

Machines, cycles and processes

TASK 1 Using the passive
Sequencing

TASK 2 Using *which* to organize and add
information
Expressing result and purpose

Task 1 Using the passive

1 Look at the five objects a–e and answer the questions.

a Which of these materials are used to make these objects?

wood ■ plastic ■ cement ■ bricks ■ diamonds
metal ■ leather ■ glass ■ rubber

b Which of the materials in your list are natural and which are manufactured?

2 Complete 1–6 with the correct forms of the verbs in brackets.

Examples

A river *runs* through London. (active)

Many electronic goods are *manufactured* in Japan.
(passive: *be* + past participle)

Manufacturing cement

Limestone is the main ingredient of cement. Firstly, it **1** _____ (extract) from the ground. Then, at the factory, it **2** _____ (heat) to a high temperature with other ingredients. After this, it **3** _____ (cool) with blasts of cold air.

How rain is formed

When warm air **4** (reach) high ground, it is forced to rise, and, as a result, it **5** (cool). Moisture in the air **6** (condense) to form rain.

3 Complete 1–8 with the correct forms of the verbs in brackets.

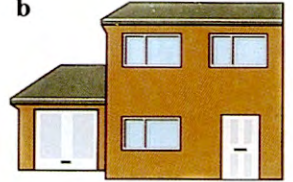
The water table

Some rocks **1** _____ (hold) large amounts of water. When it **2** _____ (rain), the tiny spaces in the rock gradually **3** _____ (fill) with water so that the rock **4** _____ (become) saturated or full up. The top of this saturated zone is called the water table. If long periods of rain **5** _____ (occur), the water table **6** _____ (rise). If there is no rain, the rock **7** _____ (begin) to dry out and the water table **8** _____ (fall).

a



b



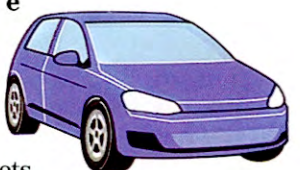
c



d



e



Technique

Make sure you use the correct form of the verb when you describe processes. Natural processes are often described using the active form, whereas manufacturing processes are usually described using the passive.

Natural processes:

A river *flows* from its source to the ocean. (active)

The Sun *heats* the water.
The water *evaporates*.

Manufacturing processes:

Many electronic goods are *manufactured* in Japan. (passive: *be* + past participle)

The tree is *chopped down*.
A door is *made from wood*.

Technique

Make sure the subject and verb agree when you describe processes.

The Sun *shines* and the temperature *rises*.

- 4 Are the verbs in sentences a–c transitive, intransitive, or both?
Which sentence cannot be put into the passive?

- a The temperature *falls*.
- b Manufacturers *make* rubber products.
- c Sunlight *opens* the leaves. The leaves *open*.

Technique

Think about the type of verb you are using. Verbs which require an object are called *transitive*. Verbs which never have an object are called *intransitive*.

- 5 Label each verb in the box transitive (T), intransitive (I) or both (B).
The first one has been done for you.

fall I	design	produce	rise	send	begin	manufacture
obtain	die	become	dry	grow	cool	

- 6 Use the notes below to write short paragraphs about production processes.

Example

The production of a car involves various stages. car/design; prototype/make; car/mass-produce; car/distribute; car/sell

The production of a car involves various stages. After the car is designed, a prototype is made and the car is mass-produced. The car is then distributed and sold.

