**Examples of GCSE Astronomy Maths**

**The questions below are indicative of the level of maths required for the GCSE and the individual concepts will be taught in detail. Some lesson time will be allocated to study skills such as numeracy and literacy. A calculator may be used unless otherwise stated.**

**Question one:** Our nearest spiral galaxy Andromeda is 2.5 x 106 light years away. Write this in words.

**Question two: A** = 1.6 x 10-3. Work out **A ÷ A** without using a calculator.

**Question three:** The current speed of the Voyager 1 spacecraft is 17 km/s. How long does it take to cover 51 km?

**Question four:** The distance between the Earth (3rd planet) and the Sun is 1 AU. The distance of Venus (2nd planet) from the Sun is 7/10 AU. What is the distance between Venus and the Earth?

**Question five:** A sundial in Greenwich reads 12:00 on 4th February. A correction must be applied equal to -14 minutes. This must be subtracted from 12:00, work out the corrected time: 12:00 – (-14 minutes).

**Question six:** The sky takes 23 hours and 56 minutes to rotate once. We follow a 24 hour day. If a star reaches its highest point in the sky at 19:00, at what time will it reach the same point on the following day?

**Question seven:** Hubble’s law states that the velocity, **v** (in kilometres per second, km/s) of a galaxy is equal to the Hubble constant, **H** (kilometres per second per megaparsec, km/s/Mpc) multiplied by the distance of the galaxy, **d** (megaparsecs, Mpc). This can be written as **v = Hd**. A galaxy is observed to have a velocity of 3500 km/s. If H = 70 km/s/Mpc, what is the distance of the galaxy (in Mpc)?

**Question eight:** If the Earth was twice its distance away from the Sun, the strength of gravity it would feel would be 1/(22) of the original strength. Write this as a simplified fraction and convert this into a decimal number.

**Question nine:** The light gathering capacities of two telescopes are compared. Telescope A has a mirror 5 cm wide. Telescope B has a mirror 10 cm wide. Is the area of telescope B twice as great or four times as great as telescope B?

**Question ten:** The brightness ratio of star **A** to star **B** is equal to 2.5B-A (2.5 to the power of **B-A**). If **B** = 3.5 and **A** = -0.5 what is **B-A**? Calculate the brightness ratio of the two stars (= 2.5B-A).