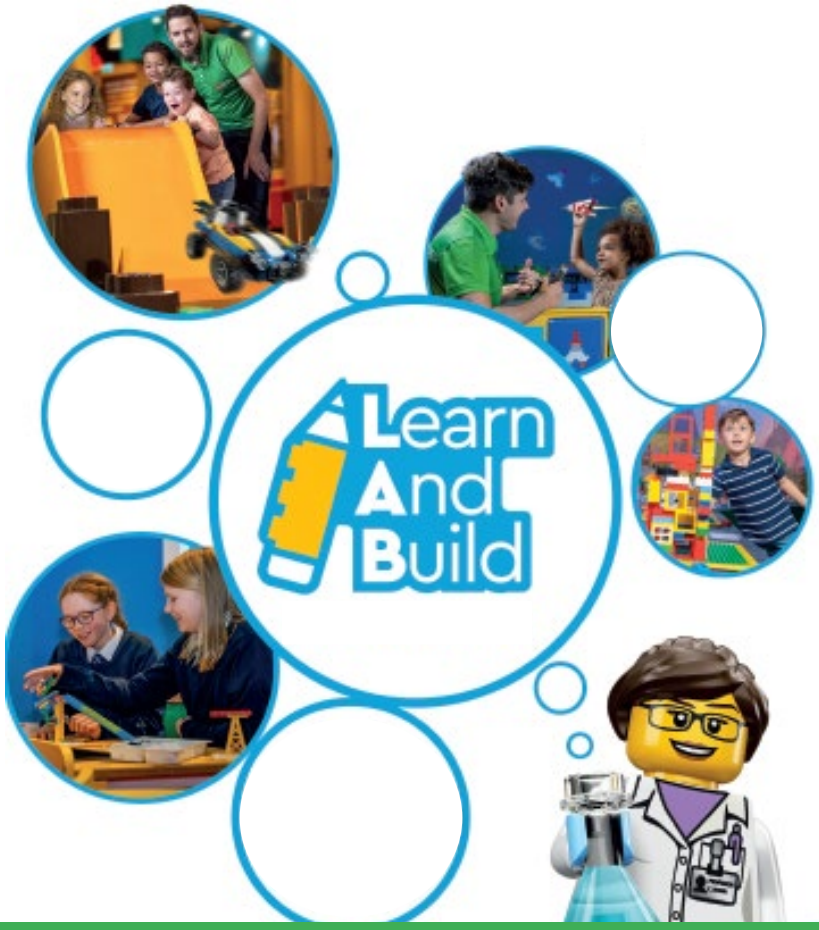
Homeschool Self-Guided Education Packet



TEACHER GUIDE

GRADES 2 – 3

STUDENT SHEETS INCLUDED

LEGO DISCOVERY CENTER

LEGO DISCOVERY CENTER

VISIT GUIDE: GRADE 2-3

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:

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!

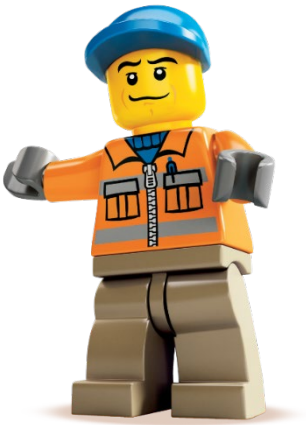
Challenge

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: Falcons football game playing at Mercedes Benz Stadium
- **Find transportation** - Answer: Hartsfield Jackson Airport Plane
- **Find a water feature/fountain** - Answer: Howell Fountain at Atlanta Botanical Garden
- **Find a lake** – Answer: Stone Mountain Lake
- **Find a sculpture** – Answer: Martin Luther King Jr. Memorial
- **Find a fun attraction with a ride** – Answer: Skyview Atlanta Ferris Wheel
- **Find a famous building** – Answer: King and Queen Towers

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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Georgia Standards of Excellence Alignment

