Using Parentheses for Exact Answers in One Entry MathPrint View

Objectives:

- Recall the meaning of exact and approximate
- Perform calculations using one entry

Recall the meaning of exact and approximate

An exact answer has no error from rounding.
An approximate answer should be close, but is still a "near miss", due to rounding or approximating.
CAUTION: You should always write an exact final answer unless the instructions tell you to round.
CAUTION: Rounding intermediate steps will give an approximate final result, sometimes quite wrong!

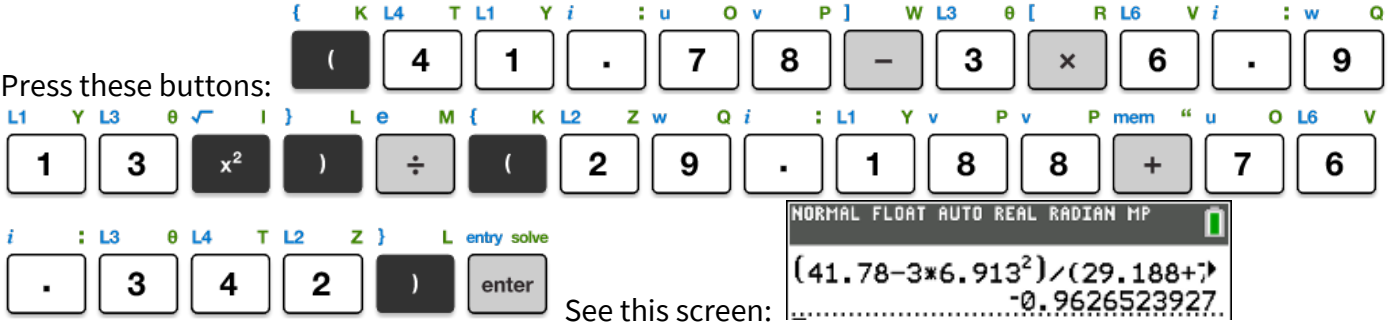
Perform calculations using one entry

Round-off errors can become much bigger if a calculation is done from rounded partial results.
To avoid this, do one entry, using parentheses for the order of operations, or use memory locations or Ans.
IMPORTANT: If the instructions say to round, round only the final answer.

Example 1: Calculate $\dfrac{41.78-3(6.913)^2}{29.188+76.342}$. Round to the nearest thousandth.

Remember that the long fraction bar means that the entire numerator and entire denominator must be calculated before the results are divided. The calculator follows the order of operations and will not add or subtract before dividing unless we use extra parentheses, like this: $\dfrac{\left(41.78-3(6.913)^2\right)}{(29.188+76.342)}$

Press these buttons:



See this screen:

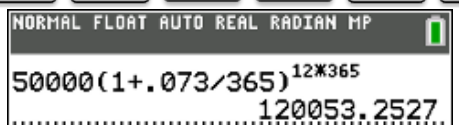
NOTE: The MathPrint command does not wrap to the next line, so MathPrint fraction formatting is clearer.
Round the final answer to the nearest thousandth to get -.963

Example 2: Calculate $50000\left(1+\dfrac{0.073}{365}\right)^{12(365)}$. Round to the nearest hundredth.

NOTE: MathPrint will ensure that both 12 and 365 are in the exponent.

Press these buttons:

See this screen:

