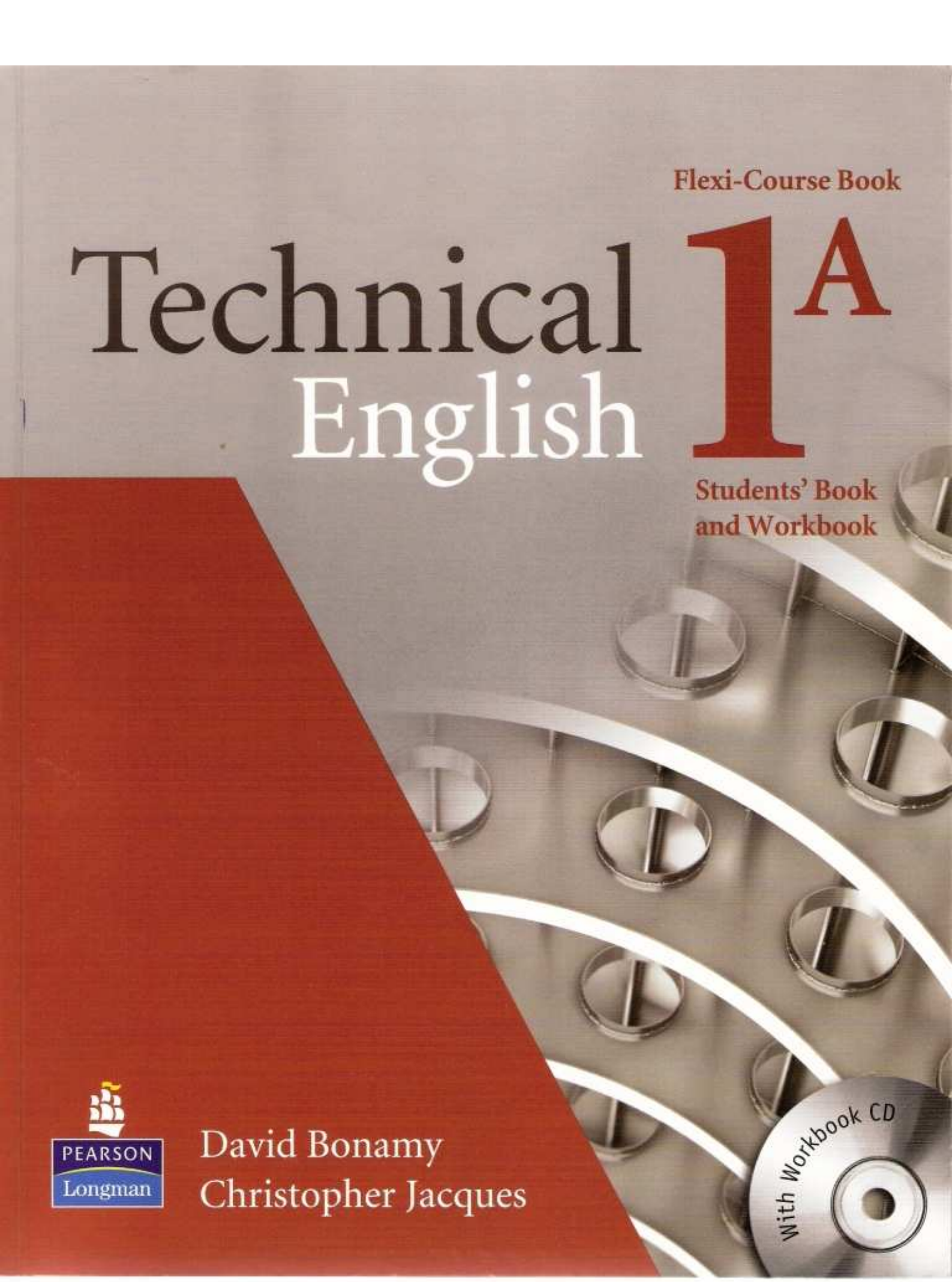
Flexi-Course Book

Technical English 1A

Students' Book and Workbook



David Bonamy
Christopher Jacques

PEARSON
Longman

1 Check-up

1 Basics

Start here

1 02 Listen and complete the dialogues with the words in the box.

am are I'm is name's

1 ● *Hello. I* (1) *am Hans Beck.*
○ Hi. My name (2) _____ Pedro Lopez.
● *Pleased to meet you.*

2 ● *Excuse me.* (3) _____ *you Mr Rossi?*
○ Yes, I am.
● *Pleased to meet you, Mr Rossi.* (4) _____ *Danielle Martin.*
○ Nice to meet you, Danielle.

3 ● *Hi. My* (5) _____ *Jamal.*
○ Hello, Jamal. (6) _____ Borys.
● *Good to meet you, Borys.* (7) _____ *you from Russia?*
○ No, (8) _____ from Poland.

I am → I'm
My name is → My name's
What is → What's

2 Work in pairs. Practise the dialogue in 1 with your partner. Talk about yourself.

Writing

3 Complete the form about yourself. Use block capitals.

Name	Country	Occupation
_____	_____	_____

Speaking

4 Work in pairs. Ask and answer questions.

A: Hello. What's your name? *B: I'm Kato.*
A: Where are you from? *B: I'm from Japan.*
A: What do you do? *B: I'm a builder/an electrician/a student.*

What do you do? = What's your job/occupation?

Listening **5** 03 Play this game. Listen. Only follow the instructions if the speaker says *Please*.

Vocabulary **6** Match the opposites.

pick up raise read say stand start

listen lower put down sit stop write

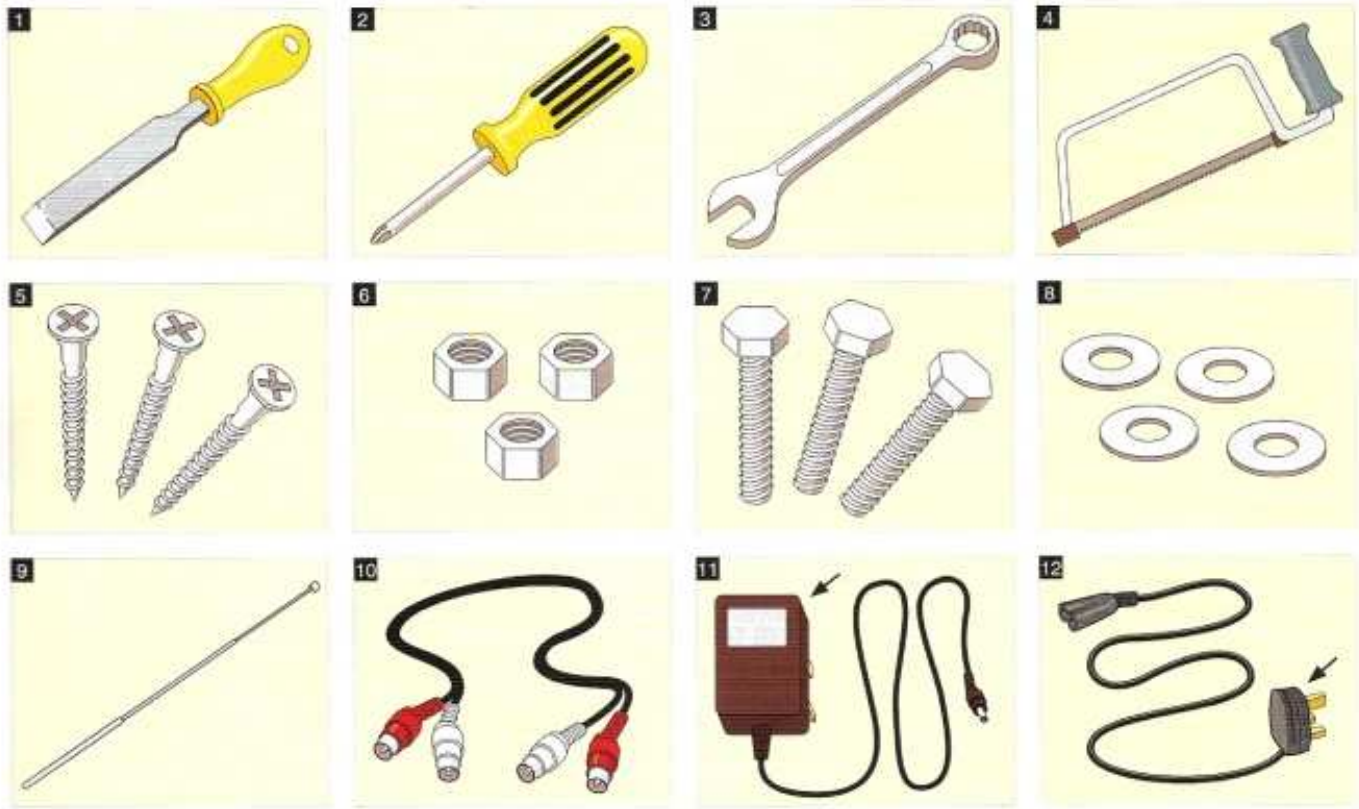
Example: stand ≠ sit

7 Try this quiz. Choose the correct answer.

1	The TV is	a) on.	b) off.	
2	The doors are	a) closed.	b) open.	
3	Turn	a) left.	b) right.	
4	Go	a) in.	b) out.	
5	Drive	a) up.	b) down.	
6	The hammer is	a) in the box.	b) on the box.	c) under the box.

8 Match the pictures with the words in the box.

adapter antenna bolts cable chisel nuts plug
saw screws screwdriver spanner washers



2 Letters and numbers

Start here **1** 04 Listen and correct the four mistakes in the business card.

Listening **2** 05 Listen and complete the forms.

Macrosoft

Bruno Martin
Software Technician
Tel: (0033) (0)562 19 89 64
Email: mart70@macrosoft.com

1

Surname	___ ___ A ___ L ___
Company	___ ___ ___
Email address	___ q ___ ___ @ ___ ___ ___ .com

2

Emergency service	FIRE
Address	___ ___ E ___ S ___ Street
Postcode	___ ___ 4 ___ N ___
Surname	___ A T ___ E ___ S

3 **Problems with your product?**
Phone CUSTOMER SERVICE HELPLINE

Full name	PIETER ___ R ___ U ___
Postcode	2 ___ ___ ___ ___
House number	___ ___
Model number	___ ___ 8 ___ ___ ___

Speaking **3** Dictate and spell out details from your business card to your partner.

4 Put all the letters of the alphabet into the correct column.

three	eight	five	ten	two	EXCEPTIONS
B ___ ___	A ___ ___	I ___	F ___ ___	Q ___	___
___ ___ ___			___ ___		

5 Work in groups. Have a spelling competition.

Team A: Make a list of ten countries. Check the spelling. Then ask Team B to spell them correctly.
Team B: Make a list of ten capital cities. Check the spelling. Then ask Team A to spell them correctly.

Example: How do you spell EGYPT? How do you spell TOKYO?

Listening **6** 06 Listen and match the pictures with the announcements.

A

B

C

D

E

F

G

7 Listen again and complete the sentences with numbers and letters.

1 Counter number _____, please.
2 This is Radio _____ on _____ FM.
3 Please pay _____ pounds and _____ pence.
4 The _____ train to Oxford will depart from platform number ___.
5 Flight number _____ is boarding now. Please go to gate number ___.
6 To donate money to Live Aid, ring this number now: _____.
7 Begin countdown now: _____ ...

Speaking **8** Play *FIZZ BUZZ.*

- Count from 1 to 100 round the class.
- Use *Fizz* for a number you can divide by 3. *Example: 3, 6, 9, 12, ...*
- Use *Buzz* for a number you can divide by 5. *Example: 5, 10, 15, 20, ...*
- Use *Fizz Buzz* for a number you can divide by both 5 and 3. *Example: 15, 30, ...*
- If you make a mistake, you are OUT of the game.

Start like this: 1, 2, Fizz, 4, Buzz, Fizz, 7, 8, Fizz, Buzz, 11, Fizz, 13, 14 ...

Vocabulary **9** What do the following mean?

km + g in kW kg L V
A ° rpm C km/h
m £ – ft € W gal

amps = watts / volts

Example: km = kilometre

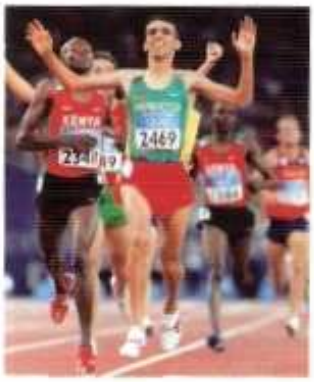
Listening **10** 07 Listen and write the numbers in the correct space.

1	_____ °C	5	_____ °	9	_____ W
2	_____ A	6	_____ km/h	10	_____ V
3	_____ km	7	_____ rpm	11	_____ €
4	_____ m	8	_____ kg	12	_____ L

3 Dates and times

Start here

1 08 Listen to the sports results. Add the positions (2nd, 3rd and 5th) and complete the times in the blanks in the chart.



Athens Olympics 2004 Official Results Men's Finals: 1500 metres			
Position	**Name**	**Country**	**Time**
(1)	Silva	Portugal	3:34.68
4th	Kiptanui	Kenya	(2) 3:_____ . _____
1st	El Guerrouj	Morocco	(3) 3:_____ . _____
(4)	Lagat	Kenya	3:34.30
6th	East	Britain	(5) 3:_____ . _____
(6)	Heshko	Ukraine	3:35.82

Speaking

2 Put the ordinal numbers ***1st*** to ***31st*** into the chart. Read them out to your teacher.

-st	*-nd*	*-rd*	*-th*
1st,	2nd,	3rd,	4th,

3 Say the names of the months of the year.

4 Say the days of the week. Start with ***Monday***.

5 Read out these airport codes.

FRA = Frankfurt	WAW = Warsaw	DXB = Dubai	CAI = Cairo
CDG = Paris	MAD = Madrid	FCO = Rome	NRT = Tokyo
LHR = London	BAH = Bahrain	JNB = Johannesburg	LOS = Lagos

6 Give the days of the flights.

on Mondays = on Monday every week

Flight number	From	To	Depart	Arrive	Days
1 LH 306	FRA	WAW			1 4
2 AF 835	CDG	MAD			2 4 6
3 EK 971	LHR	BAH			1 2 4 5
4 MS 740	DXB	CAI			1 3 5 7
5 AZ 7788	FCO	NRT			2 3 5 6
6 SA 104	JNB	LOS			1 4 7
1 = Monday 2 = Tuesday 3 = Wednesday 4 = Thursday 5 = Friday 6 = Saturday 7 = Sunday					

Example: 1 LH 306 departs from Frankfurt on Mondays and Thursdays.

Listening **7** 09 Listen and write down the dates. Use *dd/mm/yy*.

Speaking **8** Write down some dates important to you. Then dictate them to your partner.

You dictate: *The twenty-eighth of December two thousand and ten.*
Your partner writes: *2010-12-28.*

28th December 2010
- in Europe: *28/12/10* (dd/mm/yy)
- in the USA: *12/28/10* (mm/dd/yy)
- in Japan: *10/12/28* (yy/mm/dd)
- ISO 8601: 2010-12-28 (yyyy-mm-dd)

9 Complete the table. Read out your answers.

write: *0*; say: *oh* or *zero*.

