



EDUCATION LEVEL: HIGHER



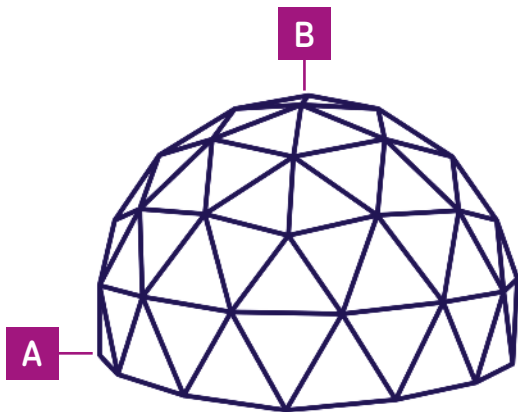
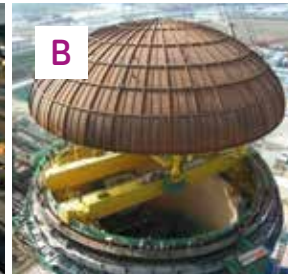
Shape and structure

Nuclear power stations generate electricity. All nuclear power stations have containment structures that hold the reactors. They come in different shapes, but are all very strong.

Look at the pictures (right)

Unscramble the shape names and match them to the pictures:

nicydrel ephres mode



This is a beautiful and strong shape called a geodesic dome

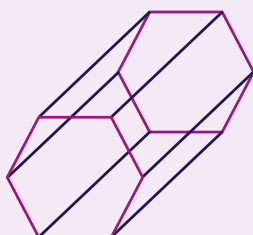
If you look carefully you can see lots of different shapes.

1. How many different shapes can you see?
2. How many sides do they have?
3. Can you name them?
4. If you stood in the middle of the dome, what angle would you measure from A to B?
5. If the diameter of the dome is 10 metres, what is the height?

Build your own strong containment structure

You will need:

- Spaghetti (the steel frame)
- Marshmallows (the bolts)
- Drinks can (the nuclear reactor)



You can cut the spaghetti to whatever size you want and stick them together with marshmallows.

1. Start by making a 2D regular **polygon** – you can decide on the number of sides but you must be able to sit a can inside.
2. Consider the number of sides and name the polygon.
3. What is the angle between the sides? You may want to use the equation: $\text{angle} = (n-2) \times 180$ (where n is the number of sides)
4. Now turn your 2D polygon into a **prism**. You must be able to put the can into the prism.
5. How can you make your structure stronger? Look at the geodesic dome and think about why it is so strong.
6. Your teacher might like to test how strong your contain structure is by balancing some heavy objects on top.

