

Enrichment 11-1

Patterns of Roots

Since $5^3 = 5 \cdot 5 \cdot 5 = 125$, 5 is the *cube root* of 125. This is written $5 = \sqrt[3]{125}$.

Complete the table.

n	1	2	3	4	5	6	7	8	9	10
n^3										

1. Look at the one's digits of the numbers in the n^3 row. Tell what is interesting about these digits.

2. Use your calculator to find these cubes.

a. 17^3 _____ b. 27^3 _____ c. 57^3 _____

d. 19^3 _____ e. 49^3 _____ f. 79^3 _____

3. Describe a method for predicting the ones' digit of the cube root of a perfect cube simply by looking at the perfect cube.

Write the ones' digit of the cube root.

4. $\sqrt[3]{681,472}$ _____ 5. $\sqrt[3]{140,608}$ _____ 6. $\sqrt[3]{12,167}$ _____

$2^5 = 2 \cdot 2 \cdot 2 \cdot 2 \cdot 2 = 32$. 2 is the *fifth root* of 32; $2 = \sqrt[5]{32}$.

Complete the table.

n	1	2	3	4	5	6	7	8	9	10
n^5										

7. Describe how to predict the ones' digit of the fifth root of a perfect fifth power.

Write the ones' digit of the fifth root.

8. $\sqrt[5]{2,476,099}$ _____ 9. $\sqrt[5]{229,345,007}$ _____ 10. $\sqrt[5]{33,554,432}$ _____