

Activity - Biorhythm Cycles



A popular but unproven theory called biorhythms attempts to explain the ups and downs of everyday life with four cycles that begin at birth. A biorhythm is based on the idea that certain aspects of life move in cycles. The aspects are Physical, Emotional, Intellectual, and Intuitive. Each aspect is based on a sine wave and starts at 0 on the day of birth. Each of the different aspects cycles at a different rate. Where you are in your biorhythm cycles is expressed as a percent from -100% to 100% . Positive values indicate high-energy days and negative values indicate low-energy days.

The classical theory originated at the turn of the 20th century, between 1897 and 1902, from observational research. Hermann Swoboda, professor of psychology at the University of Vienna, who was researching periodic variations in fevers, looked into the possibility of a rhythmic change in mood and health. He collected data on reaction to pain, outbreak of fevers, illnesses, asthma, heart attacks, and recurrent dreams. He concluded that there was a physical cycle and an emotional cycle. Later two more cycles were added, intellectual and intuitive. Below are functions modeling these cycles.

- **Physical cycle** $P = \sin \frac{2\pi}{23} t$
- **Emotional cycle** $E = \sin \frac{2\pi}{28} t$
- **Intellectual cycle** $I = \sin \frac{2\pi}{33} t$
- **Intuitive cycle** $U = \sin \frac{2\pi}{38} t$

In each equation above, t is the number of days since birth. Other cycles have been added recently, such as the 43-day **aesthetic cycle** and the 58-day **spiritual cycle**. Some claim that there are cycles that are combinations of other cycles, such as the **wisdom cycle**, which is the emotional joined with the intellectual.

1. Find the amplitude of the Physical, Emotional, Intellectual, and Intuitive cycles.

2. Find the period of the Physical, Emotional, Intellectual, and Intuitive cycles.

3. Graph two periods of the Physical, Emotional, Intellectual, and Intuitive cycles.



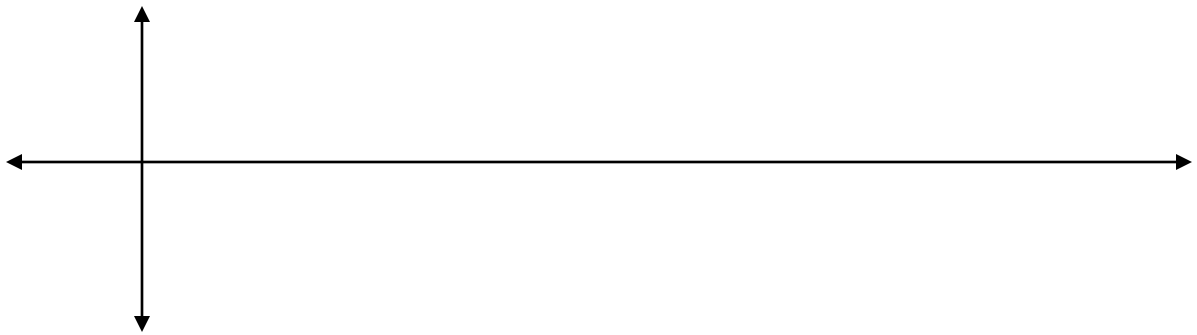
Physical



Emotional



Intellectual



Intuitive

4. Graph all four cycles on a single coordinate plane through 40 days. Use 4 different colors and label them by color.



5. Consider a person who was born on August 15, 1994. Describe the person's four energy levels today.

6. Find your Physical, Emotional, Intellectual, and Intuitive cycle today. (Hint: Find the number of days between your date of birth and today using wolframalpha.com)