Homeschool Self-Guided Education Packet

Learn
And
Build

LEGOLAND® Discovery Centre
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.

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: Toronto Maple Leafs at Scotia Bank Arena
- **Find an airport** - Answer: YYZ (Toronto Pearson International Airport
- **Find a water feature/fountain** - Answer: Niagara Falls
- **Find a lake** – Answer: Ontario
- **Find a sculpture** – Answer: Toronto Sign
- **Find a fun attraction with a ride** – Answer: The CNE (The Canadian National Exhibition)
- **Find an iconic building** – Answer: CN Toronto

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.

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Ontario Curriculum Alignment (Grades 2 -3)

Activity Component	What Students Do	Ontario Curriculum Alignment (Grades 2–3)	Alignment Details
Sort landmarks (Natural vs. Human-made)	Students categorize landmarks and explain why each is important.	**Science & Technology – Understanding Structures and Mechanisms (Grade 2–3)**: Identify and describe natural and constructed objects and their purposes.	Students classify landmarks into natural and human-made, developing understanding of the built and natural environment.
Select & draw landmarks for dream MINILAND	Students choose 5 landmarks and sketch them.	**The Arts / Visual Arts (Grades 2–3)**: Create representations of ideas and objects using drawing and other media; **Science & Technology**: Use models to explore concepts.	Sketching landmarks represents a **model of a design solution**, connecting visual arts with modeling practices.
Reflect on cultural, historical, or community significance	Students explain how landmarks represent culture, history, or community needs.	**Social Studies – Heritage and Identity (Grades 2–3)**: Understand local communities, landmarks, and their significance.	Students connect landmarks to culture, history, and community roles, reflecting Ontario's focus on **community and heritage awareness**.
Decision-making / design	Students select landmarks based on importance, culture, and history.	**Science & Technology – Engineering Principles (Grades 2–3)**: Plan and construct objects with criteria in mind.	Students define design criteria (fun, historical, cultural) and make decisions, reflecting Ontario standards for **engineering/design thinking**.

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 lake	....
☐ A sculpture	....
☐ A fun attraction or ride	....
☐ A famous/iconic 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	

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?
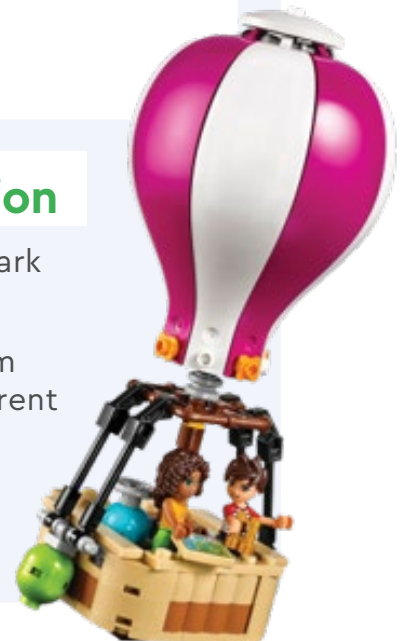
LEGO® Kingdom Quest

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.

LEGO® Kingdom Quest

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Ontario Curriculum-Aligned Learning Objectives

- **Collecting Scores** Students record their own and classmates' scores → aligns with D1.1 (Grade 2 and 3).
- **Representing Data in Multiple Ways** Tables, grids, bar graphs, pictographs, line plots → aligns with D1.1, D1.2 (Grade 2 and 3).
- **Interpreting and Comparing Results** Identifying highest/lowest scores, comparing left vs. right side, row differences → aligns with D1.3 (both grades).
- **Asking and Answering Questions About Data** "Which side is better?" "Who got the highest score?" "Was it fair?" → aligns with D1.4 (Grade 2 and 3).
- **Thinking About Fairness (Early Critical Thinking)** Students reflect if the ride was fair and give reasons → aligns with D1.3 (Grade 2) and D1.5 (Grade 3).

