

Who invented the pen?

ACTIVITY SHEET

Fountain pens became incredibly popular because they had free-flowing ink, due to an extra hole in the pen. Let's use water bottles to experiment with the 'air in, ink out' idea used in fountain pens!



What you will need

- 2 identical water bottles
- A stopwatch or timer
- Scissors or something sharp (please ask for help from a grown up)
- Food colouring (optional)
- An area where you can tip water out

Fun Fact

The average ball point pen can write up to a total of 2km of writing!

What to do

1. Fill up both water bottles with water.
2. Put two drops of food colouring into the water bottles (optional).
3. Loosely put the lid on both bottles.
4. Make sure you are somewhere you can tip out the water and make mess!
5. Take one water bottle, turn it upside down and take the lid off. Using a stopwatch or timer, measure the time it takes for all the water to pour out.
6. Fill in your observations in the table below.
7. Turn the second water bottle upside down and ask an adult to help you poke a hole in the base of the bottle.
8. Remove the lid and measure how long it takes for the water to pour out.
9. Fill in your observations in the table below.

	Bottle without a hole	Bottle with a hole
Time it took for the bottle to empty		
Did you hear any sound?		
How was the water moving?		

What's going on?

By experimenting with the water flowing out of the two different bottles, you've shown how the ink inside a fountain pen comes out so smoothly.

Without a hole, there's no easy way for air to get inside the bottle, so the water comes out in 'waves' instead of flowing out smoothly.

When you create a hole in the bottle, the air pressure inside and outside of the water bottle becomes equal, allowing air to push the water out of the bottle and pour smoothly.

Don't forget to take photos and share your results on social media with #ScitechAtHome

Joke

Q: What is black, white, and inky all over?

A: A pen-guin

