



# Periods of Pendulums

## (guide)

### Leading questions:

- What does it take to make a pendulum?  
**Explain:** Have students observe the set-up and ask them to identify the parts they see – a weight hanging from a string.
- What kinds of forces do you think affect how pendulums work.  
**Ask:** Listen to students' ideas and ask them to explain their thinking.

### What to do:

1. Start with just one golf ball. Pull the ball back and let it go.
  - How close to its original position does it return?
  - What do you think keeps it going?  
**Explain:** Once the pendulum is set in motion, it maintains its motion by the conservation of energy. It possesses the greatest potential (stored) energy when the weight is at the top of the arc. As the weight descends its potential energy is converted to kinetic energy (energy of motion). In the absence of friction, the pendulum would continue to swing indefinitely. The **period** of a pendulum is the time it takes to make one complete swing, forward and back.
2. Hold the balls on short strings, one in each hand.
  - How do you think the weight of the ball will affect its period?
3. Try it and describe what you find.
  - Pull both balls on short string back to the same distance and release.
  - Does the heavier ball have a greater or shorter period?
  - Using the stopwatch, measure the time it takes for one of the balls to swing through 10 periods.
4. Now investigate how pendulum is affected by the length of the string.
  - Do you think using a longer or shorter string will affect the period?
5. Try it and describe what you find.
  - Measure the time it takes for one of the balls to make 10 periods.  
**Explain:** Student will observe that the longer the string, the longer the period of the pendulum.

### Summary:

A pendulum consists of a weight hanging on a string. The **period** of a pendulum only depends on the length of the string, but not on the hanging weight.

- What do you think **pendulums** could be used for?



# Periods of Pendulums

## Leading questions:

- What does it take to make a **pendulum**?
- What kinds of forces do you think affect how pendulums work?

## What to do:

1. Start with just one golf ball. Pull the ball back and let it go.
  - How close to its original position does it return?
  - What do you think keeps it going?
2. Hold the balls on short strings, one in each hand.
  - How do you think the weight of the ball will affect its period?
3. Try it and describe what you find.
  - Pull both balls on short string back to the same distance and release.
  - Does the heavier ball have a greater or shorter period?
  - Using the stopwatch, measure the time it takes for one of the balls to swing through 10 periods.
4. Now investigate how the period of the pendulum is affected by the **length** of the string.
  - Do you think using a longer or shorter string will affect the period?
5. Try it and describe what you find.
  - Measure the time it takes for one of the balls to make 10 periods.

## Summary:

A pendulum consists of a weight hanging on a string. The **period** of a pendulum only depends on the length of the string, but not on the hanging weight.

- What do you think **pendulums** could be used for?