Exponential Functions in Evolutionary Disease

Guide for Curriculum Unit 24.05.04, published September 2024
by Kristina Kirby

This goal of the unit "Exponential Functions in Evolutionary Disease" is for students to (1) identify instances of exponential growth or decay in graphs, tables and word problems; (2) translate tables and word problems depicting exponential functions into equations; and (3) comprehend and convey the conceivable importance of exponential data represented graphically. Student learning in this unit will greatly rely on the initial pattern of spread and vaccination in the COVID-19 pandemic to illustrate exponential growth and decay, respectively. This unit follows the Herbartian instructional model, which consists of four phases: the Preparation phase (in which the teacher brings prior knowledge to the forefront of the students' learning experience), the Presentation phase (which focuses on connecting prior learnings to new learnings), the Generalization phase (during which the teacher clarifies and facilitates development of students' conceptual understanding), and the Application phase (in which students demonstrate their newfound comprehension through application of concepts to new contexts).

Key Words: Exponential functions, exponential growth, exponential decay, COVID-19, Herbartian instructional model

(Developed for Math I, grade 9; recommended for Algebra I and Math I, grades 8-9)