

U3A-GROUP ASTRONOMY

Introduction (23-9-2005)

Earth

One of 9 planets orbiting the Sun, \pm 4.5 billion years old.

Diameter: 12,760 km

1 Moon at 384,000 km (average); diameter 3460 km (*1 km = 0.6 mile; 1 mile = 1.6 km*)

Solar system

Consists of the Sun (= average star, diameter 1.4 mln km), plus 9 planets and millions of Asteroids and other smaller objects. Diameter c. 30 bln km.

Distance Earth-Sun: 150 mln km (= 1 *Astronomical Unit or AU*)

Milky Way Galaxy

Spiral disk containing some 100 billion stars (+ planets etc.)

Diameter: 100,000 light-years, thickness in the centre c. 2000 light-years.

Universe

Contains trillions of galaxies, nebulae etc.

13-15 billion light-years old/large – and expanding!

DISTANCES

Kilometers (or miles)

Can only be used for small distances (e.g. between the Earth and the Moon).

For larger distances larger units have to be used:

Astronomical Unit (AU)

Represents the average distance between the Earth and the Sun : 150 million km

Light-years

The distance travelled by light in one year, at a speed of 300,000 km per second.

So one light-year is $300,000 \times 60 \times 60 \times 24 \times 365 = 9,500,000,000,000$ km (9.5 trillion km or 5.9 trillion miles).

SOLAR ECLIPSE on 3-10-2005

The Moon will cover the Sun for about 60% at its maximum (in the UK).

It will start at about 8.50 am and reach its maximum around 10 o'clock.

In Central Spain and N and E-Africa the eclipse will be complete.