

8.B. Graphic Organizers

Diagrams that are used to organize and display ideas visually are called graphic organizers. Graphic organizers are especially useful in science and technology studies when you are trying to connect together different concepts, ideas, and data. Different graphic organizers have different purposes. They can be used to

- show processes
- organize ideas and thinking
- compare and contrast
- show properties or characteristics
- review words and terms
- collaborate and share ideas

TO SHOW PROCESSES

Graphic organizers can show the stages in a process (Figure 1).

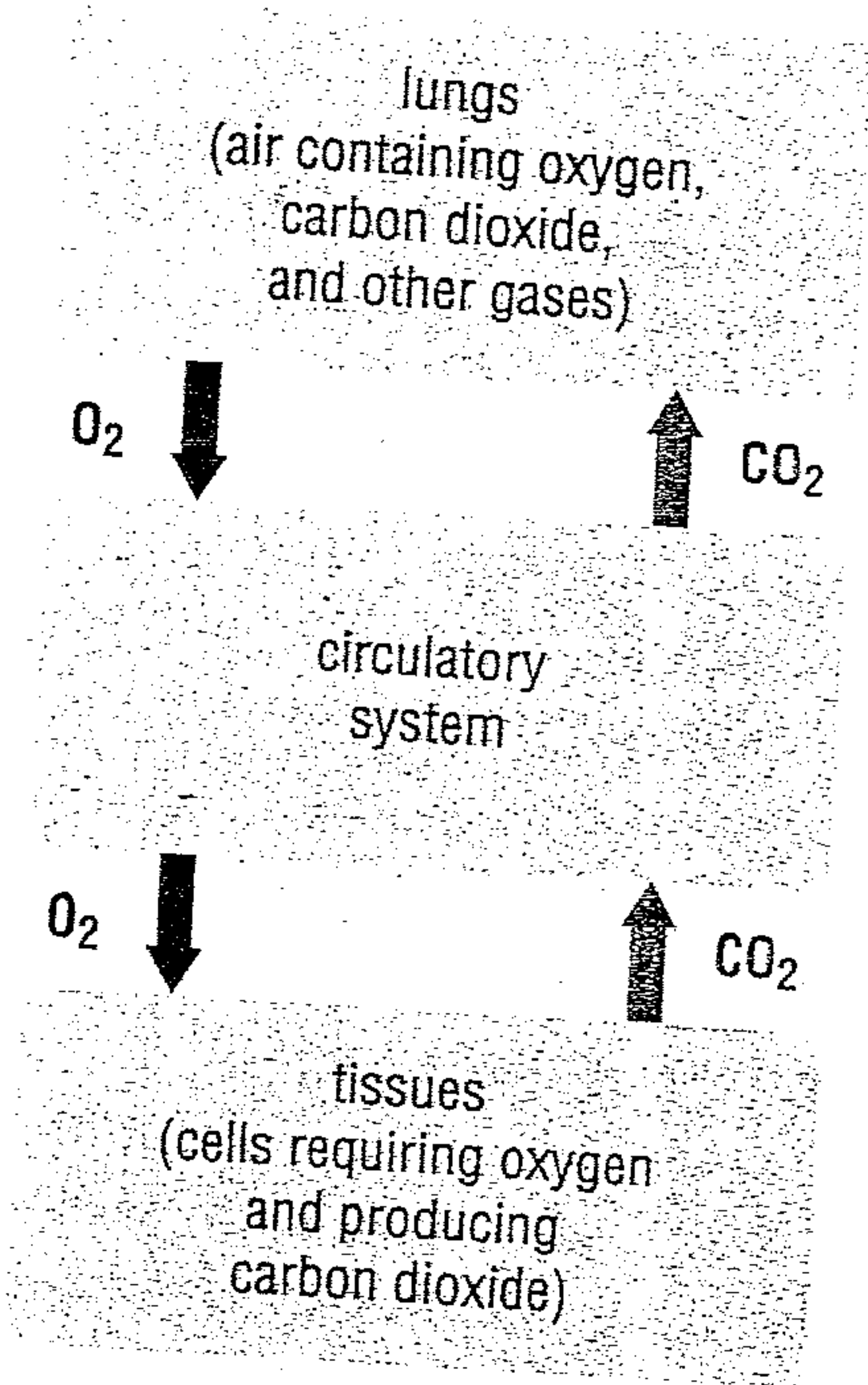


Figure 1 This organizer shows that oxygen and carbon dioxide are transported around the body.

