

# Homeschool Self-Guided Education Packet



**TEACHER GUIDE**

**GRADES K - 1**  
STUDENT SHEETS INCLUDED



**DISCOVERY**  
CENTER

## Welcome to LEGO® Discovery Center

### **LEGO® Discovery Center**

connects learning and fun together like LEGO® bricks!

Our self-guided homeschool visits allow students to **explore, discover, and create** in an engaging environment filled with hands-on activities. The guide is designed to add fun, focused, and interactive learning during your visit.

This guide includes **curriculum-based challenges and activities** covering Mathematics, English, History, and Science for 3 attractions! Including:

#### **MINI WORLD**

Marvel at LEGO landmarks and build your own MINI WORLD

#### **LEGO® Imagination Express**

Go on a science adventure!

#### **LEGO® Racers Build & Test**

Design and test your way to the finish line!

*The attractions can be visited in any order.*

# LEGO® MINI WORLD

Explore and play in an updated fantastical world of awesome LEGO builds! Made with over 1.5 million LEGO bricks, planes fly over the tallest towers, day turns to night and some local landmarks creep into the skyline too. Can you recognize them?



## Challenge

Students are challenged to explore MINI WORLD and do the following:

- Observe and describe landmarks.
- Classify natural vs. human-made features.
- Represent ideas through drawings/models.
- Begin connecting landmarks to people and communities.
- Share ideas through speaking/drawing.



## Preparing for the Activity

### Questions and Definitions:

- **Q: What is a landmark?**
  - A: An object or feature of a landscape or town that is easily seen and recognized from a distance, especially one that enables someone to establish their location.
- **Q: What is a natural landmark?**
  - A: a physical feature in the landscape, such as a mountain, waterfall, cave, or a body of water, that is easily recognized and stands out from its surroundings, not created or significantly altered by humans
- **Q: What is a Human-Made landmark?**
  - A: a notable, impressive, or unique structure or feature built by people, rather than by nature. These landmarks can be ancient ruins, modern architectural feats, or other structures that stand out in a landscape, serving to identify an area, a city, or a nation.

# LEGO® MINI WORLD

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## Learning Objectives

This MINI WORLD activity supports early science, engineering, and social studies learning goals for Kindergarten and Grade 1 by helping students:

- Observe and describe landmarks and features in their environment.
- Classify natural vs. human-made features.
- Represent ideas through drawings and simple models.
- Connect landmarks to communities and culture.
- Communicate their ideas through speaking and drawing.

The activity reinforces foundational observation, classification, modeling, and communication skills, while also building early community and geography awareness.

## NGSS Standards Addressed

- **K-ESS3-1:** Use a model to represent the relationship between the needs of different plants/animals (including humans) and where they live.
- **1-ESS1-1:** Use observations of the sun, moon, and stars to describe patterns (focus here: noticing patterns in human-made vs. natural places).
- **K-ESS3-3:** Communicate solutions that will reduce the impact of humans on the land, water, air, or other living things. (Sorting lays the foundation for this.)
- **1-LS3-1:** Make observations to construct an evidence-based account that young plants/animals are like, but not exactly like, their parents. (Parallels: recognizing similarities and differences in landmarks).
- **K-2-ETS1-2:** Develop a simple sketch, drawing, or model to show how an object solves a problem.
- **K-ESS3-2:** Ask questions to obtain information about the purpose of weather forecasting to prepare for, and respond to, severe weather. (Foundation: asking questions about how humans adapt their environments for needs and enjoyment).
- **Science & Engineering:** Practice of communicating information.



### MINI WORLD: Landmark Activity

#### Part 1 – Landmark Scavenger Hunt

Look around MINI WORLD. Can you find these? Circle them when you do!

Sports game

Sculpture

Ride or attraction

Fountain

Airport

Train

Tall building

Lake

#### Part 2 – Natural or Human-Made?

Draw a line to match each landmark.

