Heinemann

PHYSICS 11

1ST EDITION

Student Workbook

Doug Bail

VCE Units 1 & 2

- Written for the VCE Physics Study Design (2016–2021)
- Key knowledge, worksheets and practical activities
- Area of Study 2 worksheets and investigations for selected options
- Area of Study 3 investigation model and guide

Contents

Unit 1 What ideas explain the physical world?

Contents

Unit 2 What do experiments reveal about the physical world?

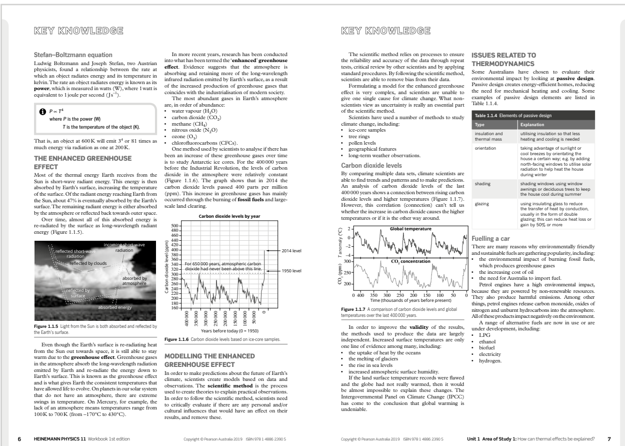
To the student

The *Heinemann Physics 11 Student Workbook* has been created to help you achieve your best possible performance in VCE Physics Units 1 and 2. It is designed to be used in conjunction with your textbook and class notes. This workbook will be an important reference document throughout the course and in preparation for the examinations. The workbook is divided into six Areas of Study–three in Unit 1 and three in Unit 2. The workbook has four main sections:

- Key knowledge
- Worksheets
- Practical activities
- Research and practical investigation skills.

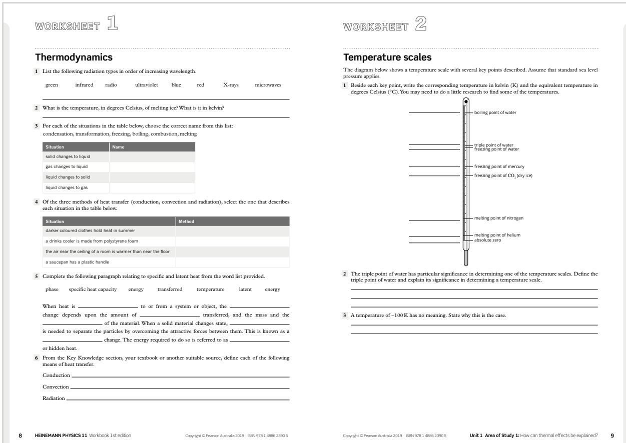
KEY KNOWLEDGE

Key knowledge is a set of summary notes that covers the key knowledge set out in each Area of Study of the Study Design. It is useful for highlighting information essential to your understanding of the themes covered in the textbook, and provides a ready reference for completing the worksheets and for exam preparation. As this is your workbook, you are encouraged to make your own notes and highlight key points directly onto the pages as you work.



WORKSHEETS

Each Area of Study includes a range of worksheets designed to consolidate and test your understanding of the essential knowledge required, and to further your understanding of the key concepts. Once completed, the worksheets will become an important part of your revision notes. You can check your answers to these by visiting ProductLink at pearsonplaces.com.au.



PRACTICAL ACTIVITIES

Each Area of Study includes a range of activities related to the various themes covered in this course. These investigations include several practical activities designed to satisfy the requirements of the Area of Study Outcomes. The activities offered help you develop the skills of scientific enquiry outlined in the Study Design. They give you practice in designing, conducting and evaluating scientific investigations, as well as gathering and analysing data. Discussion, results and conclusions can be recorded directly into your workbook. The activities in this section of your workbook support and extend the key skills relevant to Units 1 and 2, and the key concepts within each Area of Study.

This symbol indicates that the activity includes hazards and your teacher will discuss these with you.

This symbol indicates that you should wear safety glasses.