TO ORGANIZE IDEAS AND THINKING

A **concept map** is a diagram showing the relationships between ideas (Figure 2). Words or pictures representing the ideas are connected by arrows and words or expressions that explain the connections. You can use a concept map to brainstorm what you already know, to map your thinking, or to summarize what you have learned.

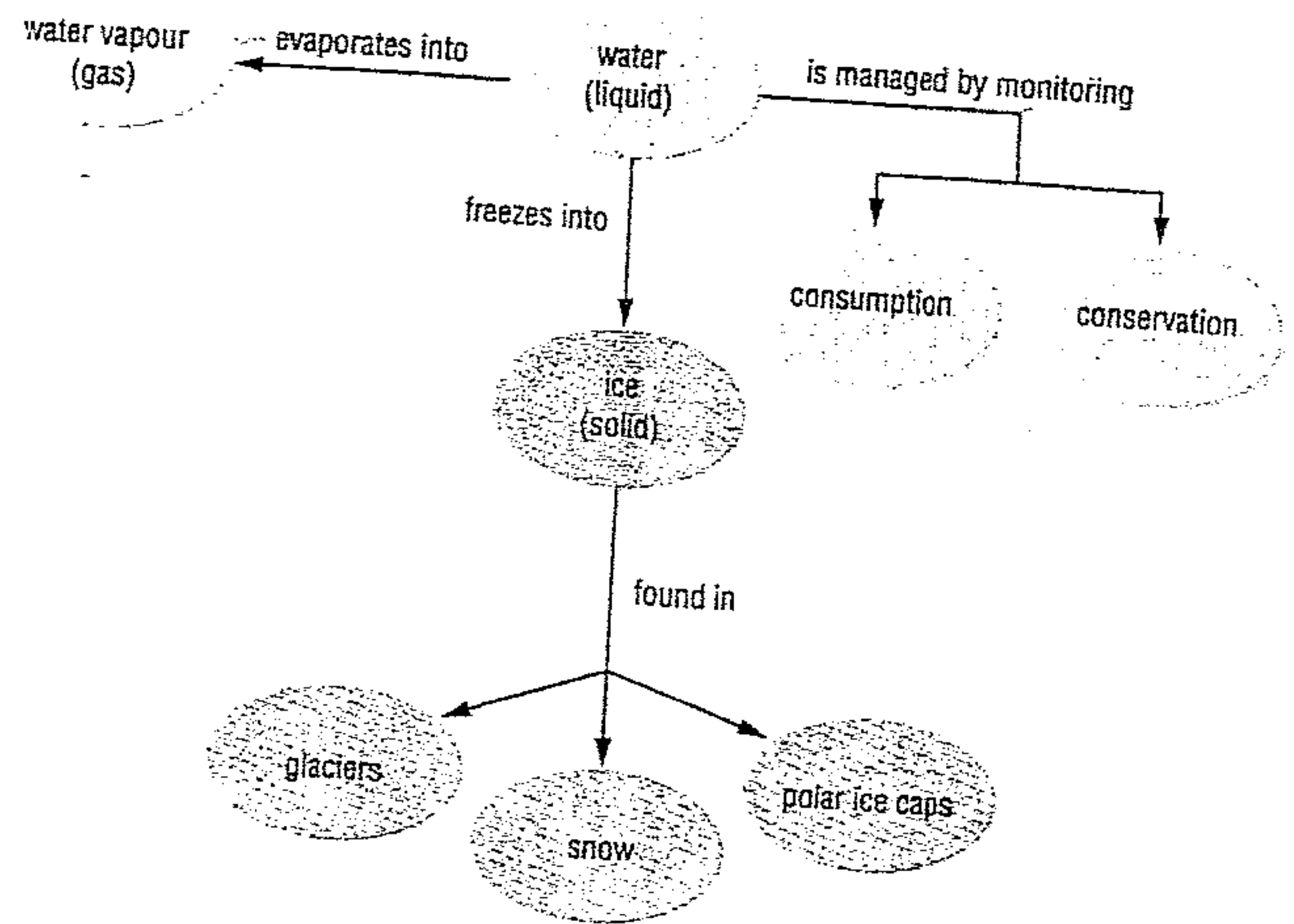


Figure 2 Concept maps help show the relationships among ideas.

Mind maps are similar to concept maps, but they do not have explanations for the connections between ideas.

