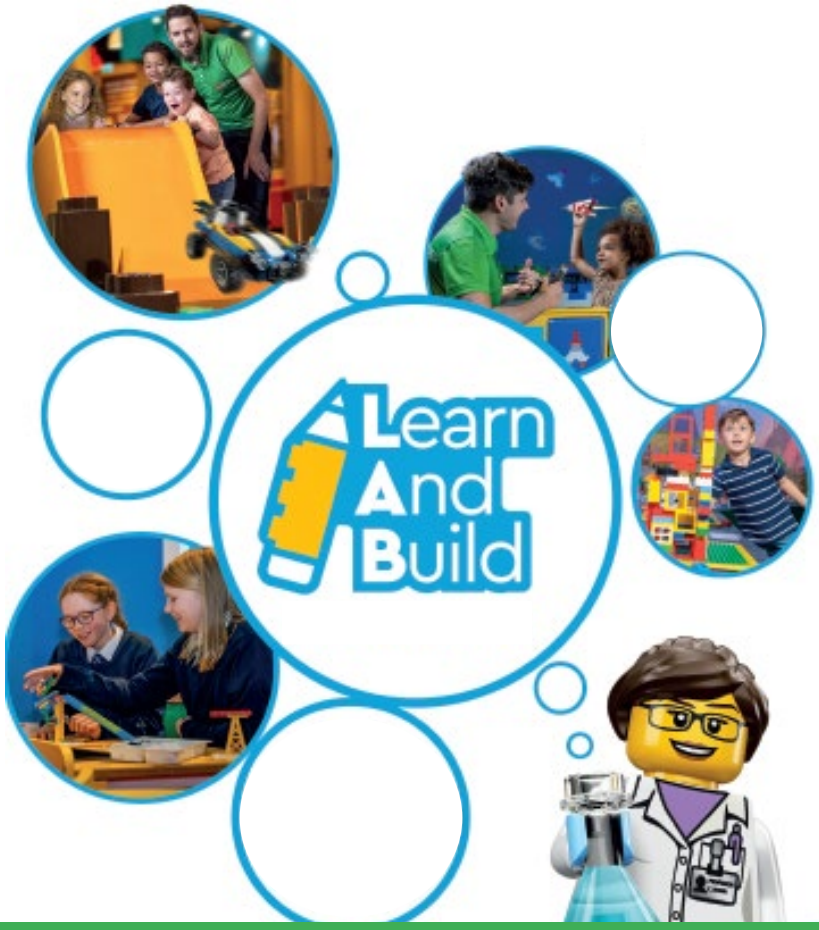
Homeschool Self-Guided Education Packet



TEACHER GUIDE

GRADES 2 – 3

STUDENT SHEETS INCLUDED

LEGOLAND® DISCOVERY CENTER

LEGOLAND DISCOVERY CENTER

VISIT GUIDE: GRADE 2-3

Welcome to LEGOLAND® Discovery Center

LEGOLAND® 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:

MINILAND
Marvel at LEGO landmarks while learning about geography.

LEGO® Kingdom Quest
Think like a scientist on a data investigation!

LEGO® Racers Build & Test
Design and test your way to the finish line!

The attractions can be visited in any order.

TEACHER GUIDE: GRADES 2-3

LEGO® MINILAND

MINILAND is a miniature replica featuring the city's most loved buildings and landmarks.
Fun Facts: All of the MINILAND models took a total of 5000 hours to design and build.
MINILAND is made up of over 1.5 Million LEGO® Bricks. There are over 500 Minifigures!

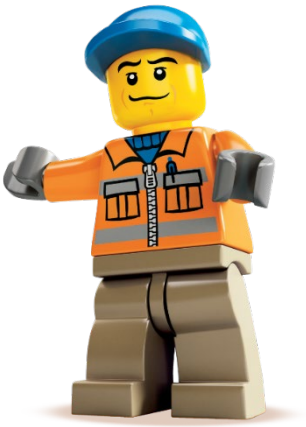
Challenge

Students are challenged to explore MINILAND and identify historic or notable city landmarks, and look for activities located in specific locations, such as sports and transportation. They are asked to find these key items and locations:

- **Find a sports arena** – Answer: OHIO State Stadium
- **Find transportation** - Answer: Rail Cares, City Buses, or Taxies
- **Find a water feature/fountain** - Answer: The Fountain of Eternal Life - Cleveland
- **Find a river** – Answer: The Scioto River
- **Find a sculpture** – Answer: Gavel Sculpture, Lucius Quinctius Cincinnatus Sculpture, Arnold Statue
- **Find a fun attraction with a ride** – Answer: LEGOLAND Discovery Center
- **Find an iconic building** – Answer: Columbus State House or LeVeque Tower

Post Challenge

Students are asked to put each landmark in the correct group (i.e. Natural or Human-made) and tell you why it's important. Then they are tasked to select 5 landmarks to include in their dream version of MINILAND and draw them, before finally thinking and reflecting on how landmarks represent culture, history or community needs.