24-hour clock	12-hour clock
07.50	(1) *7.50 am*
17.30	5.30 pm
14.40	(4)
(6)	1.35 pm
05.55	(8)

24-hour clock	12-hour clock
(2)	6.30 am
15.15	(3)
(5)	4.45 pm
20.25	(7)
(9)	9.10 pm

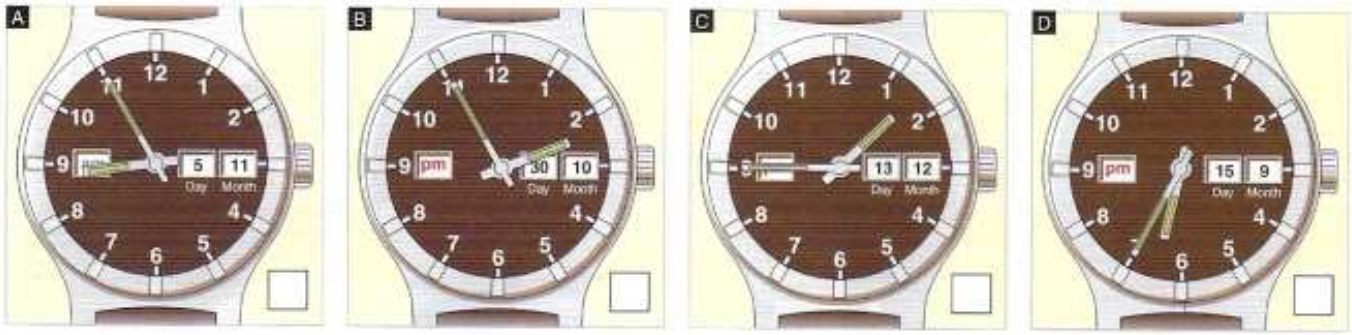
10 Read out these times.

First, use the 24-hour clock. Then use the 12-hour clock.

1) 05.15 2) 08.50 3) 11.14 4) 13.40 5) 15.18 6) 17.30

Listening **11** 10 Listen and add the times to the timetable in 6. Use the 24-hour clock.

12 11 Listen and write the correct number next to each watch.



13 Read out the times and dates on the watches in 12. Use the 12-hour clock.

Social English **14** Practise this conversation.
Use different days and times.

A: *When's the party?*
B: It's on Friday.
A: *Is that Friday the 24th?*
B: Yes, that's right.
A: *What time?*
B: 7.30.
A: *OK. See you then. Bye.*
B: See you. Bye.

2 Parts (1)

1 Naming

Start here

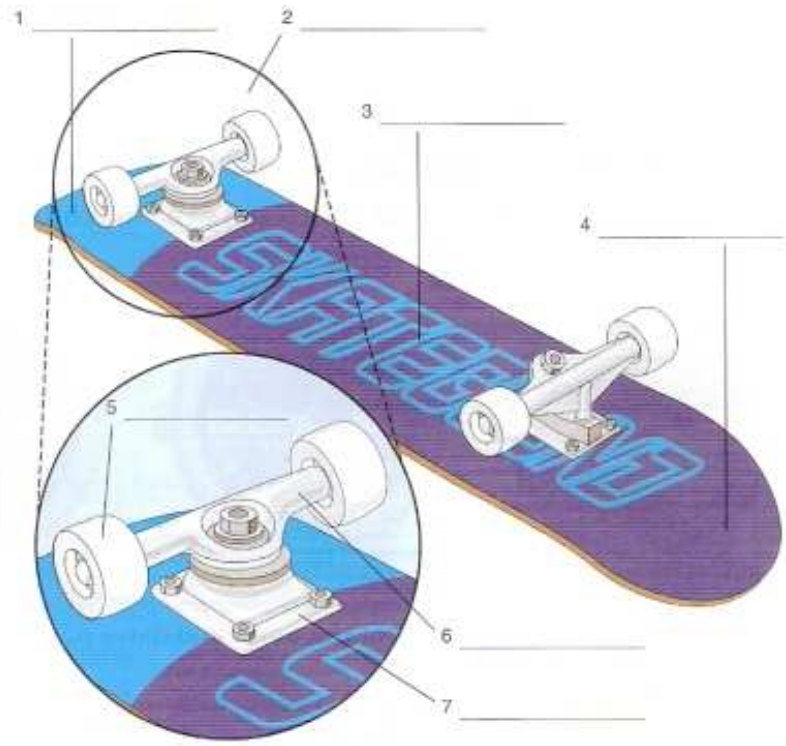
1 12 Listen and complete the table.

Skateboard record	Distance	Date (dd/mm/yy)
1 High jump	_____ metres	_____/_____/_____
2 Long jump	_____ metres	_____/_____/_____

Vocabulary

2 Work in pairs. Label the diagram with the words in the box.

axle deck nose plate tail truck wheel



Listening

3 13 Listen and check your answers to 2.

4 14 Listen and complete the dialogue.

- *What's this* _____*?*
- ○ It's _____ a deck.
- *What's* _____ *called in English?*
- ○ It's called _____ truck.

Speaking

5 Work in pairs. Ask and answer questions about all the parts on the diagram.

A: What's this called? (or *What's this called in English?*)
B: It's called a deck.

Language

What's this called? Use this when you don't know the English word.
What's this? Use this when you don't know what it is, even in your own language.

What	's is	this that	called	?	It	's is	called	a	deck.
								an	axle.
What	are	these those			They	're are		decks. axles.	

6 Complete the dialogues with the words in the box.

It's that these They're this those



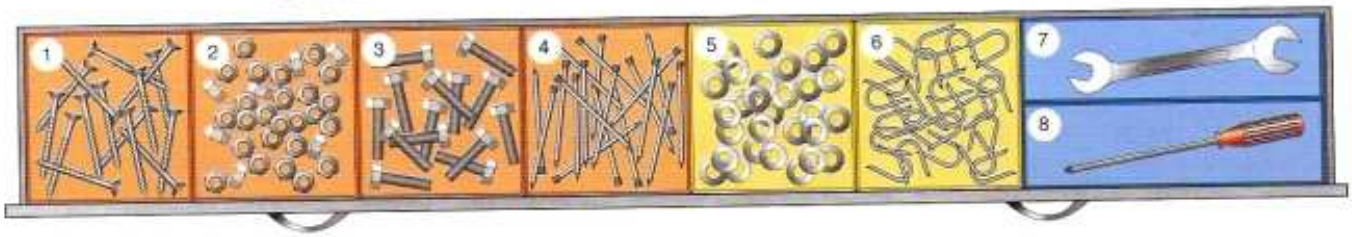

1 ● *What's* _____ *called in English?*
○ _____ called a screw.
2 ● *What's* _____ *called?*
○ _____ called a motorbike.
3 ● *What are* _____ *called in English?*
○ _____ called bolts.
4 ● *What are* _____ *called?*
○ _____ called antennas.

Vocabulary

7 15 Listen and repeat.

nails ... bolts ... nuts ... spanner ... washers ... staples ... screws ... screwdriver

8 Match the words from 7 with the pictures.



Speaking

9 Work in pairs. Ask and answer questions about the tools and fixings.

A: What are these called?

10 Point to things in the class or outside. Ask and answer questions.

What's this/that called? What are these/those called?

11 Work in small groups. What are these?

Clue: they're all vehicles on land, sea, in air and space.

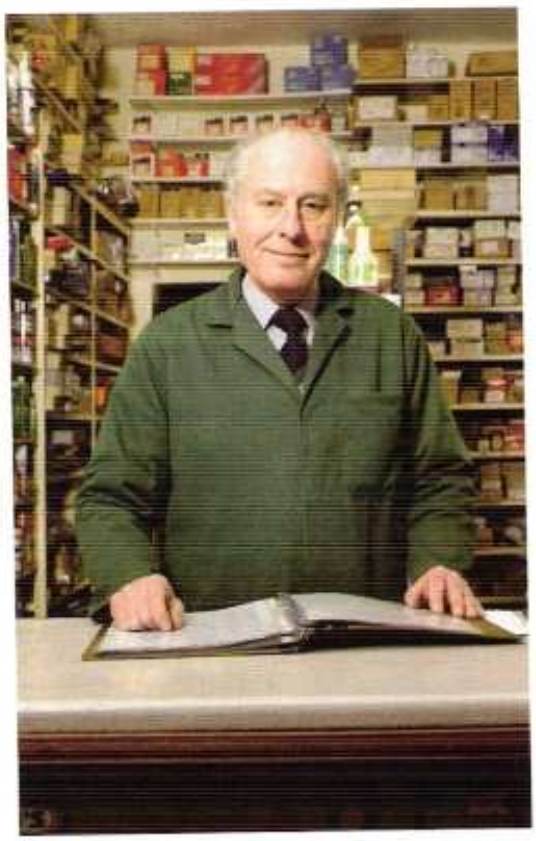
A: What's this?






Answers on page 65.

2 Assembling



Start here

1 Work in pairs. You want to assemble a skateboard. What do you need? Choose items from page 11, exercise 7.

assemble (a skateboard) = fit the parts (of a skateboard) together

Listening

2 16 Listen and complete the checklist.

write: *1 mm*; say *one millimetre* or *one mil*
write: *5 mm*; say *five millimetres* or *five mil*
(Stress the underlined syllable)
size M5 = 5 mm

	Size	Quantity
spanner	____ mm	1
nuts	____ mm	____
bolts	M____	____

Speaking

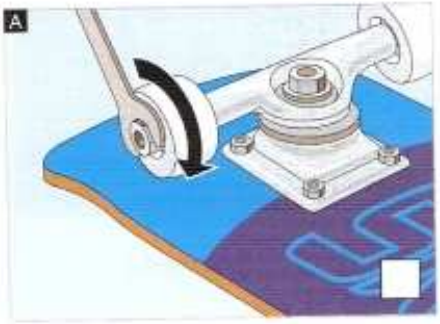
3 Work in pairs. Make dialogues with your partner.

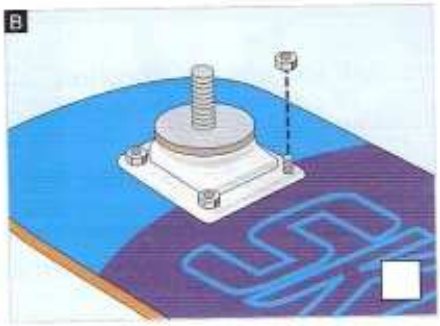
1 bolts / 10 mm / 50
2 washers / M6 / 60
3 screws / 24 mm / 100
4 nuts / 36 mm / 75
5 bolts / M16 / 60
6 nails / 30 mil / 80

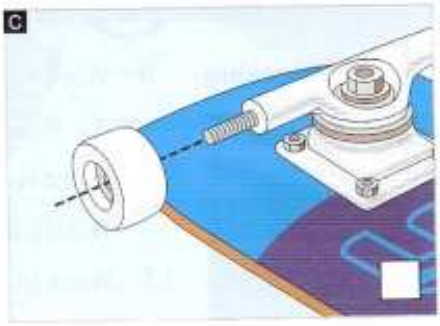
Example:
Customer: *I need some bolts, please.*
Shopkeeper: *What size?*
Customer: *10 mm.*
Shopkeeper: *How many?*
Customer: *Fifty, please.*

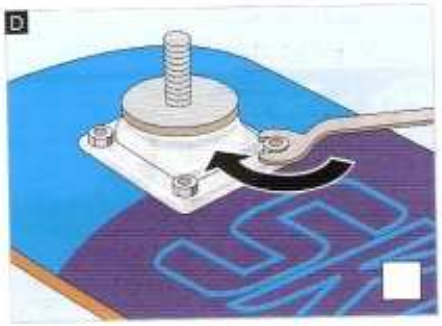
Task

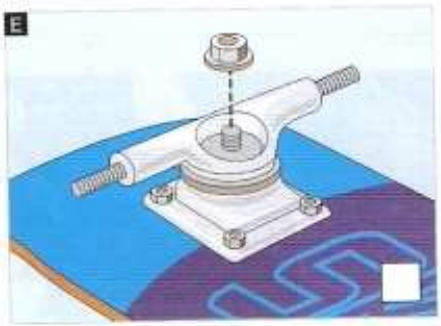
4 How do you assemble a skateboard? Put these diagrams in order.

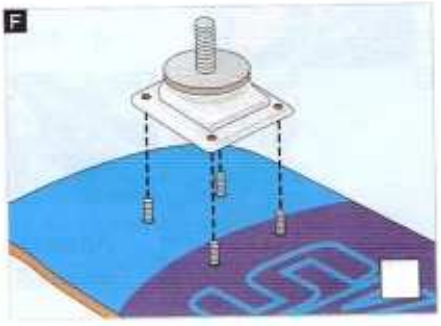




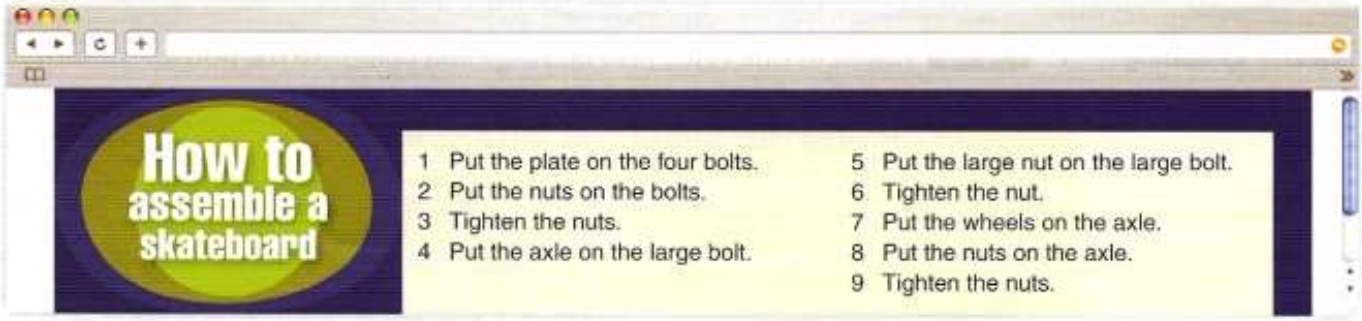








Reading **5** Read this instruction manual and check your answers to 4.



