1105 and Microbiology Topic: "Infant Mortality Rates"

Learning Objectives:

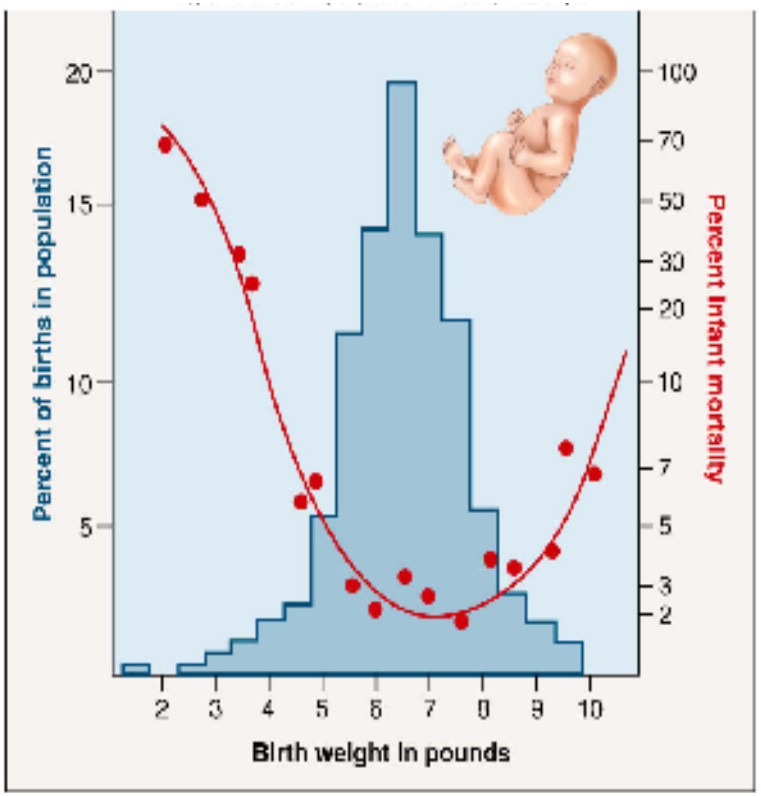
The student will be able to:

Read a graph.

Find the best fit (type of function that best suits the data)

Find the minimum or maximum. (Find the vertex.)

Solve a quadratic inequality (to find the ideal weight limitations for "acceptable" infant mortalitiy.)



