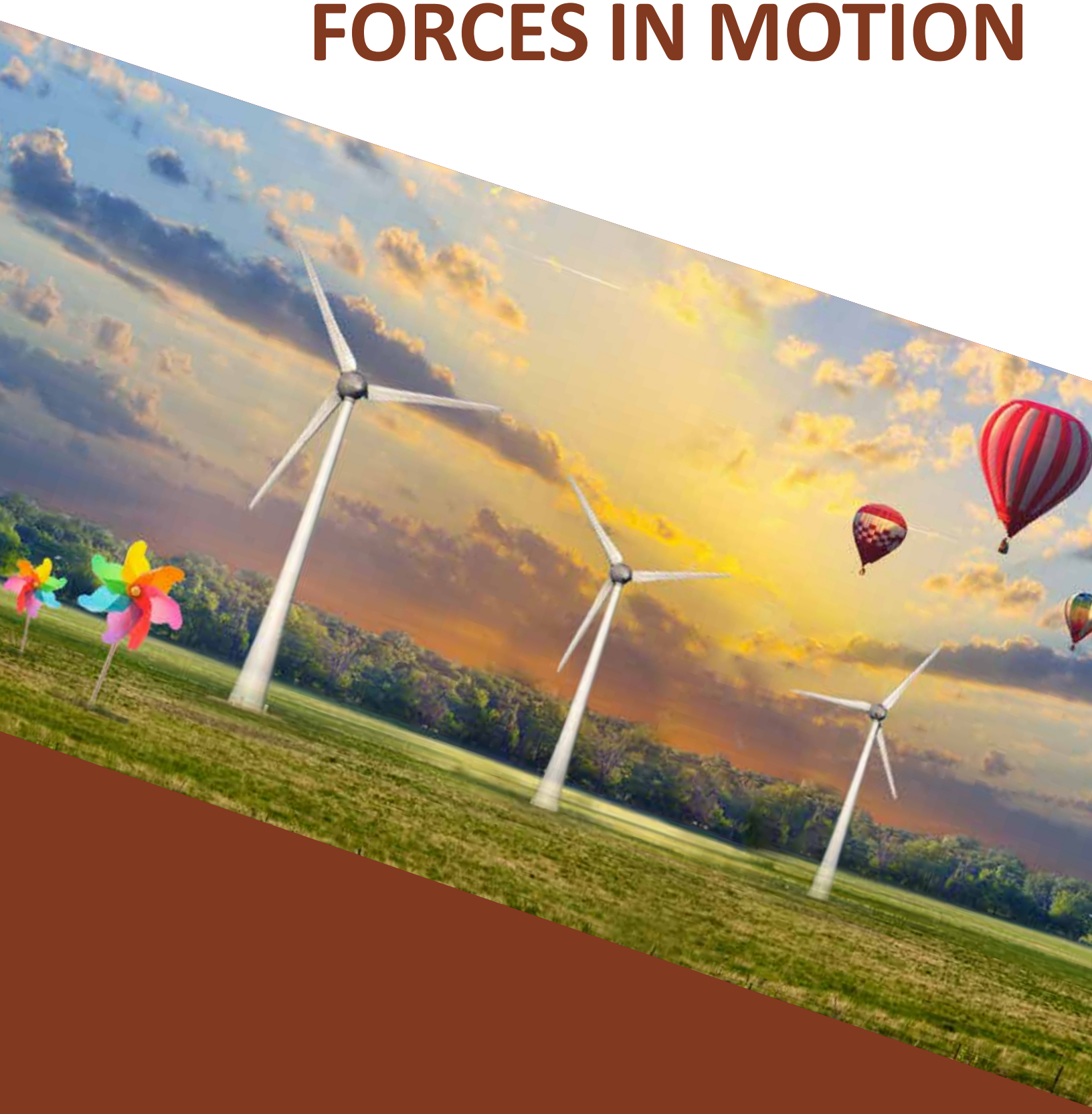
# FORCES IN MOTION



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Science

# Sink or Float

EZ.007.LA.1014

**Activity Type:**
Small Group

**Objective:**
Students will predict, observe, and test predictions.

Children discover buoyancy and density by making predictions about objects' ability to float and testing predictions in a sensory area. Students can continue testing items from around the classroom in educator-led or student-led ways. Young children are naturally curious. Hands-on experimentation taps into this natural curiosity to make learning fun and engaging.

