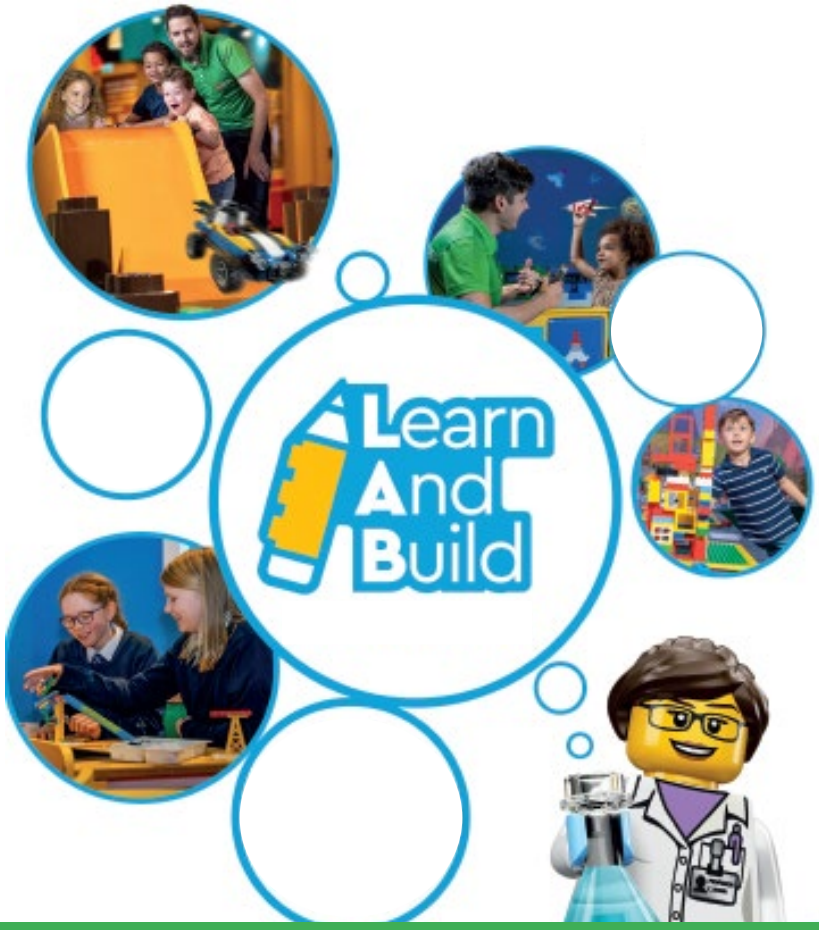
Homeschool Self-Guided Education Packet



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!

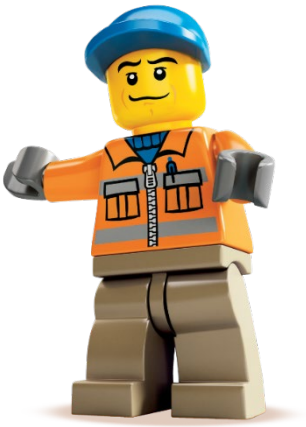
Challenge

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 game** – Answer: Alamo Bowl at Alamodome
- **Find an airport** - Answer: Amtrak Train Station
- **Find a water feature** - Answer: Japanese Tea Garden
- **Find a river** – Answer: San Antonio Riverwalk
- **Find a sculpture** – Answer: World's Largest Cowboy Boots
- **Find a fun attraction/ride** – Answer: Tower of the Americas
- **Find a famous/historic building** – Answer: The Alamo

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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Curriculum Alignment - TEKS Science & Engineering

