

MATERIALS AND EQUIPMENT

The unit requires a variety of materials to support various ways of learning (including doing, discussing, listening, watching, reading, and writing). Prepare in advance by collecting the materials and equipment needed for all the demonstrations and hands-on investigations.

Part A: Forces and Motion

Lesson 1

- pencils
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 2

- rubber ball
- index cards for student vocabulary deck (3 per student)
- internet access and the means to project images/videos for whole-class viewing

Lesson 3

- rubber eraser (1 per student)
- rubber ball
- index cards for student vocabulary deck (1 per student)

Part B: Friction Is a Force

Lesson 4

- materials to create two ramps, such as: books, blocks, clipboard, cardboard
- sandpaper (enough to cover each ramp)
- scissors
- glue
- block (wooden or plastic)
- oil (cooking, such as vegetable oil)
- paper towels or rags/cloths (for cleanup)

For each group of students:

- baking sheet pan
- large piece of felt (large enough to cover the bottom of the baking sheet)

- large piece of aluminum foil (large enough to cover the bottom of the baking sheet)
- large piece of sandpaper (large enough to cover the bottom of the baking sheet)
- plastic cup (for the oil)
- bottle cap (such as those for milk jugs)
- sand (to fill each bottle cap)
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Lesson 5

- eraser
- pencil
- paper
- sticky notes
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing (examples of friction)

Part C: Predicting Motion

Lesson 6

- image of grandfather clock
- pencils or crayons
- string
- scissors
- yo-yo
- index cards for student vocabulary deck (1 per student)
- internet access and the means to project images/videos for whole-class viewing

Part D: Magnetism Is a Force

Lesson 7

- index cards for student vocabulary deck (5 per student)
- internet access and the means to project images/videos for whole-class viewing

Teacher Demonstration

- ring (or donut) magnet
- assortment of metal and plastic paper clips
- pair of metal scissors
- metal binder clip
- pushpins
- plastic utensil
- roll of masking tape
- pencil
- bowl
- yarn
- long wooden sticks

Student Investigation

- ring (or donut) magnets
- bowls
- yarn
- long wooden sticks
- assorted magnetic and nonmagnetic items
 - coins
 - metal marbles/balls
 - keys or key rings
 - rocks/pebbles
 - erasers
 - shoelaces
 - chalk
 - feathers

Lesson 8

- shoebox lid
- white paper
- water-based paint, such as tempera (multiple colors)
- metal ball
- craft magnet
- bar magnets (1 per student)

Lesson 9

- compass
- metal hairpins (bobby pins)
- magnetic strip
- magnets
- paper
- glue
- cabinet
- additional materials as necessary (see Step 3 in Day 2)
- index cards for student vocabulary deck (2 per student)
- internet access and the means to project images/video for whole-class viewing

Unit Review

- magnetic tape roll
- narrow box with ends cut off
- cardboard from one end of the box
- small, thin piece of foam or sponge
- thin clear tape
- glue
- index cards for student vocabulary deck (3 per student)
- internet access and the means to project images/videos for whole-class viewing