7 What is in the air?

Air is a mixture of invisible, tasteless and colourless gases.

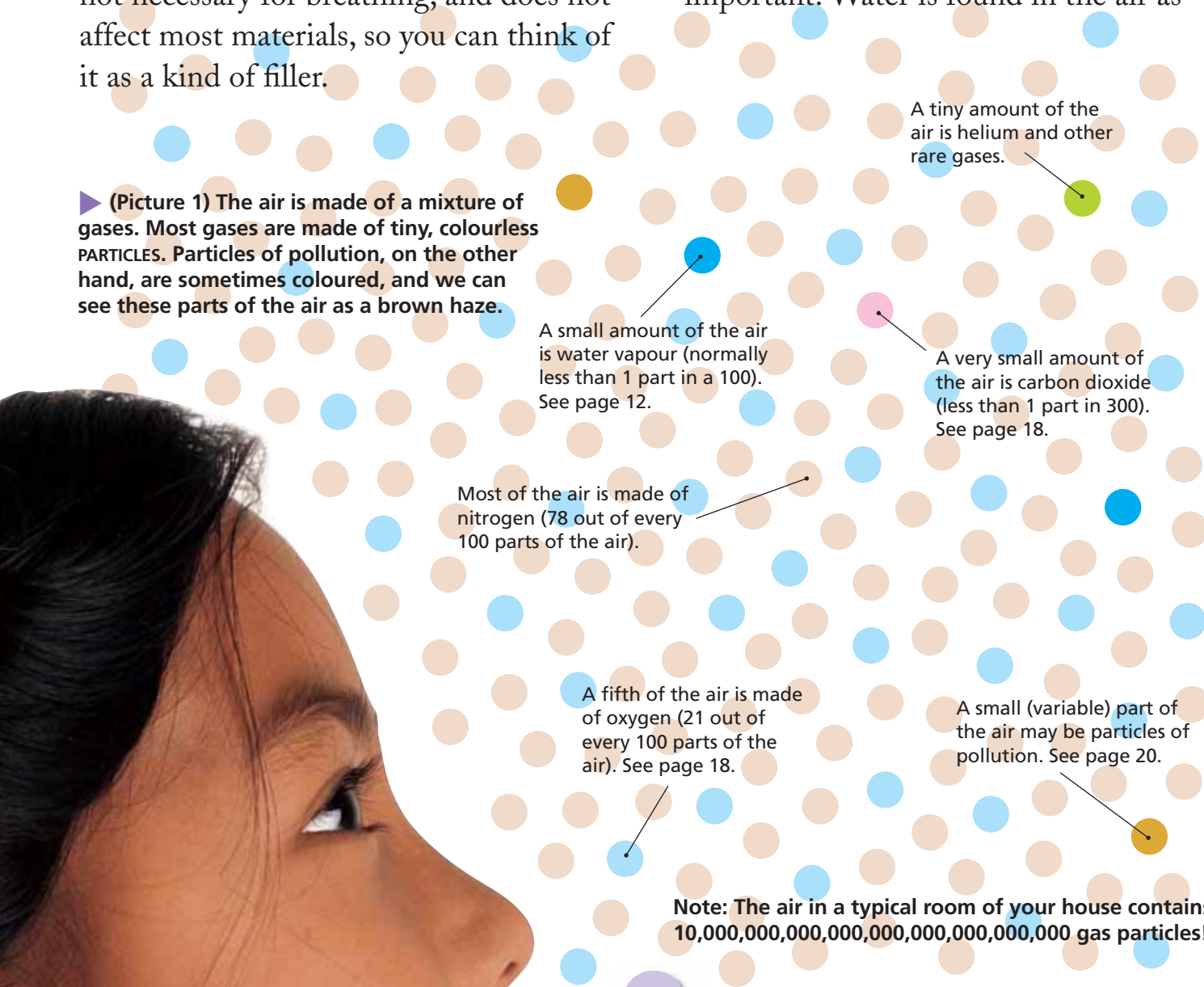
You cannot see, smell or touch air, but you know from the previous pages that air is always on the move.

Usually we think of the air as being just one thing. But the air around you is really a **MIXTURE** of gases (Picture 1).

The most common gas in the air is called nitrogen (Picture 2). Nitrogen is not necessary for breathing, and does not affect most materials, so you can think of it as a kind of filler.

About one-fifth of the air is oxygen. Oxygen is quite different to nitrogen – it changes almost everything it touches. Oxygen makes damp iron go rusty, it is necessary for fires to start and all animals need it to live (see pages 18 to 19).

