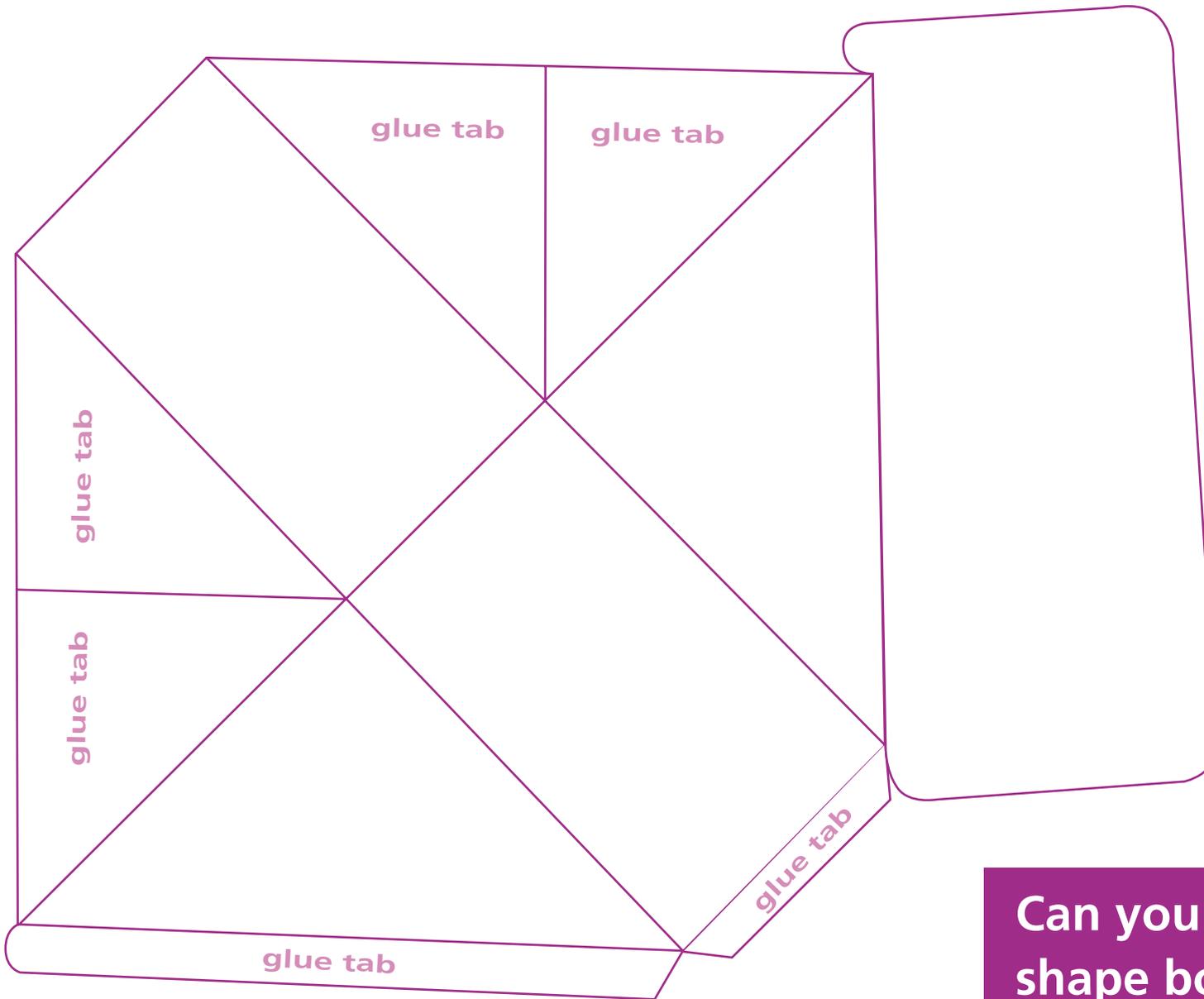


Much of our food and drink is **packaged** in boxes



Most **boxes** are cut from a single flat piece of card.

Look carefully at the **design provided**. It is a mini version of the real thing.

Imagine cutting it out and folding it up.

