

Algebra 1
Order of Operations with Grouping Symbols

Order of Operations with Grouping Symbols | A1-U01-P06

96 problems · Four activity formats

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Topic focus
Across 96 tasks this topic asks for all valid groupings or impossibility proof, all valid groupings or impossibility proof; justified strategy selection, equivalent expression or tree and exact value, equivalent expression or tree and exact value; justified strategy selection, exact value or undefined verdict and exact value or undefined verdict; justified strategy selection.
8 PDFs and a README; 63 buyer pages.

Algebra 1

**Order of Operations
with Grouping Symbols****Name:** _____ **Date:** _____ **Class:** _____

Answer each question and record the matching bank letter. Give exact values. Give the whole requested response, including any reasoning the question asks for.

Evaluate $5 + 7 \cdot 4 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Bank label: _____

Evaluate $3 + 2 \cdot 5 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Bank label: _____

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Name: _____ Date: _____ Class: _____

Answer each question and show your reasoning in the workspace. Give exact values rather than decimals unless the question supplies a decimal. Give the whole requested response, including any reasoning the question asks for.

Translate $(4 - 3) \div 4$ into an operation tree whose leaves and operation nodes preserve every grouping, and state its exact value. _____ _____	Insert grouping into $4 + 4 - 4 \div 4$ to obtain 4, without reordering operands or operations. Any full parenthesization preserving the displayed order is allowed. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____
Insert grouping into $5 - 4 + 5 \cdot 3$ to obtain $\frac{33}{2}$, without reordering operands or operations. Only these grouping templates are allowed: $(5 - (4 + 5)) \cdot 3$; $5 - (4 + (5 \cdot 3))$; $(5 - 4) + (5 \cdot 3)$. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____	Evaluate $(10 - 6)(2 + 1)$. Record each completed inner group before using it in the enclosing operation. _____ _____
Insert grouping into $2 - 4 + 6 \cdot 2$ to obtain 8, without reordering operands or operations. Any full parenthesization preserving the displayed order is allowed. Give every valid grouping, or prove none works by checking the permitted structures. _____ _____	A fraction bar has numerator $[8 + 1 \cdot 5]$ and denominator $[5 - 5]$. Evaluate each whole group, then evaluate the compound fraction or state that it is undefined. _____ _____

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Evaluate the supplied statement or method. Say whether it is correct, repair it if it is not, and verify the result exactly. Not every prompt contains an error.

Compare $(-9)^4$ and -9^4 . Evaluate both, state whether they are equal, and explain how the parentheses and exponent parity control the sign.

Audit the evaluation of $-|4 - 9| + 2$. Step 1: Compute $4 - 9 = -5$. Step 2: Replace $|-5|$ by -5 , so the external negative gives $-(-5)$. Step 3: Add 2 and report 7. Identify the first invalid step, preserve the valid prefix, and give the corrected value. If every step is valid, say so.

Audit the evaluation of $18 \div [7 - (5 - 4)]$. Step 1: Compute $5 - 4 = 1$. Step 2: Compute $7 - 1 = 6$. Step 3: Replace the bracket by 7 and report $\frac{18}{7}$. Identify the first invalid step, preserve the valid prefix, and give the corrected value. If every step is valid, say so.

Compare $(-5)^2$ and -5^2 . Evaluate both, state whether they are equal, and explain how the parentheses and exponent parity control the sign.

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Full Worked Solutions - excerpt

Worked example

Problem. Evaluate $5 + 7 \cdot 4 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Answer. 32

Explanation and check.

First

$$7 \cdot 4 = 28$$

Then move left to right:

$$5 + 28 - 1 = 32$$

Worked example

Problem. Evaluate $3 + 2 \cdot 5 - 1$. At each precedence level, work from left to right; show the decisive first operation.

Answer. 12

Explanation and check.

First

$$2 \cdot 5 = 10$$

Then move left to right:

$$3 + 10 - 1 = 12$$