Activity Component	What Students Do	TEKS Alignment (2nd–3rd Grade)	Alignment Details
Sort landmarks (Natural vs. Human-made)	Students categorize landmarks and explain why each is important.	**Grade 2 – 2.5B**: Identify and classify natural and man-made structures or objects.	Students demonstrate understanding of the difference between natural landforms (lakes, rivers) and human-built features (buildings, fountains).
Select & draw landmarks for dream MINILAND	Students choose 5 landmarks and sketch them.	**Grade 2 – 2.7C / Grade 3 – 3.7C**: Construct simple models or drawings to communicate solutions or concepts.	Drawing landmarks is **modeling a design solution**, reflecting TEKS emphasis on representing ideas visually.
Reflect on cultural, historical, or community significance	Students explain how landmarks represent culture, history, or community needs.	**Grade 3 – 3.5B / 3.7A**: Understand human impact on the environment; explain how communities use structures and resources to meet needs.	Students evaluate how human-built landmarks meet community needs and reflect cultural or historical importance.
Decision-making / design	Students select landmarks based on importance, culture, and history.	**Grade 3 – 3.1B / 3.2B**: Explore design processes to solve problems; identify criteria and constraints.	Students define criteria for their "dream MINILAND" and make design decisions consistent with TEKS engineering/design expectations.

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 game	.....
☐ An airport	.....
☐ A water feature	.....
☐ 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?

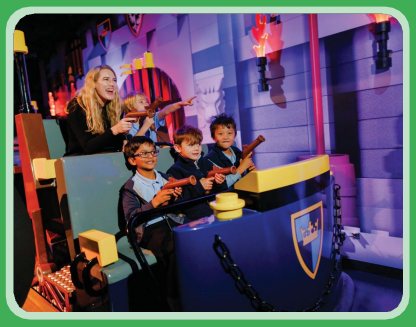
Part 4 – Reflection

- 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.

Aligned Learning Objectives

- **Scientific Investigation & Inquiry** – Students systematically collect, record, and compare repeated observations.
- **Data Representation** – Students use grids, charts, and tables to display the same data in multiple ways.
- **Analysis & Reasoning** – Students identify patterns, compare results, and make evidence-based claims (e.g., fairness of the ride).
- **Collaboration & Observation** – Gathering data from peers fosters communication and comparison, supporting teamwork skills.
- **Critical Thinking** – Students reflect on factors influencing outcomes, variability, and fairness, connecting data to reasoning and evidence.

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!

Curriculum Alignment - TEKS Science & Engineering

Activity Component	What Students Do	TEKS Standard(s) Alignment	Alignment Details
Ride multiple times to collect data	Students ride 4 times in different seats/rows, recording their scores each time.	**Grade 2: 2.5B / 2.6A / 2.7C** – Plan and conduct simple investigations; collect data; use tools to record information.	Students systematically record repeated observations, practicing scientific data collection.
Record others' scores	Students ask peers for scores and record them.	**Grade 2: 2.5B / 2.6A / 2.7C** – Collaborate to gather and organize data from multiple sources.	Encourages collaborative data collection and comparison.
Represent data in multiple ways	Students explore grids, charts, and tables to display scores.	**Grade 2: 2.9A / 2.9B / Grade 3: 3.9A / 3.9B** – Organize and display data using tables, charts, and graphs.	Students learn to represent data in different visual formats, supporting TEKS data literacy skills.
Analyze & reflect on fairness	Students consider whether seat location affects performance and whether the ride is fair.	**Grade 2: 2.6B / 2.7C / Grade 3: 3.6B / 3.7C** – Analyze data to identify patterns, trends, and relationships; make evidence-based conclusions.	Students identify patterns and variability, and justify conclusions about fairness.
Compare repeated measures	Students compare scores across rides, seats, and rows.	**Grade 2: 2.6B / 2.7C / Grade 3: 3.6B / 3.7C** – Compare results from multiple trials to evaluate outcomes.	Supports understanding of variability, multiple trials, and influences on outcomes.

