Name:

**Cube It - Painted Shape Worksheet**

Imagine a cube made up of smaller cubes. Suppose that you dip that cube into a bucket of paint. The smaller cubes will get different numbers of faces painted depending on where they lie in the big cube. In the table below, *n* represents the side length of the larger cube and also the number of smaller cubes that lie along a side of the larger cube. For example, when *n*=2, the large cube is 2x2x2 and is made up of 8 smaller cubes, two along each side.

For each size of cube, enter the number of smaller cubes that have the given number of faces painted.

**Painted Face Table**

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| Size of Cube (*n*) | 0 faces painted | 1 face painted | 2 faces painted | 3 faces painted | 4 faces painted | 5 faces painted | 6 faces painted |
| 1 |  |  |  |  |  |  |  |
| 2 |  |  |  |  |  |  |  |
| 3 |  |  |  |  |  |  |  |
| 4 |  |  |  |  |  |  |  |

Now focus on two columns above and analyze the growth in the number of faces painted for each of them.

**Which sets are you going to look for at?**

**Drawings to look at Sets**

Drawing n = 1

Drawing n = 2

Drawing n = 3

Drawing n = 4

**Property of Cube sets**

What property of your cube sets are being represented? Volume? Surface Area? something else?

**Cube Set Equation**

Write equations that describes the growth within your cube sets.

How did you determine the equations?