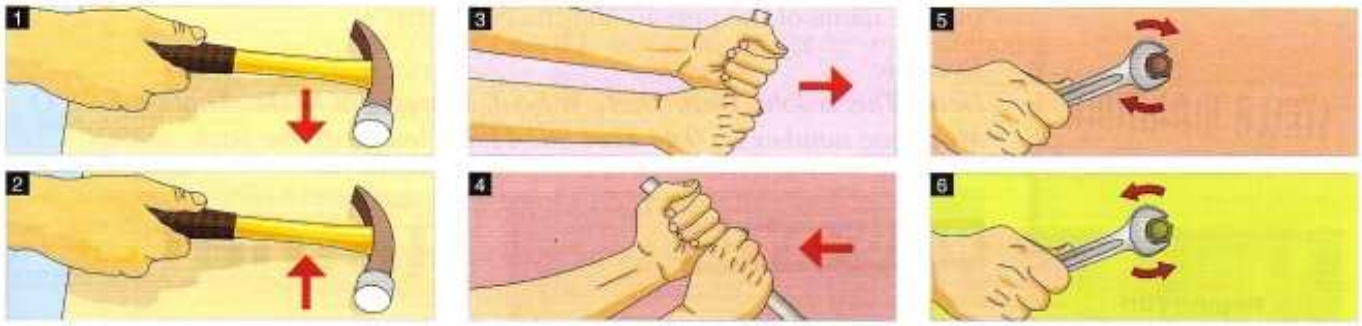
Language **6** Complete the table. Use the sentences from 5. Leave some spaces blank.

Verb (action)	Object (thing)	Location (place)
1 Put	the plate	on the four bolts.
2 Put		
3	the nuts.	
4 Put		
5 Put		
6		
7		
8		
9		

Vocabulary **7** 17 Listen and repeat.

loosen ... pull ... push ... put ... take ... tighten

8 Complete the instructions. Use the words from 7.



1 _____ the hammer on the table.
2 _____ the hammer off the table.
3 _____ the lever.
4 _____ the lever.
5 _____ the nut.
6 _____ the nut.

9 Complete the table.

Verb	Opposite	
put (on)	(1)	(off)
tighten	(2)	
push	(3)	

3 Ordering

Listening

1 18 Listen to this voice mail message and complete the notes.

SKATEBOARDS HU

Phone call from

Name: *Ben* Phone number: *00 44*

Message: *Customer needs some skateboard parts. Please call him back.*

2 19 Listen and correct the mistakes in these names and numbers.

write: *55*; say: *five five* or *double 5*.
write: *0*; say: *zero* or *oh*.

1	Abdel Monem Waheed 00 202 47832
2	José Fernandez Luis 00 34 912 838 990
3	Adel Al-Mansour 00 971 2 605 8843
4	Nikolay Kuznetsov 00 7 495 900 22 77

Speaking

3 Work in pairs. Choose words from this unit (e.g. *screwdriver*) and dictate them to your partner.

4 Work in pairs. Leave phone messages.

Student A. Turn to page 64.

Student B:

1 Leave phone messages for Student A. Use the business cards below. Spell out the name of the person and the company.

Example:
Hello. This is John West. That's W-E-S-T. Manager of Kesko. That's K-E-S-K-O. My phone number is 00 44 1224 867 4490. Please call me back.

STELLA MARITIMA

Pepino Turi
Engineer

00 39 06 625 500

1

NIHOMATIC

Kazuo Suzuki
Technician

00 81 3 3388 5124

2

Komet

Stefan Gross
Designer

00 49 711 845 8833

3

2 Change roles. Listen to Student A and make notes like this:

Call from John West, Manager
Company: Kesko
Phone number: 00 44 1224 867 4490
Please call him back.

Task **5** Work in pairs. Order goods on the phone.

Student A. Turn to page 64.

Student B:

1 You are a customer. You want to buy the items circled in red. Telephone Student A (the sales person) and order the items.

Item	Colour			Size			Quantity		
Helmet	red	white	(blue)	large	(medium)	small	(1)	2	3
Deck	(red)	yellow	blue	(large)	medium	small	(1)	2	3
Pad	black	(brown)	green	large	(medium)	small	2	(4)	6

Begin:

A: Hello. I need to buy some things for my skateboard.
B: OK. What do you need?
A: I need a helmet.

USEFUL PHRASES

What size/How many/What colour do you need?
What's your name? Please spell that.
What's your phone number?

2 Change roles. You are the sales person. Ask Student A (the customer) what they want to buy.

3 When you have both finished, you can circle new items and phone up to order them.

Social English **6** 20 Listen and then introduce yourself and your partner to other students.

A: I'm Luis. I'm a student. And this is Paulo. He's a student, too.
B: Hello, Luis. Hello, Paulo. Nice to meet you.

Review Unit A

1 Rewrite these statements as questions.

1 The machine's on.
Is the machine on?

2 The switches are off.

3 Roberto's in London.

4 They're IT technicians.

5 He's a student.

6 She's Polish.

2 Answer the questions in the negative. Then make a positive statement.

1 Is it Sunday today? (Monday)
No, it isn't. Sunday today. It's Monday.

2 Is the power on? (off)

3 Are you Peter? (John)

4 Are they from Berlin? (Bonn)

5 Is she a technician? (engineer)

6 Is he an electrician? (builder)

3 Rewrite these sentences using contractions where possible.

1 My name is Jamal and I am from Jordan.
My name's Jamal and I'm from Jordan.

2 This is Jean. He is French, but he is not from Paris.

3 This is Frieda. She is from Rome, but she is not Italian.

4 Look at the switch. It is down, but the power is not on.

5 These are the wrong items. They are not bolts. They are screws.

6 What is this tool called? What are these called?

4 Complete the questions and answers with the words in the box. You can use the words more than once.

am are do does is

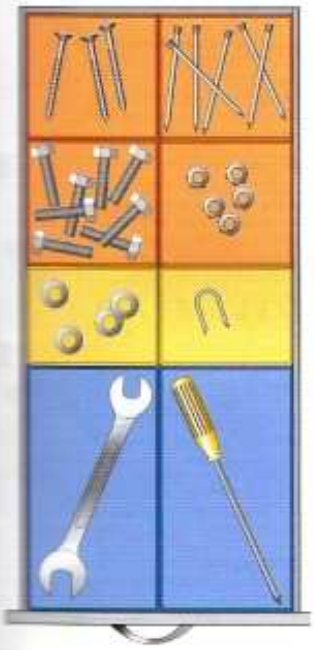
1	Where *are* you from?	a)	No, my name _____ Jan.
2	What _____ you do?	b)	I _____ an IT technician.
3	Excuse me. _____ you Ian?	c)	His name _____ Peter.
4	What _____ he do?	d)	No, they _____ from Germany.
5	What _____ his name?	e)	I *am* from Denmark.
6	Excuse me. _____ they from France?	f)	He _____ a marine engineer.

5 Match the questions with the answers in 4.

6 Work in pairs. Practise the questions and answers in 4. Use contractions.

7 Look at the pictures in Units 1 and 2. Work in pairs. Make questions and answers about the pictures.

What's this/that called? What are these/those called?
It's/They're called ... .



8 Look at this drawer for 15 seconds. Then close the book and list everything in the drawer.

Begin: 3 screws, ...

9 Draw a line from each word to its opposite.

on stand large in stop off
left small up sit right
open out closed
start tighten loosen down

10 Choose the correct way to read out these numbers.

1 Room 101
a) one hundred and one
b) one oh one

2 Height: 8850 metres
a) eight thousand eight hundred and fifty
b) double eight five oh

3 Tel: 74 77 88
a) seventy-four seventy-seven eighty-eight
b) seven four double seven double eight

4 Voltage: 109,845 V
a) One hundred and nine point eight four five
b) One hundred and nine thousand eight hundred and forty-five

11 Work in pairs. Solve this puzzle. Write a sentence of eight words.

pea	are		see	tea	eye		
P		A				S	E

why	oh	you	are

				eye							are	why			why
E	N	G	L	I	S	H	E	V	E				D	A	

	eye	tea				are	eye			
W			H	A	F			E	N	D

12 Complete the dialogue with the question words in the box.

How What What's

1 ● _____ do you need?
○ *Some bolts, please.*

2 ● _____ many do you need?
○ *Forty, please.*

3 ● _____ size?
○ *10 mm, please.*

4 ● _____ colour? Black or silver?
○ *Black, please.*

5 ● _____ your name?
○ *John Martins.*

6 ● _____ your phone number?
○ *It's 00 30 438 9981.*

13 Say the dates and times. Use the 12-hour clock.

1 WED 10/04/07 13.40

2 FRI 13/11/09 07.55

3 MON 03/09/10 11.05

4 WED 29/01/11 21.32

Example: 1 Wednesday, the tenth of April 2007 at 1.40 pm.

14 Complete the number sequences with your partner.

a) 1, 2, 3, 5, 7, _____, _____, _____
b) 1, 1, 2, 3, 5, 8, _____, _____, _____
c) 2, 5, 10, 17, 26, _____, _____, _____
d) 0, 1, 10, 11, 100, 101, _____, _____, _____

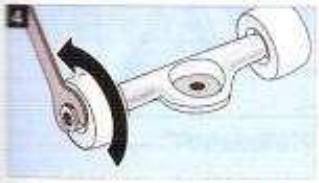
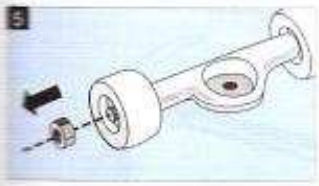
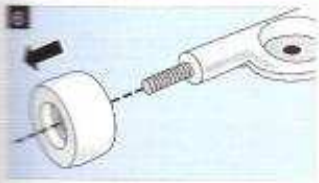
15 Write these numbers and units in words.

1 5 km *five kilometres*
2 250 kg _____
3 €1015 _____
4 110 V _____
5 0°C _____
6 13 mm _____

16 Look at the pictures on page 65 for 15 seconds. Don't look again. Are these true (T) or false (F)?

1 The window is open. T/F
2 The TV is on. T/F
3 The white switch is up. T/F
4 The black switch is down. T/F
5 The circle is blue. T/F
6 The triangle is yellow. T/F
7 The large helmet is green. T/F
8 The small helmet is red. T/F
9 The cable is under the table. T/F
10 The car goes left. T/F
11 The letter is B. T/F
12 The number is 14. T/F



17 Complete the instructions for these pictures. Use SOME of the words in the box.

loosen off on put take tighten use

How to take the truck off the skateboard

Step 1: (a) _____ the large nut. (b) _____ the large spanner.

Step 2: (c) _____ the large nut (d) _____ the bolt.

Step 3: (e) _____ the truck (f) _____ the bolts.

How to take the wheels off the truck

Step 4: (g) _____ the small nuts. (h) _____ the small spanner.

Step 5: (i) _____ the small nuts (j) _____ the axle.

Step 6: (k) _____ the wheels (l) _____ the axle.

18 Put the words in the instructions in the correct order.

1 screws the tighten
Tighten the screws.

2 the large hammer use
_____

3 take off the car the old wheel
_____

4 the new wheel put on the car
_____

5 into the wood hammer the nails
_____

6 through the holes the bolts push
_____

Project **19** Find the meaning of the words *plate*, *truck* and *axle* for different technical fields, and write the results in a table.

Search results for *deck*	Technical field
a floor or level of a ship	marine engineering
a floor or level of a bus or other vehicle	transport engineering
an outdoor floor attached to a building	building and construction
the road surface of a bridge	civil engineering
cement or tile area around a swimming pool	building and construction
flat surface of a skateboard	sports technology
flight deck – surface on an aircraft carrier	aerospace
component of music system – e.g. turntable, cassette deck	electronics
computer games console	IT, entertainment industry

3 Parts (2)

1 Tools

Start here **1** 21 Listen and complete the TV advert.

This is the new Multi Tool!

Use it at home. Use it on the building site. Use it when you travel.
It has a (1) _____ and a pair of (2) _____.
It also has a (3) _____, a (4) _____ and a (5) _____ _____.
The Multi Tool has everything you need! Only £29.99. Buy one now!

Listening **2** 22 Listen and complete the dialogue with the words in the box.

do does doesn't have

pliers and *scissors* are always plural
say: *I need some scissors*, or *I need a pair of scissors.*

- *Do you* (1) _____ *a Multi Tool?*
- Yes, I (2) _____.
- *Does the Multi Tool* (3) _____ *a hammer?*
- Yes, it (4) _____.
- *Does it* (5) _____ *a pair of scissors?*
- No, it (6) _____.

3 23 Listen and repeat.

a pair of pliers … a pair of scissors … a blade … a can opener … a bottle opener … a screwdriver

Language

Do	you		have	a Multi Tool?	Yes, I do. / No, I don't.
Does	the Multi Tool		have	a hammer?	Yes, it does. / No, it doesn't.
	The Multi Tool	doesn't does not		a hammer.	

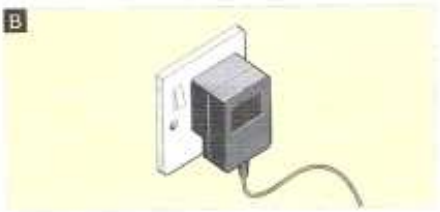
4 Work in pairs. Practise the dialogue.

A: *Does Pedro have a Multi Tool?*	Bob / you / we
B: Yes, he does.	he / I / we
A: *Does it have a ruler?*	chisel / saw / spanner / screwdriver
B: No, it doesn't.	yes / no
A: *Does it have a pair of pliers?*	hammer / scissors / opener / blade
B: Yes, it does.	no / yes

5 Work in pairs. Design a Multi Tool for your work.

2 Functions

Start here **1** Match the words with the pictures.



Electrical power sources
1 mains electricity + AC adapter
2 solar power
3 dynamo
4 batteries

Reading **2** Label the photos of the emergency radio below with the words in the box.

alarm antenna clock compass handle thermometer torch

3 24 Listen and repeat.

handle ... thermometer ... torch ... alarm ... clock ... compass ... antenna

internal ≠ external

4 Read the description and check your labels.

Dynamo Solar Radio

Key features: This equipment has
- a radio
- a thermometer
- a compass
- a torch
- a clock
- an alarm

Power sources
It uses electricity from four sources of power:
- an AC adapter. This connects the mains electricity supply to the radio.
- 3 external AA batteries.
- a solar panel. This changes the Sun's energy into electricity and charges an internal battery.
- a dynamo generator. The handle turns the dynamo. The dynamo produces electricity and charges the internal battery.

5 Explain the function of these parts.

1 the AC adapter
2 the handle
3 the dynamo
4 the solar panel

6 Match the parts with their functions.

Part	Function
1 thermometer	a) shine a light
2 compass	b) make electricity
3 torch	c) turn the dynamo
4 clock	d) tell the time
5 alarm	e) find North
6 solar panel	f) receive radio signals
7 handle	g) measure temperature
8 antenna	h) make a loud noise

7 Make sentences from the parts and functions in 6.

Example: 1 The thermometer measures temperature.

Language

	It	measure	s	temperature.
Does	it	measure	temperature?	Yes, it does. / No, it doesn't.
	It	does not doesn't	measure	speed.

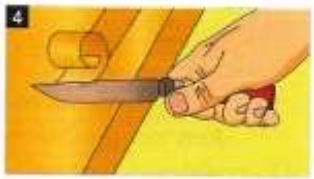
Speaking

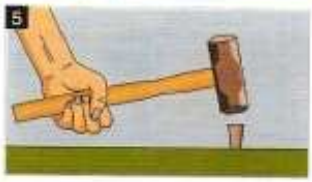
8 Work in pairs. Make questions and answers, using the words from 6.

A: Does a thermometer measure time?
B: No, it doesn't. It measures temperature.