## WHAT TO DO

1. Fill the sensory table with water. Ask students to make predictions about each object, with questions like, "Will this object sink or float?" and "Why do you think it will sink or float?" Indicate students' predictions on the sink/float prediction chart.
2. Ask students to test each item's ability to float, filling out the test column on the sink/float prediction chart. Facilitate a buoyancy discussion, relating to other things that sink/float (coins, themselves, boats, etc.).

## PLAY TIP

Read books about buoyancy, such as *Who Sank the Boat?* By Pamela Allen, *Things That Float and Things That Don't* by David Adler. Buoyancy is a difficult concept for young children to grasp and books help children build vocabulary and make the concept relatable.

## WHAT YOU'LL NEED

**Sink or Float**

| name | prediction | test |
|---|---|---|
| submarine | | |
| purple tube | | |
| blue ball | | |
| raft | | |
| hexagon | | |
| purple star | | |
| yellow star | | |
| red ball | | |
| | | |
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Social Studies

# Play-Based Exploration with an AR Sandbox

EZ.007.LA.1015

**Activity Type:**
Free Choice and Small Group

**Objective:**
Students will explore the Earth's surface using AR technology.

An augmented reality (AR) sandbox is a 3D, interactive educational tool to help understand mapping, topography, natural hazards, and more. A mounted computer projector and motion-sensing device detects the distance to the kinetic sand and a visualization is cast to the sand from a projector. Students can freely interact with the sand and make observations while the educator guides conversation around water, weather, landforms, and maps.

## WHAT TO DO

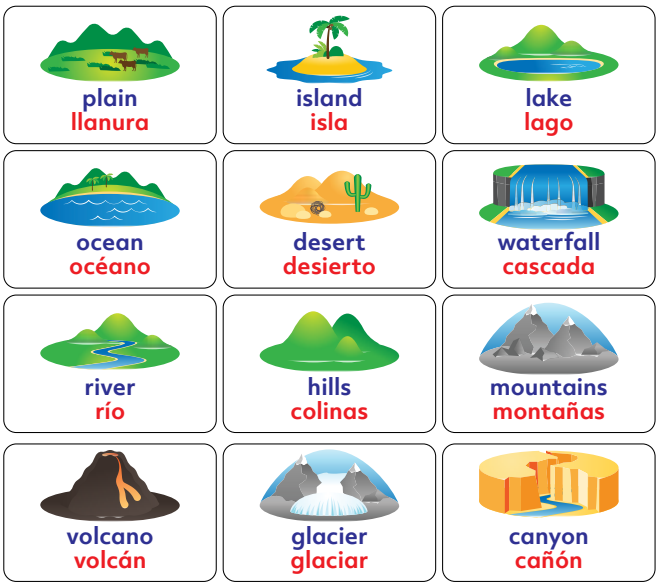
1. Demonstrate how the AR sandbox visualization works. Cover the projector lens so students can see that the sand is one color. Unblock the project lens to show students how the colors and contour lines return to the sand surface.
2. Show students the topographic map and landform examples. Ask students what they notice about the maps and landforms (height, colors, etc.). Provide opportunities for students to explore the AR sandbox freely. Ask students what they notice about the sandbox and the visualizations. Ask students the following questions: "How do the colors and lines change as you build features in the sand?" and "What do you think the lines tell us?"

## PLAY TIPS

- Determine a set of rules before acclimating students to the AR sandbox. Simple rules like, "Sand stays in the box." and "Wash your hands before and after using the AR sandbox." keep the students safe and minimizes issues with the AR sandbox.
- Compare the sandbox visualization to the real topographic maps. Ask students to build landforms in the sandbox which closely resemble the maps.

## WHAT YOU'LL NEED




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Science

# Wind Exploration

EZ.007.LA.1019

**Activity Type:**
Free Choice and Small Group

**Objectives:**
Students will make observations and predictions about wind.
Students will design, test and re-test their designs.

Fans are an engaging way for students to experiment with and learn about the movement of air as force. Children explore how the air from the fan moves different materials, making observations about speed, direction and distance. They may experiment with foam balls, scarves, paper airplanes, tissue paper, or other classroom items to see how each reacts. Since young children are still developing their understanding of abstract concepts like force, this type of hands-on exploration provides a concrete and play-based way to build scientific understanding.

## WHAT TO DO

1. Ask students to wave their hands in front of their face and describe what they feel (wind, air). Explain that wind is a force and ask students where they see/feel wind. Provide opportunities for students to explore the fan freely by adjusting the speed and direction of the airflow and observe drag and force using various materials in front of the fan.
2. Make observations and talk about the ways objects behave in the path of the wind. Discuss the variables in objects, including weight, shape, and surface area. These observations and discussion help students reflect, redesign, and test again.