You can use a **tree diagram** to show concepts that can be broken down into smaller categories (Figure 3).

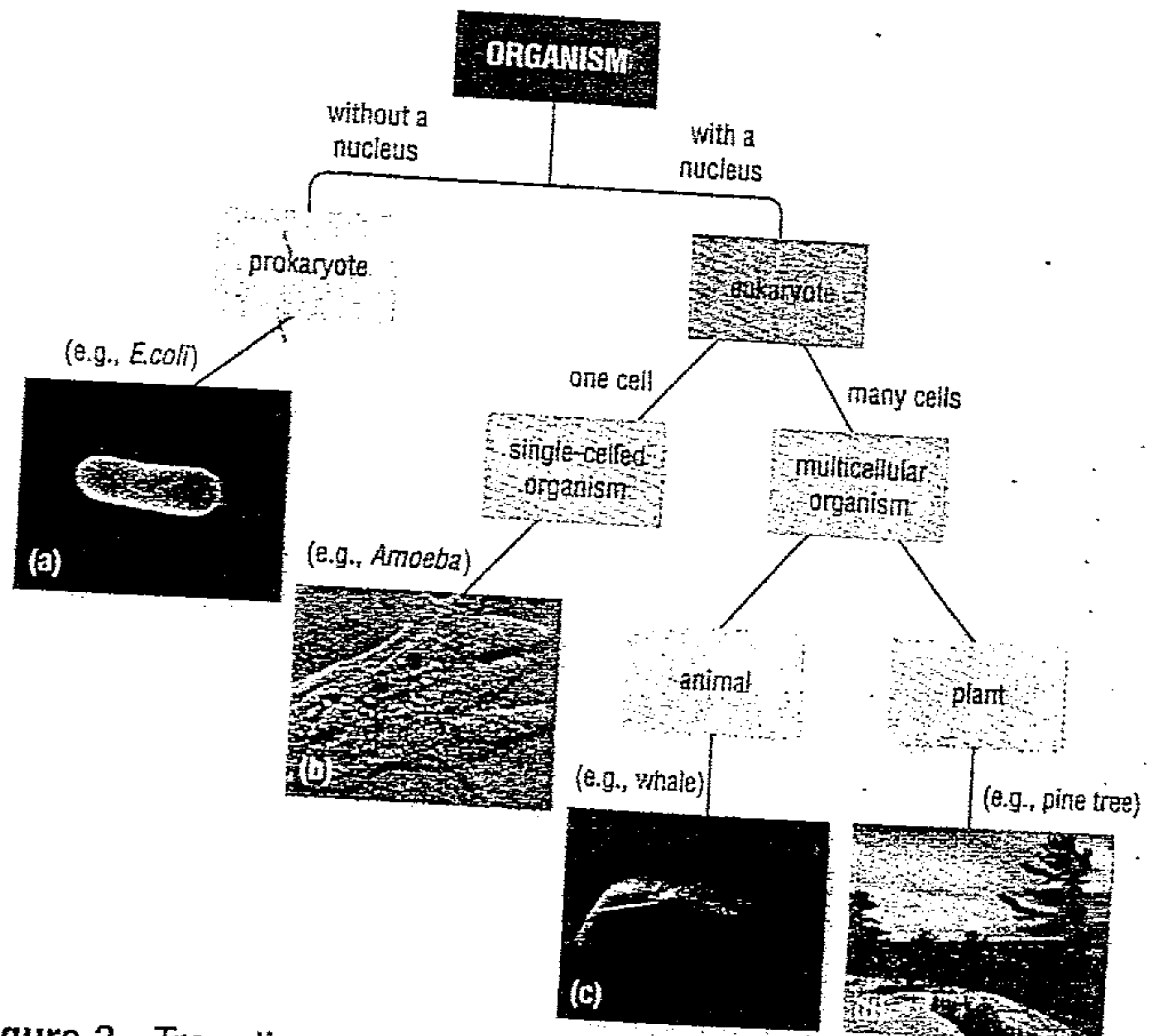


Figure 3 Tree diagrams are very useful for classification.

You can use a **fishbone diagram** to organize the important ideas under the major concepts of a topic you are studying (Figure 4).

