Math 93
TI-84 – Calculator basics

You have purchased this expensive calculator. So what does it do? Well, the Ti-84 can do lots of different fancy math applications. For this course we will see that it
a)   Can do numerical calculations like any other calculator
b)   Can graph a line
c)   Can solve equations from a graph
d)   Can find the point of intersection of two equations
e)   Can do some basic statistical calculations
f)   Can compute lines of best fit

You may not know what all of these terms mean quite yet, but be patient. You will in good time. Right now let's focus on getting this fancy machine to do some basic arithmetic calculations.

TURNING THE CALCULATOR ON
- Hit the button marked ON in the lower left hand corner
    -

TURNING THE CALCULATOR OFF
- Hit the 2nd key – it is on the left hand side, then hit the ON key.
Note your calculator will turn off after a few minutes of nonuse.

HOME SCREEN AND CLEAR
- When you turn your calculator on you will be on the home screen. This is the place where you want to do your computations.
- If your home screen is messy with previous expression you have entered, you can erase these by hitting the CLEAR button
    -

ARITHMETIC
- Notice on the right hand side you have the four basic operations of arithmetic.
- The key (-) near the ENTER button is the negation sign. You use this to enter a negative number say like -5. DO NOT USE THE SUBTRACTION SIGN in this case
- The key ^ that is above the division sign is the exponent key on the TI-84.
- The open and closed parenthesis (and) are located above the keys 8 and 9.
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The good thing is that the calculator understands the order of operations. However the calculator will only respond to what you enter. So you may have to think about what you need to enter in some cases. Here are some examples:

Example 1: Evaluate: $32 \div 8(4)$

Enter 32	Hit ÷ key	Enter 8
32	**32/**	**32/8**

Enter (	Enter 4	Enter)
32/8(	**32/8(4**	**32/8(4)**

Hit Enter		
16		

Example 2: Evaluate: $-8 + 35 \div 7 \cdot 3 - 4 \cdot 2 + 5$
You try this one – remember the negative sign is the (-) key; the – key is used for subtraction. Check with your group. Did you get the same answer? Did you get the answer 4?

Practice: Use a calculator to evaluate these expressions

1. $3(9 - 5) + 5(12 - 4)$ 2. $(35 - 3)(15 - 2 \cdot 6)$

Sometimes you need to use parenthesis to help you instruct the calculator on how to use the order of operations. One situation where this occurs is the fraction bar.

Example 3: Evaluate: $\frac{30-9}{12-9}$

Hopefully you can do this one "by hand" and see the answer is 7. If you enter it in the calculator as follows:
$30 - 9 / 12 - 9$, you will get 20.25.

You don't get 7! Do you see why? The calculator did the division 9/12 FIRST then did the subtractions, which is exactly what the order of operation says to do. To solve this problem enclose the numerator in parenthesis and the denominator in parenthesis as indicated in the following:
$(30 - 9)/(12 - 9)$. Now you get the correct answer, 7.

Example 4: Evaluate $\frac{2}{3} \div \frac{2}{3} + 4$

If you think about this problem and apply the order of operations the answer is 5. But if you enter it in the calculator as follows:
2/3/2/3+4, you will get 4.111111111
You get the wrong answer again. Why? The calculator did the $\frac{2}{3}$, then divided it by 2 (which gives $\frac{1}{3}$), then divided this answer by 3 (which gives $\frac{1}{9}$ or .1111….) and added 4. To do this correctly you should enclose the second $\frac{2}{3}$, in parenthesis (to tell the calculator you are dividing by $\frac{2}{3}$, and not just 2). The correct form is:

2/3/(2/3)+4 or, if it may be clearer for you to use (2/3)/(2/3)+4.

More Practice: Evaluate these using a calculator

3) $\frac{12.8+24.6}{3.5}$ 4) $\frac{64.5+59.1}{0.2(43)}$ 5) $\frac{4}{5} \div \frac{2}{3} \cdot 5$

EXPONENTS:
The ^ key is used for the exponent. Here is a simple example:

Example 5: Evaluate 5^4. Enter 5^4. The answer is 625.

Be careful in situations like $(-6)^2$. If you do not enter the parenthesis you get -36.
The calculator did the following problem: -6^2. This is the opposite of the square of 6.
You want the square of the opposite of 6. It's a different order of operations. Include the parenthesis:

(-6)^2. The answer is now 36, which is correct.

Practice: Evaluate each using the calculator. If necessary, round to the nearest hundredth.

6) $(-1.1)^2 \div (0.05) + 3.2(5.2^3 - 2.1^2)$

7) $\frac{5(3-1)}{4(6)+1}$

8) $\frac{4^2 - 3\cdot2}{3-4\cdot2+2^2}$

9) $\frac{12}{5} \div \frac{20}{7} \cdot \frac{5}{7}$

10) $34.3 + 4.2(13.2 - 8.4 \div 0.2)$

11) $\frac{-7.92+(3.1)(4.01)}{3.6^2 - 7.43}$ Round your answer to the nearest tenth.