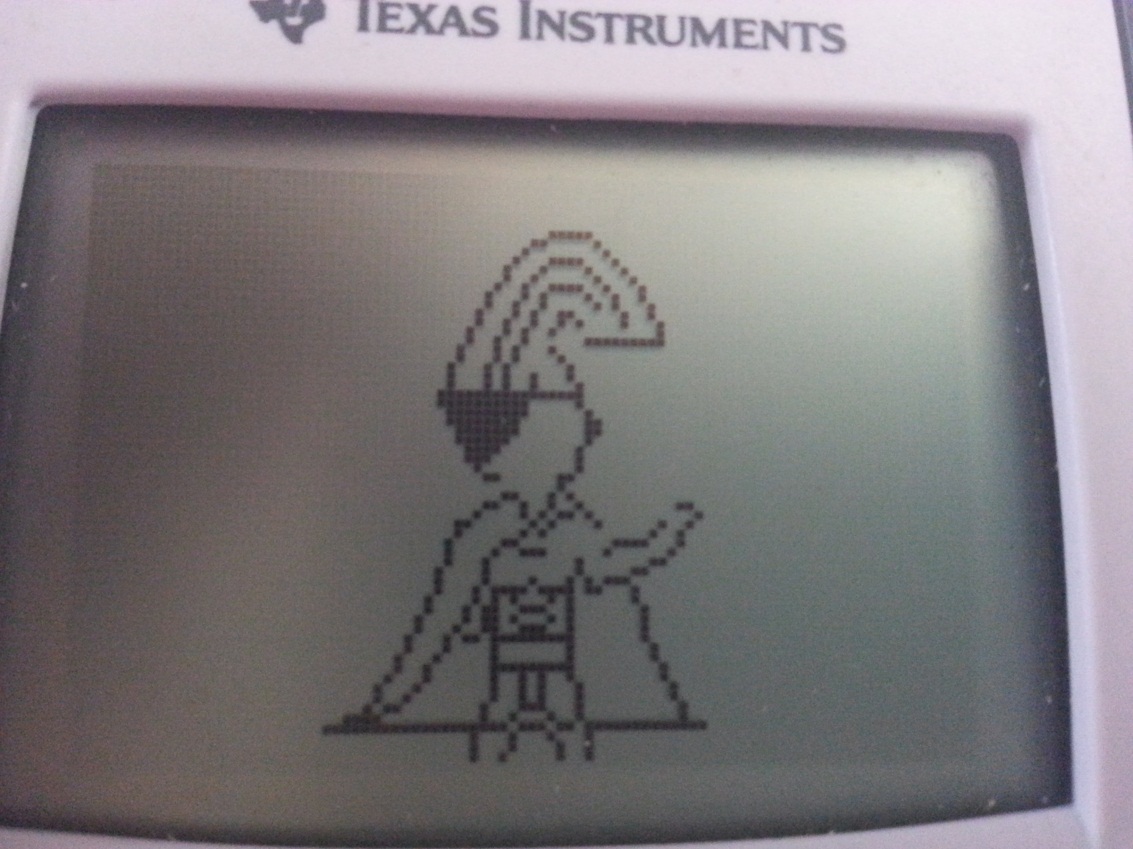