TEACHER GUIDE: GRADES 2-3

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Ohio Learning Standards for Science (Grades 2-3)

Activity Component	What Students Do	Ohio Learning Standards Alignment	Alignment Details
Sort landmarks (Natural vs. Human-made)	Students categorize landmarks and explain why each is important.	**Grade 2: Earth and Space Sciences (2-ESS2-2)** – Identify landforms and bodies of water; distinguish natural and human-made features.	Students practice classifying natural vs. human-made structures and recognizing their functions and importance.
Select & draw landmarks for dream MINILAND	Students choose 5 landmarks and sketch them.	**Grade 2: Engineering Design (2-ETS1-2)** – Develop a simple model to represent a solution to a problem.	Sketching landmarks serves as a **model of a design solution**, reflecting engineering design practices.
Reflect on cultural, historical, or community significance	Students explain how landmarks represent culture, history, or community needs.	**Grade 3: Human-Environment Interactions (3-ESS3-1)** – Investigate how human activities impact the environment and design solutions to meet community needs.	Students evaluate how landmarks reflect culture, history, and community needs, aligning with human-environment standards.
Decision-making / design	Students select landmarks based on importance, culture, and history.	**Grade 3: Engineering Design (3-ETS1-1)** – Define a simple design problem with criteria and constraints.	Students make design decisions and apply criteria (fun, cultural significance, history), aligning with OLS engineering practices.

STUDENT WORKSHEET

LEGO® MINILAND

Student Name: _____

Designing MINILAND: Natural vs. Human-Made Landmarks

Part 1 – Landmark Scavenger Hunt

What can you see in MINILAND? (Check the boxes)

Famous Place or Landmark	For Extra Points: Name the famous place or landmark
☐ A sports arena	.....
☐ Any transportation	.....
☐ A fountain	.....
☐ A river	.....
☐ A sculpture	.....
☐ A fun attraction or ride	.....
☐ A famous building	.....

Part 2 – Landmark Sorting

Landmark	What Type? (Circle One)	Why Is It Important?
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	
	Natural Human-made	

Student Name: _____

Design Your Own Dream MINILAND

Part 3 – Design & Modeling

If you had to build a MINILAND of your own out of LEGO® bricks, what are the top 5 landmarks you would include?

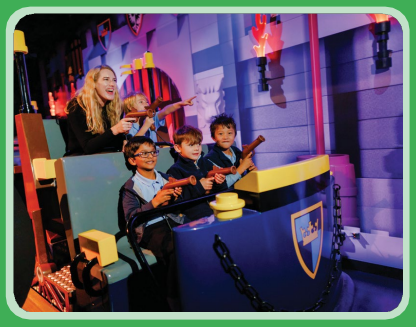
Part 4 – Reflection

- What makes a landmark special to people?
- How does your dream MINILAND show different people and cultures?
- Why do cities build landmarks?

TEACHER GUIDE: GRADES 2-3

LEGO® Kingdom Quest

Kingdom Quest is a ride in which riders board carriages and are transported through a series of interactive screens. Each person in the carriage is provided with a "blunderbuss" and compete to save the princess and get the highest score!



Challenge

Students are instructed via voiceovers to zap the bad guys with the blunderbuss – this is done by pointing and shooting. A score appears on a screen in front of each students which tallies their success in zapping the bad guys. 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.
- Rode 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 Kingdom Quest was fair.

Ohio Aligned Learning Objectives

- **Scientific Inquiry & Data Collection** – Recording repeated measures and pooling peer data.
- **Data Representation** – Displaying results in grids, charts, or tables.
- **Pattern Recognition** – Comparing scores across different conditions (seat, row).
- **Evidence-Based Reasoning** – Using data to make claims about fairness and variability.
- **Collaboration & Communication** – Sharing and comparing results strengthens scientific practice.