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: _____

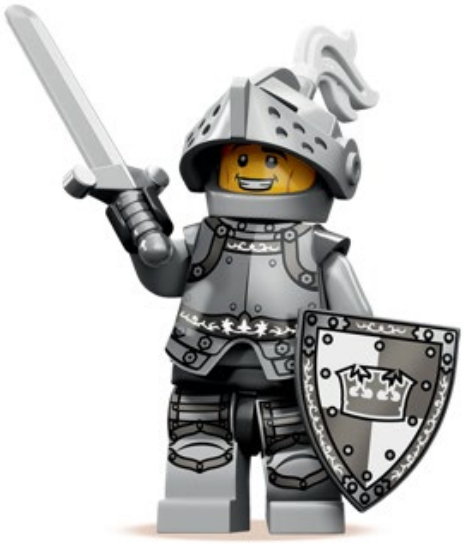
Data Investigation: Is the Game/Ride Fair?

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.

Aligned Learning Objectives

- **Engineering Design (ETS)** – Planning, testing, analyzing, and refining car designs based on evidence.
- **Physical Science (PS2 & PS1)** – Observing and measuring motion; understanding forces and material properties.
- **Data Analysis & Communication** – Comparing results, identifying patterns, and visually communicating solutions.
- **Critical Thinking** – Selecting top features based on evidence and refining designs for improved performance.

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.

Curriculum Alignment - TEKS Science & Engineering

Activity Component	What Students Do	TEKS Standard(s) Alignment	Alignment Details
Investigate and test car designs	Students build cars and race them, collecting performance data.	**Grade 2: 2.5B / 2.7C** – Plan and conduct simple investigations; use tools to collect data. **Grade 3: 3.5B / 3.7C** – Plan and conduct investigations to explore motion and forces.	Students apply scientific inquiry and engineering practices to test how cars move under different conditions.
Analyze and compare results	Students identify patterns in which design features make cars faster or slower.	**Grade 2: 2.6A / 2.7C** – Record, analyze, and interpret data to identify trends. **Grade 3: 3.6A / 3.7C** – Analyze data to identify patterns and relationships.	Students examine collected data to recognize patterns affecting motion and performance.
Use evidence to explain effectiveness	Students determine the top 5 features for future car designs.	**Grade 2: 2.6B / 2.7C** – Draw conclusions based on evidence from investigations. **Grade 3: 3.6B / 3.7C** – Use evidence to support explanations and decisions.	Students justify their selection of key design features using evidence from testing.
Communicate solutions visually	Students create a visual design of a car including the top 5 features.	**Grade 2: 2.7C / 2.8A** – Represent solutions with drawings or models. **Grade 3: 3.7C / 3.8A** – Use models, drawings, or diagrams to communicate solutions.	Students visually communicate their design, demonstrating understanding of engineering solutions.
Observe motion and patterns	Students measure speed, distance, or motion of cars to predict performance.	**Grade 3: 3.5B / 3.6A / 3.7C** – Investigate forces and motion; identify patterns to predict outcomes.	Students connect observations of motion to underlying forces and use patterns to make predictions.

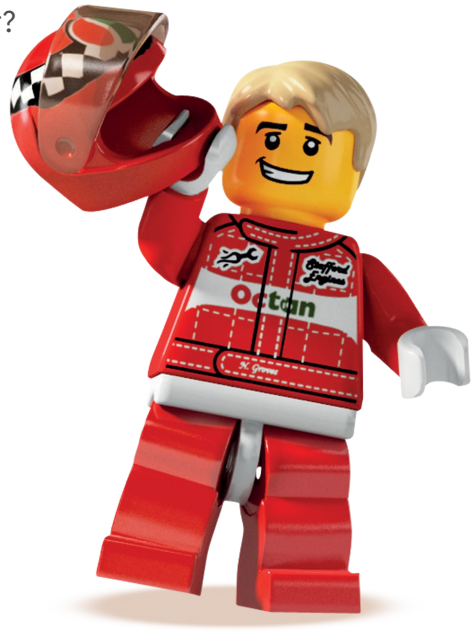
Car Building & Racing Investigation

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.