9 Match the pictures with the verbs in the box.

cut drive in grip loosen tighten





10 Make sentences.

A spanner		nails.
Pliers	cut(s)	bolts and wire.
A screwdriver	grip(s)	nuts and bolts.
A chisel	drive(s) in	paper and string.
Scissors	tighten(s) and loosen(s)	screws.
A saw		wood.
Hammers		wood and metal.

Social English

11 Make a list of job titles useful to you. Use a dictionary.

Examples: marine technologist, computer operator, automotive engineer, architectural technician

12 Find out about other students in your class.

A: *What do you do?*
B: I'm a/an … . (student/builder/mechanic …)
A: *Where do you study/work?*
B: I study/work at … . (name of school/college/company …)
A: *What does … do?*
B: He/She's a/an … . He/She works at … .

3 Locations

Start here

1 25 Listen to this computer lesson. Complete the dialogue with the words in the box.

at bottom on left right top

- *OK, now put the cursor on the START button.*
- Where's the START button?
- *It's _____ the _____. On the _____. Do you see it?*
- Yes. Is that it?
- *Yes, that's correct. … Now, move the cursor up to the CLOSE button.*
- Where's that?
- *It's an X. It's _____ the _____. At the _____.*
- Is that it?
- *Yes, that's it. Now click.*

Vocabulary

middle = *centre*
BrE *centre*, AmE *center*

2 Match the TV monitors with their locations.

1 bottom left ___
2 bottom right ___
3 centre bottom ___
4 centre left ___
5 centre right ___
6 centre top ___
7 top left ___
8 top right ___
9 centre ___

Language

in in the middle, in the centre
at at the top, at the bottom
on on the left, on the right

Reading

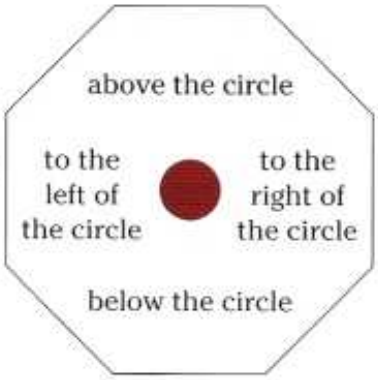
3 Correct this description. There are six mistakes in location.

Here is one way to set up your computer station. Put your screen in the centre of the system. Then put one speaker in the centre on the left, and put the other speaker in the centre on the right. Put the scanner at the top on the left, and put the computer at the top on the right. Then put the DVD drive at the top in the middle and put the printer at the bottom on the left. Finally, put the keyboard at the bottom on the right, and put the mouse at the bottom in the centre.

Language

4 Look again at the computer station in 3. Are these statements true or false?

1 The computer is *at the top, on the left.* T/F
2 The computer is *above* speaker 1. T/F
3 The computer is *to the left of* the printer. T/F



5 Look at the diagram. When do we use *ON the left* and when do we use *TO the left OF*?

6 Complete the sentences about the computer station in 3 with the words in the box.

above at below of in on to

1 The printer is _____ the top, _____ the middle.
The scanner is _____ the right _____ the printer.
The screen is _____ the printer.
2 The mouse is _____ the bottom, _____ the right.
The keyboard is _____ the left _____ the mouse.
Speaker 2 is _____ the mouse.

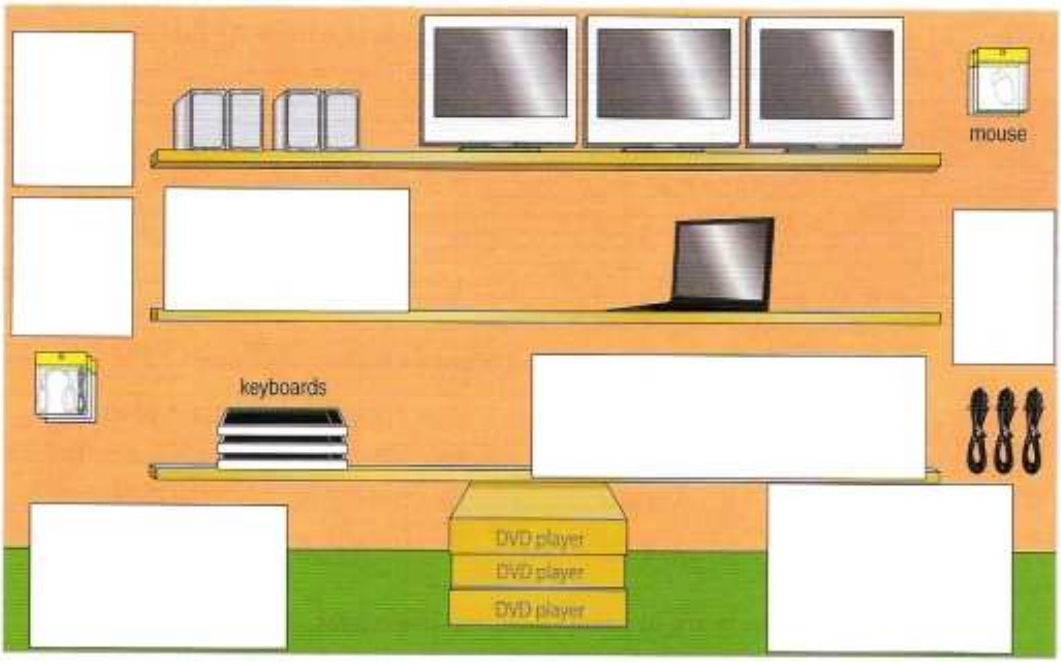
7 Look again at the computer station in 3. Make sentences about the location of:

1 the mouse 2 the DVD drive 3 the scanner 4 the screen

Task

8 Work in pairs. Student A. Turn to page 65.

Student B:
1 Answer Student A's questions. Use phrases from exercise 6.
2 Ask Student A where these items are and write them in their correct locations: *mouse pads, scanners, CD-ROMS, adapter, printers, amplifiers, TV.*

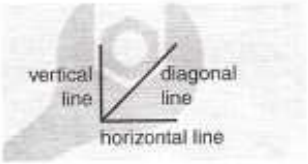


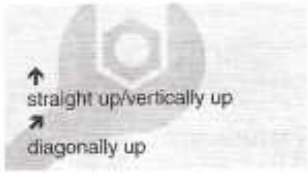
shelf (singular); *shelves* (plural)

4 Movement

1 Directions

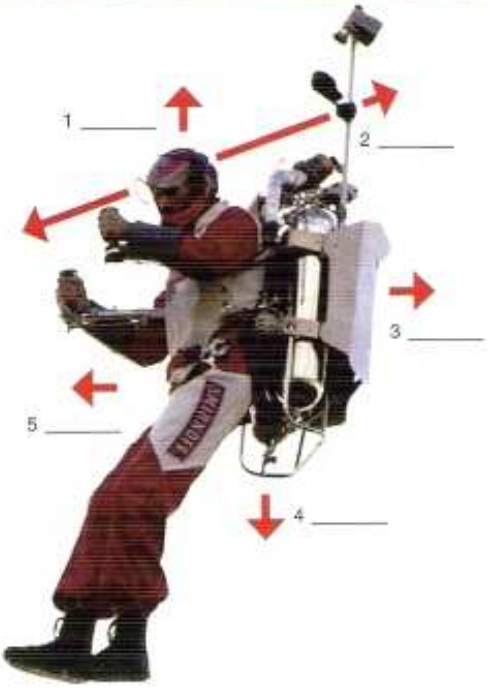
Start here





1 Label the jetpack man's movements with the words in the box.

backwards down forwards sideways up



2 Work in pairs. Which directions can planes and helicopters fly? Tick the boxes.

Direction	Plane	Helicopter
forwards		
backwards		
up and down		
sideways		

Reading

3 Read the text. Check your answers to 2.

Passenger planes can fly forwards, and can turn to the left and to the right. But they cannot fly backwards or sideways. They can fly diagonally up and down, but they cannot fly straight up or straight down.

Helicopters can fly forwards, straight up and down, sideways and backwards.

Planes and helicopters can both rotate. Planes and helicopters can rotate on their horizontal axis. Helicopters can also rotate on their vertical axis.

Language

	It / They	can / can't/cannot	fly	sideways.	
Can	it / they		fly	sideways?	Yes, it can. / No, it can't Yes, they can. / No, they can't

4 Complete these sentences with *can* or *can't*.

1 A helicopter _____ fly sideways, but a plane _____.
2 A plane _____ fly sideways, but it _____ fly forwards.
3 A plane _____ fly straight up, but a helicopter _____.
4 A plane _____ fly straight up, but it _____ fly diagonally.

Speaking

5 Work in pairs. Practise dialogues.

helicopter(s) / rocket(s) / plane(s) / fly sideways / fly straight up / fly diagonally up / rotate

A: *Can a plane fly forwards?* B: Yes, it can.
A: *Can it fly backwards?* B: No, it can't.

Task **6** Work in pairs. Follow the instructions and answer the questions.

Close your fist and hold your arm out straight in front of you.

1 Think of your wrist. (Don't move it). How many directions can it move in? One, two, three or four?
2 Think of your shoulder. (Don't move it). How many directions can it move in? One, two, three or four?
3 Think of your elbow. (Don't move it). How many directions can it move in? One, two, three or four?

Reading **7** Read the text. Check your answers to 6.

The human arm can move in seven different directions. The arm has three pivots: the wrist, the elbow and the shoulder. The wrist can move in three different directions. At the wrist, the hand can move up and down about 90°, it can move from side to side about 70°, and it can rotate about 180°. The shoulder can move in the same three directions, but different angles. It can rotate about 20°. The elbow can only move in one direction. At the elbow, the forearm can only move up and down. It cannot move sideways or rotate.

8 Match each movement in the diagram in 7 with a word or phrase from the box.

rotate move sideways move up and down

Listening **9** 26 Listen and choose the correct answers.

1 a) 19° b) 90°
2 a) 14° b) 40°
3 a) 17° b) 70°
4 a) 118° b) 180°

Task **10** Work in groups. Look at the diagram in 11 and answer these questions.

1 How many directions can this robot arm move?
2 Which part of the robot arm has different movements from the human arm. Is it: a) the shoulder? b) the wrist? c) the elbow?

Language **11** Complete the text about the robot arm with the words in the box.

can can't has is isn't

This robot arm (1) _____ like a human arm. It (2) _____ a 'wrist', an 'elbow' and a 'shoulder'.
The 'wrist' (3) _____ like the human wrist. It (4) _____ three movements. It (5) _____ rotate. It (6) _____ move from side to side. It (7) _____ move up and down.
The 'elbow' (8) _____ like the human elbow. It (9) _____ one movement. It (10) _____ move up and down.
The 'shoulder' (11) _____ like the human shoulder, because it only (12) _____ two movements. It (13) _____ rotate, and it (14) _____ move up and down. But it (15) _____ move sideways.

2 Instructions

Start here

1 Try this quiz. Choose the correct answer.

km/h = kilometres per hour (used by most countries)
mph = miles per hour (used in some countries, including the US and UK)
m/s = metres per second
rpm = revolutions per minute; 1 revolution = 1 rotation of 360°

What are the speeds?

1. Rotation of a fast CD-ROM?
   a) 98,000 rpm b) 9800 rpm
2. The speed of sound?
   a) 746 km/h (464 mph) b) 1200 km/h (746 mph)
3. The maximum speed on land?
   a) 1228 km/h (763 mph) b) 1228 mph (1976 km/h)
4. The maximum speed on water?
   a) 154 m/s b) 154 mph c) 154 km/s
5. The rotation of the Earth?
   a) 1000 mph (1609 km/h) b) 1000 km/h (621 mph)
6. The Earth moving around the Sun?
   a) 67,000 mph (107,825 km/h) b) 67,000 km/h (41,631 mph)

Listening

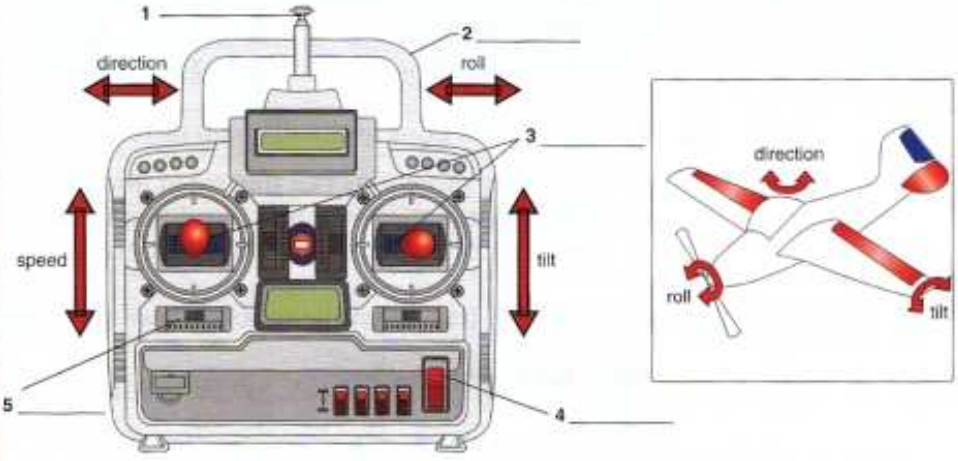
2 27 Listen and check your answers to 1.

3 Work in pairs. Write down some speeds. Dictate them to your partner.

Vocabulary

4 Label the diagram with the words in the box.

antenna handle joysticks slider switch



Task

5 Work in groups. What do you think the plane does when you move these controls?

Look at the joystick on the left.
1 Push it up (away from you). Pull it down (towards you). What happens?
2 Push it to the left. Push it to the right. Now what happens?

Look at the joystick on the right.
3 Push it up. Pull it down. What happens?
4 Push it to the left. Push it to the right. Now what happens?

Reading **6** Read the manual. Check your answers to 4 and 5.

Remote control transmitter for model plane

User manual

Look at the diagram of the transmitter. There are two joysticks. One is on the left. This is the left-hand (LH) stick. The other is on the right. This is the right-hand (RH) stick.

Now look at the LH joystick. This controls the speed and the direction of the plane. Push the LH stick up (away from you) and the plane accelerates. Pull (it) down (towards you) and the plane slows down. Slide the stick to the left and the plane turns left. Slide it to the right and (it) turns right.

Now look at the RH joystick. This controls the roll and the tilt of the plane. Push the RH stick up (away from you) and the plane descends (or goes down). Pull it down (towards you) and the plane ascends (or goes up). Slide the stick to the left and the plane rolls to the left. Slide it to the right and it rolls to the right.

7 Which words in the text do these pronouns refer to?

1 it (line 4) a) direction b) plane c) LH stick
2 it (line 5) a) plane b) LH stick c) right

8 Match your actions with the plane's actions.

Your action	The plane's action
1 Move the LH stick up.	a) The plane goes to the left.
2 Pull the LH stick down.	b) The plane goes faster.
3 Move the LH stick to the left.	c) The plane goes down.
4 Move the LH stick to the right.	d) The plane goes more slowly.
5 Move the RH stick up.	e) The plane rolls to the left.
6 Pull the RH stick down.	f) The plane goes up.
7 Move the RH stick to the left.	g) The plane rolls to the right.
8 Move the RH stick to the right.	h) The plane moves to the right.

ascend ≠ descend

Speaking **9** Work in pairs. Make dialogues with the information from the table in 8.