Worldwide Infant Mortality

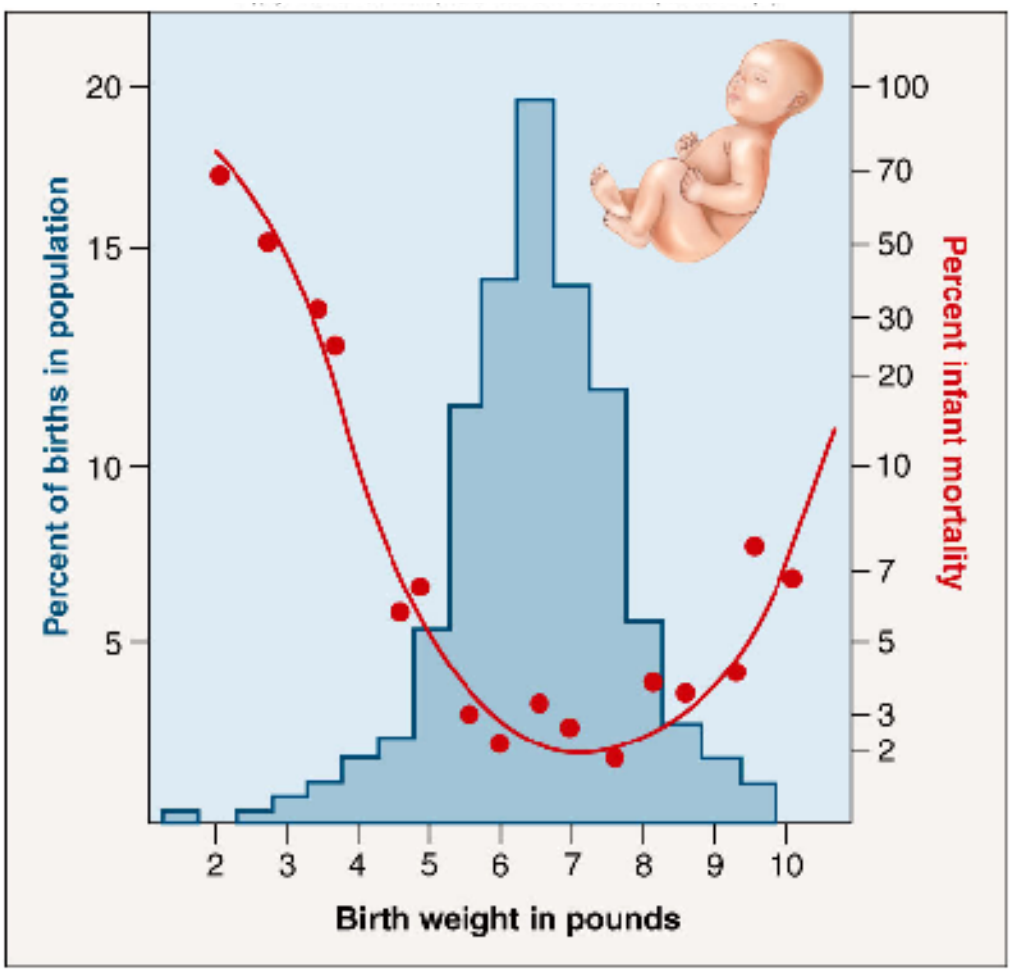
Notes for the non-A&P instructor:

Direct the students to look at the red graph and the right hand axis. Show them how they can still read this graph even though the "y" axis is to the right and the "x" axis is not negative. Follow up by reviewing what they have accomplished mathematically.

If you want to extend this exercise, you could talk about how most infants are born where the mortality rates are lowest, ensuring the stabilization of the population. A demonstration of natural selection weeding out the extreme sizes of infants.

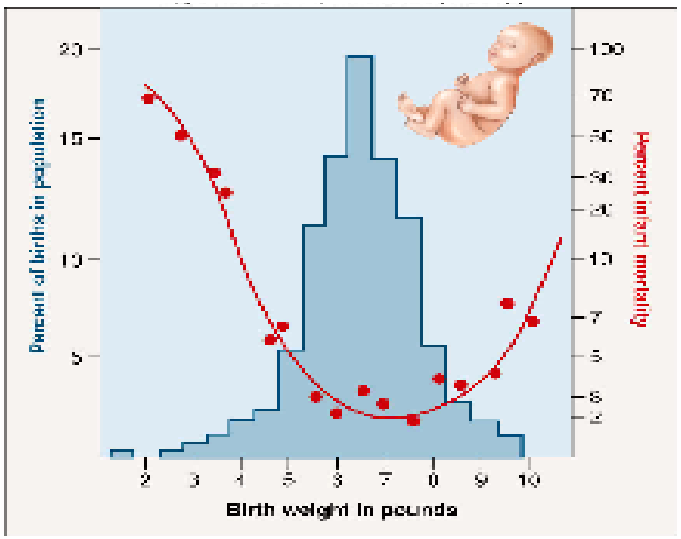
Answers are in the notes for each page.

Worldwide Infant Mortality



We are going to focus on the percent of infant mortality. Do we need to focus on the blue polygon or the red curve? What type of function would best fit the data?

What is a reasonable range for birth weight? What is a reasonable range for the percent of infant mortality (is zero possible)? Which corresponds to the domain and which to the range?



Worldwide Infant Mortality

Approximately what birth rate gives us the “best” infant mortality rate?

Given the function for the mortality rate, $m(x) = 0.66x^2 – 9.23x+33.93$, where x is the birth weight, find the vertex of the function. Does this match the graph?

Now using the given equation, approximate the range of birth weight (to the nearest tenth of a pound) that has given an infant mortality rate of less than 4 percent.