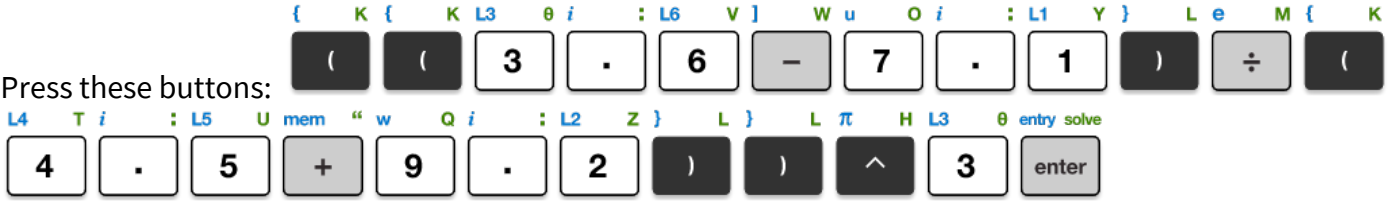


Round to nearest hundredth to get 120,053.25

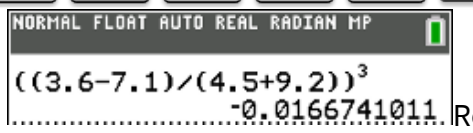
Example 3: Calculate $\left(\frac{3.6-7.1}{4.5+9.2}\right)^3$. Round to the nearest thousandth.

NOTE: The parentheses surrounding both the numerator and the denominator do not ensure that the numerator will be subtracted first! To get the correct answer, use additional parenthesis *inside* the given parentheses, like this: $\left(\frac{(3.6-7.1)}{(4.5+9.2)}\right)^3$

Press these buttons:



See this screen:



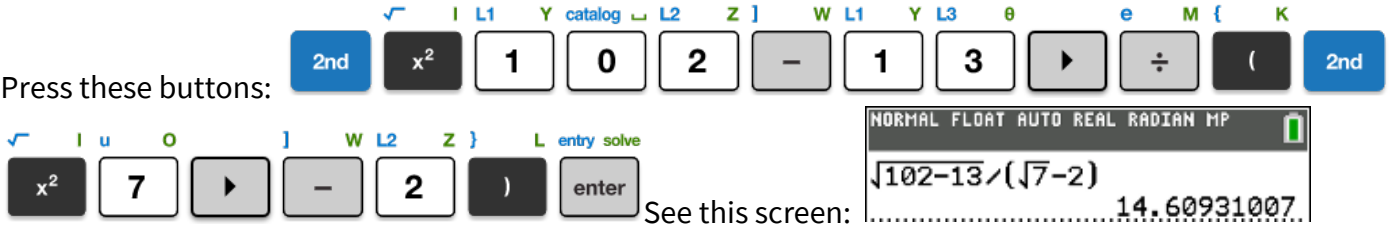
Round to nearest thousandth to get -0.017

Example 4: Calculate $\frac{\sqrt{102-13}}{\sqrt{7}-2}$. Round to the nearest hundredth.

NOTE: The square root in the numerator (the square root of a difference, parentheses around the difference) is different from the square root in the denominator (the square root of 7 only).

PLUS, we need parentheses around the denominator to subtract before divide, like this: $\frac{\sqrt{(102-13)}}{(\sqrt{(7)}-2)}$

Press these buttons:



See this screen:

Round: 14.61

Try It!

Calculate and round to the nearest hundredth.

1) $\frac{7.2(43.9)^3-97.42}{63.08-9.71+(-23.64)}$.

2) $930\left(1-\frac{0.038}{4}\right)^{7/12}$.

3) $\frac{8^{-32+25}-(-5)^{76-63}}{147-236098}$.

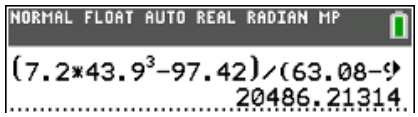
4) $\left(\frac{7.2-1.3^3}{6.2+1.9}\right)^2$.

5) $\frac{\sqrt{6}-3}{\sqrt{124-31}}$.

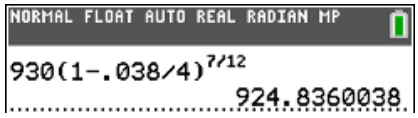
6) $\sqrt{\frac{21-4}{4}}-\frac{\sqrt{17}}{7-3}$.