Other gases occur in small amounts in the air. Nevertheless, some are very important. Water is found in the air as



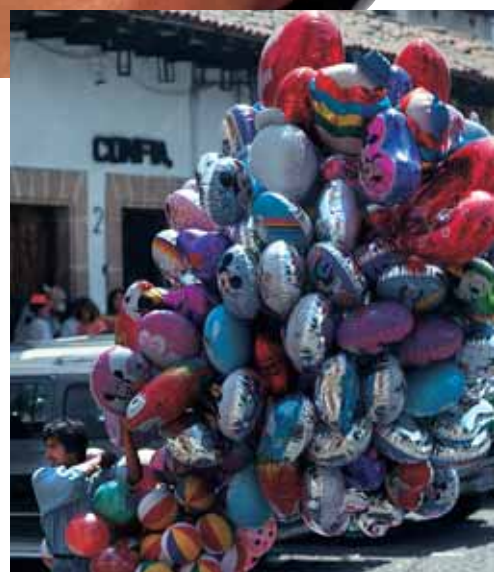
▶ (Picture 1) The air is made of a mixture of gases. Most gases are made of tiny, colourless PARTICLES. Particles of pollution, on the other hand, are sometimes coloured, and we can see these parts of the air as a brown haze.

Note: The air in a typical room of your house contains 10,000,000,000,000,000,000,000,000,000 gas particles!

a gas, or **VAPOUR**. This gets carried high into the sky and makes clouds. This gas is important to rain.

Carbon dioxide is another important gas that occurs in the air in small amounts. It is vital to plant growth, and it also keeps the air warm by soaking up heat from the Sun (see pages 18 to 19). The other gases in the air occur in really tiny amounts. Some of them, like helium and neon (Picture 3), are used for special purposes.

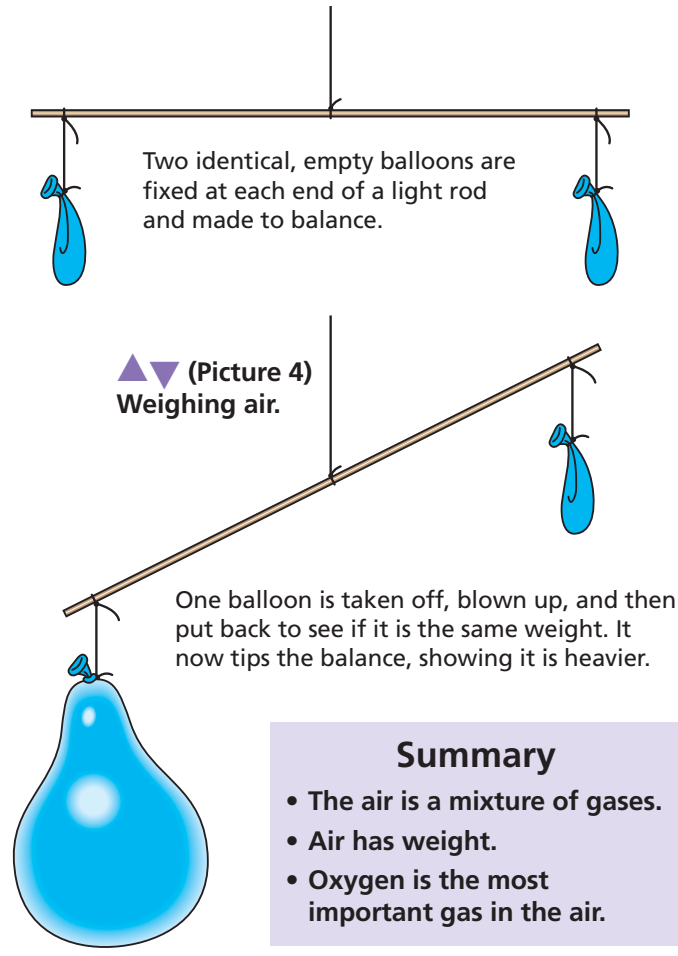
▼ **(Picture 2) Nitrogen is used in this crisp packet to keep the food fresh. Its job is to keep oxygen away from the food.**



▶ **(Picture 3) Helium is lighter than air and is sometimes used in balloons to make them float.**

Weighing gas

In an ordinary living room there are a vast number of gas particles. Each one is incredibly tiny, but if you could weigh them all, you would find they came to a staggering 80kg! But you can more easily measure the weight of air by squashing some of it into a small space. One way of doing this is to blow up a balloon. The balloon is now filled with squashed air, called **COMPRESSED AIR**. If you compare the weight of the air-filled balloon with the weight of a balloon with no air in it, you will find that the balloon containing the compressed air is heavier – it makes one side of a balance tip down (Picture 4).



▲▼ **(Picture 4) Weighing air.**

Summary

- **The air is a mixture of gases.**
- **Air has weight.**
- **Oxygen is the most important gas in the air.**

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