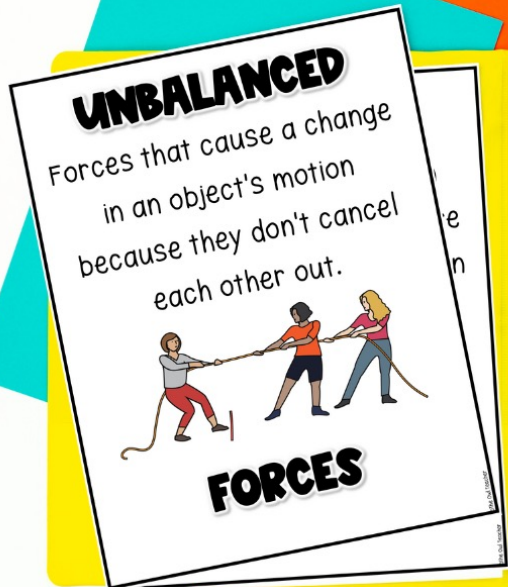


# FORCE AND MOTION SCIENCE CENTERS

## FORCE & MOTION



**STATION 1** *Balanced & Unbalanced Forces*

Follow the directions at the station, then complete the following.

1. Looking at the soda bottle with the paper cup on it, what do you observe?
2. Are there any forces acting on the bottle, tissue, and/or cup? If so, explain.
3. Do you believe the bottle, tissue, and cup have balanced forces or unbalanced forces right now? Explain how you know.
4. Squeeze the center of the bottle really hard. Write what you observed below.
5. When you squeezed the bottle, what forces were acting on the bottle, tissue, and/or cup? Explain.
6. When you squeezed the bottle, tissue, and cup, did it have balanced forces or unbalanced forces? Explain how you know.
7. Does the bottle have balanced or unbalanced forces now that you are done squeezing the bottle? Explain how you know.

HELP YOUR UPPER ELEMENTARY STUDENTS INVESTIGATE BOTH CONTACT AND NONCONTACT FORCES WITH THESE PHYSICAL SCIENCE CENTERS! STUDENTS WILL EXPLORE BALANCED AND UNBALANCED FORCES, PUSHES AND PULLS, UNDERSTANDING MOTION, PATTERNS IN MOTION, HOW FORCE AND MOTION WORK TOGETHER, AND NONCONTACT FORCES SUCH AS STATIC FORCES, MAGNETIC FORCES, AND GRAVITATIONAL FORCES.

## SCIENCE CENTERS

# CONCEPTS COVERED

- ✓ BALANCED AND UNBALANCED FORCES
- ✓ PUSHES AND PULLS AND THE POSITION OF AN OBJECT
- ✓ UNDERSTANDING MOTION – POSITION AND DIRECTION
- ✓ PATTERNS IN MOTION
- ✓ HOW FORCES AND MOTIONS WORK TOGETHER (& STRENGTHS OF FORCES)
- ✓ NONCONTACT FORCE: STATIC FORCES, MAGNETIC FORCES, GRAVITATIONAL FORCE




# WHY YOU AND YOUR STUDENTS WILL LOVE THIS RESOURCE

- ✓ TWO DIFFERENT VERSIONS – ONE SET WITH STATION NUMBERS AND ONE SET WITHOUT STATIONS SO THAT YOU CAN USE AS A WHOLE GROUP INVESTIGATION.
- ✓ A DIGITAL VERSION SO THAT YOU CAN HAVE STUDENTS COMPLETE THE ACTIVITY FROM ANY LOCATION
- ✓ INVESTIGATION QUESTION SHEETS SO THAT STUDENTS ARE THINKING CRITICALLY ABOUT THE INVESTIGATION.

**STATION 1** *Balanced & Unbalanced Forces*



Follow the directions at the station, then complete the following.



1. Looking at the soda bottle with the paper cup on it, what do you observe?  
\_\_\_\_\_  
\_\_\_\_\_
2. Are there any forces acting on the bottle, tissue, and/or cup? If so, explain.  
\_\_\_\_\_  
\_\_\_\_\_
3. Do you believe the bottle, tissue, and cup have forces acting on them now? Explain how you know.  
\_\_\_\_\_  
\_\_\_\_\_
4. Squeeze the center of the bottle really hard. What happens?  
\_\_\_\_\_  
\_\_\_\_\_
5. When you squeezed the bottle, what forces were acting on it? Explain.  
\_\_\_\_\_  
\_\_\_\_\_
6. When you squeezed the bottle, tissue, and cup, what happened? Explain how you know.  
\_\_\_\_\_  
\_\_\_\_\_
7. Does the bottle have balanced or unbalanced forces acting on it? Explain how you know.  
\_\_\_\_\_  
\_\_\_\_\_

**STATION 3** *Understanding Motion*

One egg is an uncooked egg and the other is a boiled egg. We can tell which is which by its motion.