In other practical activities your teacher may require you to complete the risk assessment yourself. In this case you will be required to sign the risk assessment data sheet, to indicate that you have read and understood it, before completing each activity.

To the teacher

The *Heinemann Physics 11 Student Workbook* has been created wholly with a view to meeting the requirements of the Study Design in this subject, and is designed to be used in conjunction with the textbook. This workbook helps students check their understanding of key knowledge, consolidate ideas, extend their thinking, address technologies, apply key skills, and undertake practical activities and assessment tasks.

KEY KNOWLEDGE

These summary notes cover the key knowledge in each Area of Study and so offer a convenient and succinct set of study notes. They are highly illustrated and written in a straightforward and easy-to-understand style to assist students of all reading abilities.

WORKSHEETS

The multiple intelligence worksheets cater for a range of learning styles. The worksheets provide opportunities to revise, consolidate and extend the student's knowledge and understanding of the key physics principles prescribed in the VCE Units 1 and 2 Study Design. Answers can be found at ProductLink pearsonplaces.com.au.

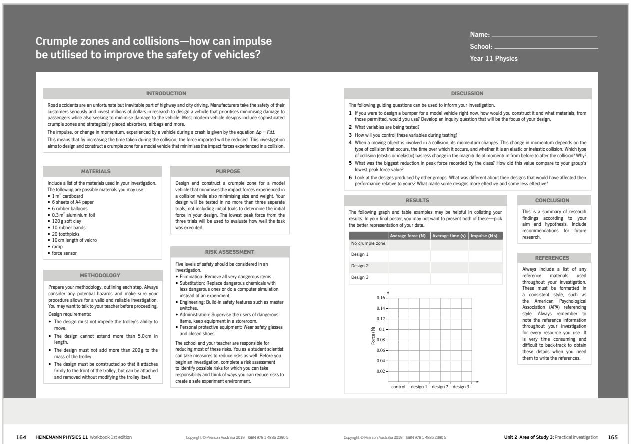
PRACTICAL ACTIVITIES

The activities and investigations included here offer a range of opportunities for exploration of the themes covered in Units 1 and 2 of this course. The practical activities represent the most popular and effective activities relevant to the VCE Physics course. They provide students with an opportunity to develop and demonstrate skills of scientific enquiry and method, including experimental design and evaluation, constructing and testing hypotheses, and gathering and analysing data, as well as opportunities to consider technological advances in Physics. The range of tasks deliberately illustrates different kinds of approaches to assessment items. Each activity has been carefully designed for completion within the suggested timeframes for this course. Risk assessment advice, as well as teacher notes to support each practical activity, are available on the Pearson Reader. The practical investigations focus on the key knowledge outlined in the Study Design with a view to contributing to the assessment requirements of the course.

OPTIONS

There are two options available within this book for Unit 2 Area of Study 2. These include 2.1 What are stars? and 2.11 How can performance in ball sports be improved? Key knowledge, worksheets and practical activities are available for these options. A further four options are available on the *Heinemann Physics 11 eBook*, and experiments and investigations can also be found on Productlink.

RESEARCH AND PRACTICAL INVESTIGATION SKILLS



The Study Design for Area of Study 3 in Unit 2 focuses on developing crucial scientific skills around research and practical investigation.

A suggested template for the presentation of a research investigation as well as a practical investigation has been provided for the students. Throughout the *Heinemann Physics 11 Student Workbook* there are also skill-development worksheets to assist students in beginning to develop or consolidate the skills of analysing sources and conducting practical investigations. The templates and worksheets provided are designed to be used multiple times to allow students to practise developing these skills using different sources and practical investigations.

PRODUCTLINK

Heinemann Physics 11 4e ProductLink supports all Heinemann Physics texts and resources, including *Heinemann Physics 11* (4th edition) and *Heinemann Physics 12* (4th edition) and the student workbooks *Heinemann Physics 11 Student Workbook* (1st edition) and *Heinemann Physics 12 Student Workbook* (1st edition). It includes:

- course advice and a week-by-week work program that integrates the text and student workbook
- practical notes and advice
- additional practical activities
- risk assessments
- chapter tests and solutions
- answers to the student worksheets contained in the student workbook
- assessment advice.