

LESSON PREP: Cut one piece of 2 foot long string for each pair of campers. Tie each string to a washer and then cut each string to 21" in length (from the end of the string to the top of the washer). It is important to be as accurate as you can with this.

Divide the crew into pairs. Pass out a washer and string **pendulum** to each pair. Have one partner hold the free end of the string about 4 feet above the floor while the other partner makes a small pendulum arc with the washer.

? What is this called? *a pendulum*

? Where do we see these? *certain types of clocks*

Now have each pair tape their pendulum to a desk or table so that it can swing freely above the ground without hitting anything. Try to make the strings for each pair as close to the same length as possible.

Have the partners swing the pendulum again with a small arc (from a low point) and count how many times it swings back and forth in one minute (one count for each back and forth cycle). Then have them record the number in a table in their **journals**. Since each pair's string is the same length, the numbers they count and record should be roughly the same.

Now prepare them to swing the pendulum with a large arc (from a high point). But first have them predict in the journals how many times the pendulum will swing back and forth.

? Will it swing more times, fewer times or the same number of times in one minute? *it should swing the same number of times no matter how high the release point.*

? What do pendulums have to do with time? *we can measure and compare how long things take by counting cycles of a swinging pendulum.*

? *Why couldn't pirates use a pendulum on the ship to keep time?*

MATERIALS:

- Washers
- String
- Tape
- Journals