

## CHAPTER 4 – Exponents and Radicals

In this chapter you will learn how to:

- Solve problems that involve square roots and cube roots
- Solve problems involving powers with integral and rational exponents
- Represent, identify and simplify irrational numbers

### Topics:

- 4.1 Square Roots and Cube Roots
- 4.2 Integral Exponents
- 4.3 Rational Exponents
- 4.4 Irrational numbers

### Chapter 4 Vocabulary:

Perfect Square	Number that can be expressed as a product of two equal factors. Ex. $16 = (4)(4) = 4^2$
Square Root	One of two equal factors of a number. Ex. $\sqrt{49} = \sqrt{(7)(7)} = 7$
Perfect Cube	Number that is a product of three equal factors. Ex. $64 = (4)(4)(4) = 4^3$
Cube Root	One of three equal factors of a number. Ex. $\sqrt[3]{512} = \sqrt[3]{(8)(8)(8)} = 8$
Prime Factorization	The process of writing a number as a product of its prime factors. Ex. $24 = 2 \times 2 \times 2 \times 3$
Irrational Number	Any number that cannot be expressed in the form $a/b$ , where $a$ and $b$ are integers and $b \neq 0$ . Cannot be expressed as a terminating or repeating decimal.
Radical	Consist of a root symbol, an index and a radicand
Radicand	The quantity under the radical sign
Index	Indicates what root to take
Mixed Radical	The product of a rational number and a radical. Ex. $3\sqrt{2}$
Entire Radical	The product of 1 and a radical. Ex. $\sqrt{32}$