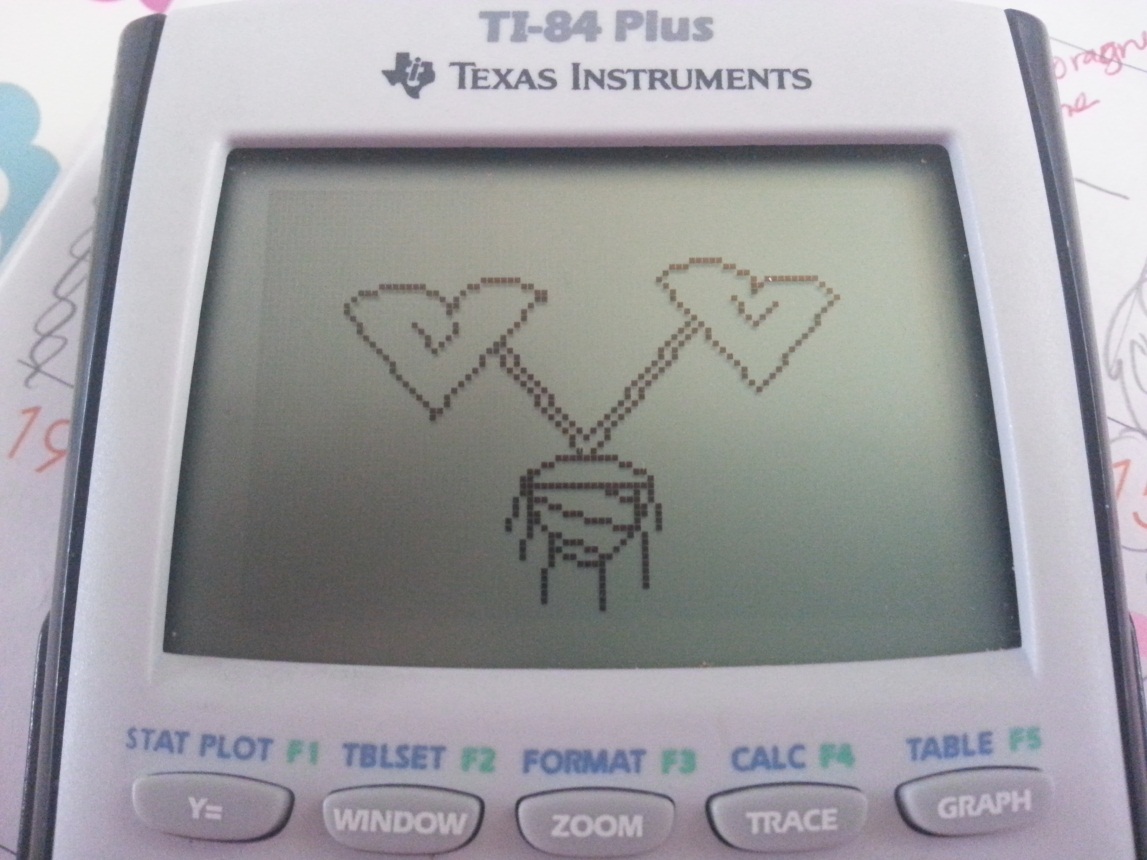
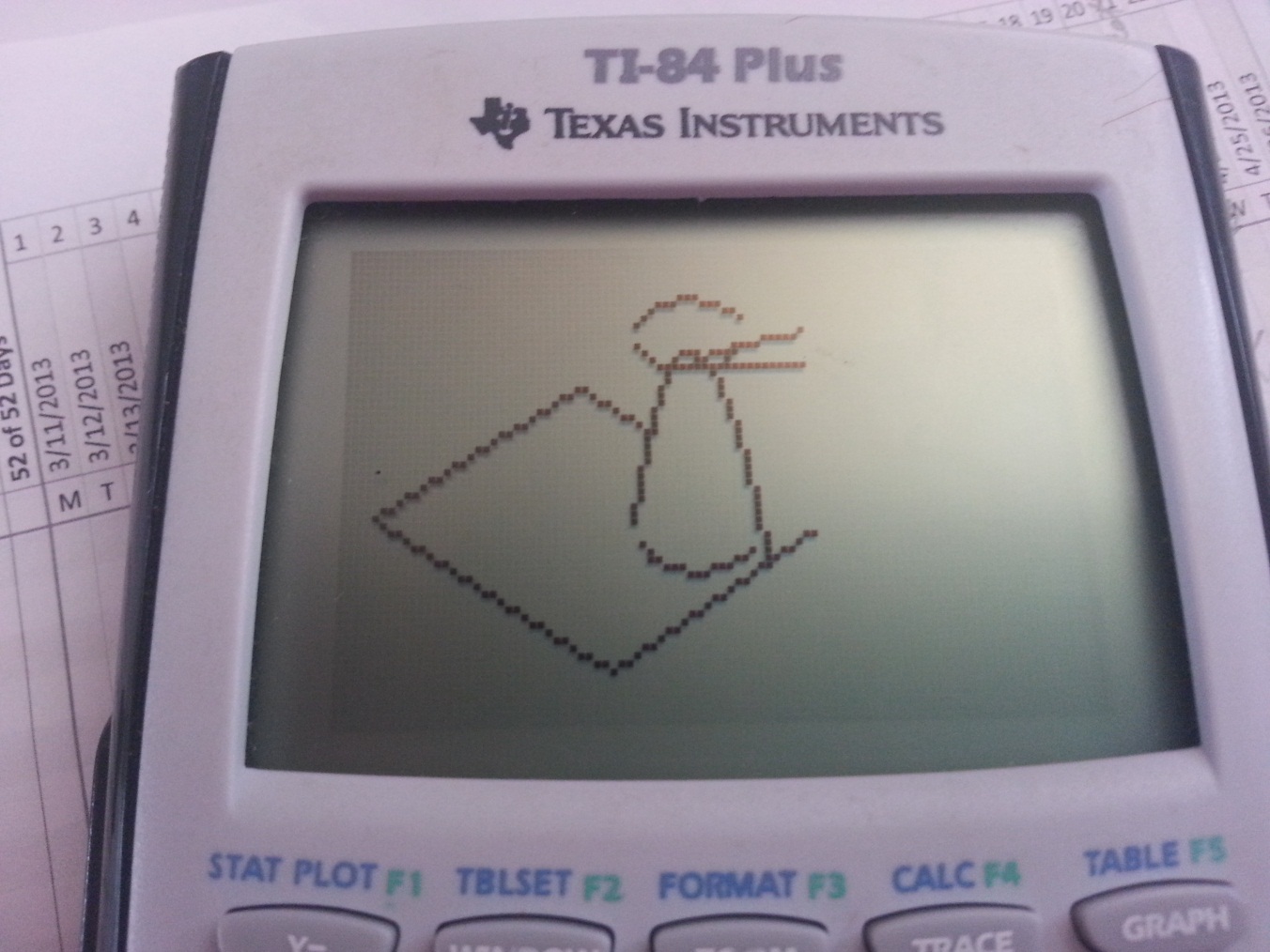
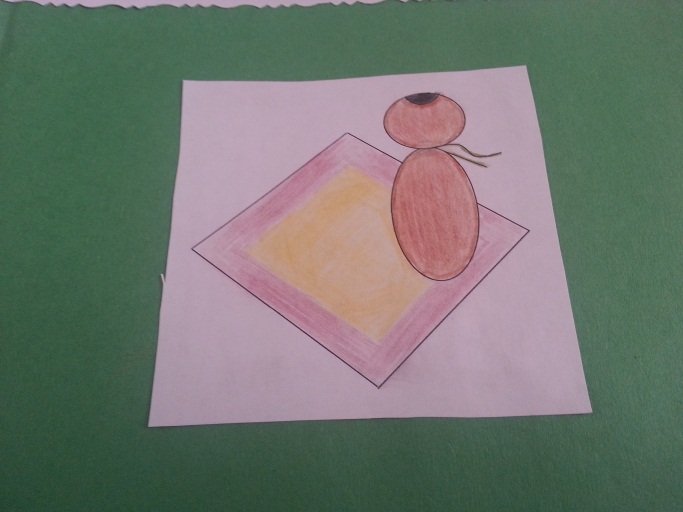
**Kāpili Hahaina**