Ontario Curriculum Standards Addressed

- **Grade 2:**
  - **D1.1** Collect and organize categorical or discrete primary data and display the data using tally charts, concrete graphs, pictographs, line plots, and bar graphs.
  - **D1.2** – Read and describe primary data presented in charts and graphs.
  - **D1.3** – Interpret data to draw conclusions, and make simple inferences.
  - **D1.4** – Pose and answer questions about data.
- **Grade 3:**
  - **D1.1** Collect and organize primary data that is categorical or discrete, and display the data using charts and tables.
  - **D1.2** – Represent data using bar graphs, pictographs, and line plots, including choosing appropriate scales.
  - **D1.3** – Read and interpret data in charts, tables, and graphs, and describe the data using comparative language (e.g., more than, fewer than, about the same as).
  - **D1.4** – Pose and answer questions about collected data and explain conclusions.
  - **D1.5** – Demonstrate an understanding of how data can be used to support an argument.

<u>Data Investigation:</u> Is the Game/Ride Fair?

Part 1 – Collecting Our Data

You will ride Kingdom Quest up to 4 times.

After each ride:

1. Write down your score.
2. Ask 2 other riders what their scores were.
3. Record the scores in the table below.

Ride #	Seat Location (left/right/row)	My Score	Friend 1	Friend 2
1				
2				
3				
4				

Data Investigation: Is the Game/Ride Fair?

Part 2 – Organize Data

Choose one way to show your data:

- Make a tally chart
- Draw a pictograph (each symbol = 10 points)
- Make a bar graph

Data Investigation: Is the Game/Ride Fair?

Part 3 – Comparing Results

Answer the questions:

1. Which ride gave you your highest score? **Ride#:_____ Score**:_____
2. Which ride gave you your lowest score? **Ride#:_____ Score**:_____
3. Did you get a better score on the **left side or the right side** of the ride?

   _____
4. Who in your group got the highest score overall? _____

Part 4 – Thinking About Fairness

Do you think everyone had the same chance to get a high score?

Yes / No. Why?:_____

_____

What could make the ride fairer? _____

_____

Part 5 – Reflection – "I Can" Statements

Check off what you learned today:

❏ I can collect and record data.
❏ I can show data in a chart or graph.
❏ I can compare data and find patterns.
❏ I can explain if something is fair or unfair.

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.

Ontario Curriculum-Aligned Learning Objectives

- **Scientific Inquiry & Investigation** – Students plan and conduct experiments, collect and analyze data.
- **Engineering & Design** – Students generate, test, and refine designs based on observed performance.
- **Material Properties & Forces** – Students explore how materials and design choices affect motion and speed.
- **Data Analysis & Evidence-Based Reasoning** – Students interpret performance patterns and justify design decisions.
- **Communication & Visual Representation** – Students create drawings/models to share design solutions.

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Ontario Curriculum Alignment (Grades 2 -3)

Activity Component	What Students Do	Ontario Curriculum Alignment (Grades 2–3)	Alignment Details
Investigate and test car designs	Students build cars and race them, collecting performance data.	**Science & Technology – Understanding Structures and Mechanisms / Materials (Grades 2–3)**: Plan and conduct investigations to test objects and explore material properties.	Students explore material properties and design performance, applying inquiry and testing skills.
Analyze and compare results	Students identify patterns in which design features make cars faster or slower.	**Science & Technology – Understanding Materials & Forces (Grades 2–3)**: Record, analyze, and interpret data to determine relationships between features and outcomes.	Students analyze performance data to recognize patterns, supporting evidence-based reasoning.
Use evidence to explain effectiveness	Students determine the top 5 features for future car designs.	**Science & Technology – Problem Solving & Decision Making (Grades 2–3)**: Evaluate solutions based on evidence and decide on improvements.	Students justify their choices of key design features using data collected from tests.
Communicate solutions visually	Students create a visual design of a car including the top 5 features.	**The Arts / Visual Arts & Science & Technology (Grades 2–3)**: Use drawings, models, or diagrams to communicate ideas and solutions.	Students represent their design solutions visually, integrating engineering thinking and creative expression.
Observe motion and predict outcomes	Students measure speed, distance, or motion of cars to identify patterns.	**Science & Technology – Forces and Motion (Grades 3)**: Make observations and measurements to identify patterns and predict outcomes.	Students connect observations of motion and force to design decisions, supporting predictive reasoning and understanding of physical concepts.

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					

LEGO® Build & Test

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.