

CAPILLARY MOVEMENT

Purpose

To show how water rises in sediments of different grain size.

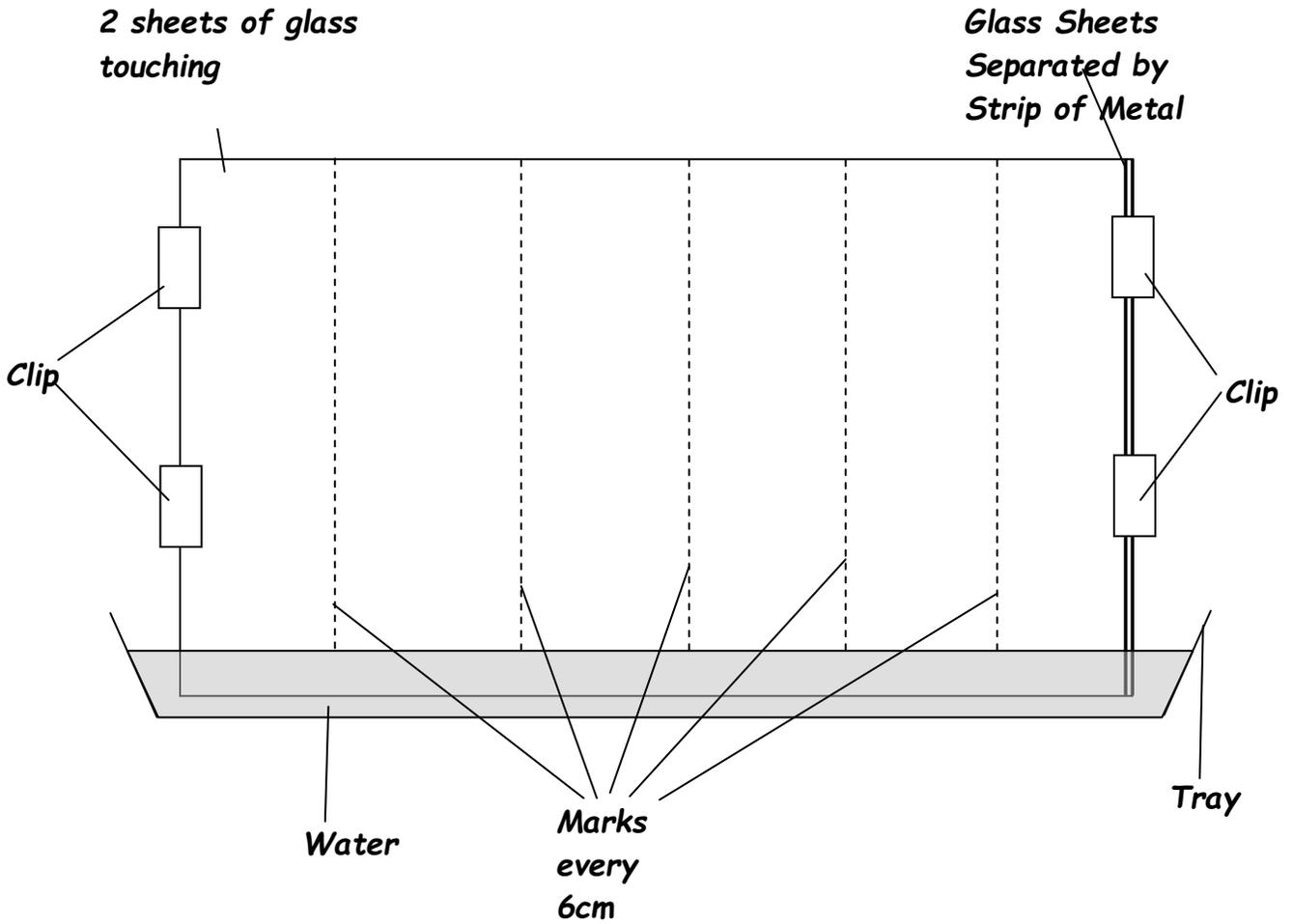
Activity I

- 1. Examine the level the water has risen to between the glass sheets. The water has risen because of capillary movement. Measure the height of the water at each of the lines.***
- 2. The glass sheets are 0.5mm apart at the one end and touching at the other and the glass 30cm long. Calculate the gap at each line.***
- 3. Plot the height of the water on the vertical axis against the width of the gap on the horizontal axis. The vertical axis for the height of water should go up to 30cm. Draw a best fit line through your points and extend it to 30cm.***

Activity II

- 1. Pour distilled water into the tray to a depth of 1cm.***
- 2. Measure the height the water in each the tube has risen above the water level in the tray every two minutes for half an hour.***
- 3. Measure the level again after several hours.***
- 4. Plot the height of water against time for each grain size.***
- 5. Use the information from activity I to estimate the effective gap between the grains for each grain size.***

Teacher's Section





Capillary movement in sediment

Requirements

Activity I 2 sheets of 4mm clean clear float glass 30cm by 20cm ideally with the cut edges smoothed. One sheet should be marked with lines every 6cm.

4 clips to hold the glass sheets together

A thin strip of metal 20cm long and 0.5mm thick

A tray more than 1cm deep and longer than 30cm filled with 1cm of distilled water

A retort stand or other support to hold the glass vertical

Activity II 4 glass tubes 50cm long, 2.5cm internal diameter, with gauze tied over the ends. The tubes should be filled with well sorted sediment with grain sizes of 0.25mm, 0.5mm, 1.0mm, and 2.0mm

Support for tubes as shown appendix 1.

Tray about 1cm deep to fit between supports.

Notes

It is impossible to see the film when the gap is very small and drying the water does not help.

Results

Activity I should yield a smooth curve with the film getting higher as the gap gets smaller. The water rises fastest and to the greatest height in the finer sediment. The water rises fastest in the first 15 minutes but then slows down to rise slowly over the next few hours.

Time

40 minutes for both activities.

Cost

Glass tubes £20



Capillary movement between glass