# AMP IT UP

Lagoon is full of rides that exhibit wave motions. Those waves all have certain characteristics. For example, they oscillate in time at a certain rate and move through a medium at a certain speed, $v$. The time it takes for a wave to repeat itself is known as its period, $T$. The number of complete oscillations per unit time is the wave frequency, $f$. Use the worksheet below to identify the various characteristics and similarities betweenKiddieland and the adult rides. If the Kiddieland rides are not running, use your imagination and best estimates.

Useful Equations

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

| **Ride** | **Average Speed (m/s)** | **Period or time per oscillation (s)** | **Frequency or oscillations per second (Hz)** | **Wavelength or distance per period (m)** |
|---|---|---|---|---|
| Tidal Wave | | | | |
| Kontiki | | | | |
| Turn-of-the-Century | | | | |
| Dragonfly | | | | |

*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. How do the size and speeds of the Kiddieland rides compare to the adult rides in general?

2. What makes the difference between the Kiddieland and adult rides?

3. What characteristic(s) gives the adult rides their thrill?

4. Which ride has the highest frequency and why?