3 B

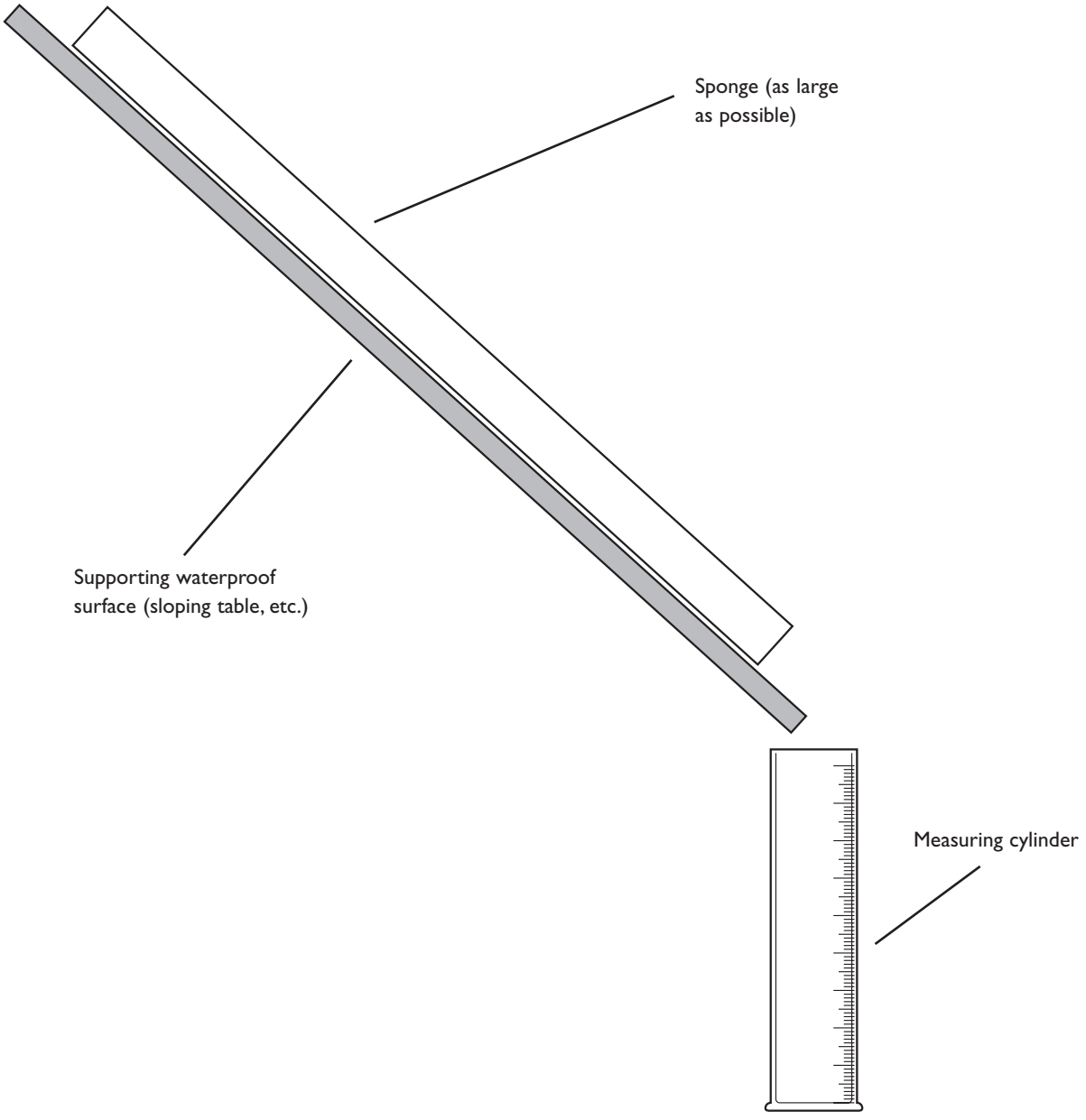
Name:..... Form:.....

See **pages 8 and 9** of *The Water Book*

Practical work: Where water comes from

Much of the water that falls seeps into the ground and then moves slowly to feed rivers.

Place a sponge on a sloping waterproof surface, such as a plastic tray. You are going to pour water in at one end of the sponge and measure the water that flows out of the other end. Then you are going to make a chart of what happens.



Answers, Notes, Background

See **pages 8 and 9** of The Water Book

Notes

This is a fun practical to do in a classroom (provided you can get a jug of water). All you need is a sponge, a tilted surface to support it (a table with two legs propped up) and a bowl to collect the water in.

The bigger the sponge the better. It will actually work with a small car cleaning sponge, but if you can get a sponge sheet then so much the better because the practical will last longer and the results will be easier to measure.

Turn the sponge so that one corner points down to the bottom of the supporting surface. It must also hang over the end of the surface because you want children to measure the water that flows out.

You also need a measuring device (two, actually, as you are going to want to swap a full one for an empty one without losing water). A measuring cylinder would be ideal, but you will need to start with a large capacity one. Towards the end you may want to swap it for a small capacity one. If you can't get hold of two measuring cylinders from the science co-ordinator, then use a cone-shaped measuring cylinder of the type used in cooking. Make sure it is marked in metric measure.

The idea is to pour the water onto the sponge, using the sponge as surrogate soil. First, children will see the water enter the sponge. It will be very difficult to make water flow over the surface. Reinforce this point by having the children take note that there is no surface water.

Get children to measure the water that flows out over time. For this they will need to work as a team, one keeping track of time using the second hand of a watch, another measuring the water and a third getting ready to put the second measuring cylinder in place immediately after the first one is removed. Then, while the second one is filling, the water in the first cylinder can be measured and recorded.

The ideal way to show this is with glass tubes. Each volume of water is placed into a separate tube and the tubes placed side by side. The level at the top of the tubes shows the pattern of flow. Alternatively, simply make a chart and join the top of the bars with a curved line. (Scientists call this chart a hydrograph, by the way.)

Children should notice that it took time for any water to flow out of the bottom (where has all the water gone, you might ask). The flow begins and peaks and then declines. It will take many minutes for a jug full of water to drain through the sponge.

If you have measured all of the outflow, you might then add them all up and show that the total is less than the quantity of water poured in from the jug. Where is the rest? – it is soil moisture, stored for the next time it 'rains'.

If you repeat the experiment, the water will begin to flow through faster than if the sponge was dry. Also the total in and out will match more closely. This is because any new water introduced at the top pushes water out of the bottom.

There are lots of possibilities, and children can try different shapes and sizes of sponge, different thicknesses, different kinds of sponge and so on. All can be related to thick and thin soils, well draining and poorly draining soils and so on.