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| **How to make Christmas crackers**  |
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| Making a Christmas cracker and hat |
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| **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: ⚠  |
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| **Subject(s):** Mathematics, Design and Technology**Approx. time:** 50 – 80 minutes |  | **Key words / Topics:** * assembly
* Christmas cracker
* net
* structure
* surface development
* visual appeal
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| **Suggested leaning outcomes** |  |  |
| * To understand what is meant by a net, or surface development.
* To understand how 2D nets are assembled into 3D objects, structures and products.
* To be able to make and assemble a Christmas cracker and a hat from a net.
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| **Introduction** |  |  |
| This is one of a series of resources designed to allow learners to use the theme of the Christmas period to develop their knowledge and skills in Mathematics, Design & Technology and Engineering. This resource focuses on building a card or paper structure, to make a Christmas cracker and hat.Christmas crackers and hats bring fun and enjoyment to the festive dinner table. Can you assemble your own cracker and hat from 2D nets? |
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| **Activity** ⚠ |  | **Teacher notes** |
| **Introduction (10-15 minutes)**Teacher to explain how nets are used to make 3D objects and how separate parts are used to make a larger structure. Teacher to explain that learners are going to make a Christmas cracker and hat. Teacher to introduce learners to, and hand out, the equipment and worksheets needed for the task.**Making the Christmas cracker and hat****(30-50 minutes)**Teacher to demonstrate the steps shown in the teacher presentation and listed below:* Step 1 – Add decoration to the Christmas cracker. Highlight the solid and dotted folding lines on the Christmas cracker net. Learners to safely cut out the Christmas cracker net, then score and fold the dotted lines. ⚠
* Step 2 – Learners to fold each line that crosses the diamond shapes then carefully cut out the diamond shapes.
* Step 3 – Learners to fold and glue tabs A, B and C. Stick tab A to its opposite edge on the centre of the cracker. Stick tabs B and C to form the top and bottom.
* Step 4 – Learners to use either ribbon or thin string to tie the bottom of the cracker.
* Step 5 – Learners to carefully cut out the hat net and use sticky tape to join the sides together.
* Step 6 – Learners to fold the hat and put it into the cracker. They may wish to put a small gift inside the cracker. Then tie the top of the cracker with ribbon or thin string. ⚠

 Learners to complete each step to conduct the activity for themselves. The teacher presentation could be left on the whiteboard as a supporting guide as they do this.**Discussing the results of the activity (10-15 minutes)**Learners to share their completed Christmas crackers with the class. Discuss what gifts may be put in the cracker and who they would give the gift to. |  | This activity could be carried out individually or in small groups.Step 2 - Some learners may need assistance with the cutting out of the diamond shapes.Extension – Learners may add their own designs and decorate the Christmas cracker and hat.Teacher may wish to print some Christmas images or use a gold or silver pen to add decorative text. |
| **Differentiation** |  |  |
| **Basic** |  | **Extension** |
| * Provide learners with pre-cut nets for both the cracker and hat.
 |  | * Learners add their own designs to the Christmas cracker and hat: e.g. add different colours and images related to Christmas, such as reindeer, snowmen etc.
* Learners to create a joke book for inside their cracker using the IET resource <https://education.theiet.org/primary/teaching-resources/thats-a-cracker/>
* Learners to watch the video: Inside a Christmas cracker making factory <https://www.youtube.com/watch?v=uuAReAuADCM> and discuss the key points.
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| **Resources** |  | icon-doc**Required files** icon-pdficon-ppt |
| * Glue sticks
* Paper
* Coloured pencils
* Scissors ⚠
* Gold/Silver pens to add decoration
* Pre-printed Christmas images
 |  |  Teacher presentation – Christmas crackers Christmas crackers activity sheet  |
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| **Additional websites** |  |  |
| * **YouTube – Christmas crackers:** The story behind and the history of Christmas crackers. <https://www.youtube.com/watch?v=Ndeg-cGN4vw>
* **YouTube – Inside a Christmas cracker making factory:** Video explaining how crackers are made. <https://www.youtube.com/watch?v=uuAReAuADCM>
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| **Related activities (to build a full lesson)** |  |  |
| **Starters** (Options) * Watch the video YouTube: Christmas Crackers: The Story <https://www.youtube.com/watch?v=Ndeg-cGN4vw> and discuss the key points.
 | **Extension** (Options)* Learners to add their own designs to the Christmas cracker and hat.
* Learners to create a joke book for inside their cracker using the IET resource <https://education.theiet.org/primary/teaching-resources/thats-a-cracker/>
* Learners to watch the video: Inside a Christmas cracker making factory: <https://www.youtube.com/watch?v=uuAReAuADCM>

**Plenary*** Learners share their completed Christmas crackers with the class. Discuss what gifts may be put in the cracker and who they would give the gift to.
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| **The Engineering Context** film |
| * Engineers use nets and card to allow them to make 3D models of structures, and even products like vacuum cleaners.
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| **Curriculum links**  |
| **England: National Curriculum**MathematicsKS2 Geometry* recognise, describe, and build simple 3-D shapes, including making nets.

Design & Technology * KS2 2a
 | **Northern Ireland Curriculum**KS2 – Mathematics and NumeracyShape and Space* build and make models with 3D shapes; create pictures and patterns with 2D shapes.
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| **Scotland: Curriculum for Excellence**Numeracy and Mathematics* MTH 2-16

Technologies* TCH 2-09a
* TCH 2-11a
 | **Wales: National Curriculum** Mathematics* KS2 Geometry skills: construct solids from given nets.

Design and Technology* KS2 Skills: Making 1, 3
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| **Assessment opportunities** |
| * Formal teacher assessment of the finished crackers and hats.
* Formal teacher assessment of practical skills through observation of learners.
* Peer and/or self-assessment of completed products.
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