

LANCASTER

SCIENCE FACTORY



Scientific Achievement Pin

Activity Packet for Girl Scout Daisies

As the leader, please read this packet to all of your Daisies so that they can answer the questions verbally and as a group.

These questions are in short-answer format, but we hope that they inspire your Daisies to have thoughtful discussions about their experiences today and how science affects their lives.

For your Daisies to get their Lancaster Science Factory pins:

You must go to these 4 exhibits:

1. Leverage Learning
2. Period Pendulums
3. Whisper Tubes
4. Minimal Surfaces

Plus complete 3 out of the 5 experiments at these exhibits:

1. Light It Up
2. Scope on a Rope
3. Airplay
4. Conductors & Insulators
5. Catenary Arch



Please summarize their responses in the spaces provided

REQUIRED EXPERIMENTS



1. Leverage Learning

A lever is a seesaw in a playground. It moves up and down or back and forth because it is attached in one spot.

Try to lift the weight with the rope. Was it heavy?

Now try to lift the other weights by pushing down on the levers.
Were they heavy?

Were some levers heavier than others?

Did you know that each of the weights is the same? They are all 15 pounds! Because you are using a machine, sometimes it does not feel like you are lifting 15 pounds.

2. Period Pendulums

A pendulum is a rod or string with a weight hanging from the end. You're going to do three experiments to see how we can change a pendulum to make it swing slower or faster.

Try the first one (on the left). Pull the pendulums towards you but pull one closer to you than the other. Now let them go at the same time so they can swing.

Did one pendulum swing slower than another?

Try the second one (in the middle). Pull back the big weight and the small weight (both just as far) and let them go at the same time.

Did one pendulum swing slower than another?

Try the last one (on the right). Pull back the long pendulum and the short pendulum (both just as far) and let them go at the same time.

Did one pendulum swing slower than another?

So if you want a pendulum to take a long time to swing, do you want a long pendulum or a short one?



REQUIRED EXPERIMENTS



3. Whisper Tubes

There are two ends to the giant whisper tube. Stand at one end and have a friend stand at the other. Whisper something to her.

Did she hear you?

Did it take a long time for her to get the message? Whisper something back!

Now look up and see how long the whisper tube really is! Do you think sound travels fast?

The sound of your whisper was trapped inside the tube until it got to your friend's ear!

4. Minimal Surfaces

Play with bubbles! What do you think we added to the water to make the bubbles (hint: you use it every day)?

Are bubbles liquid or solid or gas?

Go to the side with the big rings and try to make large bubbles. When the bubble fills with air, does it get stretchy?

Do you notice the bubble trying to form a shape?

ELECTIVE EXPERIMENTS



1. Light It Up

Press the buttons to light up the different types of light bulbs.

Are some lights brighter than others?

Do you think some use more electricity than others?

Would some burn out (stop working) sooner than others?

2. Scope on a Rope

Hold the scope tool right up against something you want to see up close. You can use the samples on the wall or you can look at the carpet or even your clothes and skin!

Do things look different up close?

When you look at your clothes under the scope, what are you looking at?

3. Airplay

Push the white buttons by the clear tubes. Then place the yellow balls in the tubes.

Do the balls stay inside the tubes or do they float?

Why do you think the balls are floating?

4. Conductors & Insulators

(On the right) Try putting each of the four different bars inside the slot.
Which ones cause the light bulb to light up?

(On the left) What do you need to do to light up the bulb in this one?
You are flicking a switch- just like one in your house.

ELECTIVE EXPERIMENTS



5. Catenary Arch

Work together as a team to match up the numbers of the blocks with the numbers on the board. Now you're going to try to lift the arch!

Do you think it can stand on its own?

Don't forget to tilt the little wooden base.

If you got the arch to stand on its own, do you think it's strong?

BONUS QUESTIONS!

1. What was your favorite exhibit or experiment?

2. Which exhibit or experiment was the most difficult?
