

ATTAINMENT'S

Science **step BY step**



**Instructor's
Guide**

Pat Crissey

Science Step by Step Win/Mac CD

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Science Step by Step

Instructor's Guide

By Pat Crissey

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1 Sinking bottle

Prerequisite skills

- Lift and pour water up to a fill line
- Discriminate between an empty bottle and one with colored water

Materials

- Two 16-ounce clear plastic bottles
- Water
- Food coloring
- Colored plastic tape
- Dishpan (or tub)
- Watering can (or pitcher)

Teaching tips

- Fill one bottle with water and add a drop of food coloring so it is easy to tell that it contains water. Label the bottle "water." Label the other bottle "no water."
- Use the colored tape to indicate a fill line in the dishpan. Make sure the water will be deep enough so the bottle with water can clearly sink below the surface.
- Put enough water in the watering can to fill the dishpan to the fill line. Label the can "water." To keep the can from being too heavy, you might need to provide more than one can of water.

Results

Density refers to the weight of an object or liquid, given its size. The empty bottle floats because it is filled with air, which is less dense than water. The bottle of water sinks because it has the same density as the water in the dishpan.

1 Sinking bottle

Materials



water



pan



bottle with water in it



bottle without water in it

Directions



1 Pour water into the pan up to the line.



2 Put the bottle with water in the pan.



3 Put the bottle without water in the pan.

Observation



☐ Both bottles fall to the bottom.



☐ The bottle without water floats.

2 Floating soda

Prerequisite skills

- Lift and pour water
- Discriminate between a can of regular soda and a can of diet soda.

Materials

- 2 cans of soda, same brand, 1 regular and 1 diet
- Colored plastic tape
- Transparent tub wide enough for the 2 cans of soda to sit side-by-side and deep enough for the diet soda to float up several inches from the bottom.
- Water
- Watering can (or pitcher)

Teaching tips

- Label the soda cans "soda" and "diet soda."
- Use the colored tape to indicate a fill line on the inside of the tub.
- Put enough water in the watering can to fill the tub to the fill line. Label the can "water." To keep the watering can from being too heavy, you may need to provide more than one can of water.

Results

The regular soda contains sugar, whereas the diet soda contains artificial sweetener. Sugar is denser than the sweetener. Therefore, even though the 2 cans contain the same amount of liquid, the density of the liquid is different, causing the regular soda to displace more water than does the diet soda.

2 Floating soda

Materials



soda



diet soda



tub



water

Directions



1 Put the soda and diet soda in the tub.



2 Pour water into the tub up to the fill line.

Observation



☐ The soda and diet soda do not float.



☐ The diet soda floats.

5 Magnet magic

Prerequisite skills

- Hold a magnet and move it around under a piece of poster board
- Understand the concepts of under and against
- Understand the concepts of moving and not moving

Materials

- Masking tape
- Lightweight poster board
- Large blocks or books
- U-shaped magnet
- Large paperclips

Teaching tip

Create a little table by taping some poster board to a couple of large blocks.



Results

The magnetic pull of the magnet passes through the poster board.

5 Magnet magic

Materials



little table



magnet



paperclips

Directions



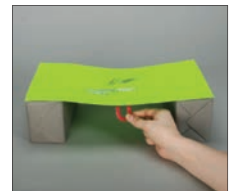
1 Set up the little table.



2 Put the magnet under the little table.



3 Put the paperclips on the little table.



4 Rub the magnet underneath the table.

Observation



☐ The paperclips move.



☐ The paperclips do not move.

6 Paperclip pick-up



Prerequisite skills

- Hold a magnet and use it to pick up paperclips
- Count to 10 with a number line
- Copy the numbers 1–10

Materials

- 2 identical, U-shaped magnets
- Large paperclips
- 2 envelopes
- 2 number lines (1–10)
- Paper
- Marker

Teaching tips

- Select 2 easy-to-hold magnets, powerful enough to pick up a number of large paperclips.
- Put the paperclips into 2 envelopes, 10 paper clips in each envelope.
- Create 2 simple number lines (1–10), leaving enough space to place a paperclip by each number.
- After each student writes down how many paperclips he or she picked up, ask who has more.

Results

Most paperclips are made of steel, which is attracted to magnets.

6 Paperclip pick-up

Materials

paperclips

2 magnets

2 number lines

paper

marker

Directions

1 Put the paperclips on the table.

2 Pick up the paperclips with your magnet.

3 Count the paperclips that are on your magnet.

4 Write the number.

Observation

☐ Partner A has more paperclips.

☐ Partner B has more paperclips.

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appendixes

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