EXPLORATION

8-6 Radical Expressions and Rational Exponents

You can use a graphing calculator to investigate the meaning of cube roots. To enter cube roots, press MATH and select **4:** $\sqrt[3]{(}$.

1. Use your calculator to help you complete the table.

Cubes	Cube Roots
$1^3 =$	$\sqrt[3]{1} =$
$2^3 =$	$\sqrt[3]{8} =$
$3^3 =$	$\sqrt[3]{27} =$
$4^3 =$	$\sqrt[3]{64} =$
$5^3 =$	$\sqrt[3]{125} =$

2. Based on the pattern in the table, what is the cube root of 6^3?

THINK AND DISCUSS

3. Explain what is meant by the cube root of a real number *a*.

4. Discuss the meaning of the expression $\sqrt[4]{16}$ and how you could determine its value.

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1. Use your calculator to help you complete the table.

Cubes	Cube Roots
$1^3 = 1$	$\sqrt[3]{1} = 1$
$2^3 = 8$	$\sqrt[3]{8} = 2$
$3^3 = 27$	$\sqrt[3]{27} = 3$
$4^3 = 64$	$\sqrt[3]{64} = 4$
$5^3 = 125$	$\sqrt[3]{125} = 5$

2. Based on the pattern in the table, what is the cube root of 6^3? 6

THINK AND DISCUSS

3. Explain what is meant by the cube root of a real number *a*.

4. Discuss the meaning of the expression $\sqrt[4]{16}$ and how you could determine its value.

3. a number that is equal to *a* when raised to the third power

4. Possible answer: the fourth root of 16; find a number that is equal to 16 when raised to the fourth power.