

# What air is made of and why it presses

Grade 7 science (Year 8 · Class 7) · Test

Name: \_\_\_\_\_ Date: \_\_\_\_\_ Class: \_\_\_\_\_ Mark: \_\_\_\_ / 20

This test covers the composition of air, the mass of air, atmospheric pressure and barometers. Use a calculator, show your working and give units. Where a question asks for an explanation, use full sentences. Marks are shown beside each part.

**Level:** Grade 7 science (Year 8 · Class 7) · **Curriculum:** MS-ESS2-5

Time: 45 minutes · 8 questions · Total: 20 marks · Calculator allowed

## Question 1 Composition of air (3 marks)

- Name the most abundant gas in air. (1 mark)
- State the approximate percentage of oxygen in air. (1 mark)
- Name one other gas found in air in a small amount. (1 mark)

## Question 2 Evidence for mass (2 marks)

A football is weighed flat and then inflated. Describe what is measured and what it shows about air.

## Question 3 Air in a hall (3 marks)

A hall is 5.0 m long, 4.0 m wide and 2.5 m high. The density of air is  $1.2 \text{ kg/m}^3$ .

- Calculate the volume of the hall. (1 mark)
- Calculate the mass of air in the hall. (2 marks)

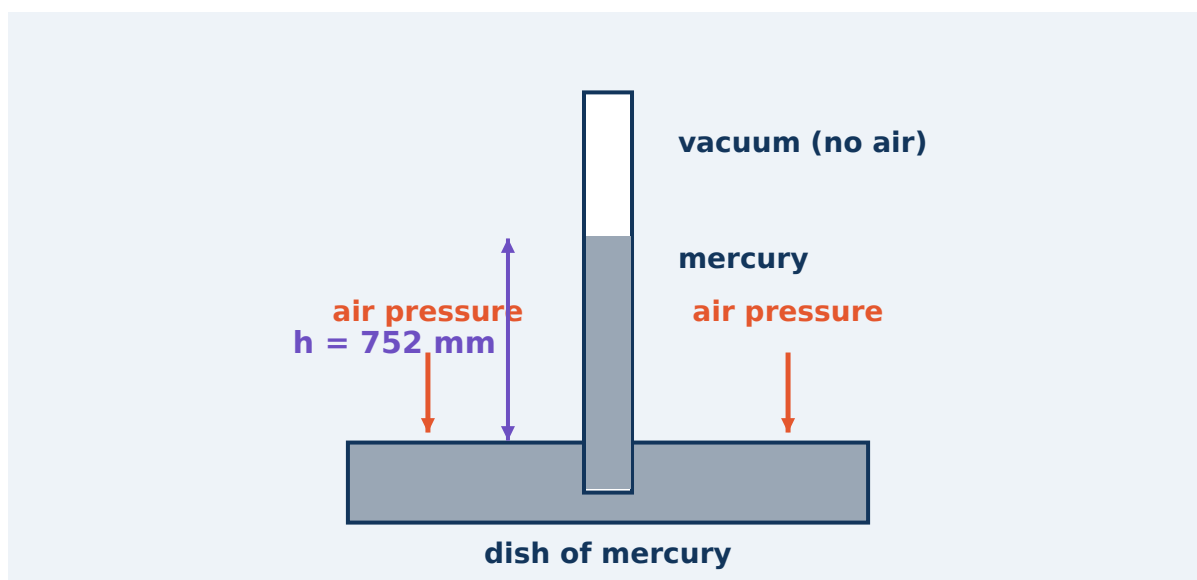
## Question 4 Pressure calculation (3 marks)

A force of 480 N acts evenly on an area of  $0.40 \text{ m}^2$ .

- Calculate the pressure in pascals. (2 marks)
- Convert the pressure into kilopascals. (1 mark)

## Question 5 Reading a barometer (3 marks)

The figure shows a mercury barometer.



A mercury barometer.

- State the height of the mercury column. (1 mark)
- State what is in the space above the mercury. (1 mark)
- State what holds the mercury up in the tube. (1 mark)

### Question 6 Pressure on a mountain (3 marks)

- Explain why atmospheric pressure is lower at the top of a mountain than at sea level. (2 marks)
- State what happens to the height of the mercury column in a barometer carried up the mountain. (1 mark)

### Question 7 Converting pressure (2 marks)

A weather report gives a pressure of 1020 hPa. Convert this into pascals and kilopascals.

### Question 8 Unit of pressure (1 mark)

State what one pascal is equal to, in terms of force and area.