TEACHER GUIDE: GRADES 2-3

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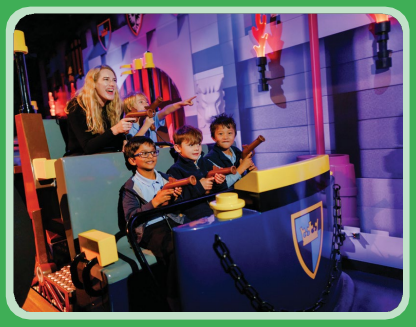


Ohio Learning Standards for Science (Grades 2-3)

Activity Component	What Students Do	Ohio Learning Standards (Grades 2–3)	Alignment Details
Collect repeated data from multiple trials	Students ride 4 times in different seats/rows, recording their score after each ride.	**Grade 2 & 3: Scientific Inquiry & Application** – Collect and record data through simple investigations.	Students systematically collect repeated measures to study variability.
Gather peer data	Students ask classmates and adults for their scores to increase sample size.	**Grade 2 & 3: Scientific Inquiry & Application** – Collaborate with others to gather and compare information.	Students extend investigation by pooling and comparing data sets.
Record scores and organize data	Students write down results after each ride.	**Grade 2: Data Analysis in Science / Grade 3: Scientific Inquiry** – Record and organize observations for analysis.	Recording ensures data is usable for analysis and representation.
Represent data in multiple ways	Students create a grid or chart to display scores.	**Grade 2–3: Scientific Inquiry & Communication** – Display data using charts, tables, or graphs.	Students practice representing the same data in multiple visual formats.
Analyze patterns in results	Students compare scores from different seats/rows and across peers.	**Grade 2: Physical Science (PS) – Motion is a change in position. Grade 3: Scientific Inquiry** – Analyze data to identify simple patterns.	Students consider whether position (seat/row) affects outcomes.
Reflect on fairness	Students discuss whether Kingdom Quest is fair or influenced by seating position.	**Grade 3: Scientific Inquiry & Application** – Use evidence and reasoning to support claims.	Students evaluate fairness using evidence from their collected data.

Student Name: _____

Data Investigation: Is the Game/Ride Fair?

Part 1 – Planning Our Investigation

Our Question: Is the game/ride fair for all players, no matter where they sit or how many times they play?

Prediction:

I think the _____ (seat/side/row) will get the highest score

because _____

Plan Your Test:

- What will you change? (seat, side, row):

_____

- What will you keep the same?:

_____

- What will you measure?:

_____

Part 2 – Collecting Our Data

Player Name	Seat/Row	Try #	Score	Notes (anything unusual?)

Student Name: _____

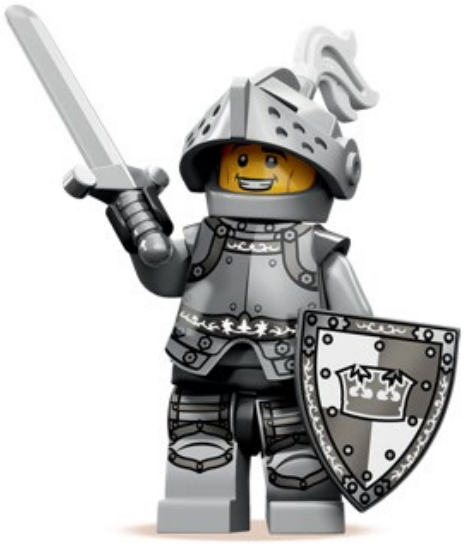
Data Investigation: Is the Game/Ride Fair?

Part 3 – Data Representation & Analysis

Step1 - Organize Your Data: Make a graph (bar, line, or dot plot) to show scores for different seats/rows. Color code if you want to show first rides vs repeat rides. Label your axes **"Ride #"** and **"Scores."**

Step 2 - Math Challenge:

- Which ride had the highest average?
- Which seat/side/row gave the lowest score?
- Did changing sides or rows make a difference?



Data Investigation: Is the Game/Ride Fair?

Part 4 – Evidence & Explanation

1. Was the game/ride fair? Why or why not? Use your data to explain your answer

_____

_____

2. If you could redesign the game to make it fairer, what would you change?

_____

_____

3. How would you test your idea?

_____

_____

Part 5 – Reflection & NGSS Connections

- Analyzing Data: What patterns did you notice in your data?
- Did your prediction match your results? Why or why not?
- What did you learn about how changing variables (seat, side, row) can affect outcomes?

Final Statement: I think the game/ride IS or IS NOT fair because…

_____

_____

TEACHER GUIDE: GRADES 2-3

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.

Challenge

Students must build cars and race them against other students' builds. Students need to observe which cars win the race and critically consider what design features are more prominent in the winning cars. They are then asked to tick which features listed on their worksheet help the cars go faster.

