The number of small unit blocks it takes to construct a cube is equal to the volume of the cube. By building a cube with edge length \( x \) and counting the number of unit blocks needed to build the cube, you can find \( x^3 \), the volume.

**Activity 1**

1. Build a cube with an edge length of 2. Draw the figure on the isometric dot paper. (2 pts)

2. The volume of the cube is the same as \( 2^3 \). What is \( 2^3 \)? (1 pt)

**Activity 2**

You can determine whether any number \( x \) is a perfect cube by trying to build a cube out of \( x \) unit blocks. If you can build a cube with the given number of blocks, then the number is a perfect cube. Its **cube root** \( \sqrt[3]{x} \) will be the length of one edge of the cube that is formed.

3. Try to build a cube using 27 unit blocks. Draw the figure on the isometric dot paper. (2 pts)
4. Is 27 a perfect cube? If so, what is its cube root? (2 pts)

Answer the Following

Model the following. How many blocks do you need to model each? (4 pts)
5. $5^3$  
6. $3^3$  
7. $6^3$  
8. $1^3$

9. How can you find the value of a number squared from the model of that number cubed? (2 pts)

10. Is 100 a perfect cube? Why or why not? (2 pts)

11. A solid has a length of 3, a height of 2, and a width of 2. What is the volume? Is it a perfect cube? Why or why not? (3 pts)

Model to find whether each is a perfect cube. If the number is a perfect cube, find its cube root. (6 pts)
12. 64  
13. 75  
14. 125  
15. 200

16. Complete the table with the first ten perfect cubes. (10 pts)

<table>
<thead>
<tr>
<th>x</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>$x^3$</td>
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17. $\sqrt[3]{100}$ is between which two integers? (1 pt)