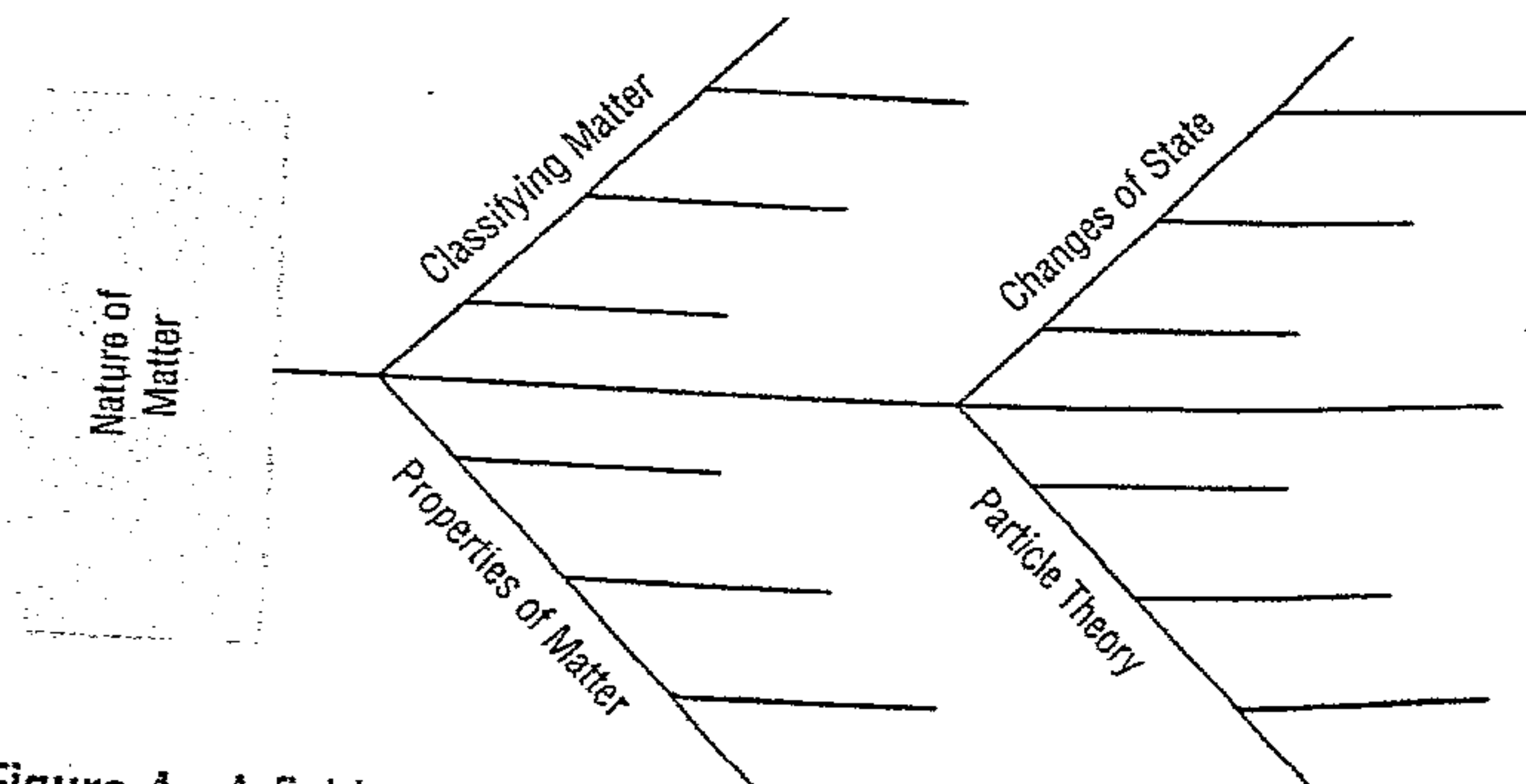


Figure 4 A fishbone diagram

What do we Know?	What do we Want to find out?	What did we Learn?
Carbon dioxide is a greenhouse gas.	Are there any other important greenhouse gases? If so, where do they come from?	Methane, water, and nitrous oxide are other common greenhouse gases. Methane is released from decaying organic matter and from the digestive tracts of grazing animals. Nitrous oxide is released in automobile emissions.
The greenhouse effect traps solar energy in the atmosphere.	If the energy of the Sun can get through the atmosphere and warm the Earth's surface, how is the energy trapped by greenhouse gases?	The atmosphere is transparent to light, allowing light rays from the Sun to strike the Earth's surface. This energy is absorbed and then released as infrared waves. Because the atmosphere is not transparent to infrared waves, energy is trapped in the atmosphere and warms the Earth.

