Building a mass spectrometer

Analytical chemistry in Ireland
rsc.li/3p00LfI

What is the purpose of a scientific model?

Find teacher support and the full project outline at https://rsc.li/3p00LfI

Discussion

1. Can you name any models or simulations scientists use to make predictions?
2. How do the measurements compare to the real thing? More accurate or less?
3. Do you ever use models or simulations in your own life?
4. What role do you think models have played in the history of science?
5. What makes a model good?

Models of the Earth

Sometimes models are used as a way of explaining complex data, other times they are used to make predictions. For example, in the past globes were simply impressions or models. When we compared them with satellite images we could see that they were very accurate.

Climate models

Many models today are mathematical or computerized, allowing us to process and analyse complex data to make predictions. Eg, climate change models, which rely on IR spectroscopy to reveal the conclusive links between global warming and greenhouse gas emissions.

Instrumentation in Ireland

Dr. Elizabeth Gilchrist, a lecturer in analytical chemistry, tells us about how mass spectrometry is frequently used in forensic science to confidently identify what is in a sample collected at a crime scene.

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Reproduced with permission from Cian Moloney

Cian Moloney is a food science specialist at Nestle and tells us about how the team there use a variety of mass spectrometry techniques to analyse and characterise the food profiles to support product development and ensure quality and safety.

The scientific method

The idea

Something you want to investigate, prove or disprove.

Planning

Think about how you'll carry it out, what you will use and produce a method.

Results

Conduct the experiment and collect the results.

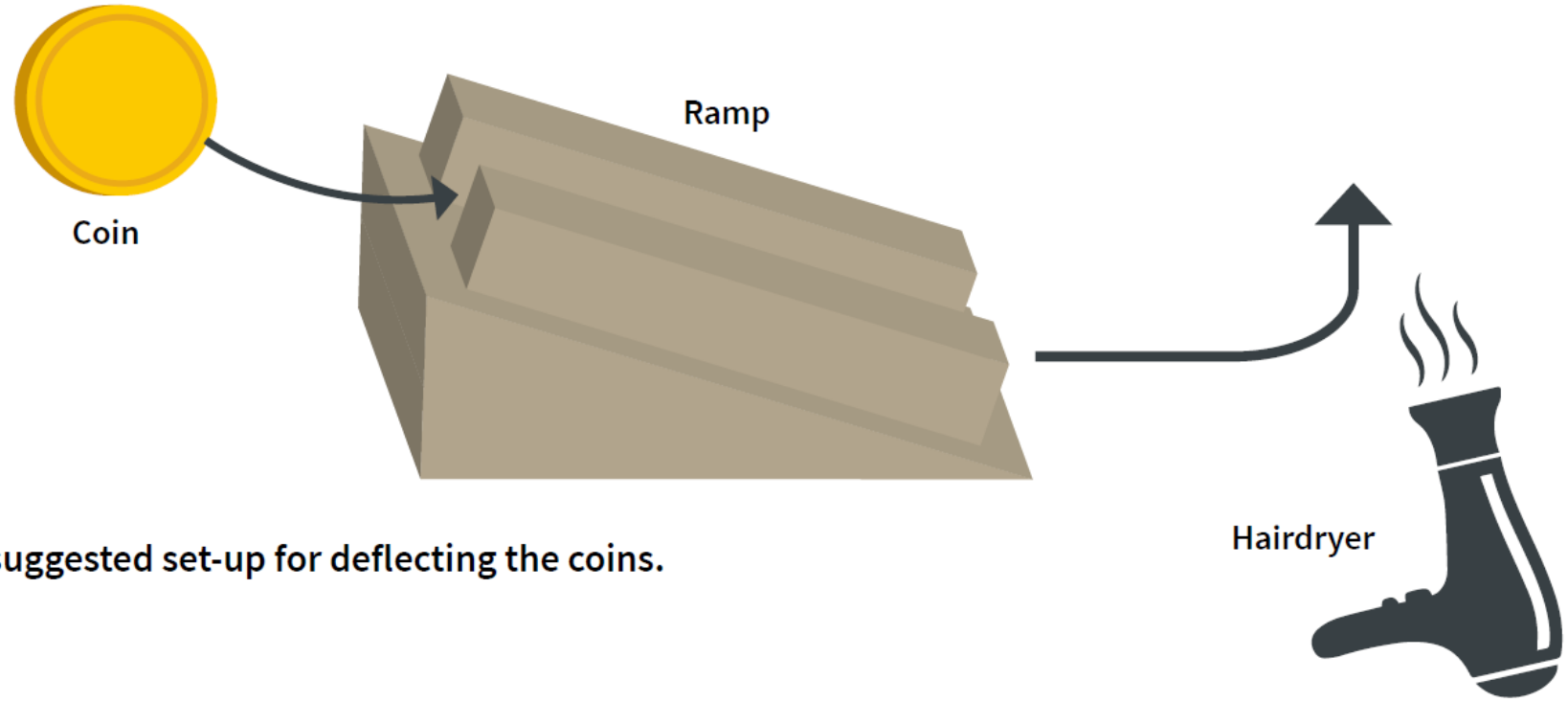
Analysis

Process your results and draw conclusions from them.

Presentation

Explain what you have found, with a poster, presentation or report.

Building and using a model of a mass spectrometer



A suggested set-up for deflecting the coins.

Acknowledgments

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Thank you to all involved!

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