A: Can the plane fly to the left?
B: Yes, it can. You move the left-hand stick to the left.

Social English **10** Work in pairs. Find out what your partner can and can't do.

A: Can you swim? *B: Yes, I can. Can you?*
A: Yes, I can. Can you sail a boat? *B: No, I can't.*

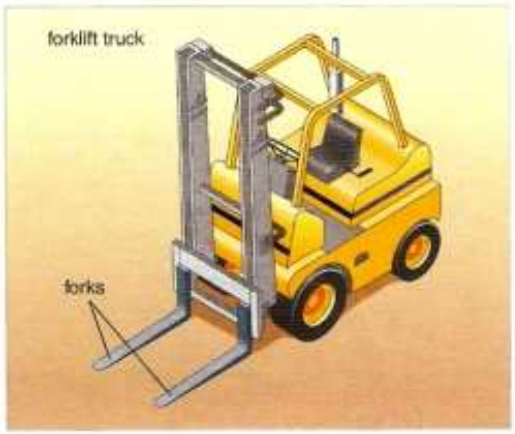


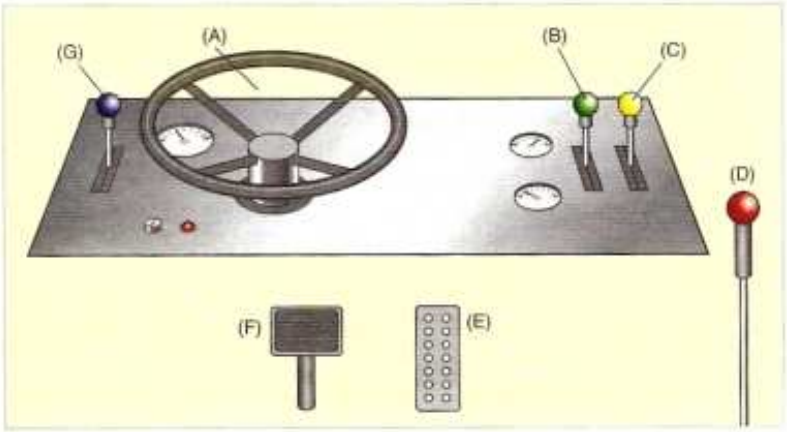





3 Actions

Start here **1** Look at the diagrams and answer the questions.





1 How many pedals does it have?
2 How many levers does it have?
3 Is the steering wheel on the left or on the right?

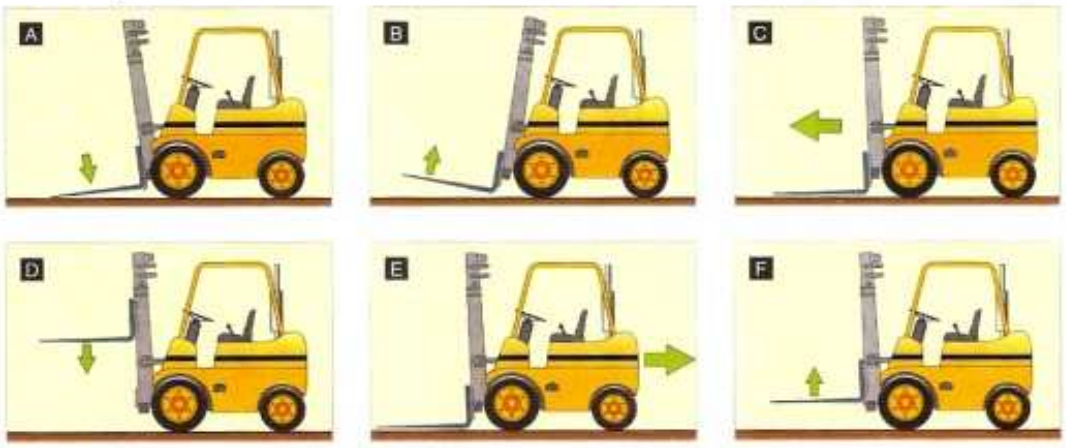
Reading **2** Read the manual. Write the letters (A–G) from the diagram next to the controls.

reverse = go backwards

In the diagram, you can see the controls of the forklift truck. On the left is a lever. This is the direction lever (1 _____). Push this lever forwards, and the truck moves forwards. Pull it backwards, and the truck reverses. Next you can see the steering wheel (2 _____). This turns the truck to the left and right. At the top, on the right, you can see two levers. Push the left-hand lever (3 _____) forwards, and the fork moves up. Pull it back, and the fork moves down. Push the right-hand lever (4 _____) forwards, and the fork tilts up. Pull it back, and the fork tilts down. At the bottom, on the right, you can see a lever. This is the parking brake (5 _____). At the bottom, you can see two pedals. The LH pedal is the brake (6 _____). The RH pedal is the accelerator (7 _____).

3 Describe these movements of the truck. Use words from the manual.

Example: A. The fork tilts down.



Speaking **4** Work in pairs. Have a driving lesson.

Student A: You are the driving instructor. Give instructions.
Student B: You are learning to drive. Follow the instructions. Act them out.

Drive forwards. Reverse. Go slowly. Go faster. Slow down. Stop! Turn left. Turn right. Reverse to the left. Reverse to the right. Turn round. Do a U-turn. To the left. To the right.

turn round = do a U-turn

Writing **5** Write a short set of instructions for one of these jobs. Draw a diagram.

1 How to park a car.
2 How to dock a small sailing boat.
3 (Choose your own job.)

6 Write full sentences from these notes. Use ***when*** and ***you*** and add ***the*** and punctuation.

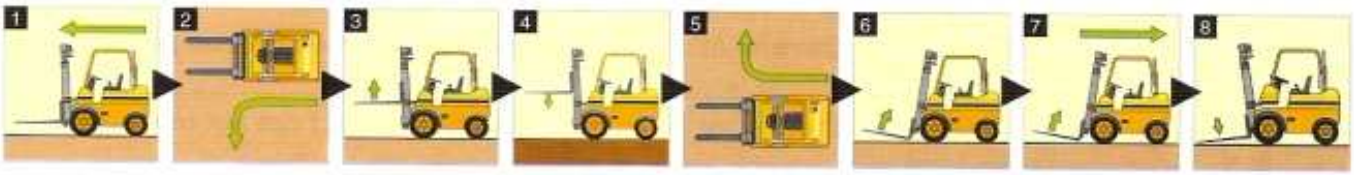
1 pull lever C backwards → fork tilts down
2 push lever B forwards → fork moves up
3 turn steering wheel to the right → truck turns right
4 pull lever G backwards → truck reverses
5 press brake pedal → truck stops
6 press accelerator → truck goes faster

Example: 1 When you pull lever C backwards, the fork tilts down.

Task **7** Work in pairs. Have a driving lesson for the forklift truck.

Student A. Turn to p. 66.

Student B:
1 You're the driving instructor for the forklift truck. Student A is learning to drive the truck. Tell Student A to follow these instructions in the correct sequence.
2 Then change roles. Follow Student A's instructions and rearrange your pictures into the correct sequence.



The correct sequence of the instructions is:

Review Unit B

1 Rewrite these statements as questions.

1 John has the spanners. *Does John have the spanners?*
2 The students have a holiday tomorrow. _____
3 The Multi Tool has a screwdriver. _____
4 These bikes have strong brakes. _____
5 The radio has an internal battery. _____
6 Those houses have solar panels. _____

2 Answer the questions in the negative. Then make a positive statement.

1 Do you have a car? (motorbike)
No, I don't have a car. I have a motorbike.
2 Does your brother have a DVD? (VCR)
_____
3 Does the Multi Tool have scissors? (knife blade)
_____
4 Do we have English today? (Science)
_____
5 Does your radio have batteries? (dynamo)
_____
6 Do the pliers have plastic handles? (metal handles)
_____

3 Rewrite these sentences using contractions where possible.

1 The Multi Tool does not have a wrench. It is not very useful.
The Multi Tool doesn't have a wrench. It isn't very useful.
2 We do not have an AC adapter. We can not switch on the computer.
_____
3 I am a technician, but I do not have my tools here. I can not repair your TV.
_____
4 The electricity is off, and we do not have any batteries. You can not use the radio now.
_____

4 Give short answers.

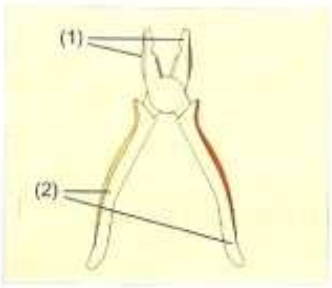
1 Can you swim? (No) *No, I can't.*
2 Is he an IT technician? (No) _____
3 Does the DVD work now? (Yes) _____
4 Do your friends have tickets for the cinema? (No) _____
5 Are you a technology student? (Yes) _____
6 Does your radio have a solar panel? (No) _____
7 Are you a telecoms engineer? (No) _____
8 Can planes rotate on a horizontal axis? (Yes) _____

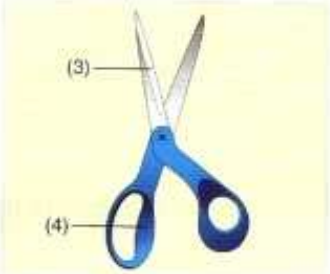
5 Complete the dialogue with the correct form of the verbs in brackets.

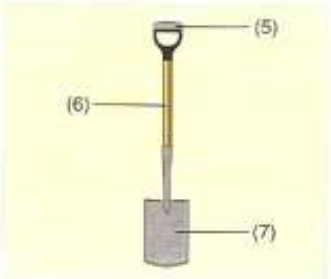
- *Look at my radio. Do you like it?*
- Yes, it's great. What (1) _____ (do) that handle (2) _____ (do)?
- *It* (3) _____ *(turn) a dynamo. The dynamo* (4) _____ *(produce) electricity for the radio.*
- What are those, at the top?
- *They're solar panels. They* (5) _____ *(charge) the internal battery on a sunny day.*
- Can the radio also (6) _____ (use) mains electricity?
- *Yes, it can. And it also* (7) _____ *(use) AA external batteries.*
- So your radio (8) _____ (have) four power sources!
- *That's right.*

6 Label the parts with the words in the box.

blade/blades handle/handles head jaws shaft







7 Describe the tools in 6.

Example: 1. A pair of pliers has two handles and two jaws.

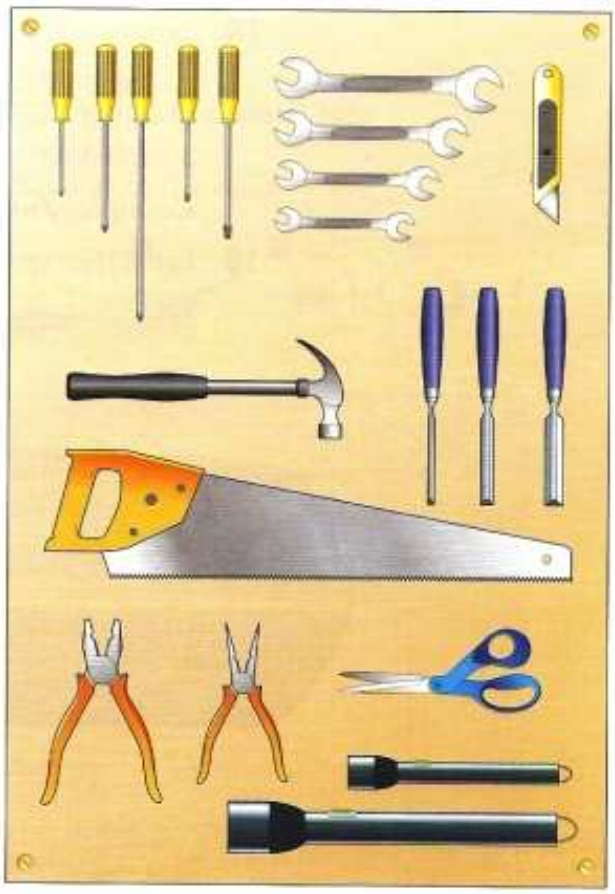
8 Look at this toolboard for 15 seconds. Then close the book and list all the tools.

Begin: Five screwdrivers. They're at the top, on the left.

9 Look again at the toolboard on the right. Make sentences with the words in the box.

above below to the left of
to the right of

Example: The screwdrivers are to the left of the spanners and above the hammer.



10 Guess the device from its description.

1 This item covers the head and protects it. Skateboarders use it.
2 This tool has handles and jaws. It can grip nuts and bolts. It pulls nails out.
3 This equipment converts (or changes) sunlight into electricity.
4 You rotate these items onto bolts. You tighten them with a spanner.
5 This item receives radio and TV signals. You can see it on a house or car.
6 This equipment produces electricity when it rotates.

11 Complete these questions and answers with the words in the box.

Notice the spelling change: *study* → *studies*

am are come/comes do does is study/studies work/works

1 Where *are* you from?	a) She _____ at Vodafone.
2 What _____ you do?	b) I _____ a student.
3 Where _____ you study?	c) She _____ a technician.
4 What _____ your subject?	d) She _____ from Finland.
5 Where _____ Elli come from?	e) I *am* from Japan.
6 _____ she a student, too?	f) I _____ at the Technical College.
7 What _____ she do?	g) I _____ telecoms engineering.
8 Where _____ she work?	h) No, she _____ not.

12 Match the questions with the answers in 11.

13 Work in pairs. Practise the questions and answers in 11. Use contractions where possible.

Example: 1–e A: Where are you from? B: I'm from Japan.

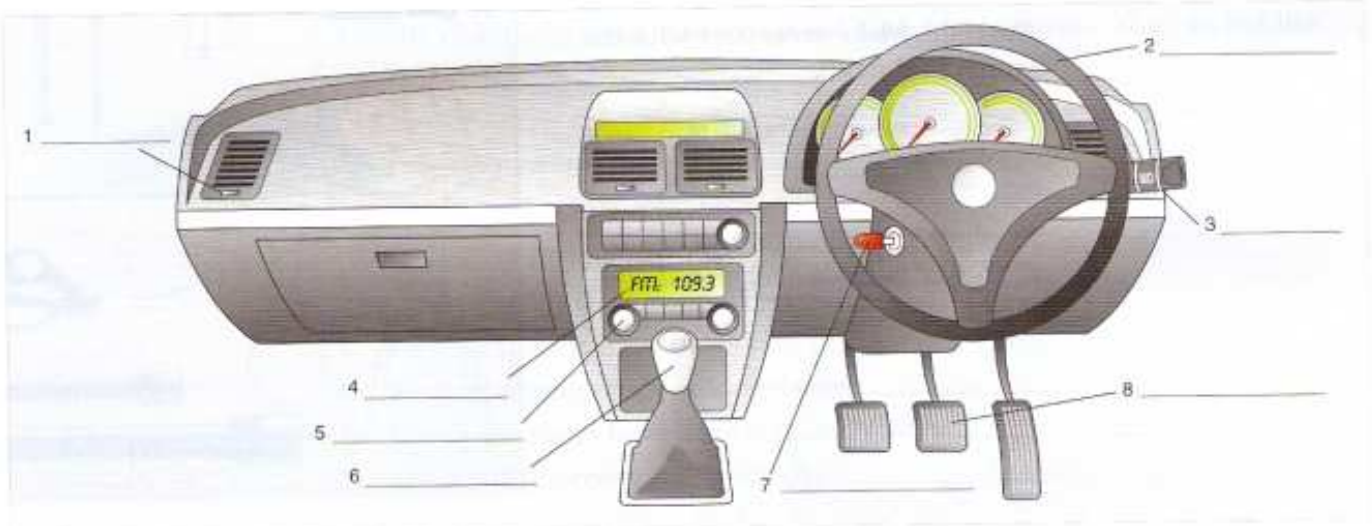
14 Cross out the silent letters in the words below. Say the words.

