INTRODUCTION

A modern curriculum for primary schools should include some structured treatment of science and technology. The choice of topics should aim to provide a wide and firm base for future scientific studies. The activities should interest both girls and boys and, in a thoroughly practical manner, involve them in solving a wide variety of problems in areas such as design and construction. The activities in *Scientific Problem Solving* aim to fulfill these goals, and to cultivate inquiring and innovative minds.

First published in the UK as two books, this collection of activities is presented here as one volume. Hawker Brownlow Education is pleased to be able to present Australian teachers with this excellent set of activities. The prime objective of this book is to encourage thoughtful ingenuity. The emphasis on experimentation, design, invention, testing, and research skills fosters a spirit of innovation and problem solving.

The present volume is organized into two parts, Level 1 and Level 2. Each has a separate table of contents, and the detailed teacher's notes precede the worksheets for each level.

CONTENTS

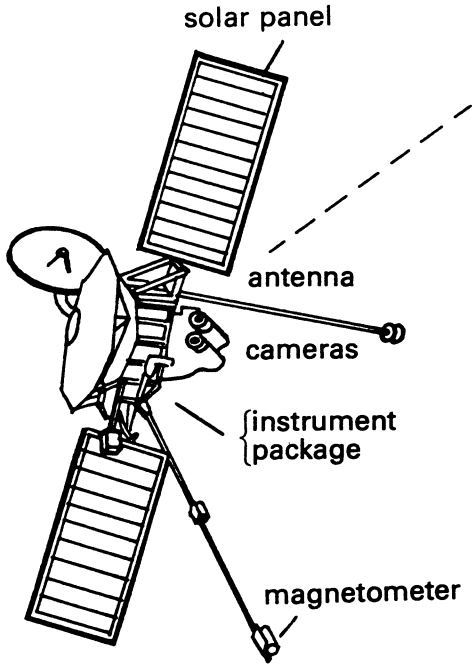
Scientific Problem Solving
LEVEL 1

Teacher's notes on the seven topics

1.1 EARTH SURVEY

Surveyor_____

1. The Earth's crust contains many valuable materials used in industry, such as oil, iron ore, and other minerals. As supplies are used up, it becomes important to find new sources.

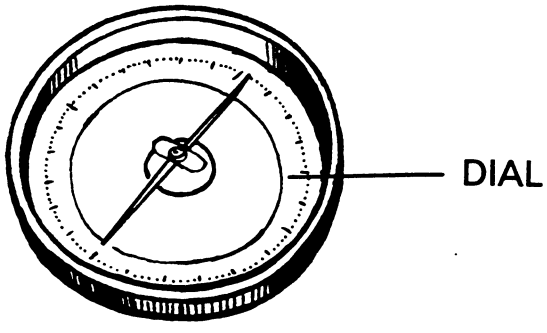


2. Earth Resource Satellites send back information from space which helps scientists to locate new deposits of natural resources. The satellites also send back data on the weather (drought or flood areas), pollution, forest fires, etc.

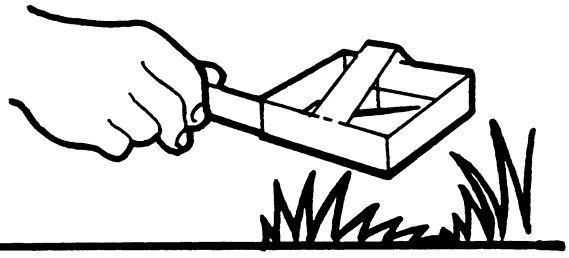
3. Satellite information on mineral deposits is checked in a ground survey, by testing the area with special instruments. You must make sure that the correct place has been found before any mining starts.

4. You are going to do the same kind of test, using a sensitive instrument called a magnetometer. Special types of magnetometers are fitted in satellites which are used to detect hidden iron deposits on Earth.

MAGNETOMETER



5. Begin by constructing your own magnetometer, using sheet 1.2. Then organise a survey of Mystery Island using sheets 1.3 and 1.4.

