144} \div (1 \times 3)$	$144 \text{ shift } \sqrt{\phantom{x}} \div (1 \times 3) =$	4
9.	$(25 \times 7) \div 5 + 4^2$	$(25 \times 7) \div 5 + 4x^2 (25 \times 7) \div 5 + 4x^2 =$	51
10.	$(4 \times 8) \div \sqrt{4} + 42$	$(4 \times 8) \div 4 \sqrt{\phantom{x}} + 42 =$	32

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## Teaching Notes (continued)

Use problem 6 from the list and solve using a four-function calculator. Record the key strokes you used to arrive at the solution. How does it differ from the key strokes used on the *fx-260*?

Key Strokes on a four-function:

11. Student answers may include information about understanding and using the Order of Operations when completing the steps on a four-function calculator. They may also state they arrived at the solution on the four-function calculator by completing a procedure that included solutions that were then used to complete another step before arriving at a final solution. (Multiple use of the = key.)

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### Student Worksheet Activity 1

Caitlin has been given the following problem to solve:  $7 + 5 \times 3$

Caitlin enters the problem into the *fx-260* scientific calculator, and the calculator displays 22.

What procedure is the calculator using to determine the solution?

Help Caitlin figure out the correct way to enter the following problems into the *fx-260* scientific calculator to display these solutions. Check your answers on your *fx-260* scientific calculator.

	Problem	Enter	Solution
1.	$36 \div 9 \times 4$		16
2.	$78 \times 6 - 52$		416
3.	$45 + 778 \div 8$		142.25
4.	$(54 \times 33) \times 7 + 9$		12483
5.	$460 \div 2 + 35 \times 222$		8000
6.	$(398 - 389)^3 \div 81$		9
7.	$\sqrt{49} \times (36 \div 3) + 3^3$		111
8.	$\sqrt{144} \div (1 \times 3)$		4
9.	$(25 \times 7) \div 5 + 4^2$		51
10.	$(4 \times 8) \div \sqrt{4} + 42$		32

11. Use problem 6 from the list and solve using a four-function calculator. Record the key strokes you used to arrive at the solution. How does it differ from the key strokes used on the *fx-260*? Which do you prefer?

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