



8B



# THE SOLAR SYSTEM

## IDENTIFYING INFORMATION

- 1 Read the statement carefully and pay attention to any qualifying words eg. *always, never, some, all etc.*
- 2 Select key words from the statement and scan the text to find them or synonyms for them.
- 3 If you find information in the text, decide if it agrees or disagrees the statement, then choose TRUE or FALSE
- 4 If you can't find the information in the text, choose NOT GIVEN.



suggested time  
**9 minutes**

# TASK

Look at the text about "The Solar System" on the following pages.

Do the following statements agree with the information given in the reading passage?

Write:

- **TRUE** if the statement agrees with the information
- **FALSE** if the statement contradicts the information
- **NOT GIVEN** if there is no information on this.

## REMEMBER

Only use information from the text. DON'T use any personal knowledge you might have.

**Example** Jupiter is the most massive object in the Solar System.

FALSE

1) Uranus and Neptune, are mostly composed of hydrogen and helium.

\_\_\_\_\_

2) Most of the objects in the solar system are composed of ice.

\_\_\_\_\_

3) Some possible dwarf planets have moons.

\_\_\_\_\_

4) Short-period comets do not come from the Oort Cloud

\_\_\_\_\_

5) Until the Late Middle Ages, everyone was sure the Earth was at the centre of the universe .

\_\_\_\_\_

6) Friedrich Bessel proved that the Earth moves around the Sun.

\_\_\_\_\_

# The Solar System

1 The Solar System formed 4.6 billion years ago from the gravitational collapse of a giant interstellar molecular cloud. The vast majority of the system's mass is in the Sun, with the majority of the remaining mass contained in Jupiter. The four smaller inner planets, Mercury, Venus, Earth and Mars, are terrestrial planets, being primarily composed of rock and metal.

5 The four outer planets are giant planets, being substantially more massive than the terrestrials. The two largest planets, Jupiter and Saturn, are gas giants, being composed mainly of hydrogen and helium; the two outermost planets, Uranus and Neptune, are ice giants, being composed mostly of substances with relatively high melting points compared with hydrogen and helium, called volatiles, such as water, ammonia and methane. All eight

10 planets have almost circular orbits that lie within a nearly flat disc called the ecliptic.

The Solar System also contains smaller objects. The asteroid belt, which lies between the orbits of Mars and Jupiter, mostly contains objects composed, like the terrestrial planets, of rock and metal. Beyond Neptune's orbit lie the Kuiper belt and scattered disc, which are populations of trans-Neptunian objects composed mostly of ice, and beyond them a newly

15 discovered population of sednoids. Within these populations, some objects are large enough to have rounded under their own gravity, though there is considerable debate as to how many there will prove to be. Such objects are categorized as dwarf planets. The only certain dwarf planet is Pluto, with another trans-Neptunian object, Eris, expected to be, and the asteroid Ceres at least close to being a dwarf planet. In addition to these two regions,

20 various other small-body populations, including comets, centaurs and interplanetary dust clouds, freely travel between regions. Six of the planets, the six largest possible dwarf planets, and many of the smaller bodies are orbited by natural satellites, usually termed "moons" after the Moon. Each of the outer planets is encircled by planetary rings of dust and other small objects.

25 The solar wind, a stream of charged particles flowing outwards from the Sun, creates a bubble-like region in the interstellar medium known as the heliosphere. The heliopause is the point at which pressure from the solar wind is equal to the opposing pressure of the interstellar medium; it extends out to the edge of the scattered disc. The Oort cloud, which is thought to be the source for long-period comets, may also exist at a distance roughly a

30 thousand times further than the heliosphere. The Solar System is located in the Orion Arm, 26,000 light-years from the center of the Milky Way galaxy.

For most of history, humanity generally did not recognize or understand the concept of the Solar System. Most people up to the Late Middle Ages–Renaissance believed Earth to be stationary at the centre of the universe and categorically different from the divine or

35 ethereal objects that moved through the sky. Although the Greek philosopher Aristarchus of Samos had speculated on a heliocentric reordering of the cosmos, Nicolaus Copernicus was the first to develop a mathematically predictive heliocentric system.

In the 17th century, Galileo discovered that the Sun was marked with sunspots, and that Jupiter had four satellites in orbit around it. Christiaan Huygens followed on from Galileo's

- 40 discoveries by discovering Saturn's moon Titan and the shape of the rings of Saturn. Edmond Halley realised in 1705 that repeated sightings of a comet were recording the same object, returning regularly once every 75–76 years. This was the first evidence that anything other than the planets orbited the Sun. Around this time (1704), the term "Solar System" first appeared in English. In 1838, Friedrich Bessel successfully measured a stellar parallax, an
- 45 apparent shift in the position of a star created by Earth's motion around the Sun, providing the first direct, experimental proof of heliocentrism. Improvements in observational astronomy and the use of unmanned spacecraft have since enabled the detailed investigation of other bodies orbiting the Sun.