



Magnetometry

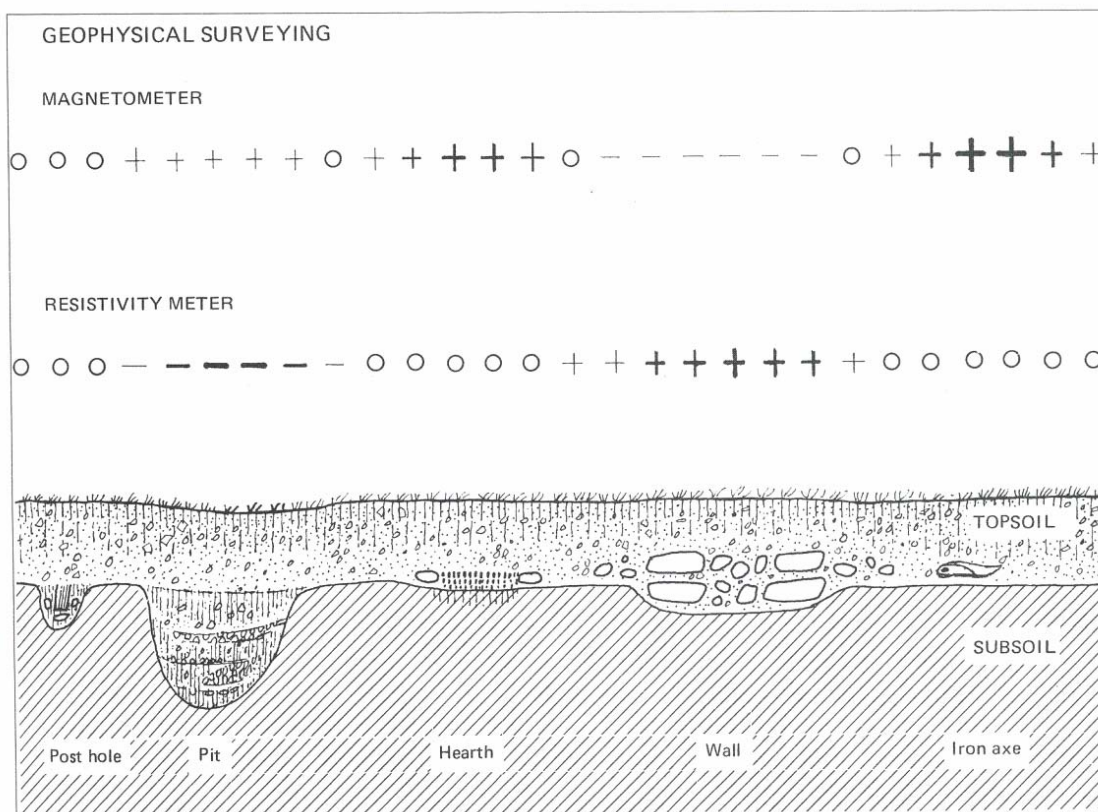
Archaeologists often have to find hidden features underground before they start digging. Can you discover the hidden object?

You have

Compass
Cat Litter tray
Sand or soil
Bar magnet
Squared paper
Ruler
Grid marker

Background

The earth's magnetic field is generally uniform in any one place. However, human activity can affect the magnetic field. A pit dug into the ground will fill up with material that contains different concentrations of magnetic material than the surrounding soil. Heating is one form of activity that alters the magnetic properties of the soil and therefore this technique is good for locating buried kilns and hearths. Archaeologists use a Magnetometer (called a Fluxgate Gradiometer) to detect these minor anomalies in the magnetic field. In this experiment children use a compass as a simple magnetometer.



Activity

Place the magnet in the cat litter tray and then pour in enough sand or soil to completely cover it so you can't tell where the magnet is.

Give the tray to the children with the other equipment and ask them to find where the magnet is buried without touching the soil. Ask them to use the squared paper to represent the tray and try to mark the exact position of the magnet.

The children should use the compass to do a 'fly over' of the tray, when the compass is above the magnet it will move. The children should devise a method of marking this on the paper.

Useful Questions

- What is most accurate way of passing the compass over the tray to ensure the whole area is covered?
- Why does the compass move when it's above the magnet?
- How could you make the experiment more accurate?
- What happens when you bury more than one magnet?

Research Opportunities

- What is geophysics?
- What other geophysical survey methods are there?
- How is magnetometry used in archaeology?
- How does a real magnetometer work?
- What buried features can you discover using a magnetometer?

Website

<http://www.pastperfect.info/archaeology/magneto.html>

creativeminds The Creative Minds project works with museums, libraries and archives across the Yorkshire region, to provide young people with learning opportunities in Science, Technology, Engineering & Maths (S.T.E.M.). This ground-breaking project is the first of its kind in the country and is managed by MLA Yorkshire. This pack was developed by Creative Minds with funding from