****

1. Read the introduction to Kāpili Hahaina, write a summary to what you have read and give me some ideas of what you are thinking for this project. **Due Date:** August 26, 2015 August 27, 2015

In his book *An Investigation into the Laws of Thought* (1854), the English mathematician George Boole

(1815-1864) approached logic in a system that reduced it to simple algebra. In his system, later called Boolean algebra or symbolic logic, expressions are combined using "and" (multiplication), "or" (addition), and "not" (negative), and then interpreted as "true" (1) or "false" (0). Today, **Boolean algebra** plays a fundamental role in the design, construction, and programming of computers.

An example of a Boolean expression is *x ≤* 5. In this case, if *x* is 10, the expression is false and assigned a value of 0. If *x* is 3, then the expression is true and it is assigned a value of 1. You can use Boolean expressions to limit the domain of a function when graphing on your calculator. For example, the graph of Y1 = (*x* + 4)/(*x ≤* 5) does not exist for values of *x* greater than 5, because your calculator would be dividing by 0.

*I had this yearning, this desire, to be like my ancestors — to connect. But I wanted to kind of do it in the traditional style. Not one exactly as my ancestors but one that I thought was close enough because in truth I don't know. So I created.  
 ~Frank Kawaikapuokalani Hewett speaking about his kakau*

 *My name is Kyle Nakanelua, and I was born and raised on Oahu. And I now live in Haiku on Maui. First of all I think my most important thing that I do is I'm a dad. Second, I'm a husband. Third, I'm a fireman: I'm a captain at Kahului airport, and I run a shift of fire fighters and our basic duties and responsibilities are about caring for people in need of our services in the event that the airplane should have trouble or if they experience medical difficulties, we normally respond first to them. And I'm the alaka'i for the halemua. I've gone into the prison several times to just talk about Hawaiian things for the men who are in prison.*  
The halemua, traditionally was the first formal institute of learning in which a Hawaiian male enters, when he enters into society… approximately five, six, seven, eight years old. He's cast in to this place called the halemua — the house of men. It's where men hold council for matters of spirit, for matters of intellect, for matters of things of the physical world. The group specializes in male activities within Hawaiian life, past, present, and future.  
  
[The halemua] does things of the earth such as planting, farming food products, farming products for material use in the culture, like koa trees, like 'ohi'a, like wauke, like 'awa. we do other physical things like dance, that people call hula. We do storytelling, we do singing or oli. We do pule. We do ceremonial welcoming of visitors to our places, to our islands, to our culture.  
  
'Awa is another facet of specifically Hawaiian male society. Taro, which is turned into poi, nourishes the body. 'Awa nourishes the spirit. So we grow 'awa, we care for 'awa, we prepare 'awa, and we inu'awa. And from beginning to end, it nourishes the spirit. It ties us into an older time, when men were more dominant within their society. So attaching ourselves to that gives us back that connection to that older masculinity.

**Kyle's Decision to Receive a Tattoo**

I was just doing genealogical research, finding out who you are, where you come from, et cetera, et cetera. That was in my twenties. When I turned thirty was when the idea of placing a tattoo or

a tatau, became a little bit more prevalent. I was interested in putting something on that would mean something special to mark this particular time in my life, and to reach into those things that let us know who we are, therefore why we are the way we are now.  
  
**But Was He Ready?**Now, I was talking about getting a tattoo. I wanted a Hawaiian particular design. Nothing heavy, just you know a little patch. Just to show I am Hawaiian. And so my sister says, oh no, he's gonna embarrass the family again, I better get to him and make sure he doesn't put anything idiotic on. So my older sister introduces me to her friend named Keone. And so I get there, he introduces himself, and ... Keone is so different, you know. He's not like your typical person who would get tattooed. Keone was this soft-spoken, intelligent, humble, kind person. And I just never associated those traits with tattoos.

But here was this guy, and he was just so full of knowledge and all of my perceptions about tattooing just got blown out of the water when I was talking to him. I was so pissed off at him, because he's telling me everything I'm doing is wrong. It's like you're talking to him, and he's going "Oh, that's interesting. Oh, hmm, where did you get that idea from?" The questions he asks, just makes you question yourself so deep. And basically, all my thoughts and perceptions, there was nothing there. It was so superficial, it was painful.  
  
He told me that I should go read certain books and look into certain things. And so I did. And that I should do my family research in which they were and learn the language, which is important. Because when you get your family names, and you know the language, then you can associate the names with the particular kuleanas that your families were associated with. And that's the treasures that I got out of talking with Keone. And when I did that, and I came back to him with it, he said okay, now you're on the right track. So about two or three years later, I was finally ready, in his eyes, to put one on. And from that point on, everything turned.

Source: <http://www.pbs.org/skinstories/stories/nakanelua.html>

You are going to write your own program on your calculator this year, that will generate a logo, tattoo or drawing that is reflective of you. Tell me some of your thoughts about what you could draw this year below. Tell me why you are choosing this logo, tattoo, or other. What did you think about Uncle Kyle’s ideas?

* Did I write down some ideas for my project?

2. Explore Boolean Expressions and Drawing Segments with your Graphing Calculator and the Calculator Notes 4G and 4H. (See attached)

**Due Dates:** August 26, 2015

August 27, 2015

What does a friendly window look like?

How do you draw a absolute-value function in the calculator?

What is a Boolean Expression?

How do you draw a line segment on the calculator?

