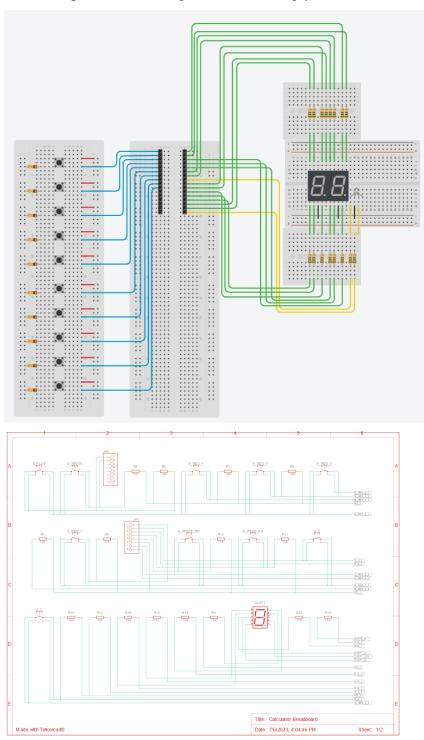
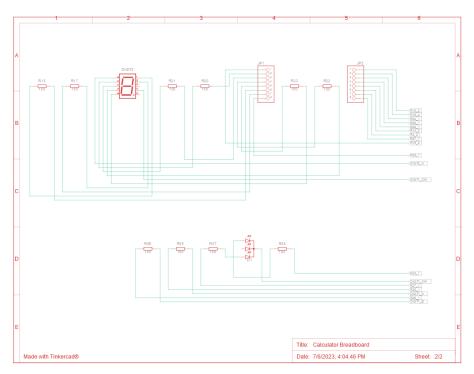
# **Setting up the Calculator**

**Step 1:** Use the images below to set up your calculator.





## **How To Use the Calculator**

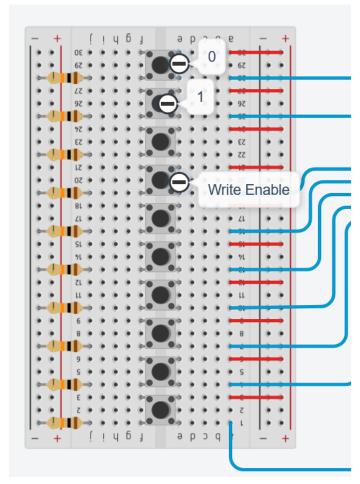
This Calculator only supports 1 and 0s as inputs. All inputs must be in the form of a binary coded decimal (BCD). The BCD and decimal equivalent are listed below:

| 0> 000000000                    | 1> 000000001             | 2> 000000010             | 3> 000000011             |
|---------------------------------|--------------------------|--------------------------|--------------------------|
| 4> 000000100                    | 5> 000000101             | 6> 000000110             | 7> 000000111             |
| 8> 000001000                    | 9> 000011001             | 10> 000010000            | 11> 000010001            |
| 12> 000010010                   | 13> 000010011            | 14> 000010100            | 15> 000010101            |
| 16> 000010110                   | 17> 000010111            | 18> 000011000            | 19> 000101001            |
| 20> 000100000                   | 21> 000100001            | 22> 000100010            | 23> 000100011            |
| 24> 000100100                   | 25> 000100101            | 26> 000100110            | 27> 000100111            |
| 28> 000101000                   | 29> 000111001            | 30> 000110000            | 31> 000110001            |
| 32> 000110010                   | 33> 000110011            | 34> 000110100            | 35> 000110101            |
| 76> 001110110                   | 77> 001110111            | 78> 001111000            | 79> 010001001            |
| 80> 010000000                   | 81> 010000001            | 82> 010000010            | 83> 010000011            |
| 84> 010000100                   | 85> 010000101            | 86> 010000110            | 87> 010000111            |
| 88> 010001000                   | 89> 010011001            | 90> 010010000            | 91> 010010001            |
| 92> 010010010                   | 93> 010010011            | 94> 010010100            | 95> 010010101            |
| 96> 010010110                   | 97> 010010111            | 98> 010011000            | 99> 010011001            |
| -100> 100000000                 | <b>-99&gt; 100000001</b> | <b>-98&gt; 100000010</b> | <b>-97&gt;</b> 100000011 |
| <b>-</b> 96 <b></b> > 100000100 | <b>-95&gt; 100000101</b> | <b>-94&gt; 100000110</b> | <b>-93&gt; 100000111</b> |
| -92> 100001000                  | -91> 100011001           | -90> 100010000           | -89> 100010001           |

```
-88 --> 100010010
                     -87 --> 100010011
                                          -86 --> 100010100
                                                               -85 --> 100010101
-84 --> 100010110
                     -83 --> 100010111
                                          -82 --> 100011000
                                                               -81 --> 100101001
-80 --> 100100000
                     -79 --> 100100001
                                          -78 --> 100100010
                                                               -77 --> 100100011
-76 --> 100100100
                     -75 --> 100100101
                                          -74 --> 100100110
                                                               -73 --> 100100111
-72 --> 100101000
                     -71 --> 100111001
                                          -70 --> 100110000
                                                               -69 --> 100110001
-68 --> 100110010
                     -67 --> 100110011
                                          -66 --> 100110100
                                                               -65 --> 100110101
-64 --> 100110110
                     -63 --> 100110111
                                          -62 --> 100111000
                                                               -61 --> 101001001
-60 --> 101000000
                     -59 --> 101000001
                                          -58 --> 101000010
                                                               -57 --> 101000011
                                                               -53 --> 101000111
-56 --> 101000100
                     -55 --> 101000101
                                          -54 --> 101000110
-52 --> 101001000
                     -51 --> 101011001
                                          -50 --> 101010000
                                                               -49 --> 101010001
-48 --> 101010010
                     -47 --> 101010011
                                          -46 --> 101010100
                                                               -45 --> 101010101
-44 --> 101010110
                     -43 --> 101010111
                                          -42 --> 101011000
                                                               -41 --> 101101001
-40 --> 101100000
                     -39 --> 101100001
                                          -38 --> 101100010
                                                               -37 --> 101100011
-36 --> 101100100
                     -35 --> 101100101
                                          -34 --> 101100110
                                                               -33 --> 101100111
                     -31 --> 101111001
-32 --> 101101000
                                          -30 --> 101110000
                                                               -29 --> 101110001
-28 --> 101110010
                                          -26 --> 101110100
                     -27 --> 101110011
                                                               -25 --> 101110101
-24 --> 101110110
                     -23 --> 101110111
                                          -22 --> 101111000
                                                               -21 --> 110001001
-20 --> 110000000
                     -19 --> 110000001
                                          -18 --> 110000010
                                                               -17 --> 110000011
-16 --> 110000100
                     -15 --> 110000101
                                          -14 --> 110000110
                                                               -13 --> 110000111
-12 --> 110001000
                                          -10 --> 110010000
                     -11 --> 110011001
                                                               -9 --> 110010001
-8 --> 110010010
                     -7 --> 110010011
                                          -6 --> 110010100
                                                               -5 --> 110010101
-4 --> 110010110
                     -3 --> 110010111
                                          -2 --> 110011000
                                                               -1 --> 100001001
```

#### Step 1: Entering the numbers into the calculator

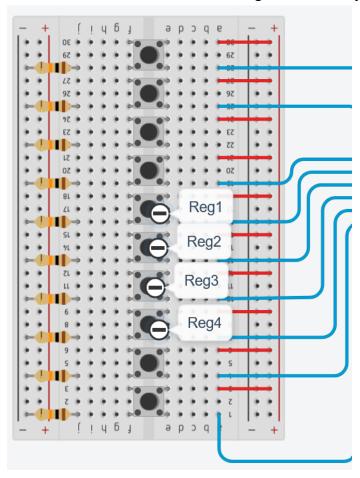
When you first power up the calculator, you will need to press the enable button to start the process of writing the BCD values into the calculator's memory. The write enable button is shown in the image below.



When the write enable has been pressed, enter your number using the 0 and 1 button. If the number you entered shows up on the seven segment displays, you have done it correctly. If you get an unexpected display, you may have made a mistake. If you have, please restart the calculator and start **Step 1** again.

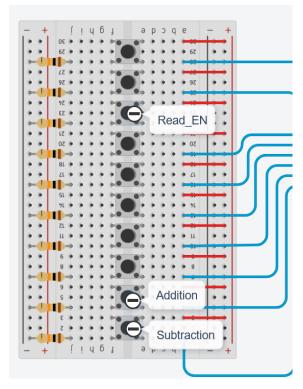
### **Step 2: Storing the numbers**

This calculator has a register file that can store up to four digits. To store a number press any of the four registers. Note: Any value that is currently stored in the register will be overwritten with the most recent value entered. The register buttons are shown in the image below. You do not need to fill all the registers. You only need at least two to make calculations.



#### **Step 3: Doing the calculation**

When you have finished storing the numbers, to do the calculation, press the read enable button. This enables the calculator to read values from the shift register. When you have pressed the read enable button, select any two values by pressing the register buttons you would like to calculate. When you have done so, simply press the addition or subtraction button to get your calculations. The relevant buttons are shown in the image below.



### **Making Another Calculation Using Values Entered**

If you have entered four values and you want to make a calculation using those numbers simply repeat **Step 3** after you get your result.

### **Entering New Numbers**

To enter new numbers, simply press the write enable button and start from **Step 1**.