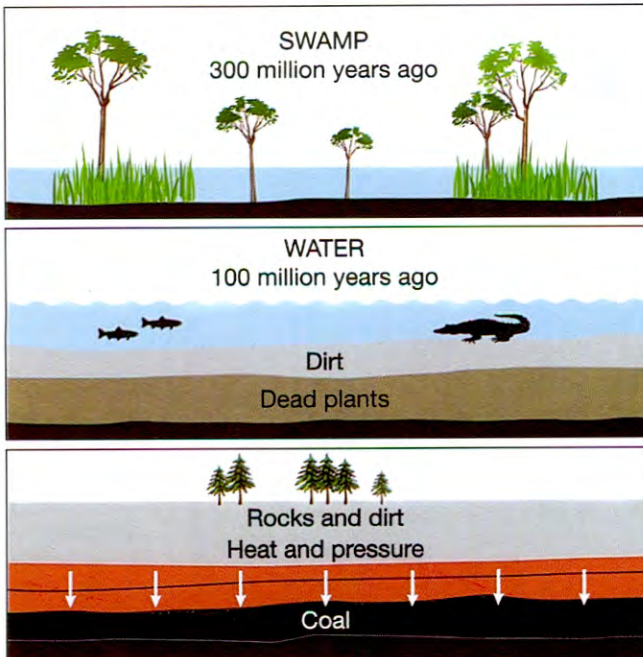
- a The production of a motorcycle involves various stages. motorcycle/design; prototype/make; prototype/test; motorcycle/manufacture; motorcycle/export; motorcycle/sell.
- b The diagram shows the various stages in the production of bread. wheat/plant; crop/harvest; wheat/transport to the mill; wheat/make flour; flour/buy/baker; bread/bake; bread/sold.

- 7 Some diagrams require descriptions using past tenses.
Complete the paragraph with the verbs from the box.

a died and dropped b was formed c lived d was covered
e was trapped f turned g is now mined h built up

Technique

Use the past simple (active and passive) to describe events and developments that took place in the past.



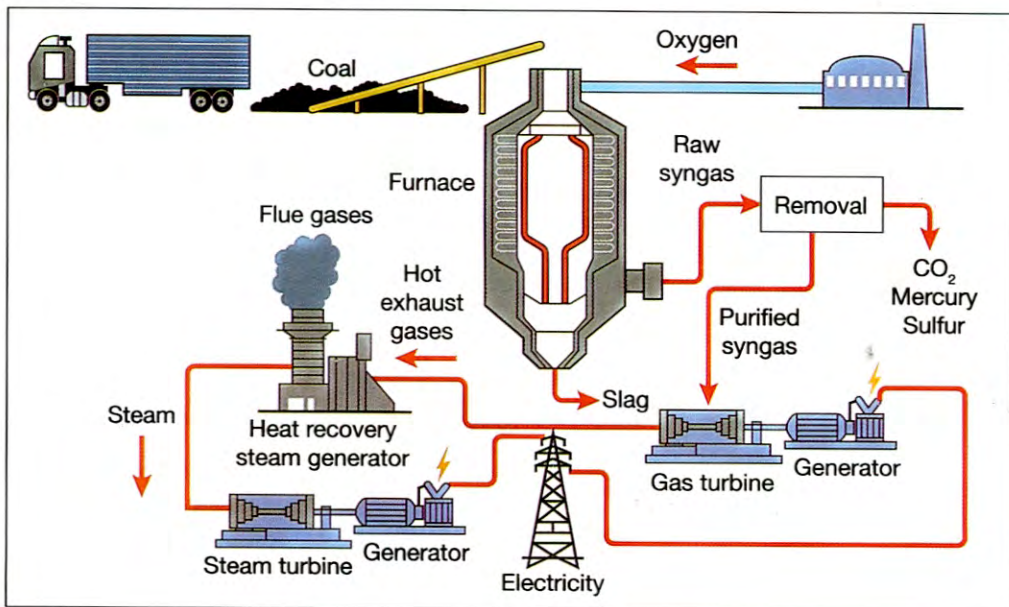
The diagrams show the process by which coal 1 _____ over a period of millions of years. First of all, large plants 2 _____ in enormous swamps a long time ago. These 3 _____ to the bottom of the water. Over the years, the dead plants formed a layer, which became deeper and deeper. More and more earth and dirt 4 _____ on top of this layer. Subsequently, this layer 5 _____ by rocks and dirt and so the energy of the dead plants 6 _____ underneath. As the pressure and the heat grew over time, the layer of dead plants 7 _____ into coal. Seams of coal were formed and coal 8 _____.

