Science experiments to try at home

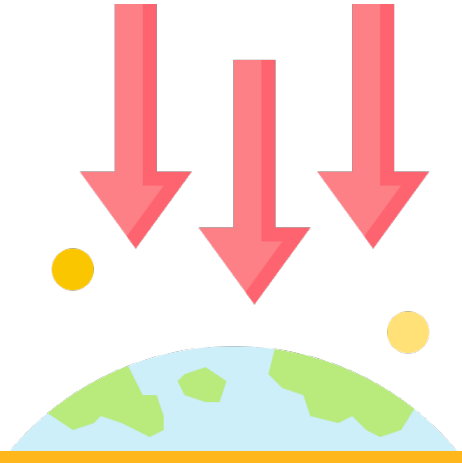
KS2 Physics

1. Magnetic Forces: Gravity Defying Magnets

Lesson: notice how magnetic forces can act at a distance and how they attract or repel each other. Explore the strength of different magnets, if using a few magnets.

Materials

- Stick
- String
- Paperclips
- Scissors
- Tape
- Strong magnets
- Metal ruler
- Blocks or books



Instructions

1. Tie a paperclip to a piece of string. Then tie the other end of the string to the stick.
2. Lift the stick so the paperclips are hanging from it. Use this opportunity to discuss the effects of earth's gravity on the paperclips! No matter how you tilt the stick, the paperclips are always pulled towards the earth by gravity.
3. Place a magnet along a metal ruler.
4. Rest this ruler between two stacks of blocks or books, with the magnets facing down.
5. Remove the string (with paperclip attached) from the sticks and tape it to the table directly underneath the suspended magnet.
6. Slowly lift the paperclip to the magnet until it is suspended and looks as if it is floating in the air underneath. Remove the ruler to see how the paperclips drop down to the ground again. What do you think is happening?

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KS2 Physics

2. Material Properties: Lava Lamps

Lesson: compare the density and solubility of everyday materials.

Materials

- Water
- Oil (e.g. vegetable oil)
- Food colouring
- Alka-seltzer effervescent antacid tablets
- Tall glass or bottle

Instructions

1. Fill a glass with two inches of water.
2. Add your choice of food colouring.
3. Fill the rest of the glass with oil and stop at about one inch from the top so it doesn't bubble over. Watch how the water and oil separate.
4. Drop an antacid tablet into the mixture and observe what happens.
5. Explore using different types of oil!

Short explanation: When dropped in water, sodium bicarbonate and citric acid combine to form sodium citrate, carbon dioxide and water. As carbon dioxide has a lower density than water, it forms bubbles and floats to the top, taking some dyed water with it. The coloured water sinks back to the bottom once the bubbles burst as they have a higher density than oil.