

5.1

A Make phrases from science from the words in each column.

1. nuclear		Earth
2. Bunsen		turbine
3. light		burner
4. green		bulb
5. planet		plant
6. wind	l	reactor
7. hydroelectric		dam

B What is the pronunciation of the energy words?

- Say each word.
- 🔊 22 Listen and check.
- Underline the stressed syllable in each word.
 - chemical
 - electrical
 - heat
 - kinetic
 - light
 - nuclear
 - solar
 - burner
 - thermal
 - potential

C Try to predict the final noun in each sentence about the phrases in Exercise A.

- Energy from atoms is called nuclear *energy*.
- We can get thermal energy from a Bunsen _____.
- Photosynthesis is a process in green _____.
- There is potential energy in the water in a _____.
- Energy from the Sun travels at the speed of _____.
- It takes 8.3 minutes for solar energy to reach the _____.
- Scientists split atoms in nuclear _____.

D Write a question for each answer below. Start with the question word given.

- How *fast does light travel?*
Light travels at about 300,000 kilometres a second.
- What _____?
The speed of sound is about 300 metres a second.
- How _____?
Microwaves travel at the speed of light.
- Where _____?
Photosynthesis happens in green plants.
- How _____?
Scientists split atoms with neutrons.
- Why _____?
Matter has less weight on the Moon because the gravity is lower.
- What _____?
The unit of measurement for mass is Newtons.
- Where _____?
Solar energy comes from the Sun.



5.2

A Study the words. Tick the correct stress pattern for each word.

🎧 23 Listen and check.

	○ ○ ○	○ ○ ○	○ ○ ○	○ ○ ○ ○	○ ○ ○ ○	○ ○ ○ ○
a. area	✓					
b. complicated						
c. everyday						
d. example						
e. essential						
f. principle						
g. scientific						
h. solution						
i. understand						

B Match the beginnings and endings to make sentences.

🎧 24 Listen and check.

1. Simple things help	the power to do work.
2. Energy is	solutions to problems.
3. Power stations change	us to understand complicated things.
4. Matter exists	energy to change the form of matter.
5. We can use	in three main forms – solid, liquid and gas.
6. Scientists find	chemical energy into electrical energy.

C 🎧 25 Listen to each question and answer from another interview. Make notes.

what en. prob.?

1. inputs = running out of coal, etc.








5.3

A Study the pairs of words.

- Are the (underlined) vowel sounds the same (✓) or different (✗)?
- 🎧 26 Listen and check.

a. coal	no	✓
b. drive	fine	
c. <u>g</u> ravity	car	
d. int <u>a</u> ke	eight	
e. <u>n</u> uclear	two	
f. oil	boy	
g. <u>p</u> ower	know	
h. steam	feed	
i. town	how	
j. <u>t</u> urbine	her	
k. <u>w</u> ater	at	

B What kind of energy does each symbol represent?

1		electrical
2		
3		
4		
5		
6		
7		

C Complete the talk about oil-fired power stations with words from the box.

electricity energy generator boiler
thermal steam turbine water

Oil goes into the boiler. Chemical energy changes to _____ energy. The boiler heats the _____. The water becomes _____. The steam turns the _____. Thermal energy becomes kinetic _____. The turbine drives a _____. The generator produces _____.

D Read the advice about giving talks. Which sentences need *Don't*?

- _____ Make notes before the talk.
- Don't Write full sentences in your notes.
- _____ Get attention.
- _____ Introduce your topic.
- _____ Bite your nails.
- _____ Look at the audience.
- _____ Make eye contact with people.
- _____ Play with your hair.
- _____ Smile.
- _____ Say 'ah', 'um', 'er'.
- _____ Stand still.
- _____ Wave your hands around.
- _____ Speak in sense groups.
- _____ Stress the important words.
- _____ Just stop at the end.
- _____ Ask for questions.

5.4

A Match the beginnings and endings to make nouns.

1. mechan		tion
2. therm		ity
3. meas		tric
4. conserva		ate
5. cre	l	ical
6. dest		cy
7. grav		ess
8. efficien		al
9. elec		roy
10. proc		ure

B Find pairs of words in the box.

1. What part of speech is each pair – noun (n), verb (v) or adjective (adj)?

beginning, end – n

beginning bottom create destroy
top drop end input keep leave
lose negative north output
pick up positive return south

2. Write a word from the box in each space.
- You pick up a ball and then you drop it.
 - We can't _____ energy or _____ it.
 - Magnets have a _____ pole and a _____ pole.
 - Batteries have _____ and _____ terminals.
 - Systems have three parts – _____, process, _____.

