

## Introduction

In this Grade 6 lesson, students investigate a variety of materials by applying tension, compression, shearing and torsion. As a result, students observe how materials respond when a force is applied and removed. Through hands-on testing and reflection, students learn to differentiate between temporary (elastic) and permanent (plastic) changes in objects.

This activity is designed to help cover the 2st KUSP of grade 6 in the Energy Organizing idea.

### KNOWLEDGE

Plasticity is a property that leads to permanent changes in an object's shape; e.g., bending a paper clip.

Elasticity is a property that enables temporary changes in an object's shape; e.g., stretching a rubber band.

### UNDERSTANDING

Changes in an object's shape depend on its properties.

### SKILLS & PROCEDURES

Differentiate between temporary and permanent changes.

Test the plasticity and elasticity of objects.



## Lesson Resources

- [Slide document](#) is available in [Canva](#) or as google slides
- [Student Handout](#)

## Added Materials Needed

- Print off Student Handout
- Paperclip
- Rubber band
- Rubber band
- Sponge
- Modeling clay or plasticine
- Aluminum foil strip
- Pipe cleaner or soft wire
- Ruler
- Small weights or books

## Learning Path:

1. **Open and save all the resources.**
2. **Suggested Anticipatory Set:**
  - Once class is settled, open up slides or canva document and pass around a paperclip and a rubber band. Discuss how kids would describe them.
  - Coach students do describe them as temporarily changed or permanently changed
3. **Complete Slides or Canva document**
4. **Lab**
  - Prep lab having materials around room and students rotate, or group students into pods and have all that materials at each pod
  - Read Question
  - Encourage students to make a prediction and fill out hypothesis
  - Read materials - ensure all materials are present.
  - Read through procedure, results, analysis and conclusion with students
  - Have students begin!
  - Once everyone is complete, go through key with students (provided on next page)



# Teacher's Answer Key

## Learning Goal

- Students should demonstrate understanding that:
- Elastic materials return to their original shape (temporary change)
- Plastic materials keep their new shape (permanent change)

Object Tested	Force Applied	Expected Observation After Release	Change Type	Property
Rubber band	Tension	Returns to original length	Temporary	Elastic
Sponge	Compression	Returns to original shape	Temporary	Elastic
Modeling clay	Tension/ Compression	Keeps new shape	Permanent	Plastic
Aluminum foil	Shearing/ Torsion	Stays bent	Permanent	Plastic
Pipe cleaner / wire	Shearing/ Torsion	Stays bent	Permanent	Plastic

## Analysis:

### 1. Which objects showed elasticity?

Rubber band, sponge

### 2. Which objects showed plasticity?

Modeling clay, aluminum foil, pipe cleaner

## Conclusion:

A temporary change can be reversed because the object returns to its original shape, while a permanent change cannot.