1 knife	4 scissors	7 descend
2 build	5 wrist	8 right
3 building	6 ascend	9 tighten

Example: ~~w~~rench

15 Label the controls with the words in the box.

button display key lever pedal slider switch wheel



16 Put ***a***, ***an***, ***some*** or ***a pair of*** before each item.

To buy:

_____ *printer* _____ *AC adapter* _____ *speakers* _____ *keyboard* _____ *amplifier*
_____ *headphones* _____ *earphones* _____ *nuts* _____ *bolts* _____ *pliers*

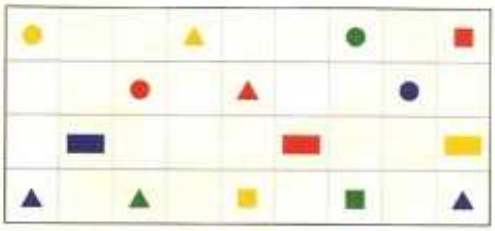
17 Make positive and negative statements.

1 this opener ... open bottles ✓ open tins ✗
2 these wrenches ... tighten the M12 bolts ✗ loosen the M5 nuts ✓
3 that antenna ... receive radio signals ✓ transmit them ✗
4 a rocket ... fly straight up ✓ reverse ✗
5 passenger planes ... fly sideways ✗ turn left and right ✓
6 I ... drive a car ✓ operate a forklift truck ✗

Example: 1 This opener can open bottles, but it can't open tins.

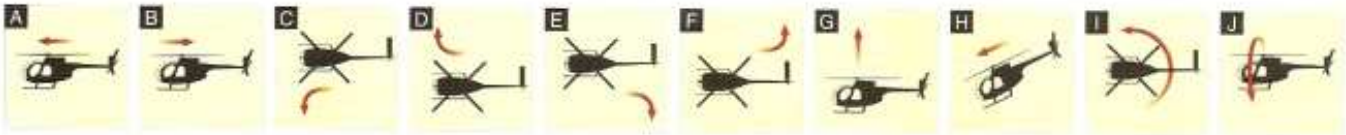
18 Follow the instructions.

Start at the red triangle. Move sideways three boxes to the right. Go diagonally up one box to the right. Move horizontally eight boxes to the left. Descend vertically three boxes. Go diagonally up two boxes to the right. Move diagonally down two boxes to the right. Where are you?



19 Match pictures with the instructions below.

1 Fly diagonally down.
2 Fly forward.
3 Fly straight up.
4 Reverse.
5 Rotate on a vertical axis.
6 Reverse to the left.
7 Turn left.
8 Rotate on a horizontal axis.
9 Turn right.
10 Reverse to the right.



Projects **20** Make a list of job titles in your industry.

Example: Construction Industry: structural engineer, quantity surveyor, site manager, architectural technician, etc.

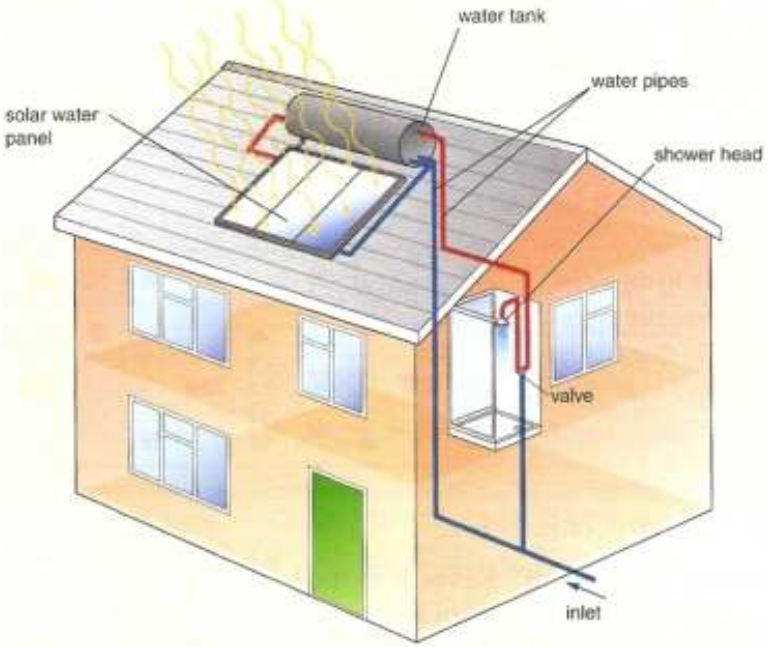
21 What do these word parts mean? Find other words with the same part.

Word part	Meaning of word part	Example of word	Meaning of word
multi-		1 multimedia 2	1 2
therm-		1 thermometer 2	1 2
kilo-		1 kilometre 2	1 2

5 Flow

1 Heating system

Start here **1** Work in groups. Which way does the water flow in this system? Draw arrows to show the direction of the flow.



Solar water heater

The main parts of this system are water pipes, a solar water panel, a water tank, an inlet, a valve and a shower head. The tank is above the solar panel.

Cold water enters the system through the inlet. (It) then flows into the tank. From (here), the water flows into the solar panel.

The Sun heats the water in the panel. The hot water rises and flows from the panel into the tank. In the tank, hot water stays at the top and cold water sinks to the bottom.

When you open the valve, hot water flows from the tank, through the valve, to the shower head. (Here) (it) finally leaves the system.

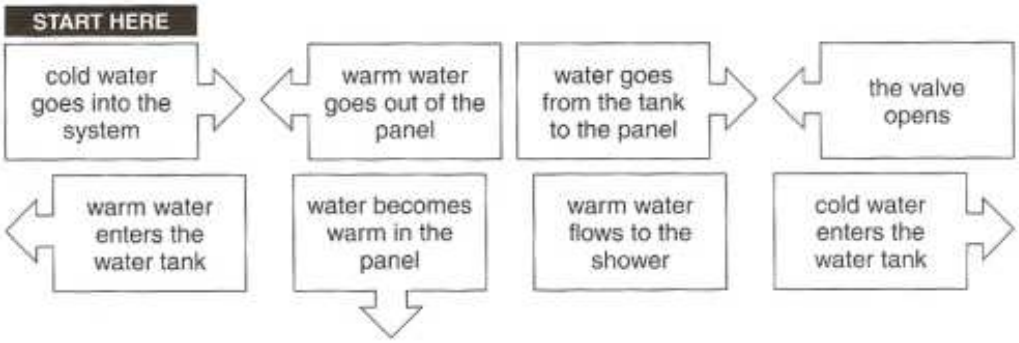
Reading **2** Read the text. Check the directions of your arrows in 1.

3 What do these words refer to?

1	It (line 6)	a) inlet	b) cold water	c) system
2	here (line 7)	a) tank	b) inlet	c) water
3	Here (line 16)	a) tank	b) valve	c) shower head
4	it (line 16)	a) shower head	b) valve	c) hot water

Example: 1 [*Cold water*] *enters the system through the inlet.* [*It*] *then ... .*
In line 6, *it* refers to *cold water.*

4 Draw the flow chart, putting these boxes into the correct order.



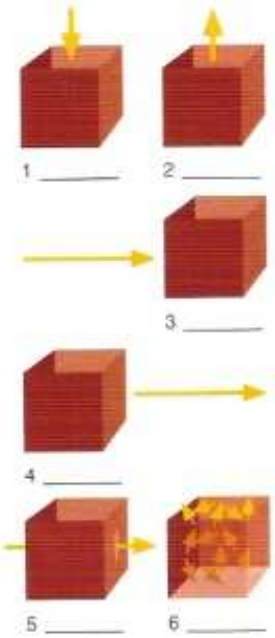
Language

The water		flow move	-s	into the tank. out of the tank.
		go pass	-es	through the pipes. around the solar panel. to the outlet. from the inlet.
The electron	-s	flow go		around the circuit. through the cables.

Vocabulary

5 Label the diagrams 1–6 with the prepositions in the box.

around from into out of through to



6 Complete the table with the verbs in the box.

enter leave rise sink

go	up	(1)
	down	(2)
	in/into	(3)
	out/out of	(4)

7 Complete the sentences with the correct form of verbs from the table in 6.

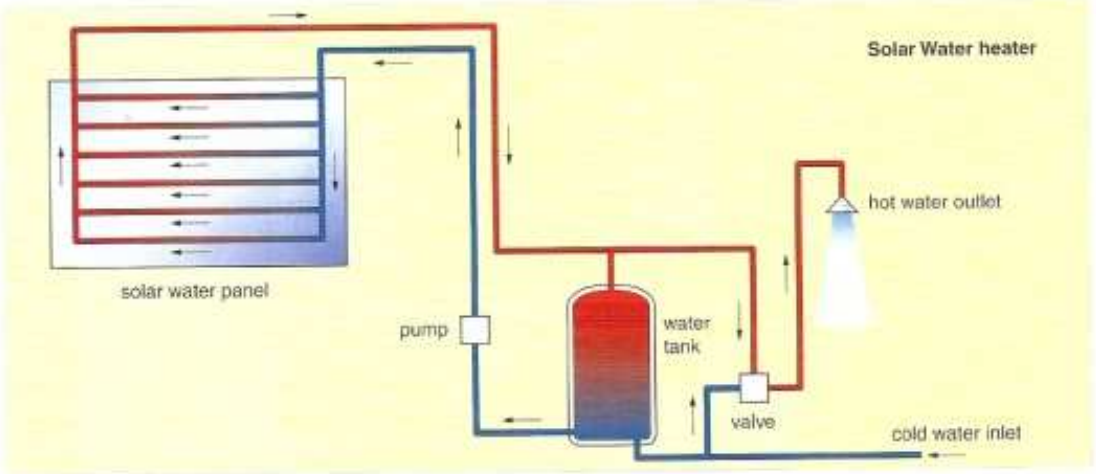
1 Water _____ the house through the inlet pipe.
2 Water _____ the solar panel through the outlet pipe.
3 When you heat the water in a tank, the hot water _____.
4 When you cool the air in a room, the cool air _____.

Task

8 Work in pairs. Explain your system to your partner.

Student A. Turn to page 65.

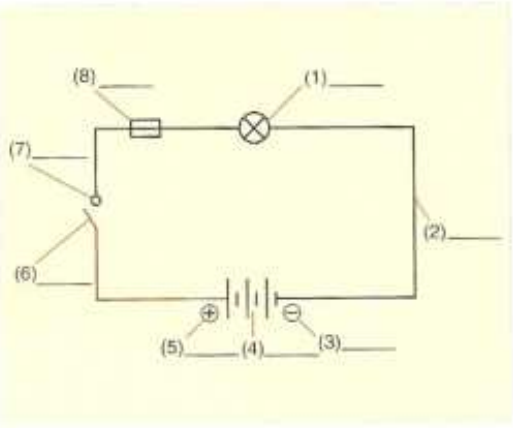
Student B:
1 Listen to Student A, and ask questions. Then draw a simple diagram of his/her system.
2 Explain your system to Student A.



Writing

9 Write an explanation of your system.

2 Electrical circuit



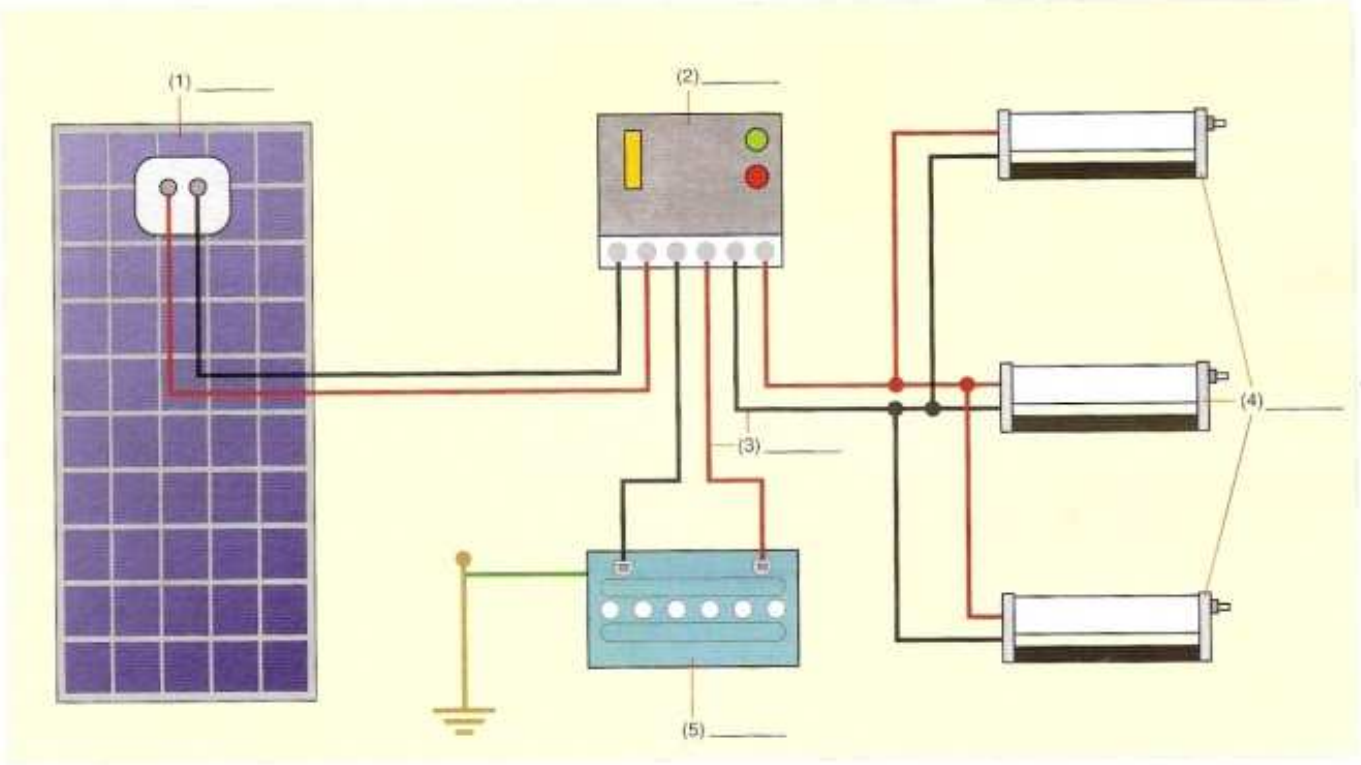
Start here **1** Do you know these electrical symbols? Label the circuit diagram with the words in the box.

battery conductor fuse lamp
negative positive switch terminal

See the glossary of electrical symbols on page 59 for answers.

