FREQ OUT!

Lagoon is full of rides that exhibit repetitive motions, each with similar characteristics. One particular type of motion is wave-like motion. Waves have characteristics and properties that oscillate with time at a certain speed. The period is the time it takes for a wave to repeat itself. The number of complete oscillations per unit time is the wave frequency. Waves are often described as being transverse or longitudinal. Use the worksheet below to identify the various characteristics and similarities between the waves and better develop your own understanding of how to describe wave-like motion.

Useful Equations

$$v = \frac{d}{t} \qquad f = \frac{1}{T} \qquad \lambda = \frac{v}{f} \qquad C = 2\pi r$$

Ride	Top Speed (m/s)	Period (s)	Frequency (Hz)	Wavelength (m)	Wave-like Motion
Carousel					
Catapult					
Paratrooper					
Centennial Screamer					
Musik Express					

Hint to find speed: Estimate the height of the ride or the diameter (radius) to find the distance traveled in one period, d. Then count how long it takes to arrive to the top point or to complete one rotation, t. Finally, calculate the average speed, v, using the equation $v = \frac{d}{t}$.

1. Which ride has the largest frequency and why?

2. What is the most common wave-like motion exhibited in the rides above?

3. How does the circular motion impact the speed?

4. Does the mass of the occupants change the ride's frequency? Explain.