C Answer the questions about the information in Joule's law on page 69 of the Course Book.

- What is energy?
The power to do work.
- What is the unit of measurement for energy?

- Why does a ball lose height with every bounce?

- How can you make a ball bounce and return to your hand?

- What are the three parts of Joule's Law?

D Underline the object in each sentence.

- You can generate your own electricity with a hand generator.
- Hand generators contain magnets and a metal coil.
- Turning the handle produces a flow of electricity.
- You can power a small device like a radio in this way.
- You can also generate a small amount of electricity with the piezoelectric effect.
- This effect powers ignition systems in fires and cookers.
- Piezoelectric devices contain a piece of silicon dioxide or quartz.
- You press the piece of quartz down.
- The pressure changes the structure of the SiO₂ molecule.
- The change of structure produces a flow of electricity.

5.5

A What is the sound of the (underlined) vowels in each word in the box?

- Write each word in the box in the correct column of the table, according to the (underlined> vowel sound.
- 27 Listen and check.

all cost do does don't
excuse month OK one own
show total touch want your

/æ/	/ɒ/	/ʌ/	/u:/	/ɔ:/
No	Not	Some	You	Or
show				

B Match the verbs and nouns to make phrases to make phrases.

1. use		a form
2. join		a gym
3. fill in		electricity
4. pay	I	equipment
5. turn on		help
6. make		money
7. power		the lights
8. ask for		the machine

C Read the conversation and write one word in each space.**28 Listen and check.**

- R: Hi. Can I help you?
C: Yes, I'd _____ to join the gym.
R: OK. _____ you want to pay weekly or monthly?
C: How _____ does it cost per week?
R: _____'s \$9 per week or \$30 per month.
C: OK. _____ I use all the equipment?
R: Yes, _____. All of it.
C: _____ you have a pool?
R: No, sorry. We _____ have one.
C: Never _____.
R: Do you want to _____?
C: Yes, please.
R: OK. _____ you fill in this form for me?

D Number the sentences from the conversation in order.**29 Listen and check.**

- ___ I C: Excuse me.
___ C: How does this equipment work?
___ C: Thanks. What's this display? 0.00 watts.
___ C: That's amazing!
___ C: This button?
___ T: Ah. Every piece of equipment is a generator.
___ T: It's good, isn't it? This display shows your electricity output.
___ T: Yes, that's right. And you touch the screen to select the time and so on.
___ T: Yes?
___ T: You turn it on here.

5.6

A Write a paragraph for a web encyclopaedia about your life so far. Don't use *I*. Use *he* or *she*!

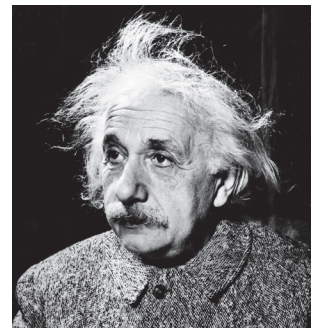
Use the patterns from the *Grammar for writing* section on page 73 of the Course Book. Join short sentences with *and* or *but*. Use some of the verbs from the box.

got had left lived moved was born went

She was born in Germany in 1996.

B Make questions about Einstein.

1. Where / Einstein / from? *Where was Einstein from?*
2. When / born? _____
3. How long / work / Patent Office? _____
4. What / win / Nobel Prize / for? _____
5. When / move / US? _____
6. When / die? _____



C Answer the questions in Exercise B from memory. Then check with the text on page 73 of the Course Book.

1. *Germany*
2. _____
3. _____
4. _____
5. _____
6. _____

D Read some information about Einstein's formula $E=mc^2$. Rewrite each sentence with the extra information in brackets.

1. The proof of the theory came in 1932. (first / of Einstein)
The first proof of the theory of Einstein came in 1932.
2. Physicists split an atom. (two / the nucleus of / in their laboratory)

3. Cockcroft and Walton used protons to split lithium. (John / Ernest / atoms)

4. They destroyed the matter. (in the experiment / some of / in the nucleus)

5. They measured the mass before the experiment. (of the matter / and after)

6. They created energy. (however / also / some / during the experiment)

7. They put the E into the formula. (and the m / from Einstein)

8. The results proved the truth. (of the experiment / of the formula)
