

Teacher's Guide

Balanced and Unbalanced Forces Station Activities

Students will:

- complete simple experiments that model and explore the effects of balanced and unbalanced forces acting on objects with a focus on friction, gravity, and magnetism.

To begin these stations, you will need 6 stations throughout the room; however, there will technically be three because you'll have two of the same thing. You will need a gravity station (2), a friction station (2), and a magnetism station (2). In this way, your groups will be smaller.

Teacher Tips:

- Make sure the instructions are laid out at each station so students will know how to complete the station.
- Be sure to tell students to follow the directions as given and discuss safety precautions.
- Setting a timer for each station is recommended so that students can use their time wisely. They will be exploring three stations.
- Group roles can also be assigned.

You will need the station directions at each station. In addition, each student will need the student sheets for all three stations.

Station 1: Students will explore the force of gravity and how air resistance comes into play. You will need a pen or pencil, a coin, and a loose, unfolded piece of paper for this experiment.

Station 2: Students will explore the force of friction and how it can be helpful and harmful for achieving goals. You will need 5 books and 5 round pencils for this experiment. You will also need a jar with a lid and liquid soap.

Station 3: Students will explore the force of magnetism. This is a free-inquiry approach. You will need materials such as bar magnets (labeled N and S), cotton balls, nails, paper clips, coins, rocks, and key for this experiment.

Before or after completing these activities, students can learn about gravity, friction, and magnetism from this [lesson](#).

Station One

Station One

You will need:

- a pen or pencil
- a coin
- a loose, unfolded piece of paper

1. Hold the pen/pencil and coin, at above a surface with one in each hand.
2. Let go of them at the same time.
3. Observe and note if they hit the ground simultaneously or if one reached the ground before the other. Repeat the experiment several times to make sure the results are consistent.
4. Repeat this process with the pen/pencil and paper. Then repeat this with the coin and paper.
5. Answer the questions on your student sheet.

Name _____

Date _____

Station One

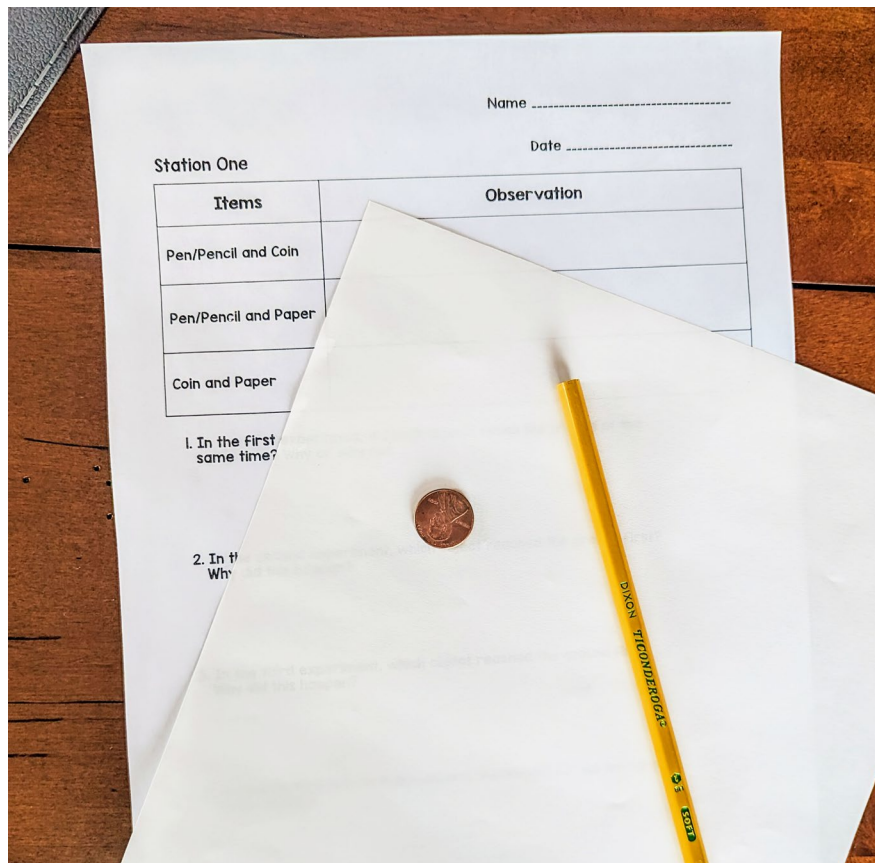
Items	Observation
Pen/Pencil and Coin	
Pen/Pencil and Paper	
Coin and Paper	

1. In the first experiment, did both objects reach the ground at the same time? Why or why not?
2. In the second experiment, which object reached the ground first? Why did this happen?
3. In the third experiment, which object reached the ground first? Why did this happen?
4. Give examples of both balanced and unbalanced forces acting on these objects.

