



F5 FOCUSED FIELD TRIPS

PLEASE NOTE: Parts of Level 1 are currently under renovation while we prepare your next scientific adventure! For up-to-date construction information, please visit azscience.org/construction_updates.

Fifth Grade Student Investigation

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ARIZONA
SCIENCE
CENTER



Updated September 2010

Fifth Grade Investigation

This Investigation contains activities on a variety of topics found throughout the Center. Exhibits are also sometimes removed temporarily for repair or refurbishment, or may be in use by other groups, so be prepared to be flexible.

Investigation Activities

Level 1: All About Me in the Steele Foundation Gallery - opens Sept. 26 to members and Sept. 27 to the public! The W.O.N.D.E.R. Center – Coming Soon!

Find out just what makes you, YOU!

Level 2: Get Charged Up! in the Kemper and Ethel Marley Foundation Gallery

All About Pendulums

A pendulum consists of a mass on the end of a string or rod. When the string is displaced, the mass will swing back and forth due to gravity. You have all probably played on a pendulum on the playground when you swung back and forth on a swing.

Where to go

All About Pendulums

What to do

Experiment with the various pendulums at the All About Pendulums exhibit. Here are some variables you may be able to change (see definitions on wall chart):

- Period
- Length of string
- Weight of mass of string
- Gravity
- Friction
- Energy

Compare the period of the short string pendulum to that of a long string pendulum with the same mass. Which one has a longer period? _____

How do you think gravity affects the period of a pendulum?

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Pulley Power

A pulley is a simple machine in which a rope passes back and forth over one or more wheels. One end of the rope is attached to the object you want to lift and then the rope loops through the pulley and back to you where you pull on the other end. When you pull down on the rope the work load moves up. By passing the rope through more than one pulley, you can further reduce the effort needed to lift that object.

Where to go

Pulley Power

What to do

There are three different pulley chair systems labeled: Hard, Harder, and Hardest. Test out all three chairs to see if these labels are indeed correct.

Why is the Hard chair easier than the Harder chair? _____

How many times does the rope loop through the pulley on the Hardest chair? _____

How many times does the rope loop through the pulley on the Hard chair? _____

Giant Lever

A lever is a bar that sits on a fixed point known as a **fulcrum**. This simple machine makes it easier to lift, pull, or move heavy objects. The longer the lever, the easier it is to lift, pull or move.

Where to go

Giant Lever

What to do

First, locate the fulcrum on the Giant Lever. Play tug-of-war by having an equal number of students on each side of the giant lever. At the count of three, have them pull on the ropes.

Which team won? _____

Why? _____

Investigate further by switching up the number on the teams and sides. Play 3 times.

What did you discover about the position on the lever where the ropes were attached?

What was the relationship between that and the amount of effort the team had to exert? _____