Figure 5 A K-W-L chart

You can use a **K-W-L** chart to write down what you know (K), what you want (W) to find out, and, afterwards, what you have learned (L) (Figure 5).

TO COMPARE AND CONTRAST

You can use a **comparison matrix** (a type of table) to compare related concepts (Table 1).

Table 1 Subatomic Particles

	Proton	Neutron	Electron
electrical charge	positive	neutral	negative
symbol	p ⁺	n ⁰	e ⁻
location	nucleus	nucleus	orbit around the nucleus

You can use a **Venn diagram** to show similarities and differences (Figure 6).

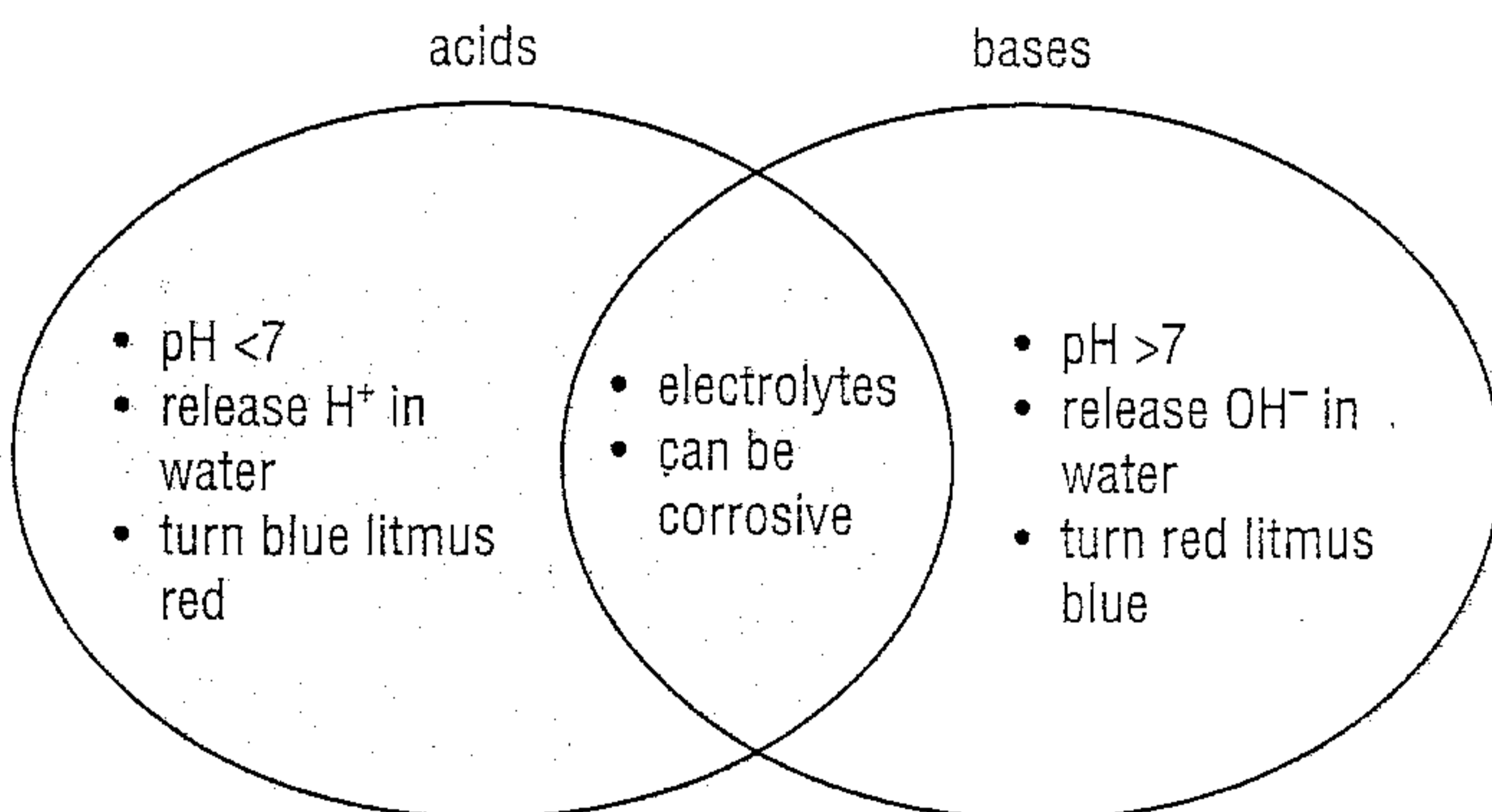


Figure 6 A Venn diagram

You can use a **compare-and-contrast chart** to show similarities and differences between two substances, actions, ideas, and so on (Figure 7).

