

Simple Science Club

There are basically two ways to play in the Simple Science Club. Either play with materials or do a simple science project.

TUITs

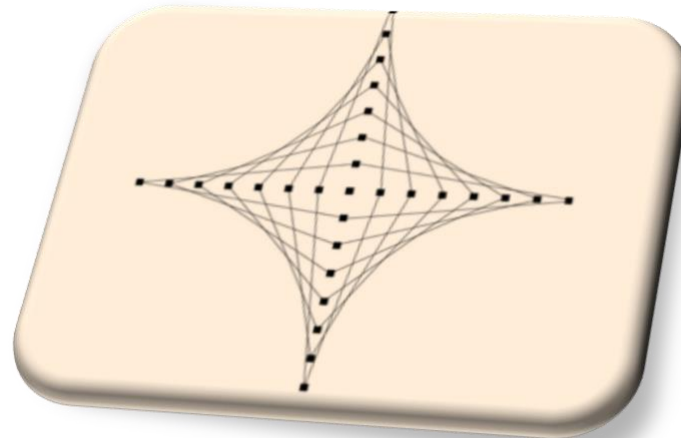
Earn a *Certificate* by getting lab skills whenever you *Get Around TUIT!*

TUITs are like tickets or maybe ... Science Club money.



Simple Science Projects

If you wish to make things and play,
check out the **Simple Science Projects**.



Simple Science Projects

- String Design
- Energy Tube
- Potato Clock
- Magnets
- Zinc Nail & Penny
- Flashlight & Wire
- Wool with:
 - plastic spoon & pepper
 - balloon with:
 - hair
 - soda cans
 - hanging string robot
- Baking Powder Submarine
- Vinegar & Baking Soda
- Corn Starch
- Candles
- Magic Fish
- Magic Ball
- Air Gun
- Vortex
- Blue/Yellow Water
- Colored Flames



The Bed of Nails [A Demonstration Project recommended for 3 to 4 people.]

With ancient roots in healing, **The Bed of Nails Demonstration** makes an exciting science demonstration on three levels (see [Bed of Nails Worksheet](#)).

It looks quite dangerous – *until you do the math!*

It opens the door to discussion on *methods of healing*.

It appeals to your sense of stepping outside your comfort zone to *move on to new versions of yourself!*



Nails Demonstration makes a great project; but it makes an even better show. You can bring this to other classes, schools, or places where people are looking for self-improvement. It makes a great addition to a school assembly program if you put teachers and administrators on the bed in front of a large audience.



The Bed of
science fair
traveling
other
for self-

The completion of **The Bed of Nails Demonstration** must have a minimum set of *Homework Assignments*. Hand in a written page that can be displayed at a Science Fair or Conference on the following.

1. HISTORY – Hand in your own interest in the *history* of beds of nails.
2. MATH – Hand in your own *pictures and/or calculations* to show how each nail holds some of the weight.
3. DRAMA – Hand in your plan of showing the *force* of each nail!
4. HANDS-ON – Hand in your sketch of the *actions* you will take with **The Bed of Nails Demonstration**.



Carbon Dioxide Five Ways [A Demonstration Project recommended for 1 to 2 people.]

This is great fun for the demonstration person and for the audience! You start showing CO_2 in its pure form as a gas, then make it chemically, and then with dry ice. The completion of **Carbon Dioxide Five Ways** must have a minimum set of *Homework Assignments*. Hand in a written page that can be displayed at a Science Fair or Conference on the following.

1. Direct from Tank
 - Tongue
 - In Test Tube, Extinguish Flame
2. Chemical Creation of CO_2
 - Gas Collection Apparatus
 - Little: Pour onto candle
 - Big: Floating Bubbles
3. Invisible
 - Where did the candle go?
 - Carbon Soot on Glass with propane flame
4. Dry Ice
 - Blowing Bubbles
 - Vibrating Quarter
 - Screaming Pan
 - Skating Puck
5. Homemade Soda



Sound Five Ways [A *Demonstration Project* recommended for 3 to 4 people.]

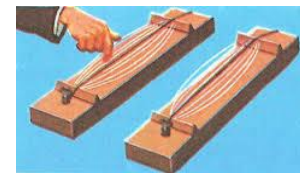
Using a Marimba Band playing a high energy grand finale, **Sound Five Ways** can make a demonstration of sound. The science of it can show how sound is made. Deeper aspects can show how sound waves are always affecting our emotions and even the matter around us.



piece for a great science show how sound waves physical

The completion of **Sound Five Ways** must have a minimum set of *Homework Assignments*. Hand in a written page that can be displayed at a Science Fair or Conference on the following.

