

PRESENTATION

In order to give you an overview of the unit, there's a large picture and some questions to stimulate previous knowledge. This will help you relate the unit content to some aspects of your daily life, and show you how the content can be applied to real life. We recommend that you answer the questions throughout the unit. There's also a *Final task* which will prepare you as you go through the unit. The same task is also presented in digital format in **Oxford investigation**. The link near the picture will take you to a short introductory video.

SCIENTIFIC WORK

YOU WILL LEARN TO...

- 1 Identify the stages in the scientific method.
- 2 Formulate hypotheses about different processes and carry out experiments to test them.
- 3 Check whether what you carry out in an experiment is the same as what you think it is.
- 4 Use the results to establish the validity of different statements when necessary.
- 5 Explain to others what you have done.
- 6 Compare results of experiments with tables and graphs.
- 7 Compare the relationship between two values from a graph and explain it as a relationship.
- 8 Appreciate the influence of evidence in a social development.
- 9 Understand the relationship between scientific research and the wider world.

YOU WILL LEARN TO...

- 1 Why do you think the scientific method is important?
- 2 Why do you think scientists carry out experiments? Think of a situation where you would carry out an experiment and what you would expect to happen.
- 3 If you were asked to carry out an experiment, what would you do? Think of a situation where you would carry out an experiment and what you would expect to happen.
- 4 Look for information about what happened in the World War II.



Birth rates and the phases of the Moon

We often hear that more babies are born when there's a full moon. This is commonly stated as a fact without any scientific basis or evidence to back it up. In this unit, you will carry out a comprehensive scientific study on the impact of the moon on birth rates and compare the results with those of your classmates.

Do you think it is true that more babies are born when there's a full moon? What do you think your answer is?

1. THE SCIENTIFIC METHOD

When you use this, you probably feel a certain **curiosity** about the two small particles. If the particles are the same, they should have the same mass. The only way to check this is to weigh them. You can do this by using a balance. The balance is a device that can measure the mass of an object. It has a flat surface on which you can place the object. The balance is connected to a scale that can measure the mass of the object. The scale is graduated in grams and kilograms. The balance is used to measure the mass of an object. The balance is used to measure the mass of an object. The balance is used to measure the mass of an object.

1.1. What is the scientific method?

1.1.1. Making an observation and asking a question

1.1.2. Formulating hypotheses

1.1.3. Testing and experimenting

1.1.4. Results and conclusions

1.1.5. Repeating and formulating new hypotheses

2. A RESEARCH PROPOSAL

As a class, for example, a shared hanging from a piece of string makes a simple pendulum. When this is set in motion, it will swing back and forth. It is a simple pendulum. A simple pendulum is a mass suspended from a fixed point by a string or a cord. The mass is called the bob. The string is called the thread. The length of the string is called the length of the pendulum. The period of oscillation is the time taken for the pendulum to complete one full cycle of oscillation. The period of oscillation is the time taken for the pendulum to complete one full cycle of oscillation. The period of oscillation is the time taken for the pendulum to complete one full cycle of oscillation.

2.1. Making an observation and asking a question

2.2. Formulating a hypothesis

Activities to keep in mind:

- 1. Make a simple pendulum.
- 2. Measure the period of oscillation of a simple pendulum.
- 3. Compare the period of oscillation of a simple pendulum with the length of the string.

CONTENT DEVELOPMENT

On these pages, there is an explanation of the material you are going to study. The activities are classified as lower-order thinking skills (*Remember, Understand and Apply*) or higher-order thinking skills (*Analyse, Evaluate, Create*). There is a brief summary of the content (*Key concepts*) at the end of each lesson in the margin.

CONSOLIDATION

This is a double page of activities that relate to the unit content. There are two highlighted sections: *Read and understand science* and *Study skills*. These consist of a summary, a concept map and a glossary of scientific terms.

The scientific method

26. The scientific method is a process of inquiry that is used to investigate a question or to solve a problem. It is a systematic approach to problem-solving. The scientific method is a process of inquiry that is used to investigate a question or to solve a problem. It is a systematic approach to problem-solving. The scientific method is a process of inquiry that is used to investigate a question or to solve a problem. It is a systematic approach to problem-solving.

26.1. Formulating a hypothesis

26.2. Testing and experimenting

26.3. Results and conclusions

26.4. Repeating and formulating new hypotheses

CONSOLIDATION

26.1. Formulating a hypothesis

26.2. Testing and experimenting

26.3. Results and conclusions

26.4. Repeating and formulating new hypotheses

WORK AND EXPERIMENTATION TECHNIQUES

Do heavier bodies hit the ground before lighter objects?

We are going to do an experiment to see if heavier objects fall faster than lighter objects. We are going to do an experiment to see if heavier objects fall faster than lighter objects. We are going to do an experiment to see if heavier objects fall faster than lighter objects.

Materials

Procedure

Analysis of the results

FINAL TASK

Birth rates and the phases of the Moon

There is a widespread belief that more babies are born when there's a full moon. This is commonly stated as a fact without any scientific basis or evidence to back it up. In this unit, you will carry out a comprehensive scientific study on the impact of the moon on birth rates and compare the results with those of your classmates.

1. Research

2. Experiment

3. Presentation

4. Self-assessment

WORK AND EXPERIMENTATION TECHNIQUES

In this section, you'll find out about interesting methods and procedures for handling instruments and for carrying out your study. These will help you learn about your surroundings and the things found in nature. With these techniques, you will be able to put into practice what you have learnt in this unit.

FINAL TASK

We will guide you through the task you have to carry out, and explain how you should present your results. This *Final task* for the unit is also available in digital format in **Oxford investigation**.

You have a **DUAL BOOK**: a printed book and its electronic version, which includes resources for you to use together with the unit. In order to access the electronic version, use the code in the book and follow the instructions. You will be able to work either online or offline.

Digital icon: This icon reminds you that there is a digital version of your DUAL BOOK, Oxford investigation. In this version, you will find reading comprehension worksheets, animated videos, videos, relevant weblinks and interactive versions of all the course book activities.