

# F5 FOCUSED FIELD TRIPS

## Fifth Grade Student Investigation

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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 I: All About Me in the Steele Foundation Gallery

#### Beat It!

Our heart is an involuntary muscle that pumps blood so our body can do everything it needs to do. Our heart automatically responds to higher activity levels by beating harder and faster.

#### Where to go

Heart Beat Drum

#### What to do

Place hands on hand pads and follow the directions.

*What changes do you observe in the drumbeat after doing jumping jacks?*

#### Just Joints

Joints are places in the body where bones meet, and allow our bodies to move in many ways. Some joints open and close like a hinge (such as knees and elbows), while others allow for more complicated movement - a shoulder or hip joint, for example, allows for rotation.

#### Where to go

Just Joints

#### What to do

Explore each joint model and the type of movement that each makes. Notice that different body parts have joints for different motions. Move your corresponding body parts so that you can feel the movement of your joints.

Now, go to the skeleton on a unicycle just below the sign for the *Heart and Surgery Theater*. If you activate the sensor near the floor, you can watch the skeleton ride the bicycle.

Find the six joints on the skeleton that have been replaced. List the names of the joints and then list the type of joint.

Type of joint	Kind of joint

## Voluntary and Involuntary

Our senses tell us about our environment by receiving information from our surroundings. We react to information with both voluntary and involuntary responses. When you suddenly get cold because of a temperature drop, you do not have to think about shivering – it is an **involuntary** response. You can choose what to do about the shivering: you can put on more clothes, or go inside! This would be a **voluntary** response.

### Where to go

What's in your Nose?

### What to do

Push the button to start the exhibit. Toss some of the sponge balls into the giant nose until something happens.

*What happened? Describe the response you experienced. Was it voluntary or involuntary?*

Next, go the Wheel Chair Race. Press the reset button to set the computer. The screen will prompt you with the words: "Ready", "Set", "Go". At what point did you choose to begin the race? Why?

### Did you know?

We experience many involuntary responses throughout our lives. Involuntary responses are often protective. We jump, blink, and flinch in response to events that would put us in danger. Your body is poised to protect itself against the unexpected.

## 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? \_\_\_\_\_

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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? \_\_\_\_\_