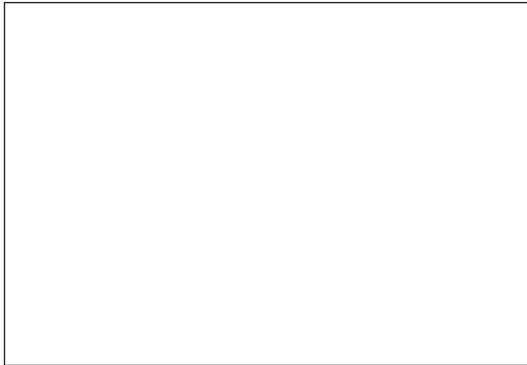


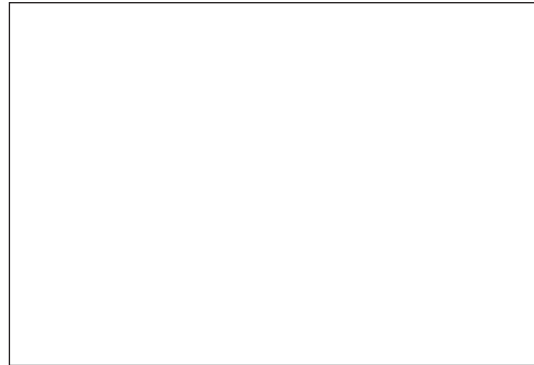
Exercise 1

Read about geothermal power and draw four simple diagrams to illustrate each stage of the process (1–4).

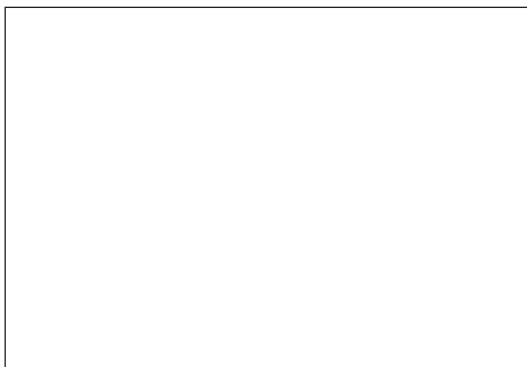
The energy beneath the Earth’s crust can be harnessed to produce electricity:



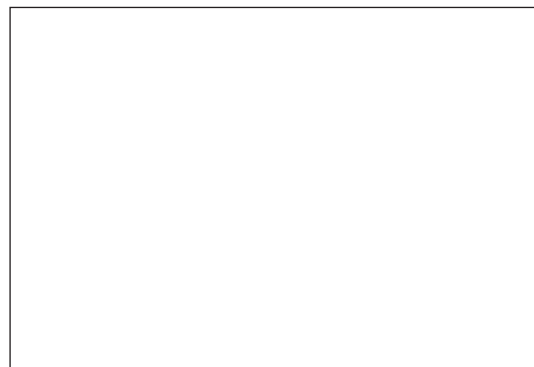
1. Rainwater seeps into the ground and flows near molten rocks.



2. The water draws heat from the molten rocks and becomes so hot that it turns into steam.



3. Steam is released through wells drilled into the ground and channelled past a turbine.

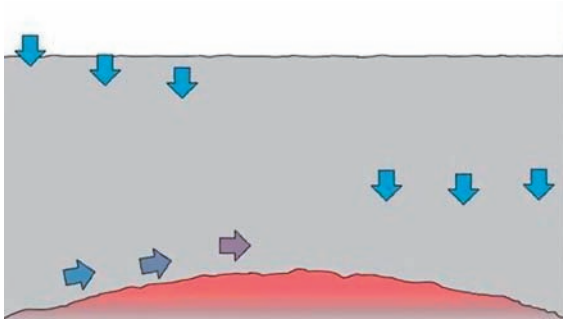


4. Like all steam turbine generators the force of the steam is used to turn the turbine blades, which spin the generator and produce electricity. After it leaves the turbine, the water is pumped back underground to be heated again. Electricity is sent via pylons and cables to homes around the country.

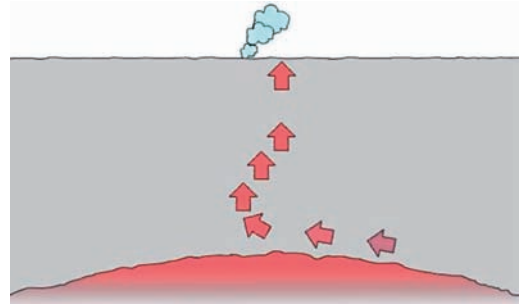
Exercise 2

Write sentences about the diagrams, using the prompts.

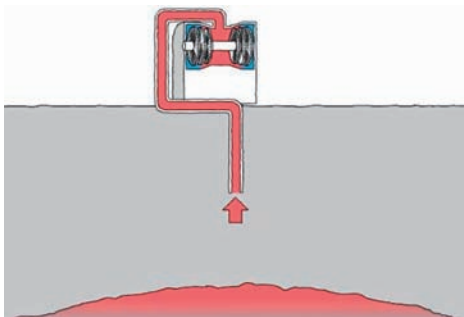
1. Rainwater/seep/ground/flow/near/
molten rocks



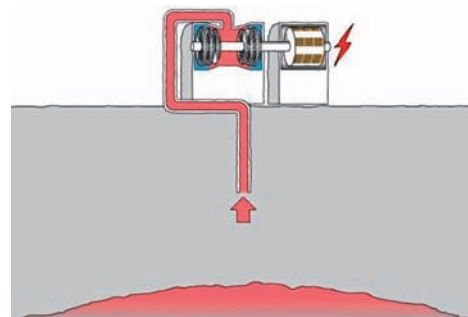
2. Water/draw/heat/molten rocks/
become/so hot/turn/steam



