**Land base on Mars – design competition**

**You are to develop an individual design for a land base on Mars.**

Your design may be submitted in any reasonable format, including:

* a written description
* a labelled picture or diagram
* a computer-generated model
* a physical model

It will be judged against meeting the requirements of the competition and on how effectively it will enable humans to thrive, considering the conditions found on Mars.

Your design should include both the physical infrastructure and organisational systems of the base.



Conditions on Mars

* Mars spins on an axis in a similar way to the Earth.
* A day is 24 hours 37 minutes and a year is 687 Earth days.
* Gravity is 2.7 times less strong than it is on Earth.
* Very thin atmosphere: mostly CO2; a tiny proportion of water vapour.
* Average temperature is –63oC. (–140oC to +30oC).
* Intensity of solar radiation is 2.25 times weaker than it is on Earth.
* Surface is mostly volcanic rock covered in a fine powder.
* Soil holds nutrients such as sodium, potassium, chloride and magnesium. It contains no organic matter.
* Perchlorates in the soil are poisonous. They can be washed out with water. Other processes can separate them from the water.
* Distance from Earth varies between 55 Gm and 400 Gm.
* A one-way message takes between 3 and 22 minutes.
* Mars does not have a magnetic field to protect its surface from forms of solar radiation harmful to humans.

*1 Gigametre (1 Gm) = 1 million km*