* Did I read through the calculator notes?
* Do I know what a friendly window is? (Note 4C)
* Do I know how to draw absolute-value function? (Note 4F)
* Do I know what a Boolean Expression is? (Note 4G)
* Do I know how to draw a line segments? (Note 4H)

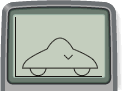
1. Sketch a drawing/design in box below (tattoo, cartoon character, sports object or mascot, design or a scene—BE CREATIVE remember it should reflect something about you). Your program needs to contain these design elements; 8 graphs (or pieces of graphs in your creation with the 6 transformations)

**Due Date:** August 26, 2015 August 27, 2015

* Did I draw a design that reflects me?
* Do I see a circle or semi-circle in my drawing?
* Do I see at least two linear lines with a slope in my drawing?
* Do I see a parabola in my drawing?
* Do I see a square root in my drawing?
* Do I see an absolute value in my drawing?
* Do I see at least two more functions of any kind that I have used in Algebra II this year?

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Graphs:

* 2 linear lines with slope
  + f(x) = mx + b
* 1 quadratic
  + f(x) = x2
* 1 square root
  + f(x) =
* 1 semi-circle
  + f(x) =
* 1 absolute value
  + f(x) =
* any 2 more functions of your choice

Transformation:

* vertical translation (up/down)
* horizontal translation (left/right)
* vertical stretch or shrink
* horizontal stretch or shrink
* reflection over the x-axis
* reflection over the y-axis *(only linear line with a negative slope and square root with a negative x will be able to do this transformation)*

1. Show me your completed picture—sketch on graph paper by. I will initial it indicating it is OK to proceed with your program. Once I have seen it, you must keep the design you chose. If you change must check with me first. You will need to do another sketch.

**Due Date: November 12, 2015**

**November 13, 2015**

* Did I draw the picture that reflects me on the graph paper that was provided?

1. Write down and explore what you think the functions are for your drawing. Make notes on your graph paper. Draw lines around your drawing and label what your **windows** would be for step 7.

**Due Date: December 8, 2015**

**December 9, 2015**

* Did I draw an x-axis labeled with numbers?
* Did I draw a y-axis labeled with numbers?
* Did I draw a box around my whole picture?
* Did I label each piece of my drawing as a function?
* Did I number each function?

Example:

**10**

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| 1. square root   7  2  1   1. linear line 2. linear line 3. absolute value 4. quadratic 5. circle / semi-circle 6. circle / semi-circle 7. circle / semi-circle   **-5 = Xmin**  **-10** | **5 = Xmax**  = Xmax  **8 = Ymax**  **10**  8  3 |
| **-10**  6  5  4 | **-8 = Ymin** |

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**DO NOT TOUCH YOUR CALCULATOR YET!!! AT ALL!!!**

6. Create a table with columns and rows titled as indicated and fill in the information for each numbered graph of your sketch. (you may use the chart on the back of this handout!) This will be need to be shown to me to get my initials by first

**Due Dates: 50% - February 3, 2016**

**February 4, 2016**

**100%- March 2, 2016**

**March 3, 2016**

* Did I number my functions?
* Did I identify and write down my parent function using f(x) notation
  + Example: f(x)= x2
* Did I identify and write my equation for my function?
  + Example: y= -0.5(x – 5)2 + 4
* Did I identify and write down my domains?
  + Example: 4<x<8
* Did I identify and write down my transformations?
* Did I write the individual Line of Code?
  + Example: DrawF -0.5(x – 5)2 + 4 / (x>4) / (x<8)
* Did I draw a thumbnail sketch of the function - include relevant values on the x- and y-axes?
* Did I identify the part of the design that the line of code draws?

|  |  |  |  |
| --- | --- | --- | --- |
| **Function** **Number** | **Parent Function** | **Equations in Calculator**  **Form (y= )** | **Restrictions (Domain)** |
| 1 | Quadratic f(x) = x2 | y = -0.5(x – 5)2 + 4 ; | x ≥ 4 and x ≤ 8 |
| **Line of Code** | DrawF(your equation) / (domain)  DrawF -0.5(x – 5)2 + 4 / (x>4) / (x<8) | |
| **Transformations** | **Thumbnail Drawing with Label** | |
| stretched by a ½  reflection over the x-  axis  moved to the right five  (5) units  moved up four (4) units | Top of Car | |

Common Core State Standards that are going to be address while doing this step:

* F.IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
* F.BF.3 Identify the effect on the graph of replacing f(x) by f(x) + k, k f(x), f(kx), and f(x + k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.

