

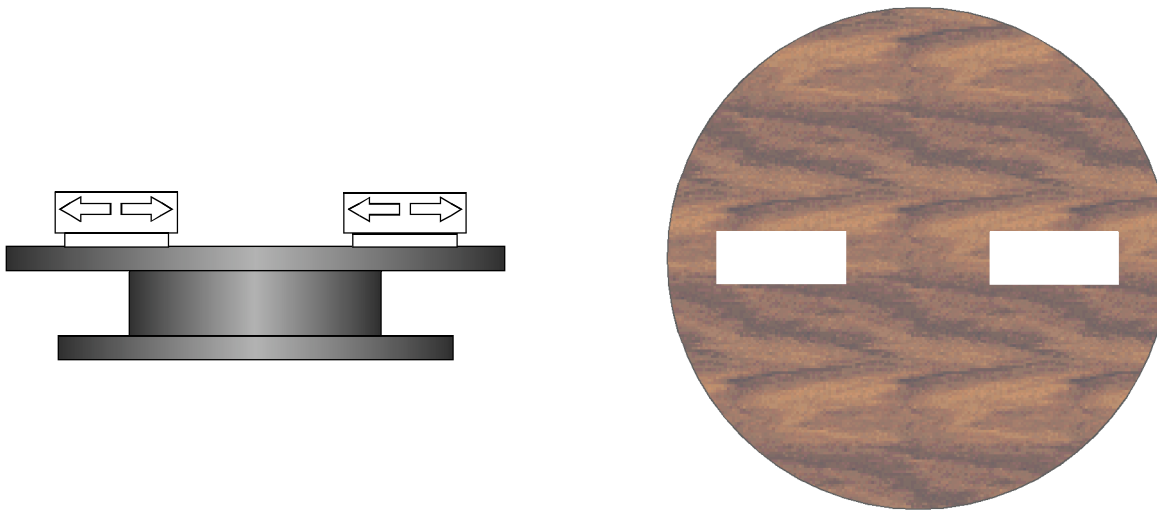
WILL IT GO ROUND IN EVEN MORE CIRCLES?

FACTORS THAT DETERMINE CENTRIPETAL ACCELERATION

Name: _____ Per: _____ Date: _____

THE SETUP

Two Visual Accelerometers are set along a diameter of a rotating platform. (Set to Manual range: 5 m/s^2 .)

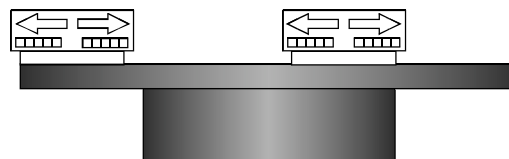


DEMONSTRATIONS AND QUESTIONS

1. The platform is spun and the speed of the platform is varied. What do you observe and what does it mean?

2. One accelerometer is moved farther from the center of the platform, the other is moved nearer.

a. Prediction: What will happen when the platform is rotated?



b. Consider the following arguments.

Student X says that since $a \propto v^2$, the faster-moving accelerometer (the one with greater speed v) will experience greater acceleration.

Which accelerometer is going faster and how do you know?

Student Y says that since $a \propto 1/R$, the accelerometer circling with the smaller radius will experience greater acceleration.

Student Z says that since $a = v^2/R$, the two factors (speed and radius) will cancel out; both accelerometers will experience the same amount of acceleration.

What do you think? Which accelerometer—if either—will experience the greater acceleration?

c. Observation. Carry out the demonstration. What do you observe and what does it mean?

3. What happens to the water when the “skinny fish tank” is rotated and how does it relate to the previous observation?

