

UNIT

8

UNIVERSE AND SPACE SCIENCE



Learning Objectives

After the completion of this lesson, students will be able to:

- ◆ know about the parts of rockets and the types of rocket fuel.
- ◆ understand the principle behind launching of rockets.
- ◆ list out the achievement of Indian space programmes, Chandrayaan and Mangalyaan.
- ◆ know about NASA and the contributions of Indians in NASA.



Introduction

Have you ever watched the clear sky in the night? We will be delighted when we see countless number of stars and the beautiful Moon. The science, which deals with the study of stars, planets and their motions, their positions and compositions, is known as astronomy. The stars, the planets, the Moon and many other objects like asteroids and comets in the sky are called celestial objects. The Sun and the celestial bodies which revolve around it, form the solar system. A collection of billions of stars, held together by mutual attraction, is called 'Galaxy'. Our Sun belongs to a galaxy called 'Milky Way'. Billions of such galaxies form the universe. Hence, the solar system, the stars and the galaxies are the constituents of the universe. In the recent years many countries are showing interest to explore the space and they are sending manned and unmanned rockets to the Moon and other planets. Our country also has launched a number of rockets into the space and achieved a lot in space research. In this lesson we will study about launching of rockets, types of rocket fuels, Indian space research programmes and NASA.

8.1 Rockets

The universe is a great mystery to all of us. Our mind always tries to know about the space around us. Understanding the space will be helpful to us in many ways. Space research provides information to understand the environment of the earth and the changing climate and weather on the earth. Exploring the space will help us to answer many of the challenges we are facing these days. Discovery of rockets has opened a small portion of the universe to us.

Rockets help us to launch space probes to explore the planets in the solar system. They also help us to launch space-based telescopes to explore the universe. More than all, rockets



Rockets were invented in China, more than 800 years ago. The first rockets were a cardboard tube packed with gunpowder. They were called fire arrows. In 1232 AD, the Chinese used these 'fire arrows' to defeat the invading Mongol army. The knowledge of making rockets soon spread to the Middle East and Europe, where they were used as weapons.