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| **Function** **Number** | **Parent Function** | **Equations in Calculator**  **Form (y= )** | **Restrictions (Domain)** |
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| **Line of Code** |  | |
| **Transformations** | **Thumbnail Drawing with Label** | |
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| **Function** **Number** | **Parent Function** | **Equations in Calculator**  **Form (y= )** | **Restrictions (Domain)** |
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| **Transformations** | **Thumbnail Drawing with Label** | |
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| **Function** **Number** | **Parent Function** | **Equations in Calculator**  **Form (y= )** | **Restrictions (Domain)** |
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1. **Building Inverse Functions:** Please take your original equations and solve to find your inverse equation. Be careful not all functions have an inverse. You may choose what functions you would like to transform. You must have at least three different functions. Please use the table below and use the Function Number from your tables in the last step.

**Due Dates: March 9, 2016**

**March 10, 2016**

* Did I find at least three different functions from my tables?
* Did I write the Function Number from my tables?
* Did I write the Parent Function?
* Did I write the Equation from my tables?
* Did I solve to find my Inverse Equation?

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| **Function Number** | **Parent Function** | **Equation** | **Inverse Equation** |
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Common Core State Standards that are going to be address while doing this step:

F.BF.4 Find inverse functions:

a. Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse. For example, f(x) = 2x3 or f(x) = (x+1)/(x-1) for x ≠ 1.

8. Enter A – G in your calculator program in your calculator. During the next step every time you come to see me please have me initial your paper. The steps will be as follows:

**Due Dates: March 30, 2016**

**March 31, 2016**

1. Press the Program [PRGM] key on your calculator; select [NEW] to create a new program. [Enter] 2 times
2. Name: Use the first three letters from your first name and the first three letters from your last name. [Enter]
3. 1st line of program: **ClrDraw** (Use [2nd] [PRGM] 1:) This will clear any pictures currently on your graphing window. [Enter]
4. 2nd line of program: **AxesOff** (Use [2nd] [Zoom]=Format, and select AxesOff). [Enter]
5. 3rd line of program: **FnOff** (Use [VARS], [Y-VARS], 4: On/Off, and then select FnOff). [Enter]
6. 4th line of program: **PlotsOff** (Use [2nd] [Y=] **Stat Plot**, and select 4: PlotsOff). [Enter]
7. 5th – 8th Next set the window (Refer to Step 5 for your numbers for your window.) (the minimum and maximum x and y values that will display on your screen). Your commands should appear like the following (enter **number** first then where **→** is the **STO** or store key on your calculator): (**Xmin**, **Xmax**, etc. are found [VARS] 1: WINDOW)

Example:

: -23.5 → Xmin [Enter]

: 23.5 → Xmax [Enter]

: -15.5 → Ymin [Enter]

:15.5 → Ymax [Enter]

1. You may now enter the equations of your graphs. (Use [2nd] [PRGM] 6: **DrawF**).
   1. To **restrict domain** and only use pieces of graphs, follow this example:
      1. : DrawF (your equation) / (domain) [Enter] (Please see Step 6 for detail example)
      2. \*\*\*Note: To get the ≤ and ≥ symbols use [2nd] [MATH] [TEST] To get the / use the division sign

**Extra and Optional Notes:**

1. Use [CLEAR] to delete a line. *Be careful…*
2. Use [2nd] [INS] [Enter] to **insert** a blank line
3. If you wish to **shade** in a part of your graph, you may use the Shade command ([2nd] [PRGM]7: Shade) as follows:
   1. :Shade ( , , ) [Enter]
      1. Shade (bottom function where shading begins, top function where shading ends, # from 1 to 8 where 1 is the darkest shade)
4. To graph **vertical lines** that has points (2,4) 1st point and (2,11) 2nd point: use [2nd] [DRAW] [LINE]. The format of the command is the following:
   1. :Line ( , , , )
      1. Line (1st point x value, 1st point y value, 2nd point x value, 2nd point y value)
         1. e.g. :Line (2,4,2,11)
5. Execute your program!!
   1. ([2nd] [PRGM] [EXEC] [choose your program name] [Enter] [Enter])

9. Showing Mrs. Cajudoy 50% and 100% on due dates of your program has been entered into your calculator.

**50 % Due: April 6, 2016 100% Due: April 27, 2016**

**April 7, 2016 April 28, 2016**

10. Type up your program as you go and title this PROGRAM. Cut out your design, cut a piece of construction paper/colored paper, and glue your design to the construction paper. Color your design with crayons or colored pencils, and decorate any way you wish! --glitter, etc.!

