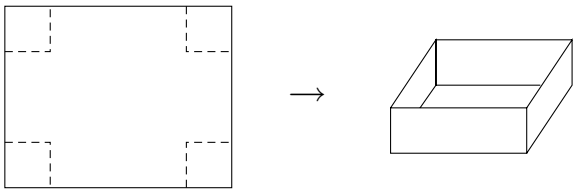
AUSTRALIAN MATHS TRUST

Maths Challenge
Junior: Years 7–8
Practice Problem

J1: Open Trays

Cake shops often use open cardboard boxes or trays. They do not have a lid and may be quite shallow. They are made from rectangular, possibly square, pieces of cardboard by cutting out small squares of the same size from each corner and then joining the cut edges without any overlap using sticky tape.

The height of a tray is never greater than either side length. All side and cut lengths are in whole centimetres.



J1: Questions

a. A tray of volume 18 cm^3 is made from a square piece of cardboard.
What are the dimensions of the cardboard and the cutouts?

b. Tia can make a tray with volume 729 cm^3.
Find all the cardboard sizes she could have used.

c. The volume of a tray is 3360 cm^3.
Find the dimensions of the original cardboard and cutouts if the dimensions of the tray are three consecutive integers.