

Using Order of Operations to Evaluate Numerical Expressions

Quick Review		
Parentheses	Parentheses, Brackets, or other grouping symbols are used to change the order of operations. Simplify each group separately. If one is inside another then work from the inside out.	$14 - (15 - 6) =$ $14 - (9) =$ 5
Exponents	Evaluate exponents before other operations	$4 \times 3^2 = 4 \times 9$ not 12^2
Multiplication and Division	Evaluate multiplications and divisions before additions and subtractions	$4 + 3 \times 5 = 4 \times 5$ not 7×5
Left to Right	When the above rules don't tell you what to do first, evaluate from left to right	$8 \div 4 \div 2 = 2 \div 2$ not $8 \div 4 \div 2 = 8 \div 2$

Problems (No Calculators!)

Evaluate each of the following computations.

1. $52 - 43 - 8$

2. $16 - 5(4 - 2)$

3. $23 - 5^2$

4. $6(13 - 7) - 4(23 - 2(13 - 3))$

5. $2(3)^2 - 3(2)^2$

6. $(2 + 3)^2$

7. $4^{3-(4-2)} + 2^{6 \div 2}$

8. $52 \div 4 \times 3$

9. $4 \times 3^2 \div 12$

10. $350 - [3(2 \times 5^2) + 5(20 - 4^2)]$

11. $64 \div 4^2 \div 2 \times 6$

12. $2 \times 3^{16 \div 2^3}$