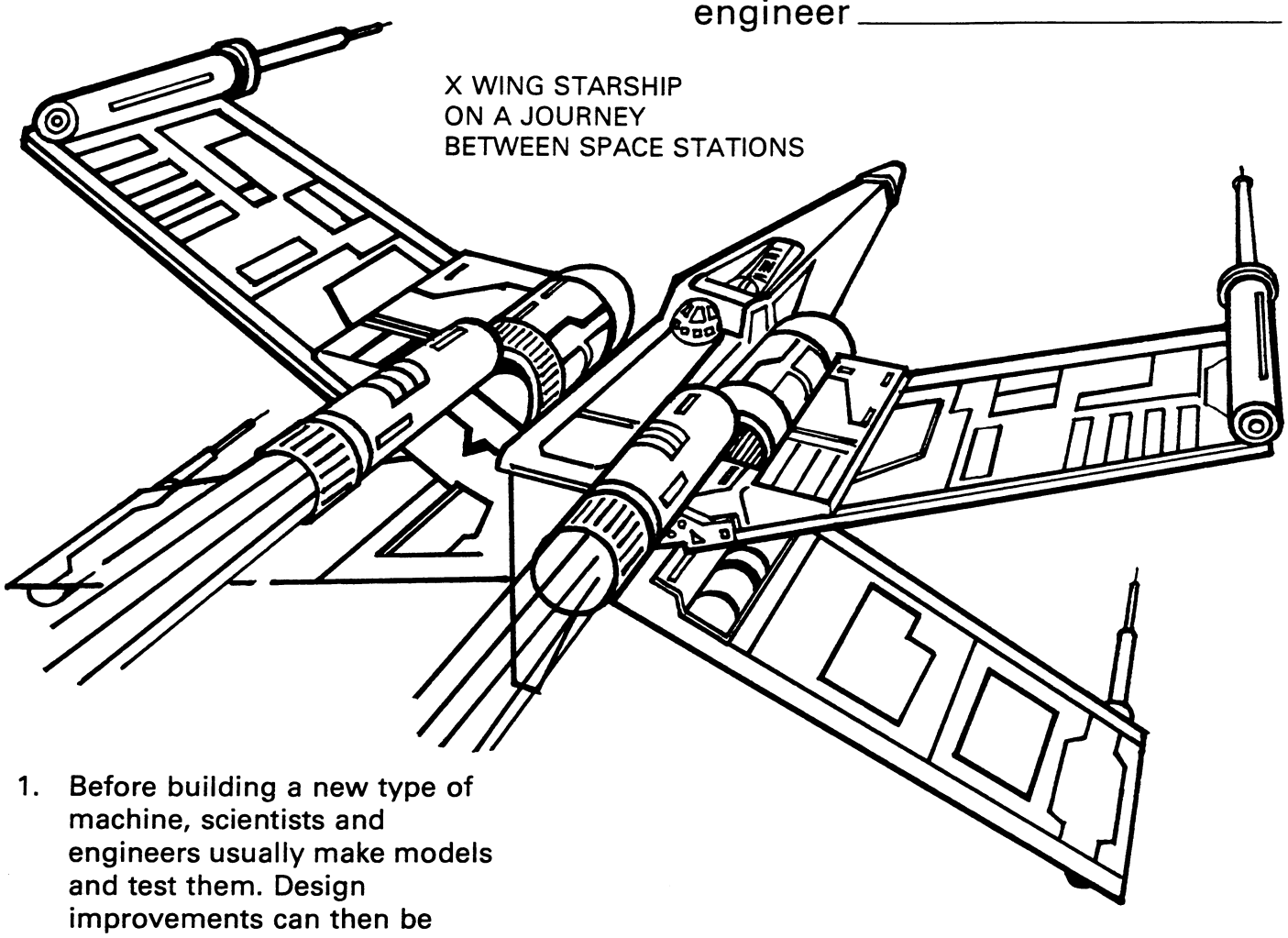


Scientific Problem Solving
LEVEL 2

Teacher's notes on the eight topics

1.1 X WING STARSHIP

Aeronautics engineer _____

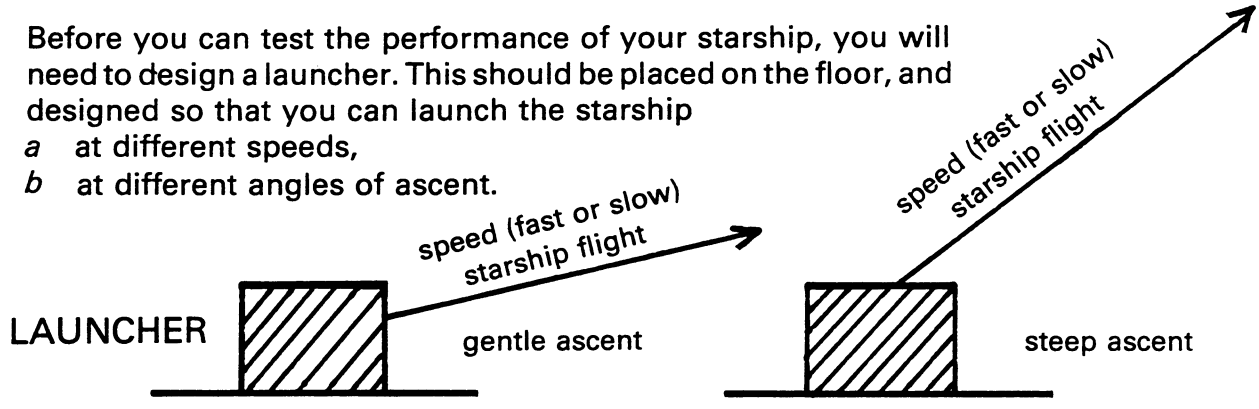


X WING STARSHIP
ON A JOURNEY
BETWEEN SPACE STATIONS

1. Before building a new type of machine, scientists and engineers usually make models and test them. Design improvements can then be made if needed.

2. Look at the plans on sheet 1.2 for the model of this X wing starship. Read the instructions carefully, then make the model.

3. Before you can test the performance of your starship, you will need to design a launcher. This should be placed on the floor, and designed so that you can launch the starship
   a at different speeds,
   b at different angles of ascent.



4. Your teacher will give you the materials to help you build a launcher. Work out your plans on a Design Sheet first, and list the things you will need. After testing, record beside the design how well your launcher worked.