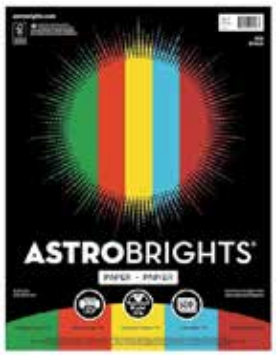
## PLAY TIPS

- Help students design, build, and test specific objects that spin, fly, or float in unusual ways, including paper airplanes and parachutes.
- Measure wind speed outside and in the classroom using a class-made wind gauge.

## WHAT YOU'LL NEED
















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Science

# A Rainbow of My Own

EZ.007.LA.1020

**Activity Type:**
Free Choice and Small Group

**Objective:**
Students will predict, observe, and test predictions.

Prisms are a fun way to observe and hypothesize about light! After students listen to the story *A Rainbow of My Own* by Don Freeman, they participate in discussions about the relationship between prisms, rainbows, and light, and discover how different items look when observed through a prism.

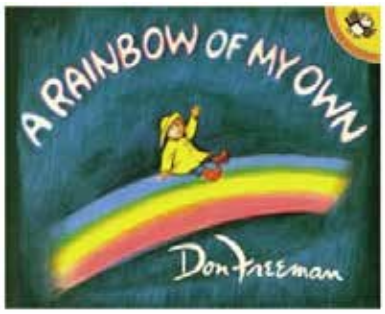
## WHAT TO DO

1. Read the story *A Rainbow of My Own* by Don Freeman. After reading the story, begin a conversation about the science of rainbows by asking the following questions: "What causes rainbows?" and "Where do they go?" Students are not expected to know the answers to these questions but asking critical thinking questions helps them think about possibilities.
2. Allow students to experiment with the prisms and flashlights. Can they create a rainbow? What do they notice about the rainbow they created? Encourage students to place a white piece of paper on the table and use a flashlight to display a rainbow on the paper. They can trace the rainbow with crayons or colored pencils as a friend holds the flashlight.

## PLAY TIPS

- Hang prisms around your classroom close to a window. Students can go on a rainbow hunt as the prisms bend the sunlight.
- Create prism patterns with patterned colored paper. Draw a pattern on colored paper. Place a prism on the paper and explore how the prism interrupts the pattern.

## WHAT YOU'LL NEED










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Science

# Gravity in Action-Ball Drop Exploration

EZ.007.LA.1022

**Activity Type:**
Free Choice and Small Group

**Objective:**
Students will make predictions, observations, and discuss scientific principles.

The properties of gravity are reinforced as students engage with a variety of hands-on materials, such as pipes, funnels, foam balls, and cups. These tools create an interactive learning environment where students can observe and experiment with the effects of gravity in a tangible way. Students can test how objects of various sizes, weights, and shapes behave when subjected to the same gravitational pull. Students are not only learning about gravity but also thinking about how different forces and objects interact with a system.

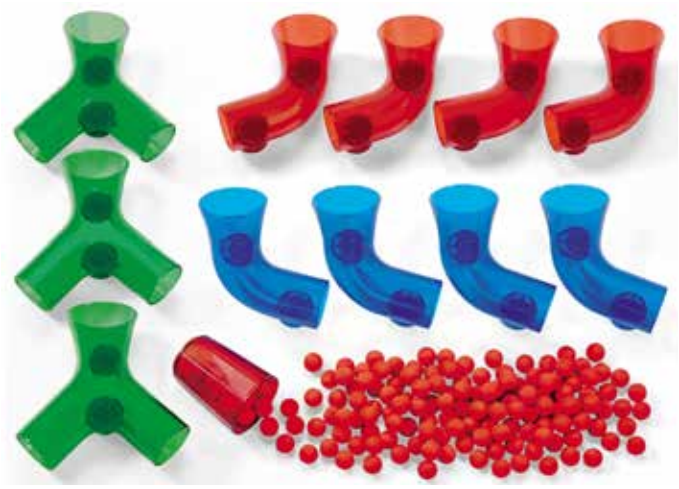
## WHAT TO DO

1. Invite students to build their own ball runs using the magnetic board, tubes, and connectors. Encourage them to predict what will happen before releasing the balls.
   - Which ball will go faster?
   - Which path is longer?
   - How will changing the angle of a tube affect the movement?
2. Guide their attention to key factors such as the tube's angle and the size, weight, or shape of moving objects. Expand their exploration with engaging activities like rolling different objects through the tubes and changing pipe angles to observe the effects. Challenge students to create a maze or racetrack for the balls to travel through.