1. What *Sympathetic Vibration* is using the strings of: guitar, violin, and a simple homemade vibrating string.
2. How Sound Waves form matter such as: Waves on Water, Powder Shapes, and Paint Pots.
3. Why Wind Instruments make sound using: Classical Musical Instruments, and a simple homemade tube that can make music.
4. The Effect of Sounds on Humans using: different Genres of Music and Special Sound Effects.
5. The incredible Whamola!



A humorous sub-theme can facilitate this demonstration as a dramatic skit (see the 'Blue Man Group').

The Computer [A *Demonstration Project* of computer circuitry recommended for 1 to 3 people.]

Taking a cue from one of the first computers – *Computer* – create a working model. Make it circuitry that will demonstrate if a person can questions correctly and have the machine person is right or wrong.

The completion of **The Computer** must have a minimum set of *Homework Assignments*. Hand in a written page that can be displayed at a Science Fair or Conference on the following.

1. The *History* of the computer.
2. The *Story of Turing* and the use of his computer to help end World War I by cracking the Enigma Machine code.
3. Build a *Cabinet* for your computer.
4. Build actual mainframe circuitry that mimics the logic of a primitive *Artificial Intelligence Processor*.



The Turing complete with answer a series of determine if the



The Pendulum [A *Demonstration Project* of vibrations recommended for 1 to 3 people.]

Vibrations of musical instruments, the pendulum of a clock, and even our consciousness can travel from one to another. When these vibrations are in sympathy, we synchronize into harmony. This can be demonstrated by creating examples of **The Pendulum** physics apparatus like the metronome, tuning forks, or stringed instruments.

Lessons from Pendula (Pendula is the plural of Pendulum)

- Close your eyes. ... Imagine no space. ... How would you know if time passed?
- Now close your eyes again. ... Imagine space is there and there are physical objects; but there is no movement or change. ... How would you know if time passed?

***** So it seems that time goes with space, physical objects, and movement. Let's call the movement or changes of objects *vibration*. It seems that everything in this physical world is vibrating.**

- To tell time or 'keep time' we use clocks. Long ago people used their own pulse, because the heartbeat is fairly regular.

Galileo

- As Galileo was sitting in a church, watching the chandelier slightly sway back and forth, he used his pulse to time the swings. He noted that the time for each swing was the same regardless of the width, or amplitude, of the chandelier's swing. This caused Galileo to perform several scientific experiments with a **pendulum**: a weight, or bob hung from a string, or rod (that does not have much weight), which is attached to a fixed point overhead. Galileo noted that even if you change the weight or amplitude, the period of time for each swing of the pendulum was the same.

***** It was then that Galileo realized that a pendulum makes an excellent clock.**

Sympathetic Vibration

- Christiaan Huygens, (1629 – 1695) invented the pendulum clock around 1657. One day in 1665 he noticed that two heavy pendulum clocks hanging from the same house beam would synchronize. That is, they would end up ticking at the same time, even if they were started at different times.

Connection



- The vibrations of pendula are connected to such diverse subjects as: the individual human heartbeat, the eras of humankind at large, planets, stars, and to the Platonic solids.
- Some ancients said that a harmonious person would live 72 years and would have 72 heartbeats per minute. They said that the heart was like a pendulum that swung back and forth to make 1 cycle. This cycle occurs with each breath, which is once per 4 heartbeats. How many heart cycles (or breaths) would the harmonious person have in one day? It turns out that the harmonious person would have 25,920 heartbeats in a lifetime.
- Plato said that humankind changes consciousness every 2,160 years. This is now called a Platonic month. One Platonic year is therefore 25,920 years (12 x 2,160). He compared the collective life of humanity on earth to the perfect shape of cubes. Interestingly, the Platonic Month of humankind is the same number as the total number of degrees in all of the corners of a CUBE.
- But the Platonic year is also related to the time it takes for one rotation of the ecliptic or said another way, the rotation of the 12 signs of the zodiac. It is the same 25,920 years.

So, this leads to an important question ... *if pendula can synchronize through sympathetic vibrations, and if humans are like pendula, maybe we humans can synchronize through sympathetic vibrations?*



The completion of **The Pendulum** project must have a minimum set of *Homework Assignments*. Hand in a written page that can be displayed at a Science Fair or Conference on the following.

1. The *History* of the pendulum.
2. Dramatization of the *Story of Galileo*, perhaps using the 'close your eyes' and the 'church story' to lead up to the use of his pendulum to create the first clocks.
3. A series of *Metronomes* that demonstrate sympathetic vibration.
4. A few variations on the simple *Pendulum*.