**Due Dates: May 16, 2016**

**May 17, 2016**

**Your Project outcomes should include (turn these into me on the presentation day):**

* Do I have my drawing on graph paper with my initials
* Do I have a *neat* copy of your table showing all of the specified information (and an initialed copy which could be the same one if it was neat when I initialed it)
* Do I have a copy of your program (just the program in your calculator) refer to step 8.
* Did I write up my Personal Reflection - Share how this design is a reflection of you. Consider why you chose this, why it is significant to you personally – typed (use this when presenting project)
* Do I have my colored design glued to construction paper backing

**11. Presentation - This project will be presented on these dates:** Boolean Project Presentation – This will be presented to your classmates on the assigned Due Dates for your class. You are allowed a three minutes time period and must be present to us as an iMovie or YouTube. We will send all links to an online document, which Mrs. Cajudoy will set up.

**Due Dates: May 16, 2016**

**May 17, 2016**

Check list for you to make sure you have it all…

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| PROGRAM |  | TABLE |  | PRESENTATION OF PROGRAM & DRAWING |  |
| USED ALL 5  FUNCTIONS |  | PARENT FUNCTIONS |  | UNIQUE, ASTHETIC |  |
| USED ALL 6  TRANSFORMATIONS |  | THUMBNAIL SKETCH |  | PRESENTATION – EXPLAINED WELL |  |
| SET DOMAINS |  | TRANSFORMATIONS AND DWG PIECE |  | SHARED PERSONAL REFLECTION |  |
|  | | LINE OF CODE |  |  | |
| EQUATIONS IN “Y=” FORM |  |
| DOMAINS |  |
| PERSONAL REFLECTION (you  can place at the bottom of Table) |  |

**Projects submitted LATE will be penalized *one letter grade* for each day that they are late. If you are not present at school that day, see that your project is submitted early or that someone else brings it in for you or it will be counted late! Project Book must be turned into my HAND on time no exceptions!**

**Good Luck, Enjoy, and Be Creative!!!** 

Also, as always, I will be glad to help anyone with their program, finding their equations, converting

equations into calculator form, etc—ANY TIME. Just COME ASK!! Don’t wait until the last minute!—it can get a bit crazy! 

{When you present this is what I am looking for}

1) Clear your equation editor

2) Operate from a clean home screen

3) Walk us through your program (PRGM, EDIT),

Identify the 8 parent functions:

a. 2 linear equation

b. quadratic equation

c. square root equation d. semi-circle function

e. absolute value function

f. any 2 more functions of your choice

Identify all six transformations:

a. vertical translation

b. horizontal translation c. vertical stretch/shrink

d. horizontal stretch/shrink

e. reflect over the x-axis f. reflect over the y-axis

4) Execute your program; explain what functions give the different components of your design.

5) Share a personal reflection about your design.

Prompts: What was doing this project like for you? In what poignant way, does this design reflect you? What did you learn from this project?

6) Answer any questions about your project.

**Boolean Project Rubric**

|  |  |  |
| --- | --- | --- |
| Program - submitted typed | 20 |  |
| Drawing - artistic and accurate (first one and final) | 35 |  |
| Personal Reflection | 10 |  |
|  | (55) |  |
| **Write up:** |  |  |
| Used all functions -   * linear, (2) * square root, * quadratic * absolute value * semi-circle * any two other functions (2) | 8 |  |
| Used all transformations –   * vertical translation * horizontal translation * vertical stretch/shrink * horizontal stretch/shrink * reflection over the x-axis * reflection over the y-axis | 6 |  |
| **Tables:** |  |  |
| Set Domains | 4 |  |
| Defined individual line of codes | 4 |  |
| Identified corresponding equations | 4 |  |
| Identified parent functions and transformations | 6 |  |
| Gave thumbnail sketches | 4 |  |
| Connected functions to drawing pieces | 4 |  |
|  | (40) |  |
|  |  |  |
| Inverse Functions | 10 |  |
|  |  |  |
| **Presentation and Creativeness:** |  |  |
| Unique, aesthetic | 5 |  |
| Explained well | 10 |  |
| Shared personal reflection | 10 |  |
|  | (25) |  |
| TOTAL | 140 |  |