## PLAY TIP

Explore gravity in other ways in the classroom using simple materials. Tie several paper clips to separate strings, then tie each string onto a pencil or stick. Lift the pencil up so the paperclips hang from the string. Ask students to move the stick around and describe what they notice (the paperclips always point to the ground). Explain that gravity pulls objects toward the Earth. Students can explore with magnets to see how other forces (magnetism) can overcome gravity.

## WHAT YOU'LL NEED





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Science

# Weathering and Erosion

EZ.007.LA.1023

**Activity Type:**
Free Choice and Small Group

**Objective:**
Students will predict, observe, and test predictions.

When weathering breaks down the Earth's surface, it forms small pieces of dirt, sand, and rock. This material is carried away through erosion and deposited in new locations. Students explore the effects of erosion by building landmasses out of sand and stone, then observing how moving water changes their shape and location. For young children, this exploratory activity builds observation skills, encourages cause-and-effect thinking, and introduces important science vocabulary in a concrete way. It also supports fine motor development as children shape and manipulate small materials.

## WHAT TO DO

1. Ask students the following questions:
   - "Where might you see moving water?" (possible answers: oceans, rivers)
   - "Where might you see the wind move things?" (possible answers: leaves, trees, and other objects outside)
   - "How does wind or water change the land around us?" (possible answers: wind can blow dirt, water can carry dirt as it moves)

   Explain to students that when wind or water changes the land, it is called erosion, and that erosion happens over long periods of time.
2. Pour sand into the container and ask students to build a structure. Then, have them brainstorm ways to move the sand using only water. Provide measuring cups or turkey basters so students can pour water over the sand and observe how it moves. Next, have students build another structure, this time adding rocks to protect it. Ask: "Did you notice anything different when trying to move the sand? How did the rocks affect the movement of the sand?"

## PLAY TIP

Have students try moving the sand with wind, using a tabletop fan. Do they notice similar observations as the sand moves with wind?

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Science

# How Do Magnets Move Things?

EZ.007.LA.1024

**Activity Type:**
Small Group

**Objective:**
Students will predict, observe, and test predictions.

Students use magnets to explore how magnetic forces attract and repel. They will make predictions, test magnets against different classroom materials, and observe how opposite poles pull together while like poles push apart. Together, they will share their observations and discuss why magnets work differently with some objects. This activity helps students practice predicting and testing ideas, which builds early science thinking. It also encourages them to consider all science inquiry skills, and they compare, sort, and notice patterns.

## WHAT TO DO

1. Give each student a magnet and ask what they already know about magnets or where they have seen them before. Allow them to freely explore, noticing what their magnet "sticks to" and what it doesn't. Show students two magnets. Ask what they think will happen if you try to put the ends together. Demonstrate how opposite poles attract and like poles repel. Encourage students to test this themselves.
2. Provide a collection of objects (paper clips, foil, coins, tissue paper, small blocks, etc.). Ask students to predict whether the magnet will stick to each item before testing. Record observations together, noticing patterns (magnets stick to some metals but not to wood, paper, or plastic). Reinforce that magnetism is an invisible force.

## PLAY TIP

Extend learning by showing how magnets can move objects without touching them (e.g., sliding a paper clip across a desk using a magnet under the table).

## WHAT YOU'LL NEED

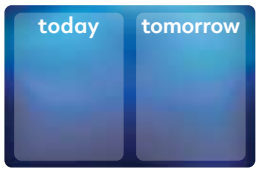


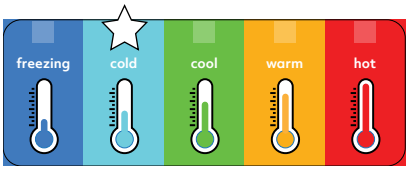

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# Play-Based Learning Materials

## Fine Arts:

















## Fine and Gross Motor:






## Puzzles:

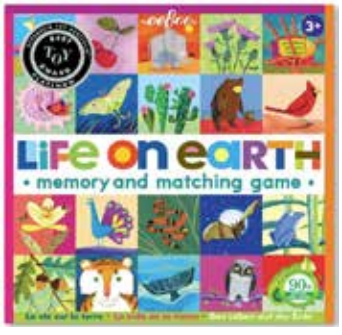






## Games:






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