Name_____ 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:

Perfect Cubes
$8 = 2 \times 2 \times 2$
$27 = 3 \times 3 \times 3$
$64 = 4 \times 4 \times 4$
$125 = 5 \times 5 \times 5$

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

Now you try!

Simplify the following

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

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

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

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