

Integrated Mathematics 2 – Key Objectives | Exponential Relations Unit

This Exponential Relations Unit will encompass 2 MAJOR concepts – 1 of which you know from your Grade 8 math course and 1 of which will be new to you. The MAJOR concepts are: (1) Exponential Relations and (2) Introduction to Functions. Both of these major concepts will be continually revisited in later units in this course and subsequent courses, so it is important to understand these concepts and master the required skills.

(A) Exponential Relations

- a. Simplifying Exponential Expressions – The Algebra of Exponential Functions **(R)**
 - i. Apply laws of exponents (product rule, quotient rule, power of a power, power of a product, power of a quotient) **(R)**
 - ii. Evaluate expressions with integral exponents, including zero and negative exponents **(R)**

- b. Solving Exponential Equations – The Algebra of Exponential Functions **(R/N)**
 - i. Solve systems involving exponential functions graphically and numerically **(R/N)**
 - ii. Solve exponential equations algebraically using involving common bases (or having to convert to common bases) **(N)**

- c. Compare and contrast growth and decay models:
 - i. How are the patterns in exponential data & linear data different? **(R/N)**
 - ii. How do linear and exponential relations differ and how are they similar? **(R/N)**

- d. The Graphing & Evaluation of Exponential Functions **(R/N)**
 - i. Graph the parent graph of $y = 2^x$ and $y = 0.5^x$ (or $y = 2^{-x}$) with and without technology **(R/N)**
 - ii. Apply simple transformations of exponential functions – initially use only vertical and horizontal translations **(N)**

- e. The Applications of Exponential Functions **(N/R)**
 - i. Write equations for exponential growth & decay functions in a variety of contexts. **(N)**
 - ii. Apply equations for exponential functions to solve a variety of contextual problems. **(R/N)**
 - iii. Explain and discuss the meaning of exponential functions in various contexts. **(R/N)**

- f. Consolidate and expand your understanding of domain and range in the context of exponential functions. **(R/N)**