



Make your Geo Dome

When you arrive on your new planet, you will have to build a structure to live in and grow your food.

You will need to bring with you building materials that are light and easily packed into a small volume. (Everything that is taken into space costs fuel and space on the ship) . You need to plan your construction carefully and pack only the essential materials that you need to complete your mission.

You have

Newspapers, art sticks, construction materials, measuring equipment, joining materials.

Activity

Make a list of all the properties that the materials you use to build the geo dome must have. Put these words on an A3 sheet and use it to remind you whilst you are designing the geo dome.

Research the geo domes that have already been created around the world, for example the Eden Project in Cornwall is a good place to start.

www.edenproject.com

Make a plan with a variety of regular shapes e.g. triangle, square, pentagon and hexagon.

Using an upturned bowl or half an inflated balloon, practise putting the shapes on these structures to see how they can fit together to make a geo dome.

Now practise making a series of regular shapes with lollisticks, art straws or rolled up newspaper. Join these shapes together to make a model of the geo dome you would build on the planet. Try different ways of joining them together, with glue or tying with string. Think about the materials you would use to put in the structures to create a contained environment.

The atmospheric pressure on the planet may influence the type of material you use.

Once you have made your geo dome, make another and see if you can design a way of linking them together with a sealable walkway. You will need a space for living, working and growing on the planet.

Useful Questions

- Which is the strongest structure, triangle, square or another shape?
 - Try making the structure in another 3D shape, such as a pyramid?
 - Why is a dome the structure that is most effective? (Strong and has the most internal area)
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- How big would the real dome have to be on a planet to support life?
- Why would having plants growing in the geo dome help the air quality?
- What materials would you use in real life to construct the geo dome with?
- What would be the quickest way to construct the dome on the planet? Would an inflatable structure be an option?
- Would you need to bring some spare construction materials in case of damage?
- What would happen to the people in the dome if there was a leak in the panels and how could you repair it?

Research Opportunities

- Domes are used in architecture all over the world. See how many famous buildings you can find which have domes in them. The Sistine Chapel in Italy is a good place to start. Domes are often used in religious buildings and often decorated with very elaborate patterns and paintings. Decorate the inside of your geo dome using symbols and pictures that describe your space colony.
- You will have to fill the geo dome with breathable air so that your colony will be able to work and live. Make a pie chart to show which gases the atmosphere is made up of on earth. Find out how to make or transport these gases. What are the properties of these gases? Find out what factors affect the composition of the atmosphere on earth.
- What is the ozone layer? What is its function in our atmosphere? Why are some people concerned about a possible hole in the ozone layer. Find out as much as you can about the ways that we can take action to limit the damage to the ozone layer and make a poster that could be displayed in school to raise awareness of this global problem.

Useful Websites

This site contains a useful plan for a geo dome
<http://www.pitsco.com/Neatstuff/geodome.htm>

Find out about the International Space Station at this fun site
<http://school.discovery.com/schooladventures/spacestation/>

creativeminds The Creative Minds project works with museums libraries and archives across the Yorkshire region, to provide young people with learning opportunities in Science, Technology, Engineering & Maths (S.T.E.M.). This ground-breaking project is the first of its kind in the country and is managed by MLA Yorkshire. This pack was developed by Creative Minds and Eureka! The Museum for Children with funding from Yorkshire Forward.

