

Museum on the Move!



Design • Build • Create

Design a Car Activity

Engineer • Test • Discover!



Welcome, Junior Engineer!

Today, you will build a car.

- Your car will roll as far as it can.
- You will change your design and test it again.
- You will discover which design travels the farthest.

Remember! Before you touch the materials, read the challenge sign.

Before You Begin make a prediction below.

What do you think makes a car travel far?

- ☐ Big wheels
- ☐ Small wheels
- ☐ A light car
- ☐ A heavy car
- ☐ A smooth shape
- ☐ I'm not sure yet!

I think the best car design will have:

Build and Test

Follow the steps at the station.

- Build your car.
- Test your car.
- Make an improvement.

Test your car again.

Test Track Data Chart

Test #	Distance Traveled
1	
2	
3	

Which car traveled the farthest?

Why do you think it worked the best?

Draw Your Best Design

Circuit Exhibit

Become an Electronics Technician!



Snap into Electricity!

Today, you will work like an electronics technician.

- Electronics technicians build, test, and repair circuits.
- Circuits help power many things we use every day.

Remember! Before you touch the materials, read the challenge sign.

Then make a prediction below.

Before You Begin

What do you think will happen when the circuit is a complete loop?

Safety First! Be sure to follow your teacher's safety rules.

Electronics technicians always work safely.

Build and Test Your Circuit

Follow the steps at the station.

Build your circuit.

Try to:

- Turn on two lights.
- Make a fan spin.
- Make other items work.

Test your circuit to see if it works.

Think Like a Technician

Sometimes a circuit does not work the first time

.

That is okay!

Use the checklist to find the problem.

Troubleshooting Checklist

- ☐ Is the battery connected correctly?
- ☐ Are all the wires attached?
- ☐ Is the circuit a complete loop?
- ☐ Is the bulb connected correctly?
- ☐ Is the switch closed?

Draw Your Circuit

Draw a circuit that powered at least one item.

Wind Tunnel Exhibit

Become an Wind Test Specialist!



Welcome to the Wind Lab!

Today, you will work like a real Wind Test Specialist. Wind Test Specialists study how objects move through air.

You will build and test an object.

Remember! Before you touch the materials, read the challenge sign and follow the steps at the station.

Build an object that you think will move well in the wind.
Before You Test in the Wind Tunnel, Think Like a Technician

What do you think will happen?

- Will your design stay balanced?
YES / NO / MAYBE
- Will your design move quickly?
YES / NO / MAYBE
- Will your design spin or wobble?
YES / NO / MAYBE
- Will your design stay strong in the wind?
YES / NO / MAYBE

Investigation: Wind Tunnel Testing

Build your object.

Complete Test #1.

Record your results.

Data Collection

Test	How high did it go?	What happened?
1	_____	_____
2	_____	_____

Look at your results.

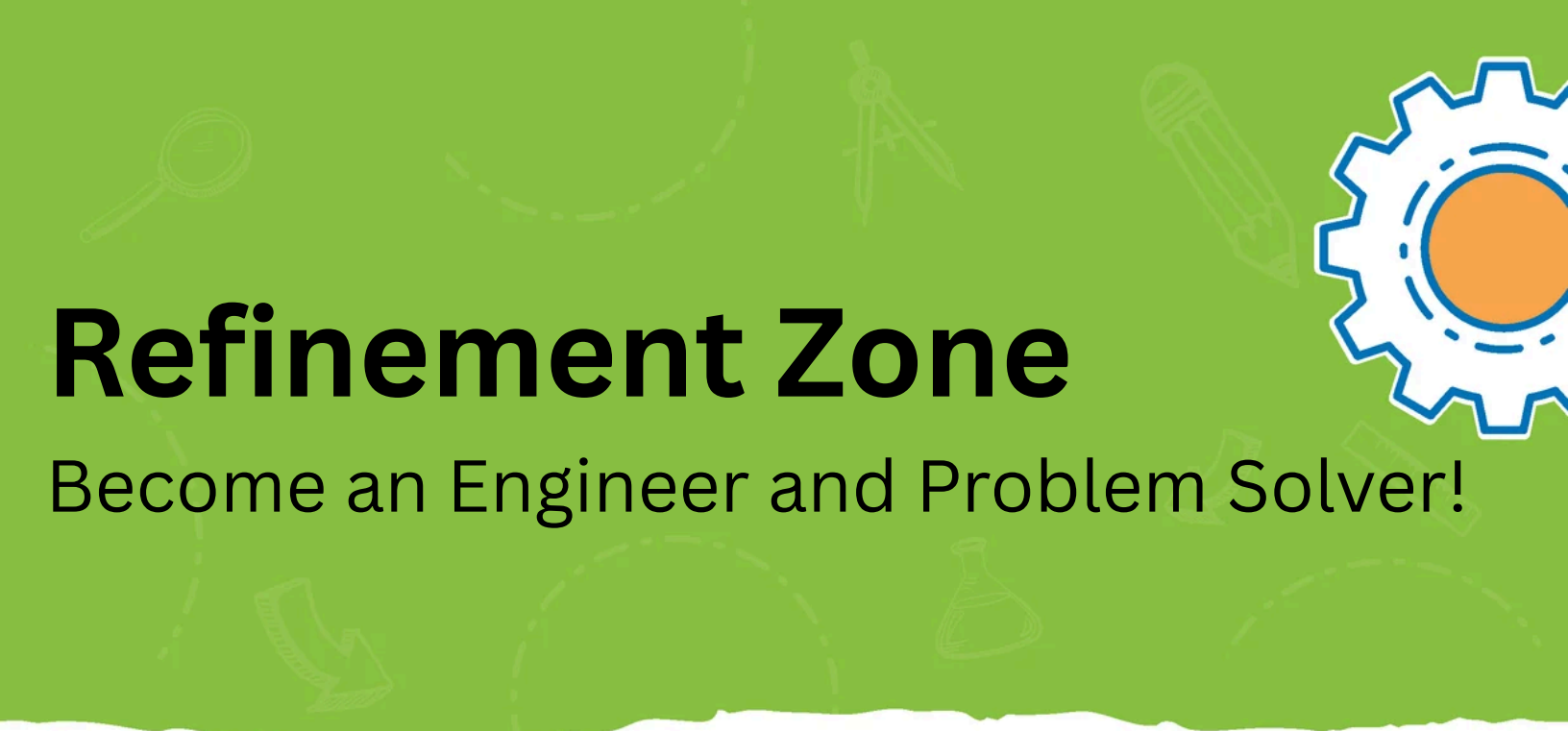
What could you change?