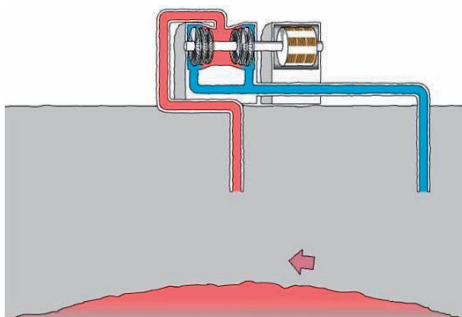
3. Steam/release/through/wells/drill/
ground/ channel/past/turbine



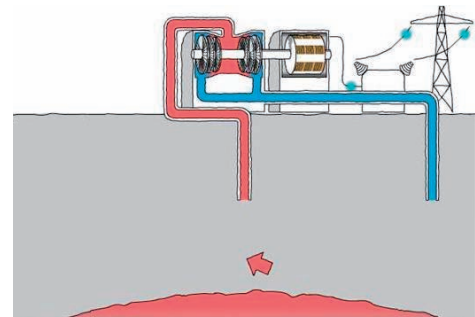
4. Force/steam/turn/turbine/blades/
spin/generator/produce/electricity



5. After/leave/turbine/water/pump/
underground/heat/again



6. Electricity/send/pylons/cables/
homes/country



Objectives

Science

Students learn how geothermal power is generated when water is heated by molten rocks beneath the earth's crust, producing steam to power a turbine.

Language

Skills: Speaking, listening, reading and writing

Grammar: Present simple tense, present simple passive

Vocabulary: Nouns: *energy, Earth, crust, electricity, molten rocks, steam, well, turbine, generator, force, blades, pylons, cables*
Verbs: *harness, produce, seep, flow, draw, turn into, release, drill(ed), channel, spin, pump*

Activities

Activities	Language skills
Students read about geothermal power and draw diagrams to illustrate the process	Reading; vocabulary
They watch the animation and check whether their diagrams were correct	Listening; reading; speaking; vocabulary
They look at a picture sequence and write captions using prompts	Writing; vocabulary; present simple tense; present simple passive
(Groups only:) They give an oral commentary on the animation	Speaking; vocabulary; present simple tense; present simple passive

Procedure**With the whole class**

(Typical situation: whole class watching the presentation and animation on an interactive whiteboard or projector.)

- 1 [Slide 1] Introduce the topic. Ask the class what they know about geothermal power and how it is generated. Introduce some key vocabulary (see above). Then ask the students to work in pairs or groups and do exercise 1 on the worksheet: they read about geothermal power and draw four simple diagrams to illustrate each stage of the process. (Students working in pairs or groups can draw one or two diagrams each.) Monitor and help, and ask the students to describe their diagrams.
- 2 [Slide 2] Play the animation. Tell the students to listen and watch, and check whether their diagrams were correct.
- 3 Students talk in groups and discuss whether their diagrams were correct.
- 4 Grammar focus (optional – see below).

5 [Slide 3] Tell students not to look at exercise 1 while they do the next exercise. Students work individually or in pairs and do exercise 2 on the worksheet: they write sentences about the diagrams using the prompts. When they have finished, they can compare their sentences with the ones in exercise 1. (The students' answers may differ from these slightly.)

With groups (one group studies geothermal power and then presents it to the class)

(Typical situation: students arranged in groups around computers eg in a language lab)

- 1 [Slide 1] Ask the students to work in their group and do exercise 1 on the worksheet: they read about geothermal power and draw four simple diagrams to illustrate each stage of the process. (Students may like to divide up the diagrams in their group and draw one each.)
- 2 [Slide 2] Students play the animation. Tell the students to listen and watch, and check whether their diagrams were correct.
- 3 Students talk in their group and discuss whether their diagrams were correct.
- 4 Grammar focus (optional – see below).
- 5 [Slide 3] Tell students not to look at exercise 1 while they do the next exercise. Students do exercise 2 on the worksheet: they write sentences about the diagrams using the prompts. When they have finished, they can compare their sentences with the ones in exercise 1. (The students' answers may differ from these slightly.)
- 6 [Slide 4] The group gets ready to give an oral commentary on the animation. They may wish to rehearse once or twice. Play the animation without sound; students give the commentary.

Grammar focus (optional): present simple passive

- 1 Focus on the last sentence from exercise 1: *Electricity is sent via pylons and cables to homes around the country.* Write the sentence on the board or ask students to highlight it on their worksheet. Underline the passive verb form *is sent*. Ask students to identify whether this verb form describes an active process or a passive process. Is the phrase describing what the subject (the electricity) does, or what happens to the subject?
- 2 Explain to the students that scientific processes are often expressed using the present simple passive, because the most important thing is the event and not who or what carried it out. Ask students to try and find some more examples of the passive verb form in the sentences in exercise 1. (*be harnessed, is released, (is) channelled, is used, is pumped back, to be heated*).
- 3 Write the structure of the present simple passive on the board: *am/are/is + past participle*. Explain to students that *to be + past participle* is the infinitive form of the passive.
- 4 If you wish, give students further grammar exercises practising the present simple passive to describe processes.

Geothermal power**Worksheet answer key****Exercise 2****(Students' answers may differ slightly.)**

1. Rainwater seeps into the ground and flows near molten rocks.
2. The water draws heat from the molten rocks and becomes so hot that it turns into steam.
3. Steam is released through wells drilled into the ground and channelled past a turbine.
4. The force of the steam is used to turn the turbine blades, which spin the generator and produce electricity.
5. After it leaves the turbine the water is pumped back underground to be heated again.
6. Electricity is sent via pylons and cables to homes around the country.