Post Challenge

Students are challenged to review the data from build and test and determine the design features needed for a fast car. They are asked to list the top 5 features. They are then tasked with creating a visual design of the car featuring the five most important design elements.

Ohio Aligned Learning Objectives

- **Forces & Motion (PS)** – Students explore how pushes, pulls, and design features affect speed and direction.
- **Scientific Inquiry** – Collecting, recording, and analyzing race data strengthens observation and reasoning.
- **Engineering Design (ETS)** – Students generate, test, and refine designs based on performance evidence.
- **Patterns & Predictions** – Students identify motion patterns and use them to predict future outcomes.
- **Communication** – Students visually represent design solutions through drawings or models.

TEACHER GUIDE: GRADES 2-3

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.

Ohio Learning Standards for Science (Grades 2-3)

Activity Component	What Students Do	Ohio Science Standards (Grades 2–3)	Alignment Details
Investigate and test car designs	Students build cars, race them, and collect performance data.	**Grade 2: Physical Science (PS) – Changes in Motion**: Forces change the motion of an object.	Students see how pushes/pulls (force) affect car motion and speed.
Analyze and compare results	Students identify which designs perform better/faster.	**Grade 2: Scientific Inquiry & Application**: Record and analyze observations to identify simple patterns.	Students compare race outcomes and detect patterns in winning designs.
Use evidence to explain effectiveness	Students justify which features (wheels, weight, design) work best.	**Grade 3: Physical Science (PS) – Forces & Motion**: Motion can be described in terms of speed and direction.	Students use observed evidence to explain why certain cars move faster/slower.
Select top 5 features for redesign	Students choose design features based on evidence.	**Grade 3: Engineering Design (ETS) – Identify criteria and constraints of solutions.**	Students evaluate design features against performance data and make improvements.
Communicate solutions visually	Students create a car design drawing with top 5 features.	**Grade 2–3: Scientific Inquiry & Communication**: Communicate findings using drawings, models, or graphs.	Students create a visual solution to represent their evidence-based design.
Observe and measure motion	Students measure speed/distance, notice patterns in performance.	**Grade 3: Physical Science (PS)**: Patterns of motion can be used to predict future motion.	Students connect patterns of motion to predict which features will work best.

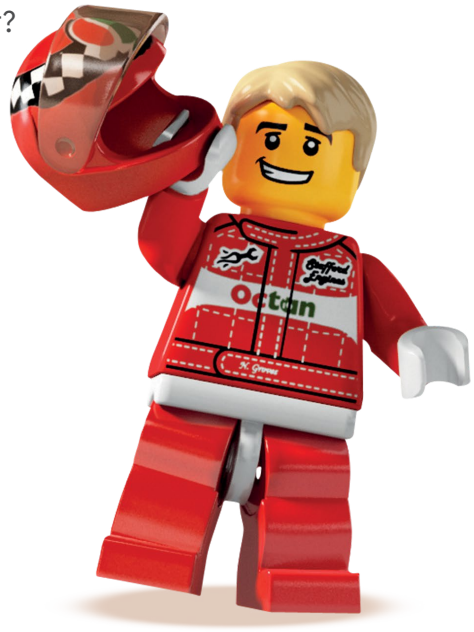
Car Building & Racing Investigation

You will build and race cars to find out which design features make a car go faster. After each race, record your results and look for patterns. Use your data to design a new car with the best features!

Part 1 – Prediction

Question: Which features do you think will make the fastest car?

- ☐ Big wheels
- ☐ Small wheels
- ☐ Long body
- ☐ Short body
- ☐ Low body
- ☐ Tall body
- ☐ Wide body
- ☐ Thin body
- ☐ Dark colored bricks
- ☐ Light colored bricks
- ☐ Windshield
- ☐ No windshield
- ☐ Heavy car
- ☐ Light car



Part 2 – Challenge

Build LEGO® cars and then race them on the ramp. Try and make sure everyone is building different types of cars so you can test which cars are the fastest.

READY, SET GO!

Part 3 – Race Results

Record results below. Tick the features each car had and write the race outcome.

Car #	Wheels (Big/Small)	Weight (Light/Heavy)	Body (Wide/Narrow)	Other Features	Race Result (Win/Lose)
Car 1					
Car 2					
Car 3					
Car 4					

Car Building & Racing Investigation

Part 4 – Finding Patterns

Question: Which patterns do you see? Which features helped cars go faster?

Part 5 – Top 5 Features

List the 5 most important features for making a fast car.

1. _____ 3. _____

2. _____ 4. _____

5. _____

Part 6 – Design Your Car

Draw and label your car design below, showing the 5 features you chose.