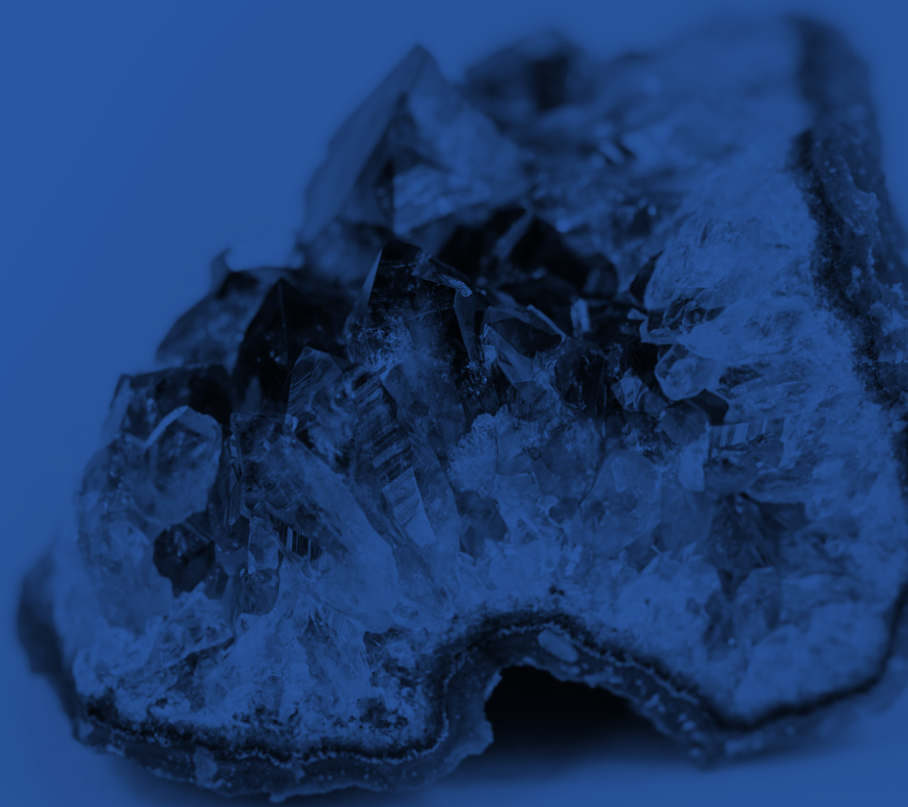


WJEC Eduqas GCE A LEVEL in GEOLOGY

SP18 Measurement of
densities of representative
samples of Earth
layers (e.g. granite, basalt)



Title: SP18 Measurement of densities of representative samples of Earth layers (e.g. granite, basalt)

Specification reference: F4.1a

Aim: To measure densities of representative samples of Earth layers (e.g. granite, basalt).

Apparatus:

Samples of rocks representative of Earth layers such as granite, basalt and peridotite.

Electronic balance

Water

Graduated (Measuring) cylinder

Method:

1. Select a rock sample.
2. Determine the mass of the sample using an electronic balance. Record the result.
3. To determine volume there are 3 possibilities
 - A. Immerse the rock sample in the water in the graduated cylinder. Measure how much the water rises (in ml). Record the result. Convert to cm^3 . ($1\text{ml}=1\text{cm}^3$); record the result.
 - B. Place a beaker of water on a balance, zeroing the reading scale. Suspend the rock sample on a thin thread and record the balance reading. (It is important to suspend the sample in water and not to let it rest on the bottom of the beaker or touch the sides.) This measurement (recorded in grams) can be converted to a volume for the density calculation ($1\text{g} = 1\text{cm}^3$).
 - C. Where the rock sample has a regular shape e.g. cuboid, the volume may be determined directly by measuring the length, width and height of the sample.
4. Repeat the process for samples of other rocks representative of Earth layers.

Analysis:

1. Calculate the density of the rock samples using the formula $\text{Density} = \frac{\text{Mass}}{\text{Volume}}$.
2. Compare the density values you have calculated with published results.
3. Discuss possible reasons for any discrepancies found with published results.

Teacher/Technician notes:

Practical techniques which may be assessed:

J. Use appropriate apparatus to record a range of quantitative measurements (to include mass, time, volume, temperature and length).