- 8 Underline the active verbs in the text and double underline the passive verbs in the text in exercise 7.

Sequencing

1 The diagram below shows how energy is produced from coal. Answer the questions.

- Where does the coal come from?
- How is the coal carried to the power plant?
- What is added to the furnace in addition to coal?
- What gas is produced when coal is burnt in the furnace?
- What do you think is removed from the gas?
- What is the gas called following this process?
- What do you think the gas does in the turbine?
- What does the turbine do to the generator?
- Where do the hot exhaust gases come from?
- What happens to the gases?



2 Write headings for each stage of the process using these verbs: deliver, add, remove, produce, convert, generate.

Example

Delivering the coal/the delivery of the coal

3 Complete the model text below by choosing the correct alternative in each case.

The diagram shows the process involved in the production of energy from coal.

1 *First of all/At first/Once* the coal is delivered by lorry. 2 *Furthermore/After that/As a result*, it is carried along a conveyor belt to the power plant, 3 *when/then/where* it is burned in a large furnace to which oxygen is added. 4 *Otherwise/From this/Therefore*, raw syngas is produced. At the next stage of the process, harmful substances like carbon dioxide, mercury and sulfur are removed. 5 *Following that/Following/Subsequent*, the purified gas is used to drive a gas turbine. The turbine 6 *in turn/afterwards/therefore* powers a generator, producing electricity. The gas turbine also produces hot exhaust gases. These are 7 *then/therefore/consequently* piped to a heat recovery steam generator, which converts the heat into steam. The steam is 8 *consequently/subsequent/subsequently* used to power a steam turbine, which again is used to generate electricity.

It is clear that the production of energy from coal requires a series of stages, including the use of exhaust gases.

Technique

Use linking devices such as *First of all*, *After that* (adverbs) and *When* (conjunction) as trigger words to help you sequence ideas when you describe processes.

- 4** Make a list of some of the linking devices which are used in exercise 3. Use a dictionary to help you decide whether they are adverbs or conjunctions.

Adverbs _____

Conjunctions _____

- 5** Connect the sentences below. Use the linking devices in brackets in each case.

Example

The parts of the car are assembled. The cars are exported. (after)

After the parts of the car are assembled, the cars are exported.

- a** The snow falls. It covers the ground with a protective layer. (when)

- b** Her cubs are born. The lioness licks them all over. (as soon as)

- c** The paper is collected. It is sent for recycling. (once)

- d** Volcanoes erupt. They send huge amounts of smoke into the air. (before)

- e** The plants transpire. The air becomes humid. (when)

- f** The trees are cut down. The forest is gradually destroyed. (and)

- 6** Connect these sentences using your own words.

- a** The food is processed. It is packaged. It is distributed.

- b** The cycle is completed. It repeats itself all over again.

- c** The rubbish is collected. It is sent to a centre for sorting. It is recycled.

- d** A new model of the bicycle is developed. The bicycle is tested.

- e** The TV is assembled. It is sent to the shops.

- f** The water is purified. It is bottled.

- g** The data about the weather is collected. The information is then broadcast.

- h** The prototype is tested. It is modified.

- 7 From your own knowledge, write a short paragraph to describe at least one of the processes below.
- The process of digital photography from the action of taking a photograph to displaying the image.
 - The progress of a letter or parcel from packaging to delivery.
 - The life cycle of an animal such as a butterfly or a frog.
 - The water cycle which creates clouds and rainfall.

Task 2 Using *which* to organize and add information

- 1 Answer the questions about the list of technologies.

computers ■ automatic doors ■ mobile phone apps ■ video games
TV remote controls ■ tablets ■ satellite navigation systems (GPS) ■ digital cameras

- Which of the technologies can help people and which can make life more difficult?
- Which technologies might make people more lazy?
- Which technologies do you find annoying and which impressive?

