



Science Close Up



Geology and Materials

Comparing sand grains

Collect several different samples of sand. Builder's sand, beach sand from low and high tide areas, stony beach sand, play sand... are all suitable.

Suggest to the pupils that they are going to do a forensic examination to help catch a thief. Start with a scenario which would appeal to the class.

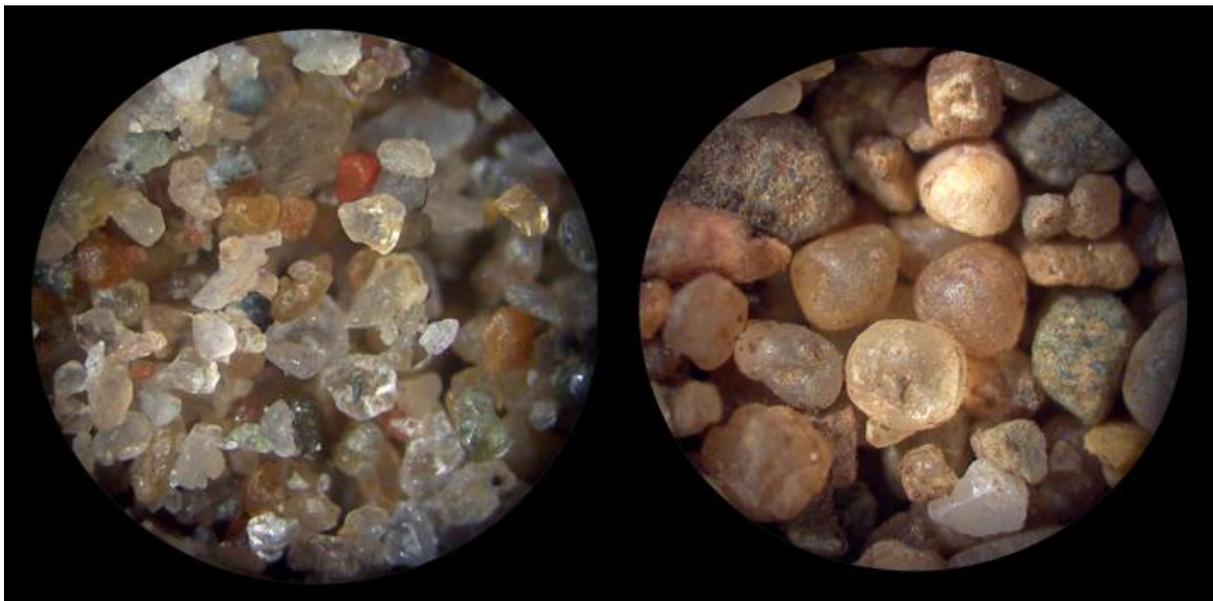
For example: - A trail of sand was left by the thief near the window where a break-in took place. The sample will indicate where the culprit might work.

The pupils should note colours, shapes, measure the sand grain sizes of the various samples and to look for pieces of shell and other materials.

From their observations they should be able to identify which is the same as the police evidence.

Use Result Sheet 1

Encourage the pupils to look for shell pieces and other materials in the sand samples.



Soil samples

A similar investigation can be carried out using soil samples.

Collect various soil samples. Try to include sandy, clay, compost, stony and fine top soil.

The grains of soil will be smaller than grains of sand so measuring grain size may not be suitable. Pieces of plant and decaying matter may also be noted. This activity encourages close observation.

Use Result Sheet 2



Science Close Up

Crystals and grains in rock samples

The lenses can be used to compare crystal sizes in granite or grain sizes in sandstone and limestone rocks.

They can also be used to examine sedimentary rock for small shell or plant fossils.

Use Result Sheet 3



Sugar crystal size

The lenses can be used to compare crystal size in different sugars. Collect samples of Demerara, granulated, caster, icing and if possible larger candied sugar for examination.

Use Result Sheet 4.