☐ A sports game

☐ NATURAL

☐ An airport

☐ HUMAN-MADE

☐ A fountain

☐ NATURAL

☐ A lake

☐ HUMAN-MADE

☐ A sports game

☐ NATURAL

☐ An airport

☐ HUMAN-MADE

☐ A fountain

☐ NATURAL

☐ A lake

☐ HUMAN-MADE



### MINI WORLD: Landmark Activity

#### Part 3 – My Dream MINI WORLD

Draw 4 landmarks you would put in your MINI WORLD. Then head over to any build zone and recreate your scene using LEGO® bricks.






### MINI WORLD: Landmark Activity

#### Part 4 – Share Your Ideas!

Finish the sentences:

- My favorite landmark is \_\_\_\_\_
- I like it because \_\_\_\_\_
- People visit landmarks because \_\_\_\_\_  
\_\_\_\_\_

#### Part 5 – “I Can” Statements

##### Kindergarten

- I can find and name special places in a city.
- I can tell if something is natural (like a lake) or human-made (like a building).
- I can draw my own model of a city with landmarks.
- I can talk about why people like to visit these places.

##### Grade 1

- I can observe and describe what landmarks look like.
- I can sort landmarks into groups (natural or human-made).
- I can create a drawing of my dream MINI WORLD.
- I can explain why I chose certain landmarks.

# Imagination Express

Step aboard the Imagination Express and travel through a giant LEGO® world! Collect points along the way with your magic wand but watch out for moles and space pirates!



## NGSS-Aligned Learning Objectives

- Observe and Record: Keep track of scores from each ride and share data with others.
- Organize Information: Represent data using tallies, grids, or simple charts.
- Look for Patterns: Compare results from different seats, sides, and rows to notice changes.
- Reflect and Explain: Talk about what the data shows and decide if the game was fair.

## NGSS Standards Addressed

**K-PS2-1:** Pushes and pulls can have different strengths and directions → (different seats/rows may give different chances to zap). **K-ESS3-3:** Communicate solutions with others → (share and compare scores). **1-PS4-1:** Waves and information → (light/sound helps them aim and hit targets).  
**Science and Engineering Practices (SEPs):** Asking questions and making observations. Collecting and recording data. Looking for patterns. Communicating what they find.

## Challenge

Students are instructed via voiceovers to use your magic wand to hit targets and collect points – this is done by pointing and shooting. A score appears on a screen in front of each student which tallies their success. To gather the appropriate amount of data, enjoy the ride up to 4 times! Adults are encouraged to ride also; this way students have more data to utilize.

Ride 1: Choose any seat and sit on the right side.

Ride 2: Choose the same seat but sit on the left side.

Ride 3: Choose a seat in a different row, sit on the right side.

Ride 4: Choose the same row but sit on the left side.

At the conclusion of each ride, students must remember their score.

Students can also ask other riders what their scores were.

After exiting the ride each time, students must write down their score and those of others.

## Post Challenge

Students are encouraged to think about the different ways they can represent this data and are to explore how the same data can be represented in different ways. They are challenged to represent the data in a grid form. They can also reflect on whether Imagination Express was fair.



### Kindergarten & 1<sup>st</sup> Grade Science Adventure!

Today, you get to be a scientist! Ride, hit targets, collect points, record your score, and look for patterns.



#### Part 1 – My Ride Data

Ride #	Seat	Side	My Score	Friend's Score
1	Same Seat	Right		
2	Same Seat	Left		
3	New Row	Right		
4	Same Row	Left		

#### Part 2 – Show Your Data

Draw tally marks, magic wands, or color bars to show your scores!

Ride 1	
Ride 2	
Ride 3	
Ride 4	



## **Kindergarten & 1<sup>st</sup> Grade Science Adventure!**

### **Part 3 – Patterns & Fairness**

**1. What did you notice?**

- Which ride gave you the biggest score? \_\_\_\_\_
- Which ride gave you the smallest score? \_\_\_\_\_

**2. Did you see a pattern?**

- Did right side or left side do better? \_\_\_\_\_
- Did front row or back row do better? \_\_\_\_\_

**3. Fair or Not Fair?**

- Do you think the game was fair for everyone? Why or why not?

