

# Final Swing Prediction

1. Make one change to the middle swing based on your investigation. What will you change?
2. The same child starts swinging on the middle swing again. Explain patterns you would see in the child's motion.
3. Predict how their swinging will be the same as and different from the video.
  - a. How it will be the same:
  - b. How it will be different:
4. What patterns support your prediction?

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Lesson 7 Notebook Sheet

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Lesson 8 Notebook Sheet

# Classroom Trash Can

List and describe the objects in the trash can.

Object from trash	Object description

# Why Does the Paper Clip Move?

Why does a paper clip start to move toward a magnet? Draw a diagram to help explain.

Lesson 10 Notebook Sheet

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Lesson 11 Notebook Sheet

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## My Ideas about the Trash Problem

Our school trash needs to be sorted. Different types of objects need to go to different places. What two things should we separate from the trash? How could we use forces to pick up and move the objects? Use patterns in data as evidence.

Object or material to remove from trash	How can a tool use a force to pick it up?



# Recycling Facts

Material	Recycling facts
Aluminum	
Glass	
Paper	
Plastic	
Steel	

# What Sticks to a Magnet?

Circle yes or no in the table for each object.

Object	Prediction	Results
Aluminum foil	yes    no	yes    no
Mini washer	yes    no	yes    no
Paper	yes    no	yes    no
Paper clip	yes    no	yes    no
Plastic bead	yes    no	yes    no
Rubber band	yes    no	yes    no
String	yes    no	yes    no
US dime	yes    no	yes    no
US nickel	yes    no	yes    no
US penny	yes    no	yes    no
Washer	yes    no	yes    no
Wood ball	yes    no	yes    no

# Magnets at a Distance

Type of Magnet	Does it attract a paper clip?	Magnetic Force Strength Test (cm)	
Cow magnet	Y    N	Touch _____	Release _____
Electromagnet	Y    N	Touch _____	Release _____
Horseshoe magnet	Y    N	Touch _____	Release _____
Large bar magnet	Y    N	Touch _____	Release _____
Ring magnet	Y    N	Touch _____	Release _____
Small bar magnet	Y    N	Touch _____	Release _____

## Magnets at a Distance

1. How are the magnets you tested alike? How are they different?

Alike

Different

2. You moved a magnet close to a stationary magnet. What happened? Include force diagrams in your answer.

3. You need to define solution goals for the trash problem. Investigating forces might help. Ask a testable question about an effect of a force that acts on a piece of trash without touching the trash.

# Static Electric Force Effects

## Predict

How **will** a static electric force affect each object in the Model Trash?

Aluminum foil	
Mini washer	
Paper	
Paper clip	
Plastic bead	
Rubber band	
String	
US dime	
US nickel	
US penny	
Washer	
Wood ball	

## Record

How **did** a static electric force affect each object in the Model Trash?

Aluminum foil	
Mini washer	
Paper	
Paper clip	
Plastic bead	
Rubber band	
String	
US dime	
US nickel	
US penny	
Washer	
Wood ball	

# Our Trash-Sorting Solution Proposal

1. What are the steps of a solution process?

2. Explain a tool that applies a force as part of the process.