

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

Your teacher may watch to see if you can:

- follow instructions to remain safe.

**Aim**

To find out some differences between inhaled and exhaled air.

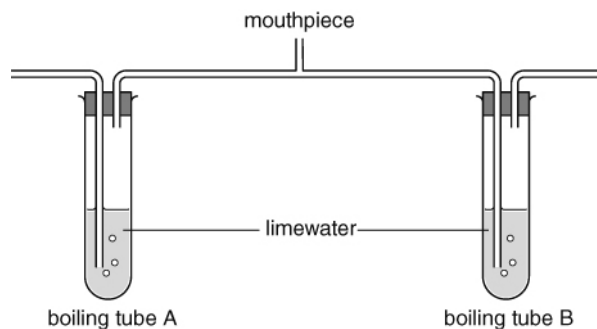
**Test 1 Method**

**Apparatus**

- two double-holed bungs with glass tubing already through them
- two delivery tubes
- two boiling tubes
- tubing
- limewater
- clean tubing for mouthpiece
- eye protection

⚠ Wash your hands after this experiment. Wear eye protection.

- A** Set up the apparatus as shown on the right.
- B** *Gently* breathe in and out through the mouthpiece for 2 minutes.



**Recording your results**

- 1 On the diagram, draw arrows to show the direction that air flows through the apparatus.
- 2 Mark on the diagram any changes you saw happening to the limewater.

**Test 2 Method**

**Apparatus**

- mirror
- dry cobalt chloride paper
- forceps
- pipette
- beaker of water

⚠ Do not handle cobalt chloride paper with your hands. If you touch it, wash your hands immediately.

- A** Put a drop of water onto a piece of dry cobalt chloride paper. Notice what happens.
- B** Breathe out heavily onto a mirror several times.
- C** Use forceps to put another piece of dry cobalt chloride paper onto where you breathed.



**Recording your results**

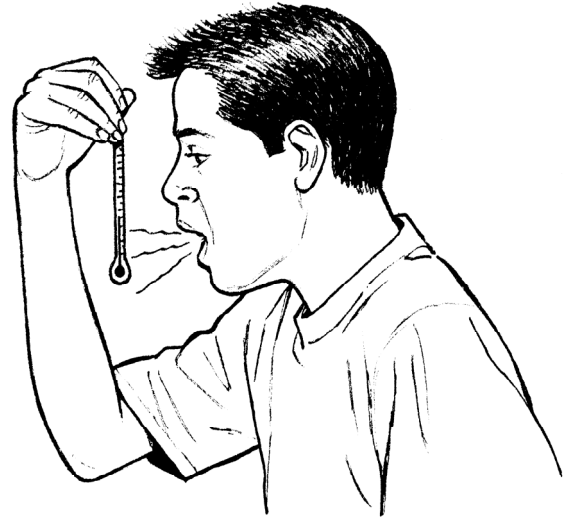
- 3 a** What happened when you put water onto dry cobalt chloride paper?
- \_\_\_\_\_
- \_\_\_\_\_
- b** What happened when you put dry cobalt chloride paper onto the mirror?
- \_\_\_\_\_
- \_\_\_\_\_

**Test 3 Method**

**Apparatus**

- thermometer

- A** Measure the temperature of the air with the thermometer.
- B** Breathe heavily onto the bulb of the thermometer several times and record the temperature of your breath.



**Recording your results**

4 Record the temperatures in this table:

<b>Air temperature (°C)</b>						
<b>Breath temperature (°C)</b>						

**Considering your results/Conclusions**

5 Describe *three* differences between inhaled air and exhaled air.

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6 Explain why the amounts of the gases in exhaled air are different to the amounts in inhaled air.

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7 Describe what would happen if you did Test 1 using a suitable indicator instead of limewater.

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**I can...**

- describe ways in which respiration can be detected.