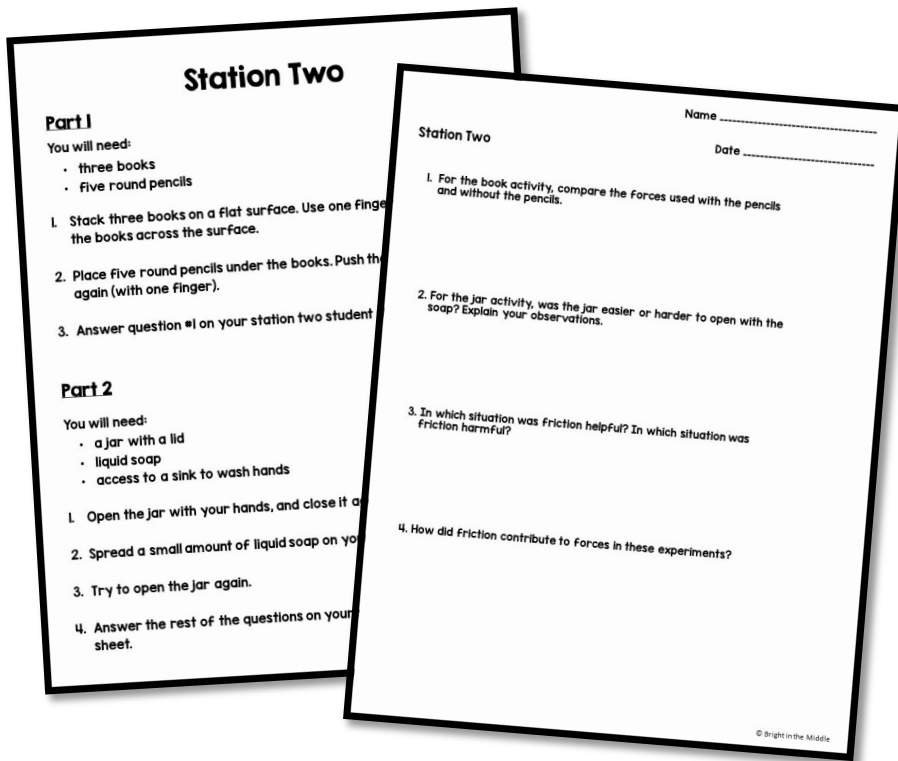
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Included:

- station directions
- student sheet
- student answer key

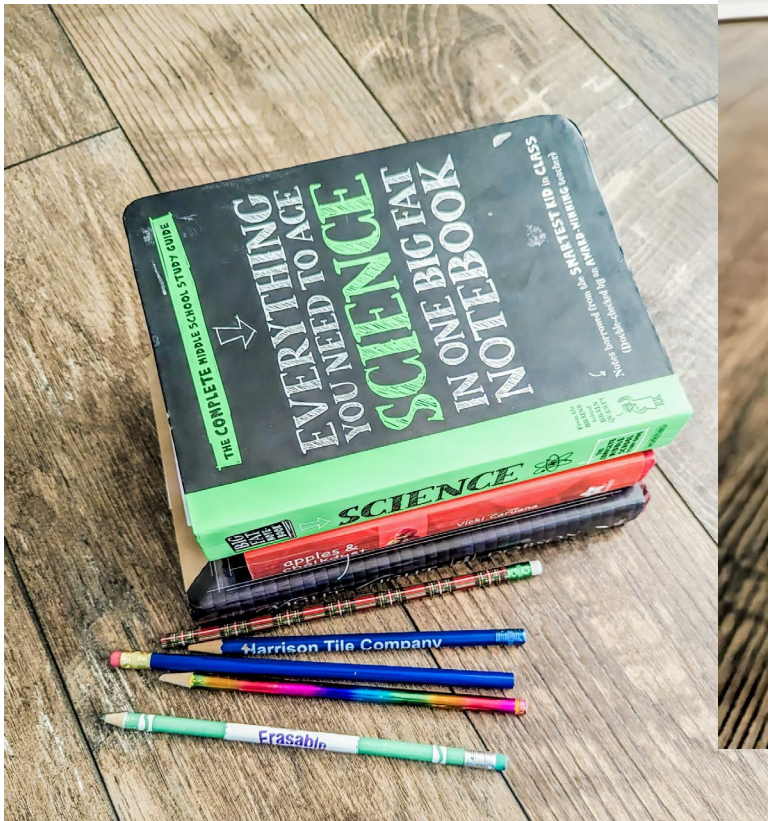


Station Two



Included:

- station directions
- student sheet
- student answer key



Station Three

Station Three

You will need:

- bar magnets (labeled north and south)
- cotton balls
- nails
- keys
- coins
- paperclips
- rocks

In this station, you will explore the materials magnets to see how they interact with

Try different orientations and positions to see any changes in their magnetic attraction

Also, test how the bar magnets interact with

After you have explored, record your observations and answer the questions on the station three

Name

Date

Station Three

Record your experiments and observations below.

1. How did the magnets affect the motion of the objects?

2. What instances of balanced or unbalanced forces did you observe?

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- student sheet
- student answer key

