WRAPPING PRESENTS INVESTIGATION

We can use maths to make sure we wrap presents efficiently, using as little wrapping paper as possible.

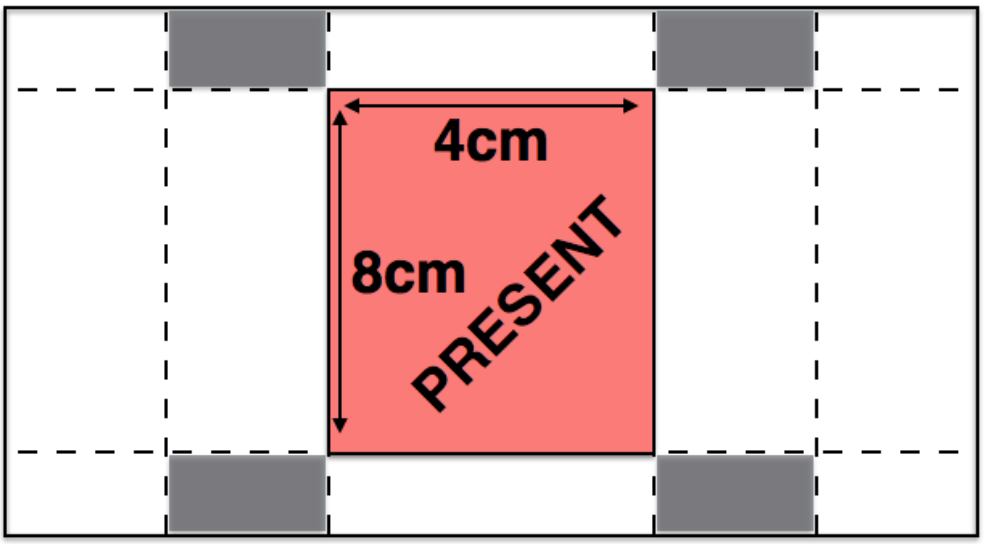
Zoe is making a cuboid block of marzipan to give as a Christmas present to her mum who loves marzipan. One way to wrap a cuboid shaped present is featured below.

Task 1

Find the **area of the rectangular piece** of wrapping paper that Zoe would need to cut to wrap the block of marzipan below, so there is no overlap (apart from the grey bits that don't get used).

Hint: Start by labelling on the diagram **any lengths that you know**.

length (y) = 8cm width (w) = 4cm depth (d) = 2cm



Not to scale

Some cuboid shapes are more efficient than others – they use up less wrapping paper for the same amount of volume.

Task 2

Draw and label the dimensions (length, width and depth) of another cuboid shape with **the same volume as the cuboid above**. Zoe could mould the marzipan into this shape instead.

What is the **area of the rectangular piece** of wrapping paper that she would need to cut to wrap this cuboid?

Task 3

She wants to mould the marzipan into the cuboid shape that would use the smallest area of wrapping paper.

Can you find the cuboid with the **same volume** as the cuboid above, that requires **the smallest rectangular area of wrapping paper** to be cut out to wrap it?

Give the **length, width and depth** of the cuboid.

*Let's assume we can only use whole numbers for our dimensions (width, length and depth).

**You'll probably need more paper.