Activity Component	What Students Do	Georgia GSE Standard	Alignment Explanation
Landmark Scavenger Hunt	Students search for specific landmarks (stadium, airport, fountain, lake, sculpture, Ferris wheel, towers).	**SS2G2** – Identify and locate major landmarks, symbols, and geographic features; **SS3G1** – Locate major cities and landmarks in the U.S.	Locating landmarks builds geographic knowledge and connects to cultural and civic understanding.
Classifying Landmarks	Students sort each landmark as *natural* (lake) or *human-made* (stadium, Ferris wheel, towers).	**S2L1** – Classify items as natural or human-made materials; **SS2G2** – Distinguish between human and physical features.	Sorting reinforces science skills of classification and social studies skills of distinguishing natural vs. built environments.
Explaining Importance	Students explain why each landmark is important (e.g., cultural, historical, community use).	**SS2H1 / SS3H1** – Describe contributions of historical figures and events; **ELAGSE2W1** – Write opinion pieces with supporting reasons.	Explaining landmark importance develops historical and civic understanding while practicing evidence-based reasoning in writing/speaking.
Selecting Top Landmarks	Students choose five landmarks to include in their "dream MINILAND."	**SS3CG2** – Explain the importance of civic responsibilities; **Mathematical Practice MP4** – Model with mathematics.	Choosing landmarks requires reasoning about value and representation, linking civic choice-making with decision modeling.
Drawing Dream MINILAND	Students create a drawing of their own version of MINILAND featuring chosen landmarks.	**VA2.CR.1 / VA3.CR.1** – Create works of art based on selected themes; **Engineering Design Practice** – Develop and use models.	Drawing integrates creative arts with modeling skills used in design.
Cultural & Historical Reflection	Students reflect on how landmarks represent culture, history, or community needs.	**SS2CG2 / SS3CG2** – Explain government/citizen roles in community and cultural identity.	Reflection links geographic and civic standards, emphasizing how landmarks embody cultural heritage and community identity.

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 lake	
☐ 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?

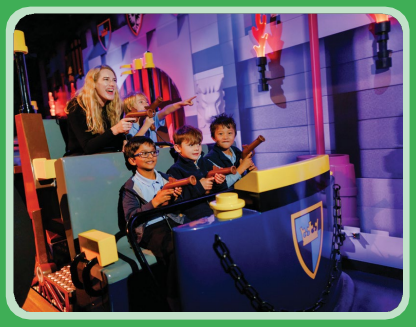
Part 4 – Reflection

- 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.

Georgia Standards of Excellence 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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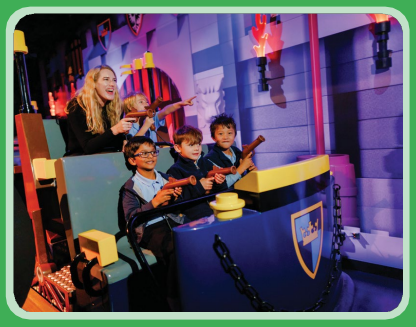


Georgia Standards of Excellence Alignment

Activity Component	What Students Do	Georgia GSE Standard	Alignment Explanation
Ride Trials & Scoring	Students ride up to 4 times, keep track of their individual scores, and compare with others.	**MGSE2.MD.9** – Generate measurement data by making repeated measurements; show the measurements on a line plot.	Repeated rides generate multiple data points (scores). Recording scores across trials provides practice with repeated measurement data collection.
Recording Scores	After each ride, students write down their score and others' scores for comparison.	**MGSE2.MD.10** – Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories.	Students collect and organize categorical data (seat side, row, rider) and record numerical values (scores) for later representation.
Seat/Row Variables	Students ride in different seats (same vs. different row, left vs. right side) and track whether location affects scores.	**Mathematical Practice (MP4 & MP5)** – Model with mathematics; Use appropriate tools strategically.	Students treat seat/row as a variable, compare outcomes, and reason mathematically about whether position influences performance.
Data Representation	Students represent collected scores in different ways (grid, bar graph, pictograph, line plot).	**MGSE2.MD.10** (bar & picture graphs) and **Grade 3 Data Standards** – Represent and interpret data using scaled bar graphs, picture graphs, and line plots.	Students practice multiple methods of representation, reinforcing flexibility in data communication and interpretation.
Peer Comparisons	Students compare their scores with classmates' results to look for trends or differences.	**Grade 3 GSE Data** – Use information presented in scaled graphs to solve one- and two-step "how many more" and "how many less" problems.	Comparing peer results develops skills in analyzing data sets and solving comparison problems based on graphs.
Fairness Reflection	Students reflect on whether the ride was "fair" given differences in seating and score outcomes.	**Mathematical Practice (MP3 & MP6)** – Construct viable arguments and critique the reasoning of others; Attend to precision.	Students reason about fairness by using evidence (scores, seat position data). This links data interpretation to argumentation and critical thinking.

