PEBBLES ON A BEACH

Purpose

To determine how the lithology of a pebble affects its size and shape.

Activity

1. Take one pebble and note its number.

2. Use the callipers or pebbleometer to measure the long, intermediate and short axes of the pebble. The three axes must be at right angles to each other.

3. Use the roundness chart to give the pebble a roundness value.

4. Record your measurements in a table.

5. Choose another pebble and make the same measurements.

6. Once you have measured all the pebbles calculate the intermediate / long and the short / intermediate for each pebble and plot these on the Zingg chart using a different symbol or colour for each rock type.

7. Work out the average long axis length and average roundness for each rock type.

8. Write down your conclusions.

Teacher's Section

Requirements

You will need to collect 12 pebbles of two different rock types. The pebbles should be numbered. I have used slate and granite pebbles collected from Lochranza beach in the Isle of Arran, Scotland.
Callipers or pebbleometer (see appendix).
Roundness chart
Zingg chart

Notes

It is easiest and quickest if you have a spreadsheet on a computer already set up to do the calculations. Numbering the pebbles makes it easy to check if a student is measuring correctly. this can also be done as a field exercise with the students collecting their own samples.

Time

60 minutes for 24 pebbles

MEASURING SPHERICITY

Purpose
To measure the sphericity of a variety of pebble shapes.

Activity
Use the calipers to measure the longest, intermediate and shortest diameter of at least ten pebbles with a variety of shapes. Your data should be recorded in columns like this:

letter	long L	intermediate I	short S	intermediate / long	short / intermediate	shape

Now plot the data on the graph below and fill in the shape column.

Zingg's shape classification

I/L=2/3

disc	spheroid
blade	roller

S/I=2/3