Get to Know Your Calculator!

You are allowed to use a non-graphing, scientific calculator for this course. A scientific calculator is different from an ordinary hand-held calculator in that it includes trigonometric functions such as sine and cosine, exponential functions such as square root, and other miscellaneous mathematical functions.

Your calculator will be an important tool in this course. It is critical that you know how to use it correctly to perform many different calculations. You are strongly urged to use the SAME calculator throughout the course. The reason for this is that the keystrokes needed to perform a given calculation can greatly vary between different models of calculators.

The purpose of this lab is to familiarize you with your own calculator, so you can use it to make correct calculations.

I. Add, Subtract, Multiply, and Divide Integers

The set of integers are \{\ldots, -3, -2, -1, 0, 1, 2, 3, \ldots\}. The button allows you to enter a negative number. This key is DIFFERENT than the key for subtraction, which is usually located on the far right of your calculator by the keys. Your calculator may have a key different than for entering negative numbers.
Notes:

1. What does the key for entering negative numbers look like on your calculator?

2. Write down the keystrokes your calculator requires to get the correct answer for \(-8 + 6\). You should get \(-2\) for the answer.

Try these with your calculator, and then check your answers below.

1. \((-20) \cdot (-5)\)
2. \(-20 \div 5\)
3. \(5 - 20\)
4. \(-5 - 20\)
5. \(-5 + 20\)
6. \(-5 + (-20)\)
7. \(20 - 5\)
8. \(20 + (-5)\)
9. \((5) \cdot (-20)\)
10. \(-20 \div (-5)\)

Answers: 1. \(100\), 2. \(-4\), 3. \(-15\), 4. \(-25\), 5. \(15\), 6. \(-25\), 7. \(15\), 8. \(15\), 9. \(-100\), 10. \(4\)

II. Fraction Keys

How to Enter a Fraction

The \(\frac{\text{a}}{\text{b}}\) key allows you to enter fractions. To enter \(1\frac{2}{3}\), you key-in the following:

\[
\begin{array}{ccc}
1 & \frac{\text{a}}{\text{b}} & 2 & \frac{\text{a}}{\text{b}} & 3
\end{array}
\]

Example Problem: \(1\frac{2}{3} + \frac{4}{5} = 2\frac{7}{15}\). Your calculator display may look like this \(2\frac{7}{15}\) which means two and seven fifteenths.

Notes:

1. When you do the example problem above on your calculator, how does the answer look on your calculator display? Don’t forget to use the enter key or equal key at the end.
Try these with your calculator, and then check your answers below.

1. \( \frac{2}{3} - \frac{5}{11} \)  
2. \( \frac{6}{13} + 1 \frac{2}{7} \)

3. \( \frac{2}{9} + \frac{5}{18} \)  
4. \( \left(3 - \frac{2}{11}\right) \cdot \left(1 \frac{5}{7}\right)\)

5. \( \frac{1}{2} - \frac{2}{3} + \frac{3}{5} \)  
6. \( \frac{1}{5} + \frac{6}{5} + 3 \frac{11}{14} \)

Answers: 1. 7/33  2. 1 68/91  3. 4/5  4. 5 5/11  5. 13/30  6. 4 11/14

How to Change a Mixed Number to an Improper Fraction

A fraction like \( \frac{9}{7} \) is called an improper fraction because the numerator is a larger number than the denominator. In algebra, it often helpful to have fractions in this form, but the fraction key usually gives answers in mixed number form. To change the number on your calculator display from mixed to improper, look for the \( \frac{A b/c}{d/c} \) key. To access this key, you may have to use the \( \text{2nd} \) key first.

Notes:
1. Verify that \( 1 \frac{5}{13} = \frac{18}{13} \) using your \( \frac{A b/c}{d/c} \) key.
2. Write down the keystrokes you used.

How to Change a Fraction to a Decimal

The \( \text{F \<> D} \) key can change a fraction to a decimal. This key usually is accessed by using the \( \text{2nd} \) key too. Remember to press the enter key or equal key to put in the original number before you change it to a mixed number or to a decimal.

Notes:
1. Verify that \( \frac{1}{2} = 0.5 \). Use your fraction key to enter \( \frac{1}{2} \).
2. Write down the keystrokes you used.
III. Exponent Key

Any scientific calculator will always have an exponent key that allows you to evaluate expressions such as $2^5$ which equals 32. What the exponent key looks like can vary. Here are some possible exponent keys: $y^x$, $x^y$, A

Shortcut: If you want to just square a number, many scientific calculators have an $x^2$ key.

Caution: Many calculators require you to put ( ) around any negative number that you raise to an even power or exponent.

Notes:

1. **What key does your calculator use to enter an exponent?**

2. **Verify that $2^5$ equals 32. Write down the keystrokes you used.**

Try these with your calculator. Check your answers below.

1. $5^3$  
2. $16^{1/2}$ Hint: Use your fraction key

3. $8^{2/3}$  
4. $(-4)^3$

5. $(-4)^2$  
6. $-4^2$

7. $-9^3$  
8. $-(-6)^2$

9. $(10 + 5)^3$  
10. $2^2 \cdot 3^2 \cdot 5^2$

Answers: 1. **125** 2. **4** 3. **4** 4. **-64** 5. **16** 6. **-16** 7. **-729** 8. **-36**  
9. **3375** 10. **900**
IV. Radical or Root Keys

Most of you know that \( \sqrt{25} \) equals 5. But, sometimes we need the approximation for the square root of a number that is not a perfect square number. For example, there is no integer answer for \( \sqrt{7} \). The approximation for \( \sqrt{7} \) to the nearest thousandths is 2.646. We need a calculator to help us find this approximation.

Some calculators have the \( \sqrt{\text{ } } \) key as a single keystroke, while others require the use of the \( \overline{\text{2nd}} \) key to access it.

There are other roots that can be calculated besides the square root. Look for \( \sqrt{\text{ } } \) or \( \sqrt[3]{\text{ } } \) to find the \( \sqrt[3]{125} \) which equals 5.

Try these with your calculator. Round any decimal answers to the nearest hundredth. Check your answers below.

1. \( \sqrt{169} \)
2. \( \sqrt[3]{8} \)
3. \( \sqrt{40} \)
4. \( \sqrt[3]{-64} \)
5. \( \sqrt{8} + 1 \)
6. \( \sqrt[3]{125} \)
7. \( \sqrt{\frac{1}{4}} \)
8. \( \sqrt[3]{9} \)
9. \( \sqrt{-24} \)
10. \( \sqrt[3]{4} + \sqrt{10} \)

Answers: 1. 13  2. 2  3. 6.32  4. -4  5. 3  6. \( \frac{1}{2} \)  7. \( \frac{1}{2} \)  8. 2.08  9. Error, or no solution  10. 4.75

Notes:
1. Write down keystrokes you uses to find the answer to problem 3.

2. Write down any questions you may still have about your calculator and how to use it.