

Competition score sheet

Educators' notes at www.sciencemuseum.org.uk/scienceboxes

Test	Scoring (points)	Reason	Additional materials required
Volume test	Any structure that covers a shoebox completely earns +10	The astronauts will need to have enough room to live and work in.	Shoebox
UV test	If the colour of the UV-detecting material lying inside the habitat doesn't change at all students get +10	UV radiation on Mars is much higher than on Earth. Without a suitable habitat, astronauts will not be able to take off their protective spacesuits.	Materials indicating UV light such as UV beads
Temperature test	What structure keeps hot water the warmest after five minutes? Best: +20 2nd best: +10 3rd best: +5	The temperature on Mars can reach an extreme cold of $-123\text{ }^{\circ}\text{C}$, so any habitat will have to be well insulated. The teacher places a beaker of hot water inside the structure, with a thermometer in the water.	Beaker of hot water and thermometer
Weight test	What structure is the lightest? Lightest: +15 2nd lightest: +10 3rd lightest: +5	Any materials used in the habitat will have to be carried in the spacecraft. A lighter spacecraft will be easier to launch and require less fuel.	Weighing scales
Strength test	Every structure that supports a 500 g weight anywhere on its roof for ten seconds gets +10 points and +20 points if the structure can support 1 kg.	Any structure that will house astronauts on Mars will have to be tough and sturdy.	500 g and 1 kg weights, or other items such as bags of sugar
Aesthetics test	Students can vote for the best-looking structure (apart from their own). Winner: +10 Runner-up: +5	Aesthetics might not be the most important criteria, but they will have an effect on the morale of the astronauts who will have to live there.	Voting cards
Total			

