From the Square to the Cube of a Number

Introduction:

Numbers can be compared to nations. There are both large and small nations just as there are large and small number quantities. Both nations and number quantities are guided by perfect laws and must obey the law of the 'group'.

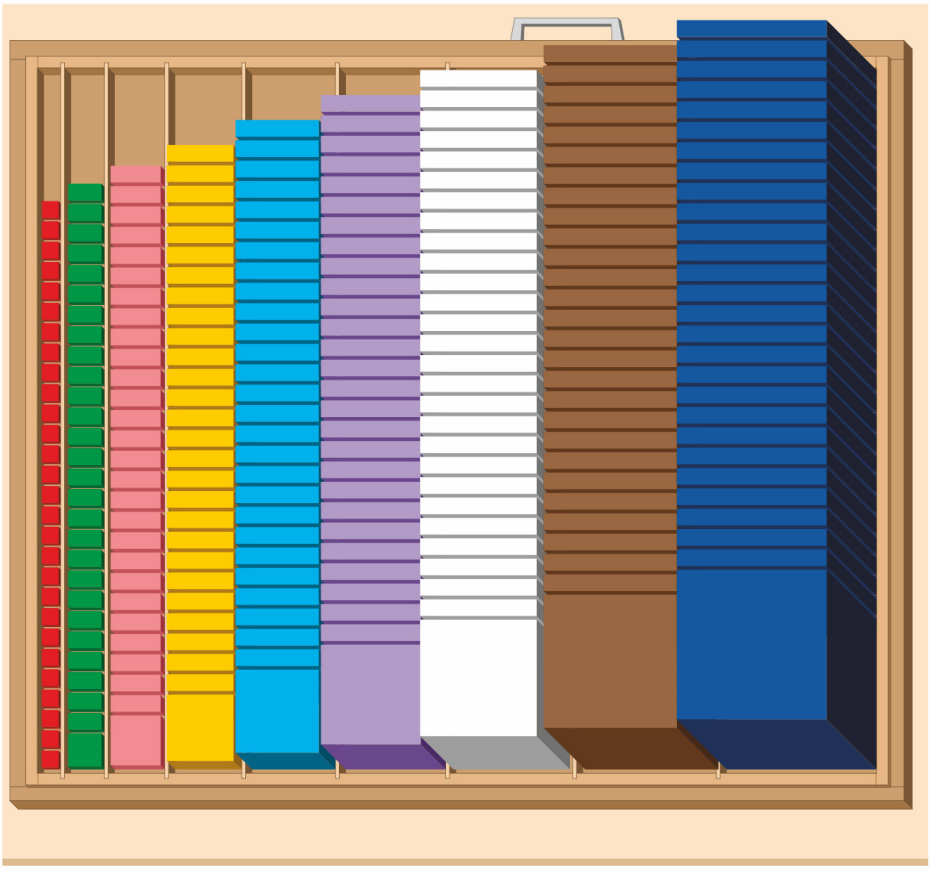
In the exercises on squaring, the child becomes aware of the passage from a number to its square.

(Example: The bar of seven is made up of 7 units. The square of 7 is made up of 7 bars of 7.)

This is the **Law of the Group**, which dominates the '**Nation of Seven**'. If this rules the formation of the Square, it will also apply to the formation of the Cube (It takes 7 squares to build it.)

Materials:

- squares and cubes of each number from the Bead Cabinet
- Cubing Material
- prepared labels



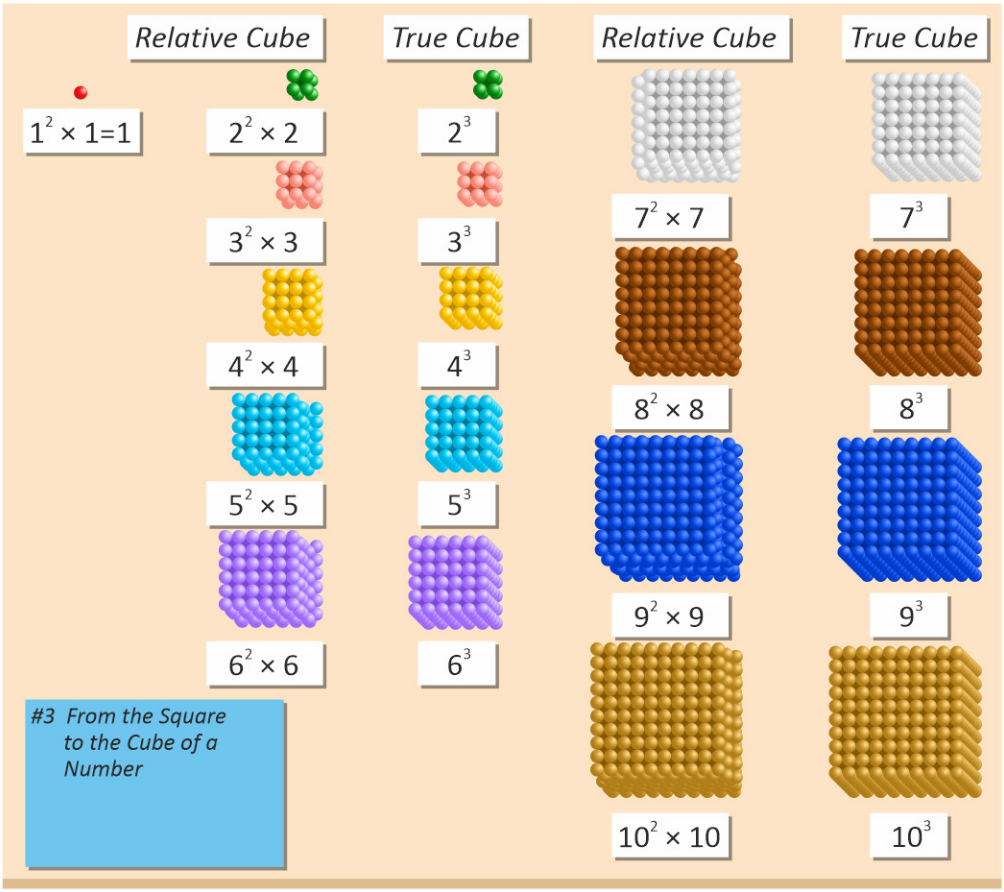
Presentation 1:

1. Show the cube of 7. Say, "The cube of 7 means $7^2 \times 7$. This is demonstrated by placing the 7 squares of 7 ($7^2 \times 7$) with the cube of 7.

2. Lay out the square of each number from 1 to 10.

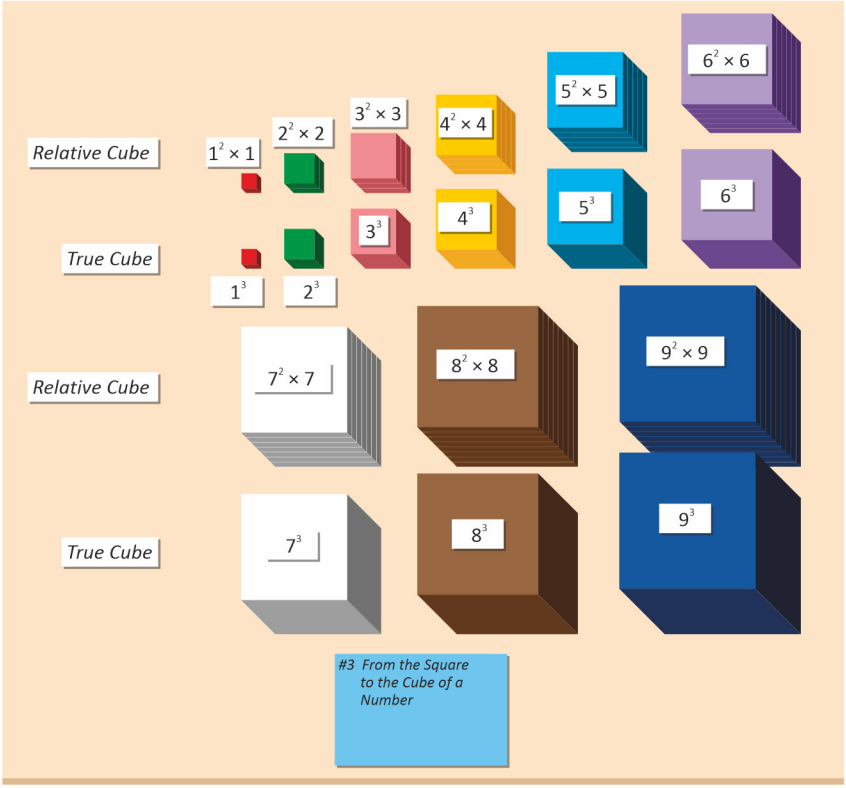
3. Stack the corresponding number of squares to form the cube of that number, showing a progression in size and height. Label each set of cubes.

$1^2 \times 1$ **$2^2 \times 2$**



4. Using the cubing materials, lay out the stacked squares of each number. Replace the stacked squares (relative cubes) with the true cubes of each number. Turn over the labels of each cube and rewrite the labels:

1^3 **2^3** **3^3** **etc.**



5. Emphasize that just as 2^2 (2 to the second power or 2 squared) is always a square, 2^3 (2 to the third power or 2 cubed) is always a cube.

6. When a number is multiplied by itself, it is written two times (2 × 2).

7. When a number is multiplied by itself three times, it is written three times (2 × 2 × 2), etc.

8. 2^5 means 2 multiplied by itself 5 times (2 × 2 × 2 × 2 × 2).

9. It is essential that the child understands exponents. An exponent is a superscript that says how many times a number is multiplied by itself.

10. 2^3: 2 is the base number and 3 is the exponent.

11. Write the labels for each of the cubes of the numbers:

$1^2 \times 1$	$2^2 \times 2$	$3^2 \times 3$	$4^2 \times 4$	$5^2 \times 5$	$6^2 \times 6$	$7^2 \times 7$	$8^2 \times 8$	$9^2 \times 9$	$10^2 \times 10$
1^3	2^3	3^3	4^3	5^3	6^3	7^3	8^3	9^3	10^3