Name Key Date

Do Now

Previously we learned how to take the square roots of irrational numbers,

- Let's see how this approach works with Cube Roots:

0 = 0·0·0
1 = 1·1·1

Perfect Cubes
8 = 2 x 2 x 2
27 = 3 x 3 x 3
64 = 4 x 4 x 4
125 = 5 x 5 x 5

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

Example 5: Simplify $\sqrt[3]{24}$

1. Find the **largest perfect cube factor** (the largest perfect cube that divides into 24 with no remainder).

$$\sqrt[3]{24} = \sqrt[3]{8 \cdot 3}$$

↑ largest perfect cube factor

2. Give each factor its own radical sign. $\sqrt[3]{24} = \sqrt[3]{8 \cdot 3} = \sqrt[3]{8} \cdot \sqrt[3]{3}$

3. Reduce the "perfect cube" radical that was created. $\sqrt[3]{24} = \sqrt[3]{8} \cdot \sqrt[3]{3} = 2\sqrt[3]{3}$

4. ANSWER: $\sqrt[3]{24} = 2\sqrt[3]{3}$

Calc: MATH 4 to get $\sqrt[3]{}$

Now you try!

Simplify the following

1) $\sqrt[3]{54}$

$\sqrt[3]{27} \cdot \sqrt[3]{2}$

$3\sqrt[3]{2}$

2) $\sqrt[3]{48}$

$\sqrt[3]{8} \cdot \sqrt[3]{6}$

$2\sqrt[3]{6}$

3) $\sqrt[3]{16}$

$\sqrt[3]{8} \cdot \sqrt[3]{2}$

$2\sqrt[3]{2}$

4) $5(\sqrt[3]{8})$

$5 \cdot 2$

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