A possible extension activity could be carried out to time how long each type of sugar takes to dissolve in water. Plan a 'fair test' with the pupils so that only one variable changes. Possible variables which could be considered are hot or cold water, with or without stirring, quantity of water, quantity of sugar.





Science Close Up

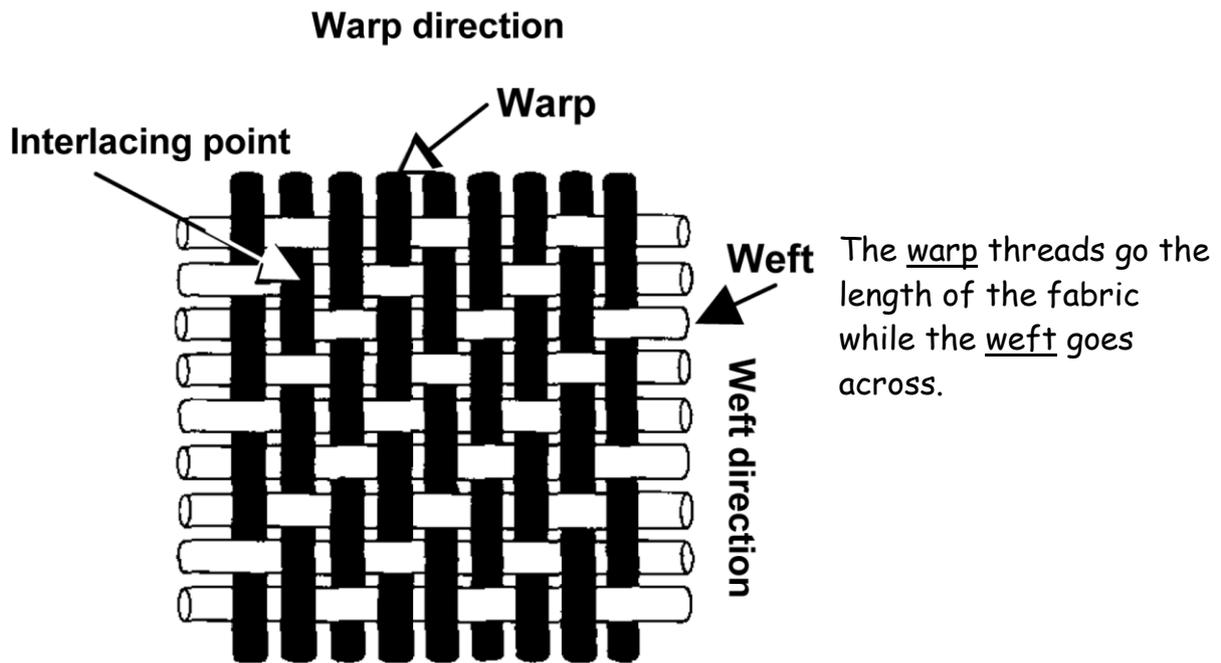
Fabric samples

The lenses can be used to count the number of threads in a cloth sample.

Textile manufacturers do this to determine quality of a fabric.

Count the number of threads per centimetre in each direction (warp and weft).

If the fabric is coarse, count over 2cm. Knitted fabrics can also be examined but pupils need to be aware of the structure and loop shapes before trying to count threads.



Knitted loops can be counted per 2cm.

Use Result Sheets 5 and 6

Pupils can examine a variety of different fabrics to observe types of weave and knitted structures.



Science Close Up

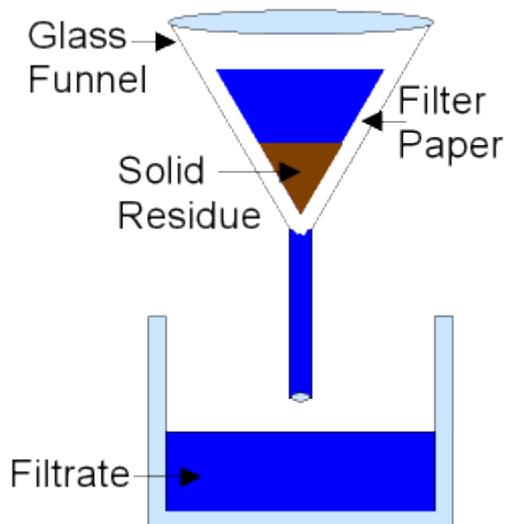
Filter papers

When introducing the idea of how filtering works, it is a good idea to examine the paper or material for size of 'hole'.

