

Inserting Parentheses for Order of Operations Classic view

Objectives:

- Identify calculations where additional parentheses are needed
- Insert parentheses in classic view to achieve correct calculations

Identify calculations where additional parentheses are needed

- Parentheses (), Brackets [], and Braces { }** are grouping symbols in math problems.
CAUTION: The GC keys for brackets [] or braces { } are matrices and lists, NOT grouping symbols!



If the math has () or [] or { }, always use () and (), repeating and nesting if necessary.

- Fraction bar** may create a group in the numerator and/or a group in the denominator, but it's also an operator meaning "divide". Additional parentheses are needed when using the classic view.

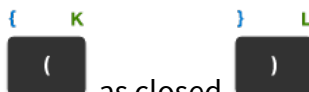
Example 1: $\frac{2-3}{7-4}$ means $(2-3) \div (7-4)$. Add two sets of parentheses to subtract before divide.

Example 2: $2-3 \div 7-4$ means $2-\frac{3}{7}-4$. The order of operations says divide before subtract.

Insert parentheses in classic view to achieve correct calculations



CAUTION: Imbalanced parentheses like (((can cause some strange errors!



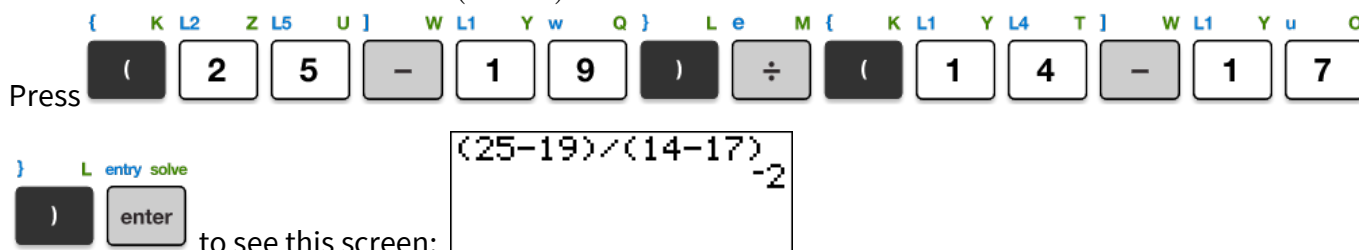
Check for the same number of open (as closed) parentheses.

Example 3: Evaluate $\{3-[4+7(1-5)]\}$



See this screen:

Example 4: $\frac{25-19}{14-17}$ becomes $\frac{(25-19)}{(14-17)} = (25-19) \div (14-17)$



Try it!

Calculate.

$$1) \left\{ 3 - \left[4 + 7(1-5)^2 \right] \right\}$$

$$4) \frac{(-2)^2 + 1}{-2 - 3}$$

$$7) -2^2 + \frac{1}{-2 - 3}$$

$$10) \frac{(-2+1)^2}{-2-3}$$

$$2) \frac{9-12}{4-6}$$

$$5) \frac{-2^2 + 1}{-2 - 3}$$

$$8) \frac{(-2)^2 + 1}{-2} - 3$$

$$3) \frac{3^2 - 2^2}{3 \cdot 2 + 2^2}$$

$$6) (-2)^2 + \frac{1}{-2 - 3}$$

$$9) \frac{-2^2 + 1}{-2} - 3$$

Answers:

$$1) 3 - (4 + 7(-4)^2) = 3 - (4 + 7 \cdot 16) = 3 - (4 + 112) =$$

$$3 - 116 = -113$$

$$7) -4 + \frac{1}{-5} = -4.2$$

$$8) \frac{4+1}{-2} - 3 = \frac{5}{-2} - 3 = -5.5$$

$$\frac{((-2)^2 + 1)}{-2 - 3} = -5.5$$

$$2) \frac{-3}{-2} = 1.5$$

$$\frac{(9-12)}{(4-6)} = 1.5$$

$$3) \frac{9-4}{6+4} = .5$$

$$\frac{(3^2 - 2^2)}{(3 \cdot 2 + 2^2)} = .5$$

$$9) \frac{-4+1}{-2} - 3 = \frac{-3}{-2} - 3 = -1.5$$

$$\frac{(-2^2 + 1)}{-2 - 3} = -1.5$$

$$4) \frac{4+1}{-5} = -1$$

$$\frac{((-2)^2 + 1)}{(-2 - 3)} = -1$$

$$10) -\frac{(-1)^2}{-5} = \frac{1}{-5} = 0.2$$

$$\frac{(-2+1)^2}{(-2-3)} = 0.2$$

$$5) \frac{-4+1}{-5} = 0.6$$

$$\frac{(-2^2 + 1)}{(-2 - 3)} = 0.6$$

$$6) 4 + \frac{1}{-5} = 3.8$$

$$\frac{(-2)^2 + 1}{(-2 - 3)} = 3.8$$