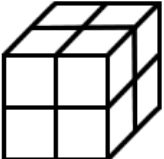
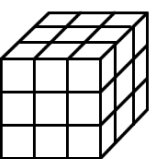


## 4.2 – Radical Expressions – Cube Root

The concept for cube root is similar to square root, except we must think in terms of a cube instead of a square.

### Activity 1

 <p><u>Dimensions of cube</u></p> <p><u>Total number of small cubes</u></p>	 <p><u>Dimensions of large cube</u></p> <p><u>Total number of small cubes</u></p>
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$$\sqrt[3]{8} =$$

$$\sqrt[3]{27} =$$

In respect to the diagrams in the activity, what do the cube root of 8 and the cube root of 27 represent?

State the index and the radicands for the radical expressions above.

### List of perfect cubes

$4 \times 4 \times 4 =$

$8^3 =$

$5 \times 5 \times 5 =$

$9^3 =$

$6 \times 6 \times 6 =$

$10^3 =$

$7 \times 7 \times 7 =$

**Class Notes** – Evaluate each expression that has a perfect cube for its radicand. If an expression contains a radicand that is not a perfect cube, write “need calculator”.

<b>LP#1</b> $\sqrt[3]{125}$	$\sqrt[3]{27}$	$\sqrt[3]{49}$	$\sqrt[3]{8}$
<b>LP#2</b> $\sqrt[3]{81}$	$\sqrt[3]{1}$	$\sqrt[3]{36}$	$\sqrt[3]{1000}$

**Class Notes** – If the radical expression has a perfect cube radicand, simplify it. If it does not contain a perfect cube radicand, write “not now”.

<b>LP#3</b> $\sqrt[3]{x^3}$	$\sqrt[3]{m^3}$	$\sqrt[3]{b^2}$	$\sqrt[3]{w^3}$
<b>LP#4</b> $\sqrt[3]{k^4}$	$\sqrt[3]{f^3}$	$\sqrt[3]{n^5}$	$\sqrt[3]{p^3}$

**Review** – Evaluate or simplify each expression.

<b>R#1</b> $\sqrt[3]{8}$	$\sqrt[3]{216}$	$\sqrt[3]{p^3}$
<b>R#2</b> $\sqrt[3]{64}$	$\sqrt[3]{729}$	$\sqrt[3]{p^3}$
<b>R#3</b> $\sqrt[3]{27}$	$\sqrt[3]{343}$	$\sqrt[3]{h^3}$

**Homework** –

Evaluate each expression that has a perfect cube for its radicand. If an expression contains a radicand that is not a perfect cube, write “need calculator”.

- |                    |                     |                     |                     |
|--------------------|---------------------|---------------------|---------------------|
| 1) $\sqrt[3]{125}$ | 2) $\sqrt[3]{27}$   | 3) $\sqrt[3]{49}$   | 4) $\sqrt[3]{8}$    |
| 5) $\sqrt[3]{65}$  | 6) $\sqrt[3]{1}$    | 7) $\sqrt[3]{36}$   | 8) $\sqrt[3]{1000}$ |
| 9) $\sqrt[3]{64}$  | 10) $\sqrt[3]{343}$ | 11) $\sqrt[3]{216}$ | 12) $\sqrt[3]{17}$  |

Evaluate each expression. State whether the result is rational or irrational. Let  $w = 2$ ,  $x = 3$ , and  $y = 4$ .

- |                           |                               |                        |                          |
|---------------------------|-------------------------------|------------------------|--------------------------|
| 13) $\sqrt[3]{6y + x}$    | 14) $\sqrt[3]{11w + 25y + x}$ | 15) $\sqrt[3]{2y}$     | 16) $\sqrt[3]{x - w}$    |
| 17) $\sqrt[3]{4y + 100w}$ | 18) $\sqrt[3]{y^3}$           | 19) $\sqrt[3]{2x + w}$ | 20) $\sqrt[3]{20y - 8w}$ |