 UNCOOKED EGG	 BOILED EGG
• More difficult to spin	• Easier to spin
• Slowly starts spinning after stops	• Does not spin after it stops




In the eggs above, write if the uncooked egg is egg A or B. Then do the same for the boiled egg.

Egg A Observations:	Egg B Observations:
<small>1st gentle</small> _____ _____	_____ _____
_____ _____	_____ _____
_____ _____	_____ _____
_____ _____	_____ _____


**STATION 2** *Pushes and Pulls*

Follow the directions at the station, then complete the following.



1. When you moved the crayon **back and forth**, what happened? Describe your observation on the lines and then illustrate it in the box. Use arrows to show direction.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  

2. When you moved the crayon **side to side**, what happened? Describe your observation on the lines and then illustrate it in the box. Use arrows to show direction.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  

3. When you moved the crayon **in a circle**, what happened? Describe your observation on the lines and then illustrate it in the box. Use arrows to show direction.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_  

4. What do you notice about the way an object is moved and the direction it moves in? Explain below.  
\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

# WHAT'S INCLUDED


**STATION 4** Patterns in Motion 

Follow the directions at the station, then complete the following.

1. Before placing your marble in the bowl, write below what you think will happen.

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**STATION 5** Force and Motion 

**It's important that you wear your goggles for this station!** Follow the directions at the station, then complete the following.

1. After you lightly flicked the ping pong ball, what did you observe? How far did the ball go and how long did it take?

---

---

3. Place the Styrofoam ball in a different position to - Write your observation below.

---

---

4. Now you will use the ping pong ball in the bowl the s happen? Do you think the size of the ping pong ball

---

---

5. Place the ping pong in the bowl just like you did the observation below.

---

---

6. If you were to place a tennis ball in the bowl, what you have observed? Explain.


---

---

7. How could knowing patterns of motion help us?

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**STATION 6** Noncontact Forces 

Follow the directions at the station, then complete the following.

1. When balloon A was being rubbed on someone's head, what force and motion was occurring?

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2. When balloon A was hovering over the tiny pieces of paper or Styrofoam, what happened? Describe any forces that were involved.

---

---

3. When you shook the balloon and pieces fell off, what forces were involved? Explain.

---

---

4. When you hovered balloon B over the paper clips, what happened? Describe any forces involved.

---

---

5. When you shook balloon B to remove the paper clips, what happened? Explain why.

---

---

second flick compared to the first flick?

---

fect the motion of the ping pong ball?

---

oving toward one another, what do you think will happen?

---

h flicked the ping pong ball toward each other.

---

---

2 SETS (STATION/NO STATION)

DIGITAL VERSION

PRINT & GO INVESTIGATION SHEETS

MATERIALS & ADVANCED PREP GUIDE

ANSWER KEYS



# HAVE YOU SEEN THESE RESOURCES?

## HOW FORCES AFFECT MOTION

The image shows two worksheets for a science center. The top worksheet is titled 'STATION 2 Multiple Forces' and contains instructions for an experiment involving a washer on a desk and a loop of tape. The bottom worksheet is also titled 'STATION 2 Multiple Forces' and contains a table with five columns: 'One person pulls on a loop', 'Both partners pull on his/her loop', 'One pulls hard other pulls lightly', 'One person pulls both loops in opposite directions', and 'No one pulls any loops'. Below the table are three numbered questions for students to answer.

### SCIENCE CENTERS

HOW FORCES AFFECT MOTION  
SCIENCE CENTERS

## FORCE & MOTION

The image displays a collection of lesson plan materials. It includes several worksheets with titles like 'Play the Force Be With You', 'Huff and Puff and Blow Your lungs down', and 'Station 1'. There are also colorful cards with instructions for various activities, such as 'Using the block of wood with nails in it, try taking a nail out with the sheet'. A pair of red scissors and several colored pencils are also shown.

### LESSON PLAN UNIT

FORCE AND MOTION  
LESSON PLAN UNIT

## FORCE & MOTION

The image shows a collection of colorful cards for a sort or center activity. At the top, there are two fishing rods with signs that say 'PUSH' and 'PULL'. Below them are several fish-shaped cards with different actions and objects. For example, one card says 'To move a beach ball', another says 'To move a box forward', and another says 'To yank a weed out of the ground'. The cards are arranged on a blue background.

### SORT OR CENTER

FORCE AND MOTION  
SORT OR CRAFTIVITY

CLICK ON ITS IMAGE TO CHECK THEM OUT!