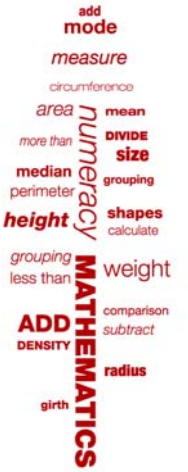

WESTONBIRT
THE NATIONAL ARBORETUM

SUBJECT: MATHEMATICS

Bark ridge brainteaser

KS2: Depth

Bark is of vital importance to all trees as it acts as a barrier against extreme weather, fungal infections and helps to stop animals from damaging the tree. Often different tree species have their own bark pattern, thickness, texture, and colour resulting from how they grow. These patterns can be used to help identify the tree. In this exercise you will investigate some of the different trees and try to decide how their bark has grown.

1. Using the tree labels, find 4 different trees (preferably with different bark patterns) and list them in the table below. Using a ruler or tyre gauge measure the depth of the bark ridges in 10 different areas on the trunk.

Tree	Measurement number									
	1	2	3	4	5	6	7	8	9	10

2. What is the average bark depth for each tree?

Tree	Average depth

Bark ridge brainteaser

Trees have rough or smooth bark depending on how they grow. In trees with thick bark ridges, new bark grows inside the outer bark. Gradually the old bark dies as it is cut off from water and nutrients by the new bark. As the outer bark is dead, it cannot expand as the trunk grows. This results in the outer bark splitting into ridges as the trunk width increases as the tree gets older. The exact pattern depends on whether the bark grows horizontally (across the trunk – producing plates) or vertically (producing ridges).
In trees with smooth bark, the bark layer grows continuously expanding as the trunk expands.

3. Split your trees into groups according to whether their bark is smooth, ridged or covered with plates.

Smooth	Ridged	Plates

4. In which trees do you think the *outer* bark is dead?

5. Very thick bark can help to protect a tree from weather extremes and even fire as it acts as insulation. Do you think any of your trees come from an area of the world that might have lots of fires?

6. Some trees shed their bark over time as old bark is replaced with new. Shedding bark has been shown to help prevent attack from fungi and helps to stop breathing pores from becoming blocked. Are any of the trees you have looked at shedding bark?