- 2 Read the Task 2 question.
Which two key elements must you include in your answer?
Underline the general nouns which tell you this.

A recent survey has shown that people of all ages are losing the ability to perform basic practical tasks and processes at work. What do you think are the main causes of this? What solutions can you suggest?

- 3 Read the following paragraph written by a student and answer questions a–e.

People are generally losing the traditional practical skills which they need to function in everyday life. This has come about, in my opinion, because people are now so over-reliant on machines. For example, computers in one form or another perform many of the tasks that people used to do themselves, such as office functions, opening and locking doors or switching machines on and off. Consequently, workers cannot do basic practical tasks, which in turn has an impact on how to process basic information mentally when they are at work.

- What kind of skills are people losing?
- What is the cause of this?
- Which examples are given?
- What is the practical consequence of all this?
- What is the mental consequence?
- What type of clause does the *which* in the last sentence introduce? Use the technique box to help you. How is it different from the clause in the first sentence?

- 4 In each sentence below, what does the word in *italics* refer to?

- People often allow the TV to do their thinking for them at home, *which* in turn has an impact on their mental performance at work.
- People are generally losing the traditional practical skills *which* they need to function in everyday life.

Technique

Do not use a comma with *which* when it introduces essential information that identifies what you are referring to (a defining clause). Use a comma when it introduces extra non-essential information (a non-defining clause) or when it refers back to the whole idea in the previous clause.



- 5** Combine the following pairs of sentences using *which*. Use the correct punctuation.
- a Sometimes, computers make mistakes. This wastes valuable time and can cost money.
 - b TV programmes provide people with information about the world. This information is often very useful.
 - c Machines now give us more freedom. This means that we have more time for leisure activities.
 - d Technology saves us more and more time. This time can be used to create more machines.
 - e More and more household tasks are now carried out by robots. They will be even more common in the future.
 - f Everything seems to be available at the touch of a button. This makes people expect instant responses from other people.

- 6** What does *which* refer to in each of your answers in exercise 5?
In which cases does the *which* clause express an effect as in exercise 4a?

- 7** Combine the sentences in a–e, deciding which information is non-essential.

Examples

News broadcasts about world disasters, *which* are now available 24 hours a day, can make people feel anxious.

The situation, *which* people blame the government for, is everyone's fault.

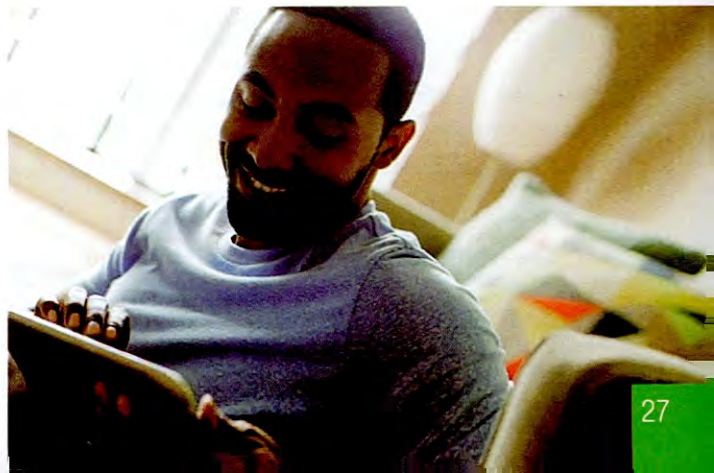
- a The situation has now become much more complex. It is effectively out of control.
- b The problem is everyone's responsibility. The public blame the government for it.
- c The cause of the problem is the lack of basic training. The cause is not immediately obvious to everyone.
- d The solution is, in my opinion, by far the best. The solution is to have a day at work where people do not use computers or other machines.
- e Office technology is the cause of much frustration at work. It requires only basic training to use.

