# Design and Technology: Year 3 and 4 — Summer Term — Structures — Structures using CAD

## Prior Learning

- I have used different joining, cutting and finishing techniques with paper and card.
- I have a basic understanding of 3d and 3D shapes.
- I have a basic understanding of the properties of some materials..
- I have some experience of using software to draw accurate shapes.

## Sticky Knowledge

- I know how to investigate a range of shell structures (e.g. gift boxes).
- I know about nets of shapes, particularly cubes and cuboids.
- I know how to build a shell structure, using a net.
- I can select and use appropraite tools and software to measure, mark out, cut and assemble with some accuracy.
- I can use computer aided design to develop a product.
- I can evaluate my product against design criteria

| Vocabulary | |
|---|---|
| **Adhesives** | Sticky substances like glue or tape that help things stick together. |
| **Appealing** | Something that looks nice, interesting, or makes you want to know more about it. |
| **CAD** | Using a computer to help you draw and design things. |
| **Cube** | A 3D shape with 6 equal square faces. |
| **Cuboid** | A 3D shape with 6 faces, like a box, made of rectangles or squares. |
| **Design** | A plan or drawing to show how something will look and work. |
| **Design criteria** | The things your design must include or be able to do. |
| **Evaluate** | Discussing strengths and weaknesses of a product and identifying ways it could be improved. |
| **Functional** | What the product should be able to do to work properly. |
| **Marking out** | Drawing lines or shapes on materials before cutting or building. |
| **Net** | A flat shape that you can fold to make a 3D object. |
| **prism** | A 3D shape with the same shape at both ends, like a triangle or rectangle. |
| **Shell structure** | A structure that is hollow inside, like a box or a can. |
| **stiff** | Hard to bend or move; keeps its shape. |
| **strong** | Doesn't break or fall apart easily. |
| **Three dimensional** | A shape that you can see from all sides – it has height, width, and depth. |
| **User** | The person who will use the thing you are making or |

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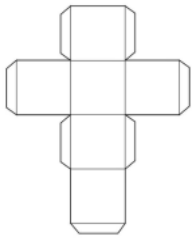
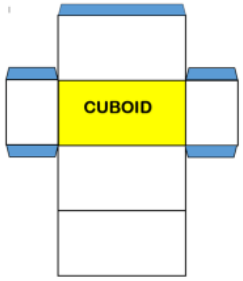
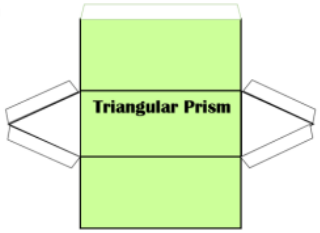
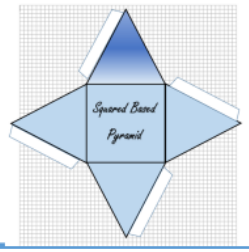
## What shape do I want my net to make?



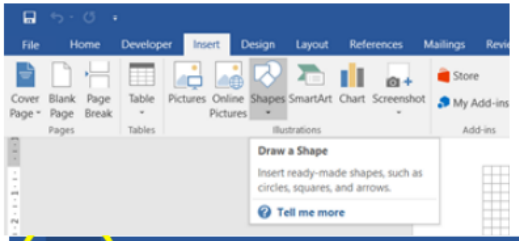


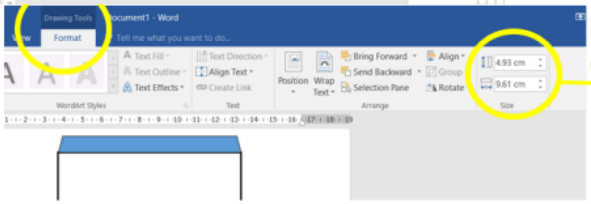




## How can I use Microsoft Word to create my packaging design?

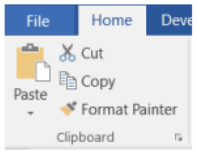
**Help Video:** Creating Nets with Microsoft Word - YouTube



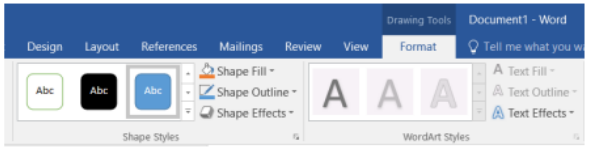

1. Insert your first **face** shape into Microsoft

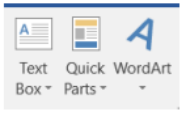



2. Change the side lengths (or dimensions) if you need a certain size.

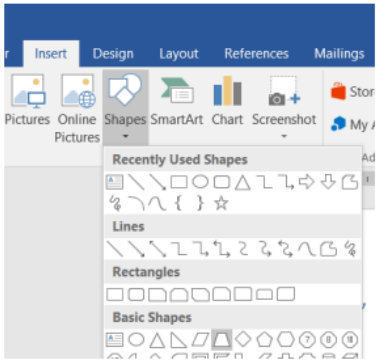



3. Use **copy** and **paste** to create more shapes that are exact same.

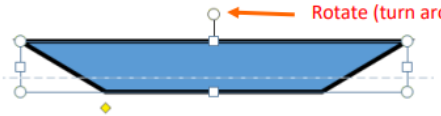



4. Use **format** tools to add text, graphics, colours and your design.




5. Insert **tabs** to make gluing your net together later easier.




6. Hold **ctrl** (don't let go) and click on all of the shapes. Group them together.