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### **Part 4 – NGSS Reflections**

Today, you were a scientist!

- You asked questions.
- You collected data.
- You looked for patterns.
- You shared your ideas.

**Scientists use data to explain the world. You used your scores to explain what happened on the ride!**

# LEGO® Build & Test

In the Build and Test area, students will find brick pits featuring car pieces including wheels, body pieces, and axels. They can then use two different ramps to test the durability and speed of their cars.



## NGSS Standards Addressed

This workshop ties playful Lego building with scientific inquiry, engineering design, and early data collection, fully aligned with NGSS for K-1.

### Kindergarten

- **K-PS2-1 (Motion & Stability):** Plan and conduct an investigation to compare the effects of different strengths or directions of pushes and pulls on the motion of an object.
- **K-PS2-2:** Analyze data to determine if a design solution works to change the speed or direction of an object.
- **K-2-ETS1-2 (Engineering Design):** Develop a simple sketch, drawing, or model to show how an object works.

### Grade 1

- **1-PS4-1 (Waves & Information):** Plan and conduct investigations to provide evidence that vibrating materials can make sound (race cars can connect if you explore noise on different tracks).
- **1-PS4-4:** Use tools and materials to design a device that solves a problem (a faster car).
- **Science & Engineering Practices:** Asking questions, making predictions, recording data, communicating solutions.

## Challenge

In this workshop, students will design and build their own Lego race cars, then test them on a ramp to see how far and fast they travel. Before testing, students will make predictions about how their car will perform. During the races, they will observe results, collect simple data (fast, medium, slow; distance; or winner), and record their findings on a worksheet.

## Post Challenge

Afterward, students will reflect on what worked, what could be improved, and sketch an updated design.

## Race Car Challenge: Build. Test, Improve!

### Part 1 – Build Your Car

- Use LEGO® bricks, wheels, and axles to make a race car.
- Make sure your wheels can roll easily.
- Your car should be strong enough to go down the ramp without falling apart.

*Think:* What size wheels will you use? Will your car be long, short, heavy or light?

### Part 2 – Make a Prediction

Check your prediction before testing.

- ☐ My car will go **fast**
- ☐ My car will go **medium**
- ☐ My car will go **slow**
- ☐ My car will **go far**
- ☐ My car will **not go very far**

### Part 3 – Test Your Car

- Place your car at the top of the ramp.
- Let it go – no pushing!
- Watch carefully.
- Test your car 2 more times.
- Record what happens on the next worksheet.



### Race Car Challenge: Build. Test, Improve!

#### Part 4 – Race Results

Record results below. Put an "X" under the speed your car traveled and explain what happened differently during each test.

Test	Fast	Medium	Slow	Winner (if racing)	Notes (distance, straight, wobbly?)
#1					
#2					
#3					

#### Part 5 – Improve Your Car

**Question:** What could make your car better? Make changes and test again!

- |                                       |   |
|---------------------------------------|---|
| <input type="checkbox"/> Big wheels   | <input type="checkbox"/> Thin body            |
| <input type="checkbox"/> Small wheels | <input type="checkbox"/> Dark colored bricks  |
| <input type="checkbox"/> Long body    | <input type="checkbox"/> Light colored bricks |
| <input type="checkbox"/> Short body   | <input type="checkbox"/> Windshield           |
| <input type="checkbox"/> Low body     | <input type="checkbox"/> No windshield        |
| <input type="checkbox"/> Tall body    | <input type="checkbox"/> Heavy car            |
| <input type="checkbox"/> Wide body    | <input type="checkbox"/> Light car            |





## **Car Building & Racing Investigation**

### **Part 6 – Reflection**

**Circle One:**

- My car went:    Faster than I thought    Slower than I thought    About the same

**Answer the Questions:**

- What helped your car go fast?

\_\_\_\_\_

- What would you change next time?

\_\_\_\_\_

**Draw your improved car idea:**

A large, empty rectangular box with a thin black border, intended for a student to draw their improved car idea.