Technique

Use *which* as a trigger word to add detail to your writing.

- 8** Complete the sentences below so that they reflect your experience.

- 1 Technology such as ..., which helps people ..., is ...
- 2 People like using systems that ...
- 3 I like devices which ...
- 4 People in my country use ..., which ...



Unit 3

Expressing result and purpose

- 1 Think of your own experiences and list at least three skills that you have learnt in the past year.
- 2 The extract below contains three paragraphs, each organized to express functions such as cause and result. Identify the ideas that relate to each function and underline them. The first paragraph has been done for you.

First of all, in recent years, many people all over the world have demonstrated a clear lack of ability to carry out certain basic tasks. A number of reasons have been put forward for this, but by far the most important, I feel, is the complexity of the modern age.

Parents, for example, no longer have enough time to spend at home with their children, because many are working unsociable hours to cope with the pressures and demands of today's world. Young people are consequently deprived of valuable time to learn the practical skills necessary for everyday life, like fixing a plug, mending a puncture on a bicycle, or even sewing a button on a shirt.

Apart from parents, the international drive towards learning new technology also needs to carry a good part of the blame. This has led to young people leaving school literate in certain computer skills. But it has also created a generation almost deficient in basic practical skills, because technical problem-solving like making things in carpentry has been squeezed out of the school curriculum.

Problem

Cause



Paragraph 1: Problem/Cause

Paragraph 2: Example/Cause/Effect

Paragraph 3: Cause/Result 1/Result 2/Reason/Example

- 3 Which linking devices are used in exercise 2 to express the functions listed?
- 4 Decide whether the linking devices below express *result* or *purpose*.

so ■ therefore ■ in order to ■ consequently ■ so as to ■ as a result
with the aim of ■ and so ■ so that ■ for this reason ■ as a consequence
hence ■ which leads to ■ which means that

- 5 For each idea below, continue the sentence or write a follow-on sentence using your own ideas to express *result* or *purpose*.

a Children are now learning how to do mental arithmetic again.

b Some cities charge motorists to take their cars into the centre.

c Machines are manufactured to break down after a certain time.

Technique

Learn at least one result phrase and one purpose phrase and use these as trigger words. When you write a sentence, insert your result/purpose trigger words to develop it.

