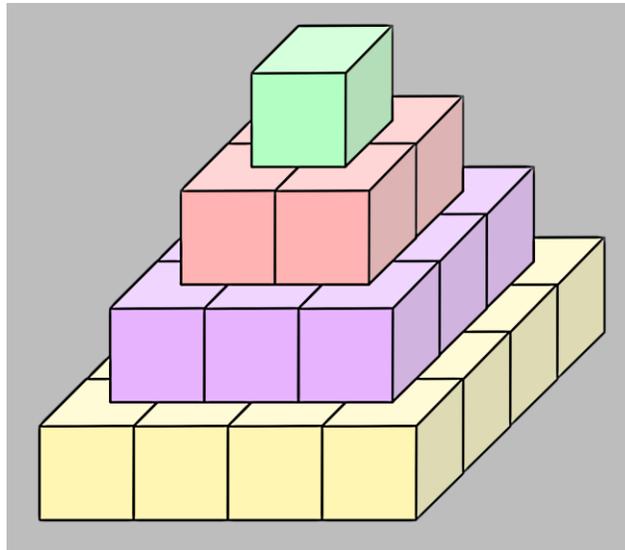


Inquiry Question***How to visualize cube roots?***

Name: _____ Date: _____

A cube root of a number is a number that, when multiplied by itself, and then multiplied by itself again, equals the given number. A perfect cube is a number that can be written as the cube of an integer. The symbol $\sqrt[3]{\quad}$ is used to represent a cube root.

**General Directions**

1. With the cubes, build the smallest cube tower. The length of each of the sides of the tower should measure 1 unit.
2. To find the volume of the tower, count the number of small cubes used to build the tower. How many cubes did you need to build this tower? ____
3. With the cubes, build the next smallest cube tower. The length of each of the sides of the tower should measure 2 units.
4. To find the volume of the tower, count the number of small cubes used to build the tower. How many cubes did you need to build this tower? ____
5. With the cubes, build the next smallest cube tower. The length of each of the sides of the tower should measure 3 units.
6. To find the volume of the tower, count the number of small cubes used to build the tower. How many tiles did you need to build this tower? ____
7. Now that you can visually see the trends of cubes. Complete the following:

	Length of Sides (feet)	Volume of Tower (feet cubed)		Length of Sides (cube root)
		Standard Form	Exponential Form	
1.			$6^3 = 216$	
2.	4			
3.		$8 \times 8 \times 8 = 512$		

8. How many cubes would be needed to build a tower in the shape of a perfect cube with the length of the sides 12?
9. You have 146 cubes to build a cube tower. How many cubes would be used to build a tower in the shape of a perfect cube? How many cubes were used for each side of the tower? How many cubes were not used to build the tower?
10. What are some real life applications of cubes and cube roots?
11. Create a short guide to help a younger student approximate cube roots.

Partially Adapted: <https://www.fevicreate.com/projects/cube-and-cube-roots/>

Materials

- ✓ Small cubes
- ✓ Pen and paper

Project submission

- A photograph of your completed tower
- A copy of your data sheet with calculations
- A guide on cube root approximation