Listening **2** 28 Listen and label the diagram with the words in the box.

battery cables controller lamps solar panel



3 29 Listen and match the items with their specifications.

1	solar panel	a)	12V 8W
2	controller	b)	DC
3	battery	c)	5A
4	lamps	d)	60W
5	electrical current	e)	12V 100Ah

Task **4** Work in pairs. Look again at the diagram in 2. Where does the current flow in these three situations? Draw arrows.

Situation 1: The Sun shines. The lamps are on.
Situation 2: The Sun shines. The lamps are off.
Situation 3: The Sun doesn't shine. The lamps are on.

5 Read the manual for the solar panel and check your answers to 4.

convert = change

How does the solar power system work? The panel converts the Sun's energy into a DC electric current. The current flows to the controller. Then it can flow from the controller to the lamps. Or it can flow from the controller into the battery. The battery stores the electricity. The current can flow from the battery into the lamps through the controller.

If the Sun shines, the DC current can flow from the panel, through the controller and into the lamps. If the Sun doesn't shine, the current can flow from the battery, through the controller and into the lamps. If the lamps are off, the current can flow from the panel, through the controller, and into the battery.

The controller controls the flow of the current. If the battery is full, the controller stops the flow from the panel into the battery. If the battery is empty, the controller stops the flow from the battery into the lamps.

Language

If	the Sun		shine	-s	, the current flows from the panel.
	the Sun	does not/doesn't	shine		, the current flows from the battery.

If	the battery	is	full	,	the current doesn't flow into the battery.
	the lamps	are not/aren't	on	,	the current flows into the battery.

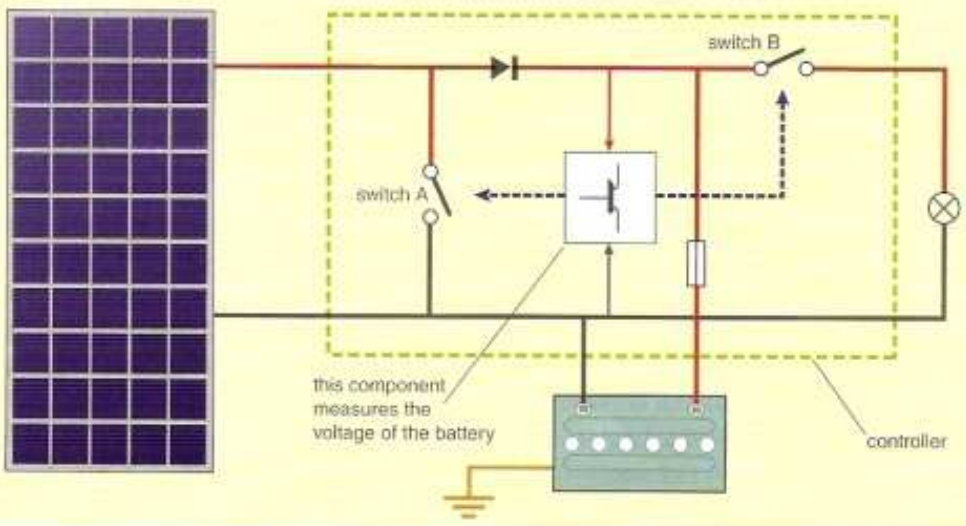
Task

6 Work in pairs. How do you think the controller below works? Make notes.

7 Complete the text explaining how the controller works. Choose the correct verb and use the correct form of the verb.

If the battery is full, switch A (1) _____ (open/close). Then the current (2) _____ (flow/not flow) from the panel to the battery. The controller short-circuits the panel.

If the battery is empty, switch B (3) _____ (open/close). Then the current (4) _____ (flow/not flow) from the battery to the lamp.



3 Cooling system

Start here

1 Try this quiz. Choose the correct answer.

What are the normal or average temperatures for these?

°F = °C * 9 / 5 + 32. This converts Celsius to Fahrenheit.
°C = (°F – 32) * 5 / 9. This converts Fahrenheit to Celsius.

1	Water from a shower?	a) 60°C (140°F)	b) 80°C (176°F)
2	Food in a refrigerator?	a) 4.5°F (–15°C)	b) 40°F (4.5°C)
3	Food in a freezer?	a) 0°C (32°F)	b) –18°C (0°F)
4	Coldest air temperature ever?	a) –89°C (–128°F)	b) –20°C (–4°F)
5	Hottest air temperature ever?	a) 156°F (70°C)	b) 136°F (58°C)
6	Water in running car engine?	a) 110°C (230°F)	b) 45°C (110°F)

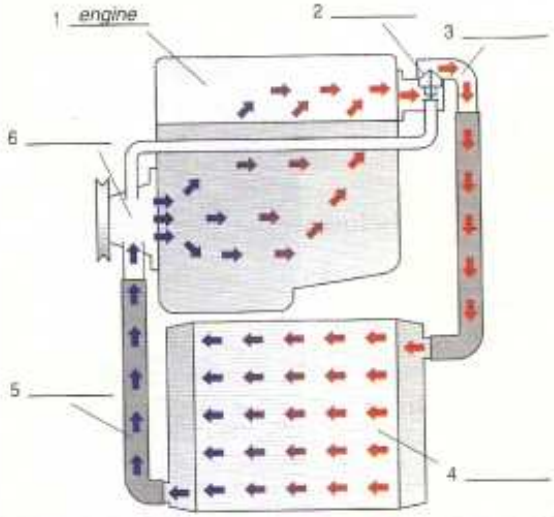
Listening

2 30 Listen and check your answers.

Reading

3 Label the diagram with the words in the box.

bottom hose engine radiator thermostat top hose water pump



Car cooling system

The engine drives the water pump and the pump pushes cool water around the engine. This cools the engine. At the same time, the water becomes hot. The water in a hot engine is normally around 110°C.

The hot water then passes through the thermostat. This controls the temperature of the engine. From the thermostat, it flows through the top hose into the radiator. Here, a fan cools the water, and the cool water sinks to the bottom of the radiator.

The cool water then leaves the radiator. It flows along the bottom hose, passes through the pump and enters the engine again.

4 Read the text. Check your answers to 3.

5 Which words in the text do these words refer to?

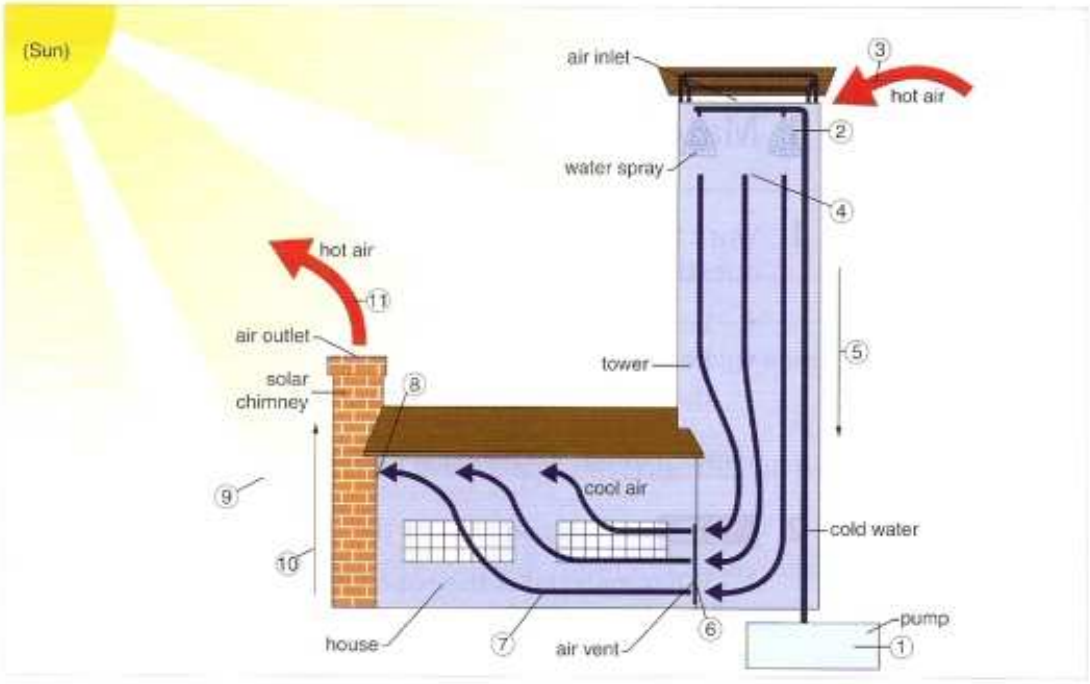
1	This (line 6)	a) hot water	b) thermostat	c) temperature
2	it (line 7)	a) engine	b) thermostat	c) water
3	Here (line 8)	a) top hose	b) radiator	c) fan
4	It (line 10)	a) water	b) radiator	c) bottom hose

Speaking

6 Make true sentences.

(1) The water pump	control(s)	the radiator to the engine.
(2) The thermostat	connect(s)	air onto the radiator.
(3) The two hoses	push(es)	the hot water from the engine.
(4) The radiator	cool(s)	water around the engine.
(5) The fan blades	flow(s)	to the bottom of the radiator.
(6) Cool water	rise(s)	the temperature of the water.
(7) Hot water	sink(s)	through the two hoses.
(8) Water	blow(s)	to the top of the engine.

Task **7** Work in groups. This is a simple way to cool a house in a hot country. How does it work? What happens at each stage (1–11)?



Writing **8** Complete this description of how the cooling system works with the verbs and prepositions in the box.

cool	enter	flow	heat	leave	rise	sink
around	into	out of	through	to		

The pump pushes cold water *through* the pipe *to* the top of the tower (1). Here, the water *leaves* the pipe *through* small holes. It's like a cold shower. (2).

Hot air _____ the tower _____ the air inlet (3).

The shower of cold water _____ the air (4). The cool air then _____ to the bottom of the tower (5).

The cool air _____ the house, (6) and then it _____ (7).

It _____ the house and _____ the solar chimney (8).

The Sun _____ the chimney, (9) and the hot air _____ (10).

The hot air finally _____ the chimney _____ the air outlet (11).

Social English **9** 31 Listen and read.

Dan is an electronics student. He also works part-time in an electronics workshop.

- *I work in the electronics workshop every Thursday and Friday.*
- When do you attend lectures?
- *Every Tuesday morning.*
- What do you do on Tuesday afternoons?
- *I do my practical work then.*

on Mondays = every Monday
on Monday mornings = every Monday morning

10 Work in pairs. Practise the dialogue.

11 Work in pairs. Discuss your own weekly schedule.

6 Materials

1 Materials testing

Start here

1 Work in pairs. Read the instructions and answer the question.

- Look at the helmet and rope. What are they made of?
- Design tests for them. Use diagrams and the words in the box.

break nylon polycarbonate pull stretch strike

Listening

2 32 Listen and answer the questions.

1 What material is the rope made of?

_____

2 What is the lecturer doing?

_____

3 Is the rope breaking?

_____

3 Listen again and complete the dialogue.

● *I'm* (1) _____ *the rope. I'm* (2) _____ *it. Is it* (3) _____?

○ No, it (4) _____.

● *That's right. It* (5) _____ _____.

Language

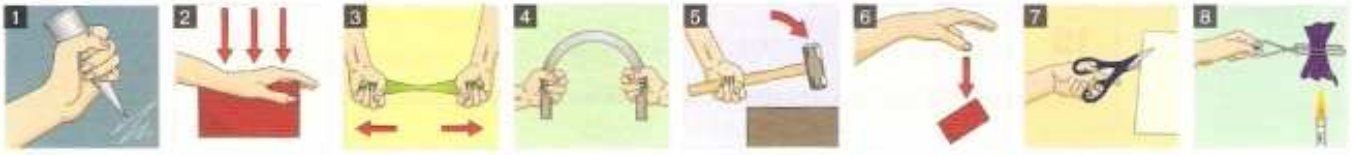
This is the *present continuous* form of the verb. Use it to describe what is happening at the same time as you are speaking.

		I	'm am	pull	-ing	the rope.
		The rope	isn't is not	break	-ing.
What	are	you		do	-ing?
	Is	the rope		break	

Vocabulary

4 Match the actions with the verbs in the box.

bend compress cut drop heat scratch stretch strike



Language **5** The lecturer is testing other materials. Complete his description.

● Now I (1) *'m heating* (heat) this plastic to 100°C. Can you see?
It (2) _____ (not melt).
OK, now I (3) _____ (put) this helmet on the floor. And now the machine (4) _____ (drop) a 10 kg weight on it.
Right, now look at Dr Wilson. He (5) _____ (strike) the metal plate with a hammer. But the plate (6) _____ (not bend).
OK, now the jaws of the vice (7) _____ (compress) this plastic block. The block (8) _____ (not break).
Now Dr Wilson (9) _____ (hang) a weight of 500 kg from the ropes. But the ropes (10) _____ (not stretch).

Note the spelling changes:
strike → striking
drop → dropping
cut → cutting

Speaking **6** What are the people in the gym doing? Describe this picture using the words in the box.

bend cycle hold lift pick up pull push run sit stretch touch

7 Ask and answer questions about the picture in 6.

A: What's D doing? Is he pushing the bar up?
B: No, he isn't. He's pulling the bar down.

8 Work in pairs. Guess the sport from the mime.

Student A: do the actions.
Student B: guess what Student A is doing. Then change roles.

A: Watch me. (Mime a sport). What am I doing now?
B: Are you diving?
A: No, I'm not diving.
B: I know. You're swimming.
A: Yes, you're right. I'm swimming.

2 Properties

Start here

1 Work in pairs. What are the most important properties of the materials in the box? Discuss with your partner.

ceramic concrete diamond fibreglass graphite steel

Example: You can't burn/melt/break/scratch/bend/cut it (easily).

Vocabulary

2 What are these made of? Match the photos with these materials.

aluminium ceramic fibreglass graphite nylon
polycarbonate polystyrene rubber steel titanium










Speaking

3 Underline the stressed syllable.

1 ny lon
2 graph ite
3 ce ram ic
4 pol y car bon ate
5 al u min i um
6 pol y sty rene
7 ti ta ni um
8 fi bre glass

fibreglass (BrE) = *fiberglass* (AmE)
aluminium (BrE) = *aluminum* (AmE)

4 33 Listen and check your answers to 3. Say the words with the correct stress.

Language

What	is 's	this helmet	made of?	It	is 's	made of	polycarbonate. nylon.
What	are 're	those ropes		They	are 're		

5 34 Listen and repeat.

- *What's this made of?*
- ○ It's made of ceramic.
- *What are these made of?*
- ○ They're made of polycarbonate.

6 Work in pairs. Make similar questions and answers about the photos in 2.

Vocabulary **7** Match the sentences.

