**Maths Challenge – Week 60**

Welcome to week 60 of our weekly maths challenge, with problems and puzzles posed by Gordon Burgin, Andrew Holt, Rod Marshall, Ian Stewart and the U3A Maths and Stats Subject Adviser - David Martin.

If you would like to share your ideas on how to solve these puzzles please join our learning forum or discuss within your U3A and interest group. **Check back each week for the solutions** and let us know how you get on by contacting u3a office. New maths puzzles will go up onto the website every Thursday.

**Week Sixty**

**Question 1.**

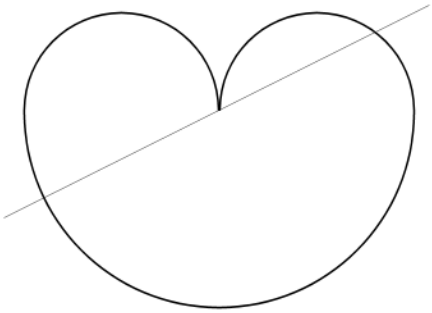
On January 1, 2000, there were 175,000 tons of trash in a landfill that had an original capacity of 325,000 tons. Each year since then, the amount of trash in the landfill increased by 7500 tons. How many years after January 1, 2000, will the landfill be at capacity?

**Question 2.**

The square of a non-zero number is three times as large as its cube. What is it?

**Question 3.**

The shape shown below consists of two equal semicircles on top of a larger semicircle.



The straight line runs through the point at which the two smaller semicircles meet.

Which is the longer part of the shape's perimeter – that above the line or that below the line, or are they equal?

**Question 4.**

A greengrocer buys a box of oranges. On each layer, the oranges are arranged in rows and columns. The number of rows, columns and layers are all different and are all greater than 1. There are less than 200 oranges in the box.

He displays the oranges in a triangular shape on his counter with each row of the triangle containing one less orange than in the previous row. To complete the base of the triangle,

he uses two columns of oranges from one layer in the box.  If he uses all the oranges in the box to complete the triangle, how many oranges did he buy?