A LEGOLAND® Florida Resort Leader Guide
To Support the Get Moving Leadership Journey!
Girl Scout Juniors (Grades 4 - 5)

Table of Contents

Welcome
Background Information:
Green Wave Facts:
Discovery Worksheet:
Park Map:
Before and After Visit:
About Get Moving:
Scavenger Hunt
Points of Interest
At Home Activity
Objectives and Standards
Page 1
Page 2-3
Page 4-5
Page 6-8
Page 9
Page 10
Page 11

Welcome to LEGOLAND® Florida Resort!

Education Programs
The LEGOLAND® Florida Resort “Get Moving” Leader Guide was developed by the LEGOLAND Education Department. These activities complement the Girl Scout Journey “It's Your Planet Love It! Get Moving!”. Please refer to your local Girl Scout Council for all the requirements needed to fulfill this program. For information on LEGOLAND Education Programs, visit www.LEGOLAND.com/Florida/education.
Background Information

Energy comes from many sources
Most of our energy supply comes from fossil fuels, such as oil, coal and gas. Since fossil fuels take millions of years to form they are effectively non-renewable. Every time we use oil, coal and gas, there is less for future use. Also, burning fossil fuels produces waste products that pollute the atmosphere.

Energy also occurs naturally in wind, flowing water and sunlight. Using these renewable energy sources may offer an alternative power source.

Collecting and Storing Energy
Energy that is naturally available needs to be collected to be useful. Sometimes energy can be used at the place where it is collected, and sometimes it must be stored and transferred. Potential energy is energy stored up and ready to be used. Kinetic energy is the energy of motion. When energy is transferred from where it is stored to where it is used, some energy escapes as heat. Power is a measure of how fast you transfer energy. You can lift an object slowly and work at a low power. Lift it quickly and you work at a hight power.

Renewable Resources: Wind, Water and Solar Power
Windmills, grouped into windfarms, can generate electricity. Large rotors have pitched blades to collect wind energy. Windmills convert about 30% of the wind’s energy into electricity.

Turbines are powerful waterwheels used in hydroelectric power stations. Water is stored behind a dam. As the water is released, it drives the turbines and generates electricity. Worldwide, water powers is the major source of energy, after fossil fuels.

Solar panels collect energy from the sun. One type of solar panel contains a liquid that absorbs the heat energy. Hot liquid passes to a heat exchanger to heat the water in a swimming pool or a home’s water heater.

Another type of solar panel converts the sun’s rays into electricity. The voltage and power is low, so several cells are connected in each panel.
What is force?
Force is any push or pull. Force is needed to provide motion, change direction or speed, and to stop. Forces cause objects to move.

Gravity constantly pulls all things toward the center of the earth. LEGO® TECHNIC™ Coaster is gravity-powered.

Inertia makes an object resist a change of motion. When LEGO® TECHNIC™ Coaster speeds up, riders feel pinned to the back of the car. Inertia makes it a fun ride!

Riders also experience inertia when the car stops and they feel “pushed” forward against the lap bar. Inertia makes your body want to continue moving as it had been moving.

When inertia is at work an object at rest tends to stay at rest and an object in motion tends to stay in motion.

Centrifugal force pulls objects away from the center of motion. AQUAZONE® riders hang on as centrifugal force pulls them to the side of the car, away from the center of the ride.

Wind resistance pushes the riders’ hair backwards. Riders on many different rides can feel wind resistance. Cars that are low and sleek face less wind resistance.

What forces act on a car going down a slope?
Friction is the amount of surface contact between a car and the slope: Less friction, faster car. Friction can cause heat when two surfaces come in contact and rub together.

How do we reduce friction to make a car go faster?
- Change the slope’s surface. The smoother the surface, the faster the car.
- Change the slope’s angle. The steeper the slope, the faster the car.
- Change the tires. Usually the car will go faster with narrow and smooth tires.

Weight can also make a car go faster or slower. In theory, a heavy and lightweight object released at the same time from the same point on a ramp should reach the bottom at the same time.

In reality, a light object often travels faster, but not as far. A heavy object often travels slower, but farther. This is due to different amounts of friction in the wheels and axles.
How does LEGOLAND® Florida Resort go green?

GREEN WAVE
LEGOLAND® Florida Resort is dedicated to creating a cleaner, more eco-friendly environment for both the staff and Park guests. Green Wave spearheads projects such as cleanup and recycling initiatives.

RECYCLED MILK CONTAINERS
Trash cans, recycling bins and benches in LEGOLAND are made of recycled milk containers.

LEGO® MODEL CLEANING
LEGOLAND® Model Building Team uses environmentally-friendly powdered walnut shells, also called “sand blasting” to clean the 15,000 LEGO® models.

RECYCLING
Park Guests as well as Park employees recycle tons of traditional recyclable materials annually. Some of these materials include; paper, cardboard, batteries, plastic and aluminum cans. Behind-the-scenes, tons of landscape waste, wood pallets, metal, glass, restaurant cooking oil and grease, and e-waste are also recycled. A one-to-one ration -- recycling bins to trash cans -- has been established throughout the Park.
Green Wave Scavenger Hunt at LEGOLAND® Florida Resort

Find the items that make LEGOLAND® “green”.

