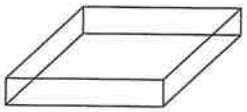
Construct

Using 1 cm squared paper, cut out a 10 cm × 10 cm square.

Then cut out a 1 cm square from each of the four corners (the grey squares on the diagram on the right).

Now fold along the dotted lines and stick to make a box.

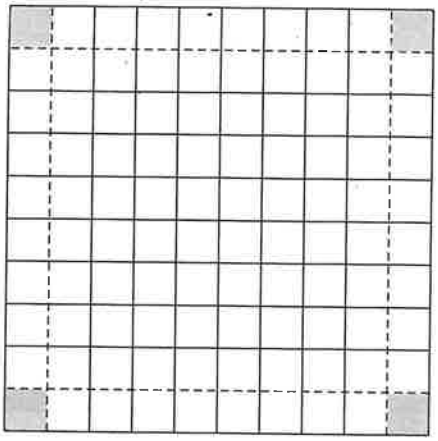


What is the volume of the box?

Repeat the above, this time cutting out a 2 cm square from each of the four corners.

What is the volume of the box?

Repeat the above twice more. For the third square cut out a 3 cm square from each of the four corners and for the fourth square cut out a 4 cm square from each of the four corners. Work out the volume of each box.



Which of your four boxes has the smallest volume?

Which of your four boxes has the greatest volume?

What if you tried with different sized squares?