

# Order of Operations

Problem: Evaluate the following arithmetic expression:

$$3 + 4 \times 2$$

Solution:

Student 1	Student 2
$3 + 4 \times 2$	$3 + 4 \times 2$
$= 7 \times 2$	$= 3 + 8$
$= 14$	$= 11$

It seems that each student interpreted the problem differently, resulting in two different answers. Student 1 performed the operation of addition first, then multiplication; whereas student 2 performed multiplication first, then addition. When performing arithmetic operations there can be only one correct answer. We need a set of rules in order to avoid this kind of confusion. Mathematicians have devised a standard order of operations for calculations involving more than one arithmetic operation.

**Rule 1:** First perform any calculations inside parentheses.

**Rule 2:** Next perform all multiplications and divisions, working from left to right.

**Rule 3:** Lastly, perform all additions and subtractions, working from left to right.

The above problem was solved correctly by Student 2 since she followed Rules 2 and 3.