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A video demonstration of the solution for *Example 2* is provided.

Example 2

Express $2\sqrt[3]{9}$ as an entire radical.

Step 1: Rewrite $2\sqrt[3]{9}$ as an entire radical by **cubing** the 2 (taking it to the power of **3**) and taking the cube root of that value.

$$2\sqrt[3]{9} = \sqrt[3]{2^3} \times \sqrt[3]{9}$$

Step 2: Bring the 2^3 and the 9 under the same root sign and express the result as a product.

$$2\sqrt[3]{9} = \sqrt[3]{2^3 \times 9}$$

Step 3: Multiply the factors.

$$2\sqrt[3]{9} = \sqrt[3]{8 \times 9} = \sqrt[3]{72}$$

Check Up

Express $5\sqrt{\dfrac{1}{3}}$ as an entire radical.

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A video demonstration of the solution for this *Check Up* question is provided.

✓ Compare your answers.

Express $5\sqrt{\dfrac{1}{3}}$ as an entire radical.

$$5\sqrt{\frac{1}{3}} = \sqrt{5^2} \times \sqrt{\frac{1}{3}}$$

$$= \sqrt{5^2 \times \frac{1}{3}}$$

$$= \sqrt{25 \times \frac{1}{3}}$$

$$= \sqrt{\frac{25}{3}}$$

Square roots, cube roots, and higher roots are not uncommon in mathematical and scientific applications involving space travel and construction. Expressing solutions in exact value form, such as with mixed and entire radicals, helps diminish the risk of error and improves the efficiency and accuracy in mathematical calculations and solutions. In *Lesson 4.3*, attention will be given to classifying numbers, estimating the value of a radical, and organizing numbers.

▶ **Multimedia**   Additional video examples pertaining to this lesson are available.