Answer Screens

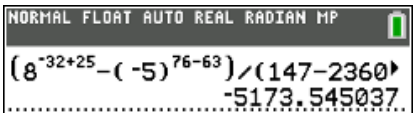
1)



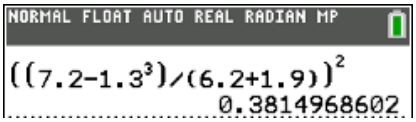
2)



3)



4)



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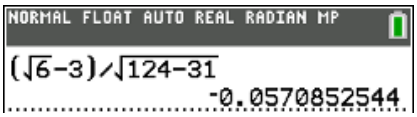

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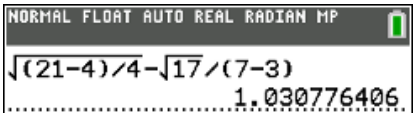
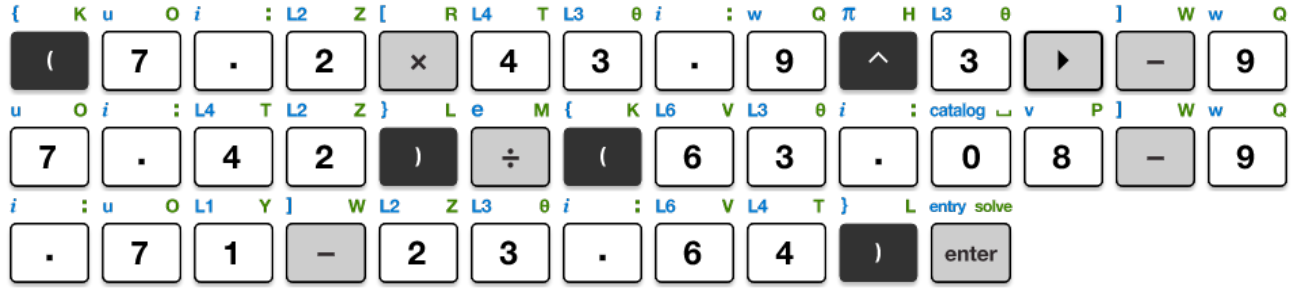
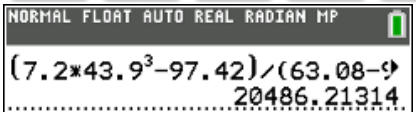


Detailed Solutions

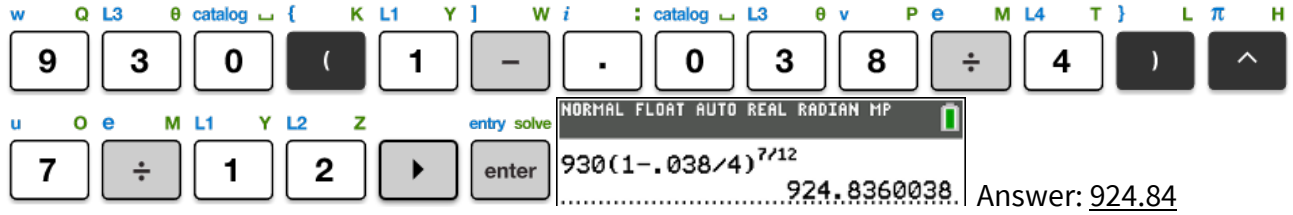
1)





