PEBBLE SHAPES IN HOMOGENOUS ROCKS

Purpose

Homogenous rocks would be expected to produce spherical pebbles. This activity is to determine the average shape of a pebble made of a homogenous rock with no bedding or joints and to explain why spherical pebbles are so rare.

Activity

- 1. Take on 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. Record your measurements in a table.
- 4. Choose another pebble and make the same measurements.
- 5. 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.
- 6. Write down your conclusions.

Teacher's Section

Requirements

You will need to collect at least 25 pebbles of either flint or granite.. The pebbles should be numbered. Callipers or pebbleometer (see making equipment)

Zingg chart

Notes

It is easiest and quickest if you have a spreadsheet on a computer already set

up to do the calculations. A larger number of pebbles is better but students should only be asked to measure a maximum of 25, more than that they get slapdash.

Results

Probably there are so few spherical pebbles because once a pebble has a larger face it will tend to rest on that and the movement of the waves will drag it back and forth on that face and thus further decrease its sphericity.

Time 60 minutes for 25 pebbles

MEASURING SPHERICITY

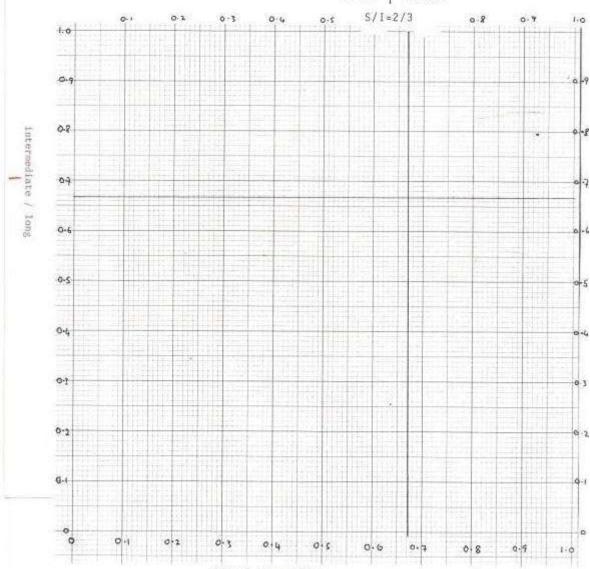
Purpose To measure the sphericity of a variety of pebble shapes.

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 1 short S intermediate short shape intermediate

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

Zingg's shape classification 1/L=2/3 disc spheroid blade roller



short / intermediate