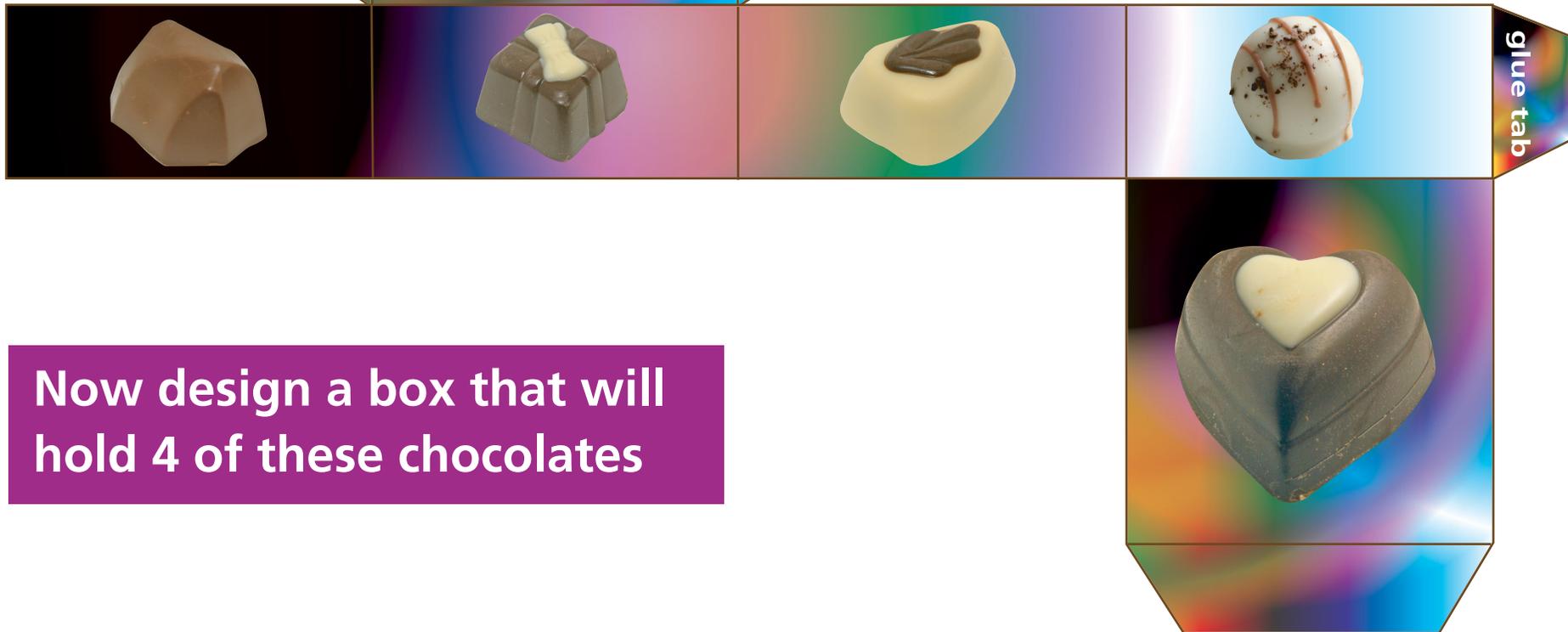
Can you predict what shape box it will make?

food and drink

One chocolate is nice... but **four** are nicer



Cut out and make this **box** designed for a **single chocolate**.



Now design a box that will hold 4 of these chocolates

Food and drink: Packaging

Description

This topic explores flat designs which can be folded and used to package food and drink.

Activity 1: What fits in here?

Activity 2: Four chocolates

Activity 3: It takes the biscuit!

The first activity requires the pupils to visualize a 3D box given an unusual 2-dimensional design. Before they cut out the design from **What fits in here?**, encourage them to predict the sort of 3D shape they expect it to make. They will need time to experiment with different ways of scoring and folding and to understand the folding conventions used. If the design is photocopied onto A3 paper it produces a box of the right size. Once they have solved the puzzle and found the correct folds, encourage the pupils to decorate the box. Exploring the orientation of the decoration on the flat design will encourage their engagement with the structural aspects of the problem.

There are many more examples of designs for boxes to be found through the internet, for example, at:

<http://shala.addr.com/print/printables/boxes.html>

The pupils should use the design on the **Four chocolates** cut-out sheet to make a small box to hold one chocolate. Then their task is to make a box that would hold four of them. They can decide how they would want to orientate the chocolates in the box and, as they design, they will need to become aware of the relationships between the dimensions of the small box and the new box they are making.

Resources

A collection of commercial carrier bags; a selection of fancy boxes for biscuits

A cut-out sheet is provided for **It takes the biscuit!** Working out how to fold the design to produce a carrier bag is far from trivial and is likely to be a significant challenge for most pupils. It is a good idea to have a collection of commercial carrier bags of this standard design for the pupils to inspect in order to help them figure it out. Once they have folded the small sample bag from the worksheet, they can think about designing a bag to package a fancy box of biscuits. To support this, you may wish to collect a range of empty boxes – the pupils can use them to estimate the required dimensions for their flat design. Encourage the pupils to make a rough 'mock up' before making the final product using card or attractive paper.



The mathematics

All these activities provide rich experience of visualising 3 dimensional shapes from 2 dimensional representations. In **Four chocolates** and **It takes the biscuit!**, pupils will need to measure accurately and construct accurate diagrams. **Four chocolates** will draw on and develop their understanding of relationships between linear dimensions and volume.