5c

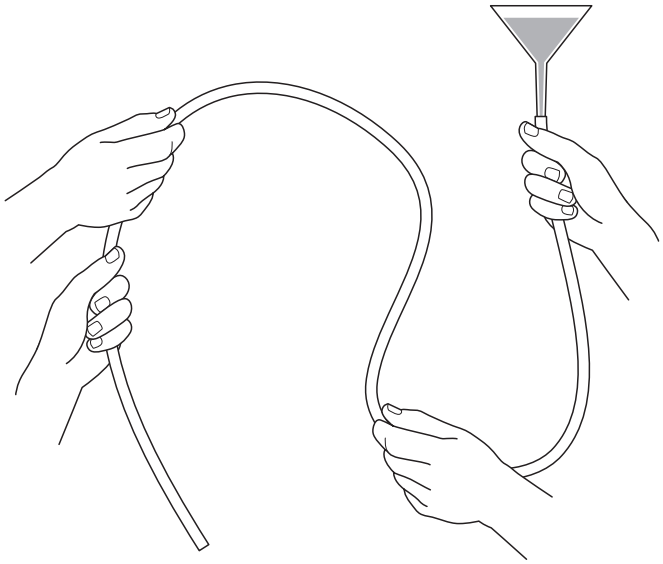
Name:..... Form:.....

See **pages 12 and 13** of *The Water Book*

Practical work: Investigate water pressure

You will need a length of clear plastic tubing, a jug, a funnel, a bowl, a measuring cylinder, a watch and some coloured water for this work. It is best that three people work together on this demonstration.

You are going to find out how height of water affects pressure.



1. Use a pen to make a line around the funnel near the top. This will be the level of water you will maintain while you are doing the work.

2. Push one end of the tubing onto the funnel and then hold the other end of the tubing over the measuring cylinder. (It will prevent troublesome spills if the measuring cylinder is placed in the bowl.)

3. Hold the funnel 10cm above the open end of the tubing. Begin pouring water into the funnel so that it stays close to the pen mark. Then time how much water is collected in 15 seconds. (You can stop collecting water by moving the measuring cylinder out of the way. Now you know what the bowl is for!)

4. Repeat the task but this time hold the funnel 50cm above the open end of the tube. Then repeat again with the funnel 100cm (1m) above the pen mark.

5. What do your results show?

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5C Answers, Notes, Background

See **pages 12 and 13** of *The Water Book*

Answers

The results show that as the funnel is raised above the tube outlet, the water flows through faster, meaning that an increase in height of the funnel (an increase in the head of water) gives higher pressure.

Notes

This demonstration shows how pressure is produced by moving the inlet high above the outlet of a tube completely filled with water.

By repeating the demonstration with various heights of the funnel, students can, if you wish, make a chart of the height against amount collected.

The same principle applies to the water tower used to supply district water. The height of the tower reflects the head of water the engineers want to achieve to provide customers with a good flow of water, taking into account the losses of pressure due to friction in the pipe over long distances.

You can extend this practical by getting children to think about the toilet cistern. This is the same principle as before, with a head of water needed to flush away the contents of the bowl. In this case a wide pipe is used from the cistern because it is important to get enough water moving at high speed. There has to be enough energy in the water to move the solid waste. (Energy is proportional to mass multiplied by velocity.) You can make the comparison that boulders are moved during heavy floods by fast-flowing rivers.