1 This material doesn't burn or melt if you heat it.	a) It's rigid.
2 This material doesn't break if you strike it or drop it.	b) It's hard.
3 You can't bend this material.	c) It's tough.
4 This material doesn't corrode if you put it in water.	d) It's heat-resistant.
5 You can't scratch this material or cut it.	e) It's corrosion-resistant.

8 Match the words with their opposites.

1 tough	a) soft
2 hard	b) heavy
3 rigid	c) weak
4 strong	d) brittle
5 light	e) flexible

Reading **9** Read the text and complete the table below.

This racing car is made from the latest hi-tech engineering materials. It's made from metals, alloys, ceramics, plastics and composites. Many materials in the car are light, but very strong.

The nose cone of the vehicle is made of strong, light fibreglass.

The spoiler and the wings are made from two materials. The inner core is light. It's made of polystyrene. The outer skin is hard and made of fibreglass.

The frame is light, but very tough and rigid. It's made of cromoly, a steel alloy.

The radiator is made of aluminium. The aluminium is coated with ceramic. These two materials are corrosion-resistant.

The engine and pistons are made of a light aluminium alloy. Each piston inside the engine is coated with a heat-resistant ceramic.

The wheels are made of a strong, light aluminium alloy. The tyres are made of a tough rubber composite.

an *alloy* is a mixture of two or more metals
a *composite* is a mixture of two types of material
fibreglass is a composite. It is a mixture of a plastic and a ceramic

Part	What's it made of?		What are its properties?
nose cone	(1)		(2)
spoiler and wings	coated with (3)		(4)
wheels	(5)	alloy	(6)
tyres	(7)	composite	(8)
pistons	coated with (9)		(10)
frame	(11)		(12)
radiator	(13)		(14)

BrE *tyre*, AmE *tire*

3 Buying

Listening **1** 35 Listen and complete the customer call form.

Customer Call Information

Name:	Manuel
Phone number:	
Email address:	
Message:	

2 36 Listen and write the correct email and web addresses.

When you hear this	write this
1 waleed at sports dot com	*waleed@sports.com*
2 adam at city dot co dot U, K	
3 theo walcott, that's T-H-E-O then W-A-L-C-O-T-T at goalfeast, that's G-O-A-L-F-E-A-S-T all one word dot com	
4 C dot ronaldo, that's R-O-N-A-L-D-O at back-of-the-net, that's B-A-C-K dash O-F dash T-H-E dot net	
5 www dot toyota, that's T-O-Y-O-T-A dot com forward slash customer dash support	
6 www dot orascom, that's O-R-A-S-C-O-M dot com dot E-G forward slash sales underscore one	

Speaking **3** Work in pairs. Dictate the addresses to your partner.

Student A. Turn to page 66. Student B. Turn to page 67.

Listening **4** 37 Listen to this phone conversation and complete the questions.

Never put a stress on the *-ty* in numbers like *thirty, forty, fifty* and so on.
Tip: say *seventy* but *seventeen* to make the difference clear.

- ● *What's your surname, please?*
- ○ It's Lint.
- ● *Could you* (1) _____ *that, please?*
- ○ Lint.
- ● *Could you* (2) _____ *that, please?*
- ○ L-I-N-T.
- ● (3) _____ *T or D?*
- ○ It's T. T for teacher.
- ● *Thanks. And what's the product number?*
- ○ It's 17-305.
- ● (4) _____ *17 or 70?*
- ○ Teen. Seventeen. One seven.
- ● *Right. Thanks.*

Speaking **5** Practise the phone call in pairs. Then change roles.

Task **6** Work in pairs. Buy sports equipment over the telephone.

Student A. Turn to page 67.

Student B:

1 You are the customer. Circle three items you would like to buy, and circle the features you want (size, colour, material), and the price. Then phone up the shop and place your order. You can either make up details (e.g. names, phone numbers, etc.) or use your own.

2 Then change roles. You are now the sales person in the sports shop. Ask Student A questions and complete this order form.

no. = number
 # = number

helmet: polycarbonate (product # 16-384: $80/£40/€60) or fibreglass (product # 18-399: $70/£35/€50). Sizes: L, M or S.

Other colours

jacket: cotton (product # 14-556: $70/£37/€58) or polyester (product # 17-765: $75/£40/€60). Sizes: XL, L, M, S.

Other colours

rope: nylon (product # 13-246: $40/£16/€25 per 25 m) or nylon + rubber composite (product # 30-356: $45/£22/€33 per 25 m). Sizes: 50 m/75 m/100 m.

Other colours

backpack: nylon (product # 19-231: $120/£60/€90) or polyester (product # 90-113: $110/£55/€85). Sizes: XL, L, M, S.

Other colours

USEFUL LANGUAGE

- **What's your name/phone number/email address?**
- **Could you spell/repeat that, please?**
  Is that sixteen or sixty?
- **What's the product name/number?**
- **What colour/size/material would you like/do you need?**
- **Do you want to pay in dollars ($), sterling (£) or euros (€)?**
- **How many would you like/do you need?**

Name	
Phone no.	
Email address	
Order	

Product name	Product no.	Colour	Size	Material	Price	Quantity

Social English **7** 38 Listen to three telephone calls. Mike (M) is phoning his friend John (J).

	1	2	3
J	Hello?	Hello?	Hello. John Davis here.
M	*Hello. Is that John?*	*Hello. Is that John?*	*Oh hi, John. This is Mike.*
J	Yes?	Yes. Is that Mike?	Hi, Mike.
M	*It's Mike.*	*Yes, it's me. Hi. How are you?*	*Hi. How are things?*
J	Oh hi, Mike.	Fine, thanks. How about you?	Great, thanks. How are you?
M	*Hi. How are you?*	*I'm fine. (Begin your call).*	*Good. (Begin your call).*
J	OK, thanks. How are you?		
M	*Fine. (Begin your call).*		

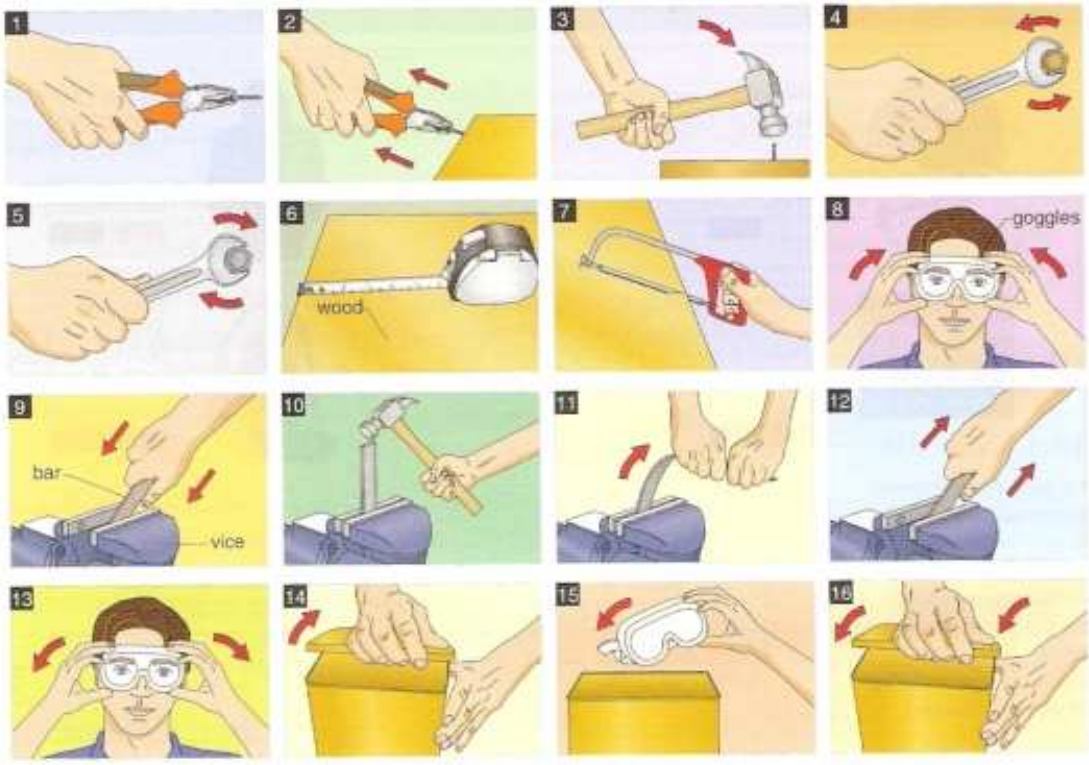
8 Work in pairs. Practise short phone calls, using your own names.

Review Unit C

1 Look at the pictures and give instructions with the words in the box.

bend close cut drive in grip loosen measure open
pull out put put on strike take take off tighten use

Examples: 1 Grip the nail. Use a pair of pliers. 2 Pull out the nail.



2 Say what is happening in the pictures in 1.

Example: 1 He's gripping the nail. He's using a pair of pliers.

3 Correct the mistakes in these sentences.

1 Water boils at 32°F. (freeze)
Water doesn't boil at 32°F. It freezes.

2 Hot water sinks to the bottom of a tank. (rise / top)

_____

3 Cool air rises to the top of a room. (sink)

_____

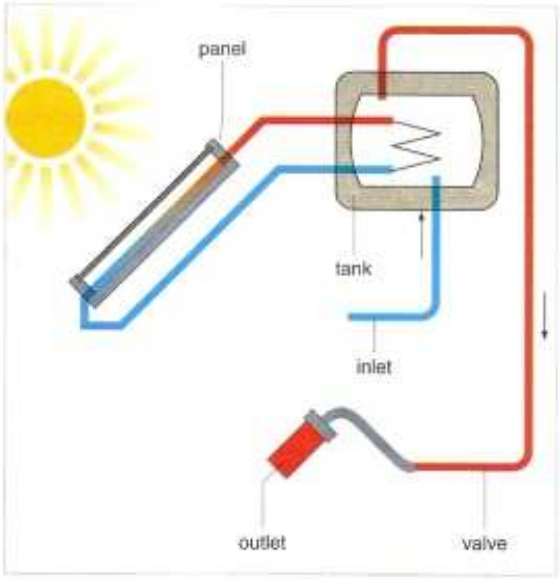
4 Hot air sinks to the bottom of a room. (stay / top)

_____

5 The Sun's rays cool the water in the solar panel. (heat)

_____

4 Complete the dialogue with the correct form of the verbs in brackets.



● How does the thermosiphon (1) _____ (work)?

○ *Well, the cold water* (2) _____ (enter) *the system through the inlet. The water pressure* (3) _____ (push) *the water around the system.*

● So how (4) _____ (do) the water (5) _____ (become) hot?

○ *It* (6) _____ (flow) *into the panel and the sun's rays* (7) _____ (heat) *it. The warm water* (8) _____ (rise) *to the top of the panel and it* (9) _____ (pass) *from the panel into the tank.*

● (10) _____ (do) the tank (11) _____ (have) a heater?

○ *No, it* (12) _____ (do not). *The hot water* (13) _____ (stay) *at the top of the tank. If you* (14) _____ (open) *the valve, the hot water* (15) _____ (flow) *from the top of the tank to the outlet.*

5 Identify the equipment from the description.

cable fan pump radiator solar panel thermostat

1 It converts energy from the Sun into heat or electricity.
2 It pushes water around a water supply system, or around a car engine.
3 It blows cold air onto a car radiator and cools the water inside it.
4 It controls the temperature of water or air in a heating or cooling system.

6 There's a problem with the forklift truck. Say what's going wrong.

1 I *'m pressing* (press) the accelerator pedal, but the truck *isn't going* (not go) faster.
2 He _____ (pull) the lever back, but the forks _____ (not rise).
3 You _____ (push down) the brake pedal, but the truck _____ (not slow).
4 I _____ (slide) the lever forwards, but the forks _____ (not tilt) upwards.
5 He _____ (pull) the direction lever backwards, but the truck _____ (not reverse).
6 You _____ (move) the direction lever forwards, but the truck _____ (not go) forwards.

7 Complete the sentences with *bend* or *break* and other words.

1 Polyester is a tough material. You can't _____ it easily .
2 Concrete is a rigid material. It doesn't _____ easily.
3 Polycarbonate is a hard material. It _____.
4 This glass is brittle. You _____.
5 These plastic rulers are very flexible. They _____.

8 Draw a line from each word to its opposite.

rise enter into heavy strong
go in inlet push light pull
sink open out of tough hard
go out to outlet soft flexible
close leave weak brittle
go down from rigid go up

9 Complete the sentences with the correct form of the verb in the box.

boil freeze melt rise sink stretch

1 If you heat water to 100°C, it _____.
2 If you cool water to 0°C, it _____.
3 If a heater warms the air in a room, the air _____.
4 If an air conditioner cools the air in a room, the air _____.
5 If you heat steel bars to 1400°C, they _____.
6 If you pull a copper wire very hard, it _____.

10 Identify the material from the description. Choose from the words in the box.

aluminium ceramic polycarbonate polystyrene rubber steel

1 Sunglasses are made of this material. It's a hard and tough plastic.
2 You can stretch this material and you can bend it, but it doesn't break.
3 You can heat this material to a high temperature, but it doesn't burn or melt. They use it in spark plugs.
4 Parts of aeroplanes are made of this material. It's a strong, light, corrosion-resistant metal.

11 Make dialogues about the parts of a racing car.

1 nose cone / fibreglass / strong and light
2 pistons / aluminium alloy / light and corrosion-resistant
3 frame / cromoly / tough and rigid
4 tyres / rubber composite / tough
5 radiator / aluminium and ceramic / corrosion-resistant
6 outer skin of spoiler / fibreglass / hard

A: What's/What are the ... made of?

B: It's/They're made of ... .

A: Why do they/we/you use ... ?

B: Because it's ... .

12 Complete the text with the correct form of the verbs in brackets.

This is how you test the properties of the material. You put the material into the multi-test machine. Then the machine does four tests on it. In the first test, a hammer (1) _____ (strike) the material with a 50 kg weight. In the second test, two pairs of jaws (2) _____ (pull) the material with a weight of 80 kg. In the third test, a heavy weight of 100 kg (3) _____ (press) the material down. In the fourth test, two sharp knives (4) _____ (scratch) the material with weights of 10 and 20 kg.

OK, now I'm demonstrating the four tests in action. Watch carefully. Here's the first test. The hammer (5) _____ (strike) the bar. Can you see? The bar isn't breaking. Here's the second test. It's starting now. The jaws (6) _____ (pull) the material. Can you see? The material (7) _____ (not stretch). Now the third test is taking place. The heavy weight (8) _____ (press) the material down. Can you see that? The material (9) _____ (not break). And now here's the fourth and final test. The knives (10) _____ (scratch) the material.

Projects **13** Find out what these word parts mean. Then find other words with the same word part.

Word part	Meaning of word part	Example of word	Meaning of word
sol-		1 *solar* 2	1 2
poly-		1 *polytechnic* 2	1 2

14 Find out about materials you use in your industry. Make your own table and complete it.

Example:

Industry: *Aerospace*		
Application	**Material**	**Property**
Wing parts	*Aluminium alloys*	*Light, strong, corrosion-resistant*