1. Recycling aluminum cans and bottles helps reduce the amount of waste that goes into landfills.
   Can you find blue recycling bins throughout the Park?

2. Mulch keeps plants’ roots cool and helps cut down water use.
   Find mulch made from recycled tree trimmings (Observe the landscaping throughout the Park and Historic Cypress Gardens).

3. Recycling plastic puts trash to good use!
   The green and blue benches throughout the Park are made of recycled milk jugs.
   Can you find any?
Discovery Worksheet: Scavenger Hunt

4. Visit LEGO® Kingdoms. An indoor/outdoor steel roller coaster that features a hilarious, behind-the-scenes view of life within the enchanted LEGOLAND® Castle. ________________________

5. What ride is the centerpiece of Fun Town? Children can choose their favorite horse and giddy up! ________________________

6. How do forces act on these rides? (Think about inertia, centrifugal force, gravity, friction and wind resistance).

Kid Power Towers

Riders pull the cable to go up, then slowly come down when they let go of the cable.

What force helps riders go down? ________________________

What force makes your hands feel hot as they rub against the cable? ________________________

7. **LEGO® TECHNIC™ Coaster** speeds up suddenly. Which force makes riders feel pinned back, as if they haven’t started moving?

8. **AQUAZONE®** riders feel air pushing against them. Which force is at work?
9. Ride LEGO® TECHNIC™ Coaster

Think about how LEGO® TECHNIC™ Coaster makes the most of potential energy, kinetic energy and gravity to speed up and slow down.

**Potential energy is energy stored up and ready to be used.**

**Kinetic energy is the energy of motion.**

1. Where does LEGO TECHNIC Coaster have the most potential energy, at the lowest or highest point of the track?

__________________________________________________________________________________________

2. How does LEGO TECHNIC Coaster gain more and more potential energy - by going up or down the track?

__________________________________________________________________________________________

3. How does the height of the track affect the amount of potential energy that can be stored?

__________________________________________________________________________________________

4. When is potential energy changed to kinetic energy?

__________________________________________________________________________________________

5. How does the dip at the end of the ride help the coaster slow down? How does this help the brakes?

__________________________________________________________________________________________

8. Answer Key:
1. Highest point.
2. Up the hill.
3. The higher the track, the more potential energy.
4. Changes to kinetic energy as gravity pulls the coaster down the hill.
5. Climbing the dip against gravity takes more power. Since the coaster naturally slows down, the brakes do not have to work as hard; and do not wear out as quickly.
Map out your scavenger hunt with these points of interest!
Before and After the Visit: At Home Activity

**Balloon Power:**

Use renewable energy - air!
Store potential energy and change it to kinetic energy.
Find out how weight affects how fast and far the balloon travels.

**Remember:**
Potential energy is energy stored and ready to be used.
Kinetic energy is the energy of motion.

**Materials:**
- Long balloons
- Drinking straw
- Masking tape
- Pennies
- String or fishing line, 6 ft. long
- 2 chairs

**Procedure:**
1. Thread the drinking straw on the string. Tie each end of the string to the back of a chair.
2. Move chairs apart until the string is taut. Slide the straw to one end.
3. Inflate the balloon, but do not tie it.
4. Hold the balloon with the opening facing the chair. Tape the balloon to the straw.
5. Let the balloon go!

**Discussion:**
1. How far did the balloon go?
2. What renewable energy source powers the balloon?
3. Where is potential energy stored? When is kinetic energy released?
4. Is any energy wasted? If so, how?

**Now try this!**
1. Tape a penny to the balloon or straw. How does weight affect the speed and distance the balloon travels?
   Try it with two pennies.
2. Use a different size or shape of balloon. Can you increase the potential energy stored and the kinetic energy released?
About Get Moving for Girl Scouts

Educational objectives

• Learn about renewable resources, such as solar and wind energy.
• Experiment with production, storage, and transfer of mechanical, solar, and wind energy.
• Test and compare energy sources.
• Define and experience potential and kinetic energy.
• Relate hands-on activity on LEGOLAND® Florida Resort attractions.

LEGOLAND® Florida Resort Supports
Girl Scout Juniors Get Moving!

Energy and Leadership - Pg. 6
Science, Math, Nature, and You: Get Moving! Engages girls in science, math, the outdoors, and environmental stewardship.
Leadership Journey: What + How: Creating A Quality Experience - Pg. 20
• Learning by doing support girls’ hands-on testing of their own ideas, skill-building, and teaching skills.
Leadership Journey: Session One - Pg. 32
• Juniors experience the various forms of energy and how they can make the most of their energy to conserve Earth’s energy.
National Leadership Outcomes: Discover
• Girls develop positive values and the importance of the environment in ways that will have a long-term positive impact.