Collect pieces of: - tea bag material, coffee filters, j-cloth, kitchen towel, netting and different grades of filter papers. Pupils can examine the materials by holding them up to a light and see the 'holes'. Further examination under the lens allows for measurement of 'hole' size.

The samples can then be used to filter muddy water. The size of particle that goes through the filter is smaller than the 'holes'.

Use Result Sheet 7



Filter paper 'holes'.



Science Close Up

Plant Studies

Seed size

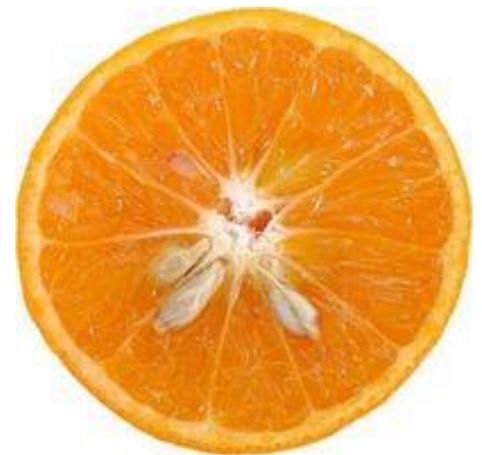
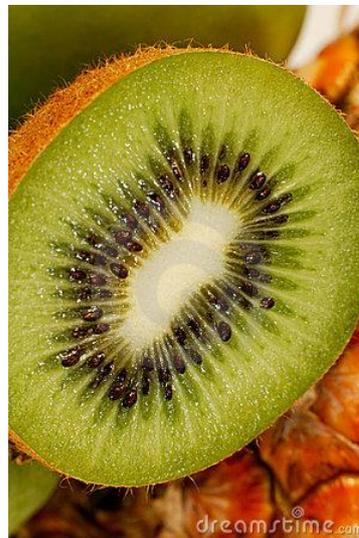
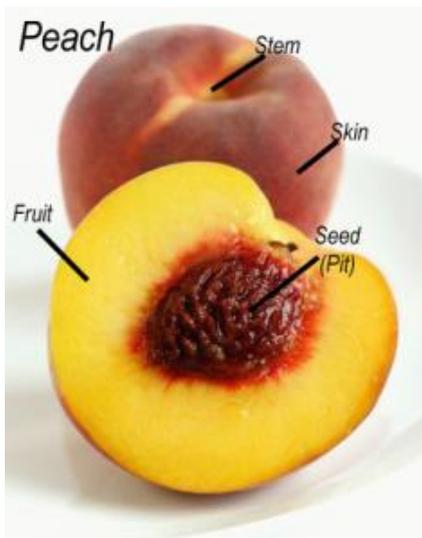
An investigation can be carried out to test the following hypothesis; - The biggest fruits have the biggest seeds.

Collect a wide variety of seeds from fruit.

Suggested fruit seeds: - orange, apple, melon, grape, peach, plum, banana (they are the small black dots seen inside the flesh), pear, kiwi, tomato, strawberry.

Pupils can measure the length of each seed type using the lens and length of the fruit using a ruler.

Use Result Sheet 8



As an extension activity pupils could list all the seeds that we eat or use.





Science Close Up

Anther size

Collect a wide variety of anthers from flowers.

Suggested flowers: - daffodil, crocus, lily, tulip, buttercup, fuchsia, hibiscus, rose and carnation. Some flowers have anthers too small to see with the lenses provided.



Pupils can draw each of the flowers and a diagram of their anthers before measuring the length of the anther of each flower type using the lens.

Use Result Sheet 9

