F5CUSED FIELD TRIPS

PLEASE NOTE: Parts of Level 1 and all of Level 4 are currently under renovation while we prepare your next scientific adventures! For up-to-date construction information, please visit azscience.org/construction_updates.

Fifth Grade Student Investigation

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ARIZONA SCIENCE CENTER

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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:
Many Hands Make a Home Gallery, Freeman gallery

Beat the Heat

Here in Arizona it can get pretty hot in the summer. Without air conditioning, a house can easily creep up to well over 90 degrees!

Where to go

Homes That Beat the Heat

What to do

Your task is to design an energy efficient home here in Arizona. You will concentrate on the exterior of the home, specifically the patio and landscaping. The choices you make in your design will affect the cost, appearance, and energy efficiency of your home. Remember, choices can be made by adding or deleting items or materials.

Which side of your house did you install your patio? _____

What additions to the patio did you chose to make your home more energy efficient?

_____

_____

What landscaping conclusions did you decide on?

_____

What does your final energy efficient yard look like?

_____

_____

Level 1: All About You Gallery, in the Steele Gallery - Coming Soon! The W.O.N.D.E.R. Center - Coming Soon!

Coming soon! Find out just what makes you, YOU!

Level 2: Get Charged Up! 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
Pendulums exhibit.

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?

_____

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 chairs.

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? _____

Level 3: Forces of Nature, Sybil B. Harrington Galleries

Let the Force Be with You

Natural forces can affect our planet in many ways. We often think of these forces as great weather events, such as tornados, hurricanes, dust storms, and lighting that can affect our lives as well as change the landscape around us. Water is one such powerful force. The wave maker demonstrates energy transfer. The water captures wind energy and turns it into movement in the surface layers of the water.

Where to go

Wave Maker: Create Waves with Wind

What to do

Using the control dial, change the effect wind can have on the sample of water in the bowl.

How can the intensity or lack of wind change the behavior of the water?

_____

_____

What other properties of wind have an effect on water?

_____

_____

How does the knowledge of these properties help us?

_____

_____