**ALGEBRA ONE NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**PERFECT SQUARES/CUBES ACTIVITY**

For this activity you will need:

pencil tape graphing calculator

template scissors

|  |  |
| --- | --- |
| Step 1:  | Build a cube out of the template that measures 1inch x 1 inch x 1 inch. Hand in the cube to your teacher, it will be used later during this class period. |
| Step 2: | On the calculator, type in y1 = $\sqrt{x}$.Look at the shape of the graph. What did we call this shape?Go to table and find the values of x for which y is a whole number. The x values for which the y-values are whole are the “perfect squares.”  |
| Step 3: | List the perfect squares from 0 – 225 |
| Step 4:  | Try scrolling to find the square roots of negative x-values. What happens? Why? |
| Step 5: | On the calculator, type in y1 = $x^{\frac{1}{2}}$. Type in x ∧ (1/2). Fill in the table and graph the square root function.

|  |  |
| --- | --- |
| x | y |
| -2 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 4 |  |
| 9 |  |
| 16 |  |

Notice anything similar to y= $\sqrt{x}$ ?What is the domain of this function? |

|  |  |
| --- | --- |
| Step 6: | On the calculator, type in y1 = $\sqrt[3]{x}$. Use y = x ∧ (1/3). Look at the shape of the graph. What did we call this shape?Go to table and find the values of x for which y is a whole number. The x values for which the y-values are whole are the “perfect cubes.”  |
| Step 7: | Try scrolling to find the cube roots of negative x-values. What happens? Why? List the perfect cubes from -27 < y < 216.  |
| Step 8: | Fill in the table and graph the cube root function.

|  |  |
| --- | --- |
| x | y |
| -27 |  |
| -8 |  |
| -1 |  |
| 0 |  |
| 1 |  |
| 8 |  |
| 27 |  |

What is the domain of this function? |
|  |  |

At the beginning of class, everyone made a one-inch cube.

How many one-inch cubes would be required to make a cube that is 3 cubes wide, 3 cubes deep and 3 cubes high?

Think of a one inch square? How many square inches are in a square foot?

(Look at the model at the front of class).

How many cubic inches would be required to fill a cubic foot?