1. Liam has a rectangular prism with a length of 12 cm, a width of 4 cm, and an unknown height. He needs to construct another rectangular prism with a length of 6 cm and the same height as the original prism. The volume of the two prisms will be equal.

   (a) Find the width, in cm, of the new prism. (4 marks)

   (b) Find the volume and height of each prism. (2 marks)

Mark scheme:

(a) **Drawing a picture will be helpful.**

$V = (4)(12)(h)$ (M1)
$V = (w)(6)(h)$ (M1)
Setting the two volumes equal to each other. (A1)
$(4)(12)(h) = (w)(6)(h)$
$48 = 6w$ (A1)
$w = 8$

(b) Since the areas of the bases of each prism are $48\ cm^2$ and the heights are equivalent, then the volume depends on the height. For example, if $h = 10\ cm$, then each volume would equal $480\ cm^3$. (A1)(R1)