

There will not be any complicated analysis or advanced mathematics in the presentation and evaluation of astronomy in this course.

There is no formal

## Mathematics Requirement (2 of 2), but...

skill in mathematics is an essential ingredient in a scientific view of the Universe.

Here are some specific skills you are expected to use:

### Ratios

Relative scales are often the only meaningful way to express comparisons in astronomy. In the table on page 194, look for the column headed "**Distance from sun.**" By setting up the appropriate ratios, calculate the actual distance of each planet from the Sun if Earth is 150,000,000 km from the sun. Then find the column headed "**Revolution period**" and calculate the relative revolution period of each planet compared to Earth's year.

### Graphs

A **graph** is a device by which numbers are translated into visual units to make their meaning clearer. In science, the most useful graph is one that reveals a mathematical principle behind a body of data. In astronomy, almost every graph is a **line graph**. To read a graph, you must recognize the **co-ordinate system**. This means the familiar x-axis and y-axis. Every graph must have both the x-axis and y-axis **labeled** with a description of what the axis represents, and each axis must include the **scale** that shows the relevant numbers. You must be able to "read" the graph, which means identifying the x-value and the y-value of a point on the graph. You must be able to describe the changes that occur if a point "moves" on the graph. Note that it does not usually mean that some object is actually moving. You must be able to describe the effect on a given graph of new information about the circumstances represented by the graph.

### Scientific notation

Large and small numbers will be expressed in scientific notation. There must be **exactly one digit** to the left of the decimal place.