Improve Your Design and Test Again!

Real technicians improve designs many times.

Which design worked best?

Draw Your Improved Invention.



Refinement Zone

Become an Engineer and Problem Solver!

Welcome to the Refinement Zone!

Your job is to design, test, and improve a vehicle prototype.

A **prototype** is a model of a product.

You will:

- Create ideas.
- Compare designs.
- Find problems.
- Make changes.
- Improve your design.

Remember! Before you touch the materials, read the challenge sign.

Build Your Prototype

Follow the **prompt card** and the steps at the station.

Your Mission

Can you design a car that solves a problem?

1. Pick a prompt card.
2. Read your challenge.
3. Design a car with the magnetic car pieces.
4. Measure the length of your car.
5. Weigh your car.

Prototype A Measurements:

Length:_____ Weight:_____

Look at your prompt card to check the specifications

Did your design meet the requirements?

YES ☐ NO ☐

What problems do you notice?

Improve your design to make Prototype B

Measurements

Length:_____ Weight:_____

Look at your prompt card to check the specifications

Did your design meet the requirements?

YES ☐ NO ☐

Sketch the prototype that met the requirements the best

Tiny Technology

Today you are a Materials Engineer!



Welcome to Tiny Technology!

Today, you are a materials engineer and a problem-solver.

You will build a model of a **silicon crystal**.

A silicon crystal is the foundation of computer chips.

Real semiconductor professionals work with tiny structures.

They look for patterns and make careful connections.

Remember! Before you touch the materials:

- Read the challenge sign.
- Look at the **reference image card**.
- Follow the reference image card and the station steps.
- Build and analyze your crystal.

While Building Your Crystal Ask yourself:

Does my structure follow the pattern?

YES ☐ NO ☐

Are all the connections complete?

YES ☐ NO ☐

What shapes repeat throughout the crystal?

How is my structure like or different from the reference image?

What changes could make my structure stronger or more accurate?

Real semiconductor professionals use careful observation, testing, and precision.

They use these skills to build technology.

Their work helps make better and more reliable computer chips!

Quality Control

Today you are a Quality Control Technician!



Welcome to the Quality Control Challenge!

Your job is to inspect machine parts.

You will look for problems.

You will sort parts into two groups:

GOOD and **BAD**

Quality Control professionals use tools to measure parts.

They follow inspection procedures.

They use evidence to make decisions.

Remember! Before you touch the materials:

1. Read the challenge sign.
2. Look at the Go / No-Go gauge.
3. Make a prediction.

Follow the **prompt card** and station steps.

Activity 1

After you finish Activity 1, answer these questions.

1. How many parts ended up in the red area?
2. How many parts ended up in the green area?

Activity 2

After you finish Activity 2, answer these questions.

1. What is the length of the part?
2. How does it compare to the standard size?
3. Use the Go / No-Go gauge. Was your part Good or Bad?

Real Quality Control Technicians inspect many parts each day.

They look for problems and work with a team to make parts better

Their careful work helps make products safe and reliable. They also help to reduce waste.