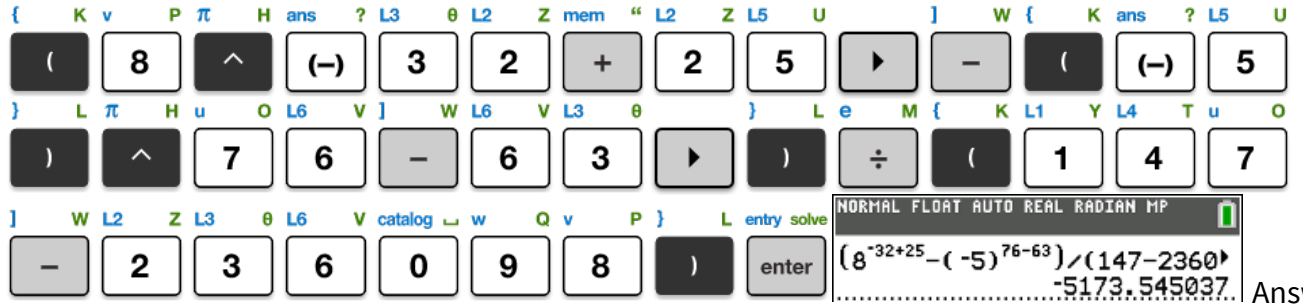
Answer: 20486.21

2)



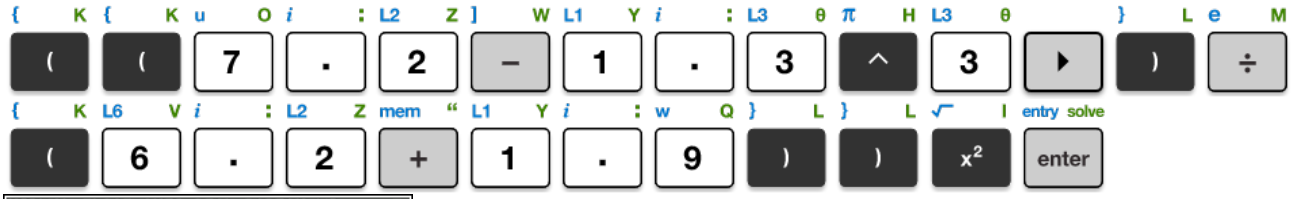
Answer: 924.84

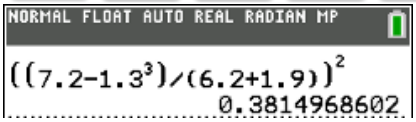
3)



Answer: -5173.55

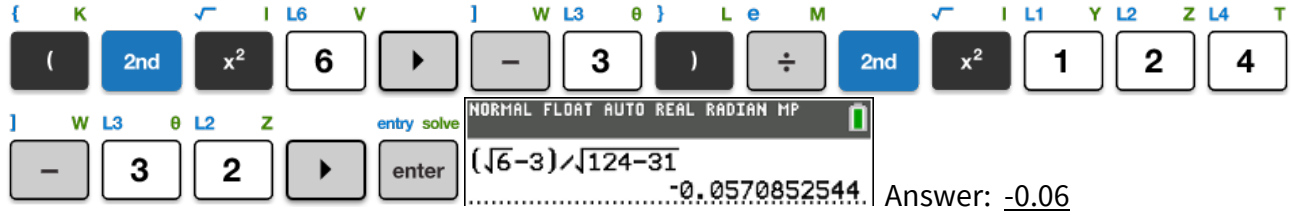
4)





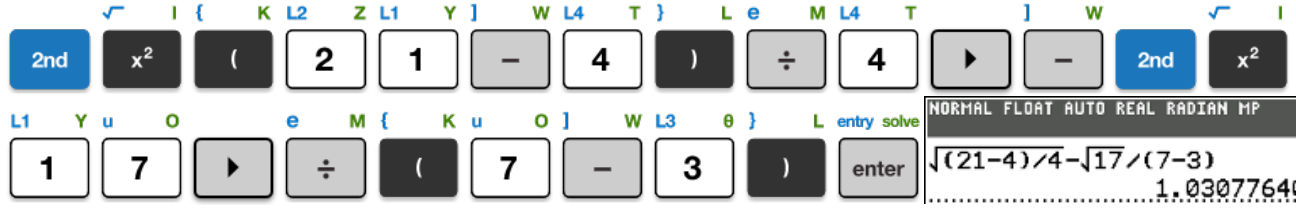
Answer: 0.38

5)



Answer: -0.06

6)



Answer: 1.03