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: _____

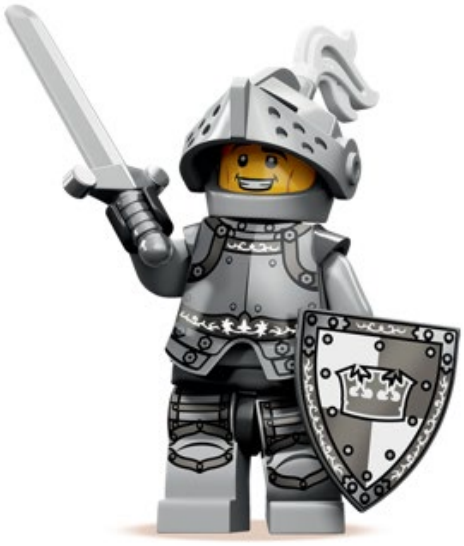
Data Investigation: Is the Game/Ride Fair?

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.

Georgia Standards of Excellence Learning Objectives

- **Plan and conduct investigations** by predicting which design features will make cars go faster, building models, and racing them.
- **Collect and organize data** from multiple trials to compare performance across different car designs.
- **Represent data** on structured worksheets to support reasoning about cause and effect.
- **Analyze results and construct evidence-based arguments** about which design features contribute to faster cars.
- **Recognize patterns** in race outcomes to refine their understanding of structure and function in engineering design.

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.

Georgia Standards of Excellence Alignment

Activity Component	What Students Do	Georgia GSE Standard	Alignment Explanation
Prediction	Students predict which design features (wheels, weight, body shape, etc.) will make their car faster and record their ideas.	**Science GSE S2CS1 / S3CS1** – Students will ask questions and conduct investigations to understand the world.	Making predictions builds inquiry skills by asking testable questions about how design features influence speed.
Building Cars	Students design and construct model cars using available materials.	**Engineering Design (NGSS-aligned, integrated in GSE K–5)** – Develop a simple sketch, drawing, or physical model to illustrate how an object solves a problem.	Designing and building cars aligns with engineering design skills of modeling and problem-solving.
Testing/Racing	Students race their cars on a common track and compare which designs perform better.	**S2CS2 / S3CS2** – Students will use standard tools and procedures to conduct investigations.	Racing is an investigation to test hypotheses and generate evidence about design performance.
Recording Results	Students record outcomes of each race, noting which cars/features performed best.	**MGSE2.MD.10** – Draw a picture graph or bar graph to represent data with up to four categories.	Recording and organizing race results prepares students to represent and interpret data.
Finding Patterns	Students analyze race outcomes to see which features (e.g., large wheels, straight axles) appear most often in winning cars.	**S3CS4** – Students will use ideas of system, model, change, and scale in exploring scientific and technological matters.	Identifying recurring features in winning cars supports the crosscutting concept of *patterns* and analyzing cause/effect.
Selecting Top Features	Students identify the five most important design features for making cars faster.	**S2CS5 / S3CS5** – Students will communicate scientific ideas and activities clearly.	Choosing top features requires using evidence from tests to evaluate design strengths and weaknesses.
Visual Redesign (Drawing)	Students create a drawing of a new car design that includes the top five features.	**Visual Arts GSE VA2.CR.1** – Create works of art based on selected themes; **Engineering Design practice** – Develop and use models.	Drawing is both a creative art standard and a modeling step in the engineering process.
Reflection/Iteration	Students compare predictions to results and consider how to improve their design further.	**Mathematical Practice MP3** – Construct viable arguments and critique the reasoning of others.	Reflecting on evidence and redesigning supports iterative problem-solving and reasoning with evidence.

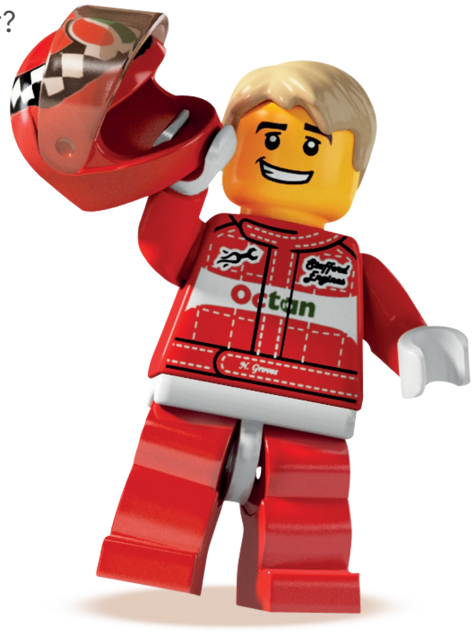
Car Building & Racing Investigation

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.