|  |
| --- |
| **Activity title** |
| **Christmas tree paper cones** |
| **Stay safe** |
| Whether you are a scientist researching a new medicine or an engineer solving climate change, safety always comes first. An adult must always be around and supervising when doing this activity. You are responsible for:    • ensuring that any equipment used for this activity is in good working condition  • behaving sensibly and following any safety instructions so as not to hurt or injure yourself or others    Please note that in the absence of any negligence or other breach of duty by us, this activity is carried out at your own risk. It is important to take extra care at the stages marked with this symbol:⚠ |
| **Time required** |
| 30 minutes |
| **Activity summary** |
| In this easy activity we are going to make paper cone Christmas trees which are fun to decorate and make a great centrepiece for your Christmas table. You will understand what is meant by 2D and 3D, and faces, edges and vertices. |
| **What equipment will you need?** |
| * A3 size green card, one piece per tree * A4 size yellow card, one piece * Scissors * Sticky tape * Biodegradable glitter * Glue stick * Felt tips or paints to decorate your tree   And have an adult to help. |
|  |
| **How to do it** |
| **Step 1**  Draw a semi-circle on the green card.  **Step 2**  Cut out your semi-circle using the scissors.  **Step 3**  Roll the semi-circle into a cone shape and stick along the edge with sticky tape.  **Step 4**  Cut out a star shape from the yellow card.  **Step 5**  Attach your star to the top of your cone and decorate with the glitter, glue and felt tips.  **Well done – you’ve cracked the Christmas challenge!** |
| **Now try this** |
| We have used a template for our paper cone Christmas tree, but you can make them in any size or shape and in whatever colours you like! They can be used as:   * A centrepiece for the dinner table. * To put on the top of the tree. * To decorate a room. * If your cone is big enough it will make a fun hat! |

|  |
| --- |
| **Here’s the science!** |
| In this challenge we have changed a 2-dimensional shape into a 3-dimensional shape – but what do these terms mean?  2D shapes are shapes with two dimensions – such as width and height. Examples of 2D shapes are squares, circles, triangles, and hexagons. When we draw flat shapes on a piece of paper, they are 2D – or 2 dimensional.  3D shapes are shapes with three dimensions - width, height and depth. Our cone is a 3D shape because it is not flat – it has depth as well as width and height. Other examples of 3D shapes are cubes, cuboids (rectangular cubes) spheres or pyramids. 3D shapes can be physically held.  We are surrounded by 3D shapes from our reading books, lunchboxes and even our pets! |
| **Faces, edges and vertices** |
| All 3D shapes have three elements – faces, edges and vertices. But what do those terms mean?  **Face** – the face of a 3D object is the flat surfaces, so a cube has 6 faces, and a sphere has one. **How many faces does our cone have?**  **Edge** – the edge is where two parts or faces meet – so a cube would have 12 edges and a sphere would have none. **How many edges does our cone have?**  **Vertices** – these are where two lines or two edges meet – so the corners of an object are vertices. A cube has 8 vertices or corners, and a sphere has none**. How many vertices does our cone have?** |
| **Did you know?** |
| * The science of measuring shape and size is called Geometry. * The word Geometry comes from the Ancient Greek words for land measurement. * Geometry is one of the oldest branches of mathematics.   3D shapes have existed forever of course but they were first described by the Ancient Greeks. A mathematician called Euclid of Alexandra wrote 13 books called The Elements of Geometry in around 300BC. |