

### Ch. 1.3: Cubes, Cube Numbers, & Cube Roots

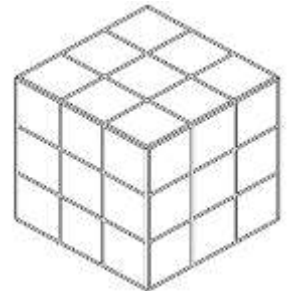
#### Investigate the following:

- ❖ What is a cube? Fill the following:
- ❖ Number of faces: \_\_\_\_\_
- ❖ Number of edges: \_\_\_\_\_
- ❖ Number of vertices: \_\_\_\_\_
- ❖ What do you notice about the length, width, and height of a cube?



- ❖ How is the edge length of a cube related to its volume? Write the formula for the volume of a cube.

- ❖ Using the model, find the volume of cube. What units would you use for volume?



#### 1. Volume & Perfect Cubes

- ❖ The \_\_\_\_\_ of a cube multiplied by itself and by itself again equals the \_\_\_\_\_.
- ❖ The \_\_\_\_\_ of a **perfect cube** is always a \_\_\_\_\_.

#### 2. Definition & Notation

- When you multiply a number by itself and by itself again, you \_\_\_\_\_ the number.
- *We can write this in MANY different ways!*

WORDS	MATHEMATICAL NOTATION
Four _____ four _____ four is sixty-four.	_____ × _____ × _____ = _____
Four _____ is sixty-four.	_____ = _____
The _____ of 4 is _____.	

### 3. Practice

Sketch a cube with edge length 5. Label the edge length.

a) What is the area of one face of the cube? Show your work!

b) What is the volume of this cube? Show your work!

### 4. Big Ideas

When the volume is a **whole number** it is a **perfect cube** number.

## Cube Roots

### 1. Modelling

- We can use prime factorization to find the cube root of a number.
- Find the cube root of 216.

**USE THE PRIME FACTORS: DIVIDE INTO \_\_\_\_ EQUAL GROUPS**

## 2. Definitions

- The \_\_\_\_\_ of a number represents the *volume* of a cube.
- The \_\_\_\_\_ of a number represents the *edge length* of a cube.
- Therefore, **cubing** a number and **cube rooting** a number are \_\_\_\_\_ operations.
- We write the cube root of a number like this: \_\_\_\_\_

## 3. Practice

a) Find the cube root of 125 using prime factorization.

b) Is 20 the *cube root* of 600? Explain your answer.

c) Determine the edge length of a cube with a volume of  $512 \text{ cm}^3$ .

## 4. Big Ideas

- What does it mean to take the cube root of a number? What is the inverse operation to cube rooting a number?
- Explain how you could prove that a number is a perfect cube number.

