LANCASTER
SCIENCE FACTORY

Scientific Achievement Badge

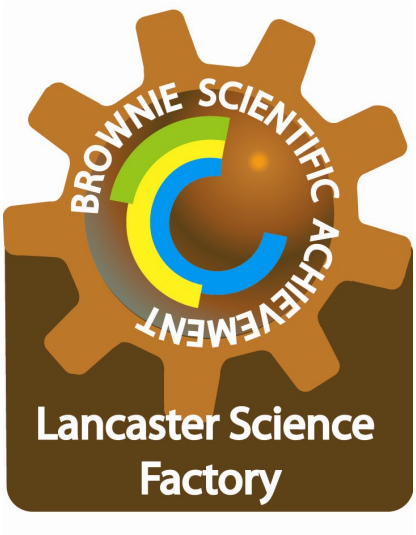
Activity Packet

Girl Scout Brownies

To get your special Lancaster Science Factory badge:

Complete all 5 required experiments
at these exhibits:

1. Roller Coaster
2. Dam the Creek
3. Electrical Circuits
4. Puzzles & Brain Teasers
5. MiniRacers



Plus, complete experiments at 4 of the 7
exhibits shown below:

1. Crank Power
2. Earthquake
3. Magnetic Sculpture
4. Flight Deck
5. Light & Vision Room
6. Mechanical Advantage
7. Parachute Launch

You must get a signature from your troop leader for completing the experiment at each exhibit and answering a question about it!

Turn the page and read on to find out what you have to do!

REQUIRED EXPERIMENTS

1. Roller Coaster

Build a roller coaster that has at least six pieces of track. Be sure that the ball reaches the end!

Explain the transfer of energy that occurs while the ball is completing its path.

Leader's Initials _____

2. Dam the Creek

Build a dam that keeps back almost all of the water using as few bricks as possible.

What is a drainage channel and what is its purpose?

Leader's Initials _____

3. Electrical Circuits

Wire a circuit that makes at least two lights shine brightly.

What is necessary to have a complete circuit?

Leader's Initials _____

REQUIRED EXPERIMENTS

4. Puzzles & Brain Teasers

Complete at least 4 puzzles. List them here:

1. _____

2. _____

3. _____

4. _____

Could you solve each puzzle on your first attempt or did you need to try different methods (you may write notes or draw pictures next to each puzzle listed above)?

Leader's Initials _____

5. MiniRacers

Build a K'nex dragster that races to the finish line.

What propels the car forward when you set it in place on the track?

Leader's Initials _____

ELECTIVE EXPERIMENTS

1. Crank Power

Work as a team to light up the headlights, make the radio play music, and spin the fans and mixer all at once.

What do generators do?

Leader's Initials _____

2. Earthquake

Build the biggest building possible that can withstand a very shaky earthquake.

What is the key to building a strong structure?

Leader's Initials _____

3. Magnetic Sculpture

See how many nuts you can get to stick together.

The hex nuts are not originally magnetized. How can such long chains of nuts be created?

Leader's Initials _____

4. Flight Deck

Make a paper airplane that flies through at least one hoop.

What are the four forces that must be considered to make something fly?

Leader's Initials _____

ELECTIVE EXPERIMENTS

5. Light & Vision Room

Find out what a red image looks like under blue light. Create a purple shadow. Bend some light.

What are the primary colors of light? How is a lens different from a mirror?

Leader's Initials _____

6. Mechanical Advantage

Try to lift each 100 pound stack of weights.

Which system makes it easiest to lift 100 pounds? With which system is it hardest?

How much rope do you need to pull to raise the weights with each system?

Leader's Initials _____

7. Parachute Launch

Propel a paratrooper up to the ceiling.

How do parachutes slow the descent of a person or object?

Leader's Initials _____

BONUS QUESTIONS!

1. What was your favorite exhibit or experiment? Why?

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_____

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_____

2. Which exhibit or experiment was the most difficult? Why?

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