Investigating the Earth: the ‘find the Mars bar’ challenge

Learning objectives:

- problem solving
- team working
- the ability to formulate a conclusion based upon evidence and to reject inappropriate evidence
- identification of the difference between fact and deductions based upon evidence

Timing: 20 minutes

Health and safety: do not eat the specimens

Apparatus:

For each group provide:

- One Treat size Mars™ bar and one Milky Way™ bar per group.
- Tough drinking straws *eg* from McDonald’s.
- Scissors (to cut the straws).
- Digital balance.
- Ruler.

Groups have to work out which bar is which. They are not allowed to cut or bite through any part of the bars. The answer is found by probing with straws plus any other evidence

Outcome:

Pupils find which bar exhibits a layered structure by drilling a **borehole**. They may determine a difference in density but decide this cannot be used to determine which is which.

N.B. The deepest borehole drilled into the Earth to date is on the Kola Peninsula in the Russian Federation and is 12.26 km deep. In terms of investigating the structure of the Earth this is equivalent to a mosquito bite on an elephant. It only penetrates half the thickness of the continental crust in that area. It can tell us nothing about the mantle and core.

The deepest mine is only 5 km deep. A genuine Journey to the Centre of the Earth will never be possible.