Practice Test 3

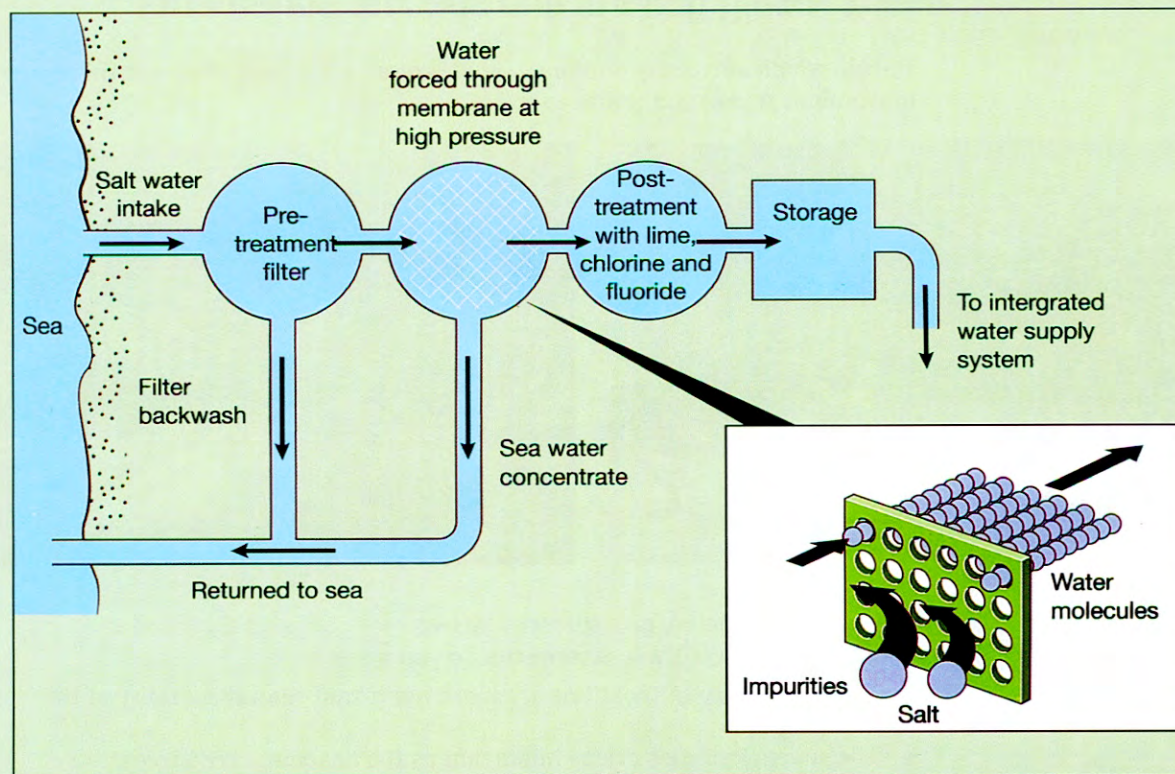
Task 1

You should spend about 20 minutes on this task.

The diagram below shows how salt is removed from sea water to make it drinkable.

Summarize the information by selecting and reporting the main features and make comparisons where relevant.

Write at least 150 words.



Technique

Think of a verb and/or a noun for each stage in the process:

The intake of water/take in water, filter/filtration, return, force through, remove/removal, treat/treatment, store/storage, distribute/distribution.

Task 2

You should spend about 40 minutes on this task.

Write about the following topic:

The widespread use of the Internet has brought many problems. What do you think are the main problems connected with using the web? What solutions can you suggest?

Give reasons for your answer and include any relevant examples from your own knowledge or experience.

Write at least 250 words.

Technique

Use a range of expressions to introduce effects: *leads to*, *results in*, *causes something to happen*, *has a big/significant impact on*, *plays an important role in (+ ing)*.

TASK 1 Using general and specific statements
Paraphrasing
Describing proportions

TASK 2 Avoiding overgeneralization
Developing reasons

Task 1 Using general and specific statements

- 1 Decide which university building below is more attractive. Which of these two universities would you prefer to go to?



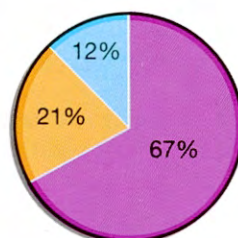
- 2 The statements below give students' reasons for choosing a particular university. Which of these statements do you agree with?
- The lecturers' qualifications are more important than the quality of the teaching.
 - The sports facilities are as important as the academic resources.
 - Good library facilities are the most important factor for postgraduate students.
 - A pleasant environment is more important than the university's reputation.
- 3 Look at the pie charts and the Task 1 question. Answer questions a–f on page 31.

Task 1

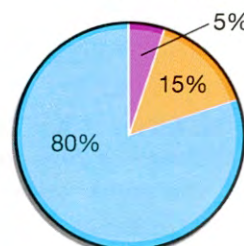
The pie charts illustrate the number of journal articles read per week by all students, PhD students and junior lecturers at an Australian university.

Summarize the information by selecting and reporting the main features, and make comparisons where relevant.

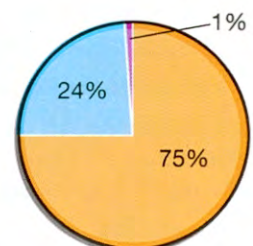
Number of journal articles read by all students



Number of journal articles read by PhD students



Number of journal articles read by junior lecturers



1 to 5 6 to 11 12+