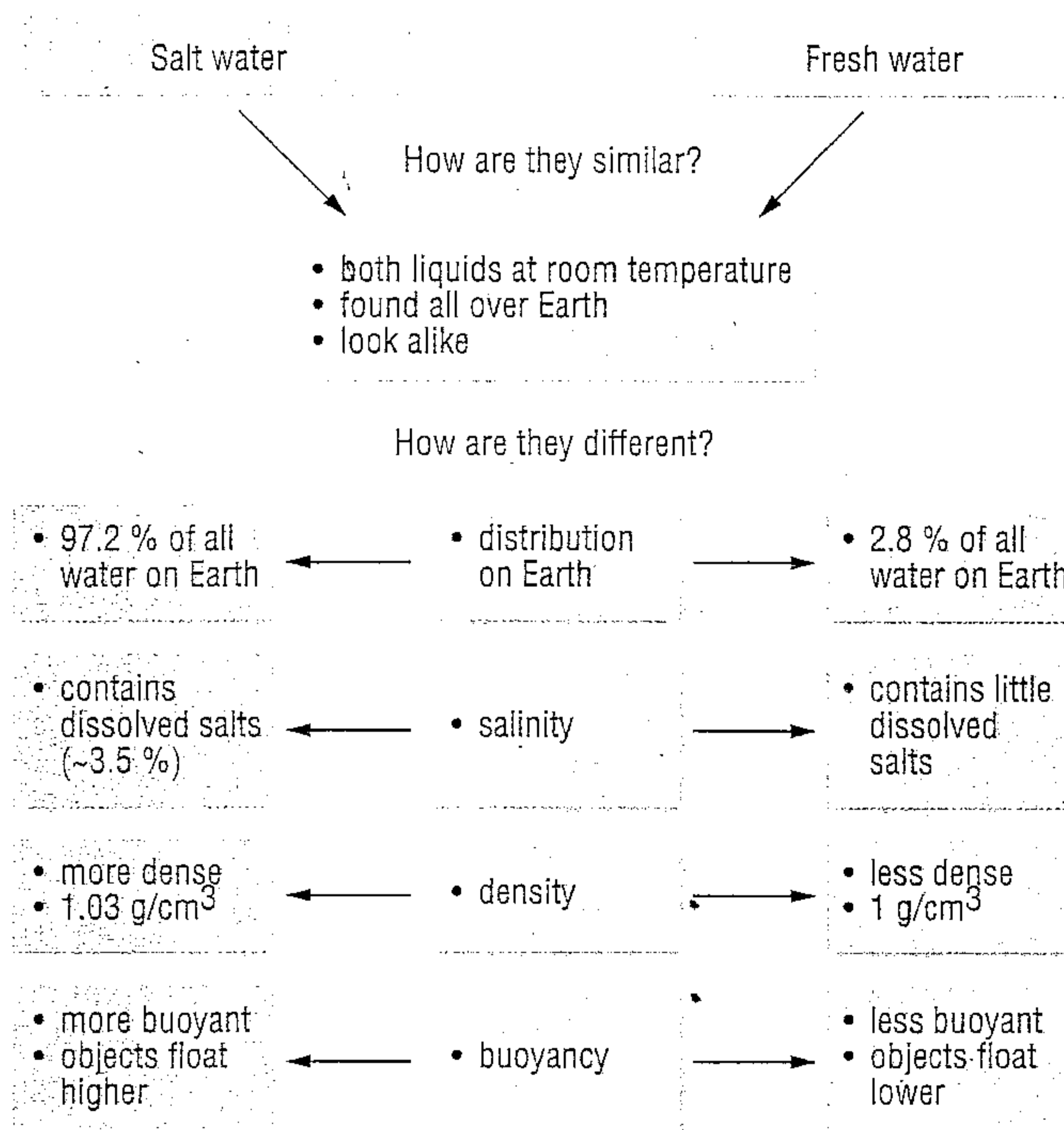


Figure 7 A compare-and-contrast chart