OXFORD Business English

tech talk

Intermediate
Teacher's Book

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Introduction

Who is *Tech Talk* for?

Tech Talk is a course for people who need English for technical jobs. It is suitable for technicians, engineers, and scientists working in a wide variety of technical fields, for example, light and heavy engineering, construction, IT (information technology), materials engineering, chemical engineering, and pharmaceuticals. Typical users might be engaged in production, planning, maintenance, purchasing, testing, laboratory work, project work, and quality issues.

The course

As its name suggests, the main emphasis throughout *Tech Talk* is on developing speaking and listening skills. The other key skills area is reading and understanding technical documentation and emails.

Tech Talk is designed for groups of intermediate-level English learners and it can be used in two ways:

- **From start to finish** It takes approximately 65 hours to complete the course from beginning to end. It assumes users have at least a low intermediate level at the start and the book progresses fairly speedily. New language is introduced systematically and recycled at regular intervals, so using the book from start to finish will provide learners with a sense of progression and ensure regular review.
- **As a dip-in resource** Each unit and each section of *Tech Talk* is free-standing, so sections can be selected and used out of sequence according to the needs of particular students. Using the book in this way will enable the teacher to cater to the needs and interests of particular groups.

Tech Talk can also be used as a revision course. Learners who had a little English at school or who have already taken a pre-intermediate level general English course will find the technical contexts and vocabulary in *Tech Talk* add a new practical dimension to their English.

The approach

Tech Talk has been designed to meet the practical needs of both technical learners and non-technical teachers. So whilst it includes technical language at an intermediate language level, it also presumes English teachers might have little specialist knowledge and direct experience of science and technology. Several elements in particular have shaped its approach.

Making meanings clear New vocabulary is introduced in context and extensive use is made of illustrations to promote understanding.

Employing authentic content Many real products and processes have been included to promote technical credibility.

Drawing on the students' creativity The students are encouraged to contribute their own ideas in many activities and thus contribute to the course content.

Fostering a positive learning atmosphere The focus in *Tech Talk* is on activities and games which involve a lot of student–student interaction, facilitating thorough practice and developing a positive group dynamic.

The syllabus

Our goal has been to provide learners with the language they need for practical communication. Teachers familiar with other intermediate level English courses will find the *Tech Talk* syllabus covers many similar basic language points. However, the technical nature of the course means there are some key differences.

1 The language of instructions receives particular emphasis in *Tech Talk*, to better prepare learners for understanding and explaining work tasks and also for reading materials such as manuals and equipment documentation.
2 Similarly, the language of measurement receives substantial attention and practice.
3 Technical communication tasks have driven the syllabus of *Tech Talk*, and consequently the emphasis is on forms that are more likely to appear in technical discussions. For example, *Tech Talk* contains a lot of tense work relevant to discussing project schedules and also a variety of different passive forms: *has been repaired, can't be extended, should be filled in*, etc.
4 The same thing applies to technical vocabulary, and *Tech Talk* includes many technical words that teachers might not expect in a more general course. For example, verbs such as *to shatter*, *to ingest*, and *to scorch*, nouns such as *drowsiness*, *constants*, and *circumference*, and adjectives such as *intermittent*, *adverse*, and *pliable*, have been included.

The needs of the technical learner have influenced the syllabus design in other key ways, too.

- Whilst learners using *Tech Talk* will need English primarily to operate in a technical workplace, we expect their needs to extend beyond just these contexts. The *Tech Talk* syllabus also includes language for travelling and what might be termed 'social language' – language for forming relationships and building rapport with foreign co-workers.
- Many learners of technical English need to communicate with non-native speakers as well as native speakers of English. To prepare students for this, *Tech Talk*'s recordings contain a variety of non-native speaker accents as well as native speaker accents.
- *Tech Talk* focuses on language that is acceptable in both British and American English so that learners have the flexibility to cope with different varieties of English. When new items of vocabulary which differ in British and American are introduced, they are glossed on the page they first appear. There is also a British-American glossary on page 108 of the Student's Book.

Course components

Tech Talk consists of the following components.

Student's Book This is the core book that students will need for class work. See below for information on its structure and features.

Teacher's Book This teacher's book provides a range of suggestions for exploiting the course materials effectively. It acts as a guide through the exercises and offers optional ideas for extending activities. It provides extra guidance for teachers who are new to teaching technical English and some ideas that we hope will be stimulating for experienced technical English teachers, too.

For practical ideas about working with *Tech Talk*, there is an appendix at the back of this book on page 82.

There is also an appendix of games and activities at the back of this book on page 85 that can be used to supplement the activities in the teaching notes.

Workbook This contains additional language practice activities along with answers. It is an excellent source of self-study work and review materials that learners can complete in their own time. It can provide further practice during the course or can be used for review when the course is completed. It can also be used as a source for additional classroom exercises if required.

Recordings Recordings of all the listening materials in *Tech Talk* are available audio CD.

The Student's Book
The Student's Book has 18 four-page units and each unit takes approximately three hours of classroom time to complete. Each unit is subdivided into two or three free-standing sections according to the language points covered.

Key language points are presented in the form of a listening or reading text. The material is generally exploited in the following way.

1 **Listening or reading for content** A task-based activity helps the students to pick out specific points of information from the conversation.
2 **Listening or reading for language** The focus shifts to vocabulary or forms of the language

and students focus on specific words and phrases.

3 **Further practice** This is performed in many different ways, including drill-type activities, information-gap activities, presentation tasks, and games. Many of the practice activities involve pair or small group interaction to maximize the amount of practice learners receive.

Review and Remember
In addition to the 18 standard units, there are also 6 Student's Book *Review and Remember* sections. They follow every third unit. These sections revisit and consolidate some key language from earlier units and introduce a little more vocabulary, providing opportunities for review and extension. They also prompt a change of pace because, although they still involve interaction, they also involve more solitary 'thinking' work.

Other features
There are a number of additional features at the back of the Student's Book and you may wish to draw your students' attention to them at the start of the course.

Information file (pages 88–104) Additional information for pairwork activities and suggested answers to some exercises. Directions for when to use each file appear at the appropriate point in the Student's Book.

Irregular verbs (page 105) A reference list of some common irregular verbs.

Numbers (page 106) Information on how we say and write different numbers (large numbers, long numbers, short numbers, fractions, decimals, money, dates, times).

Conversions (page 107) A reference of measurements and conversions (length, weight, speed, temperature, volume, area, and power).

British and American English (page 108) A list of common technical and general terms that differ in British and American English.

Listening script (pages 109–119) A script of all the listening materials.

Working with technical English

Technical terminology
Tech Talk aims to provide a generalized vocabulary that will be useful across groups of learners working in a variety of different technical contexts.

It assumes that individuals will meet specialized terms during their work that they will need to learn on their own, outside this course. Every area of science and technology embodies a large number of specialized terms. For example, someone working on aircraft skin damage might need to know words such as *pitting*, *faying*, *pillowing*, *exfoliation*, and so on. However, these terms may be of no interest to a person working on an aero-engine on the next bench who needs to know another completely different set of terms. So Tech Talk does not attempt to include specialized technical terms.

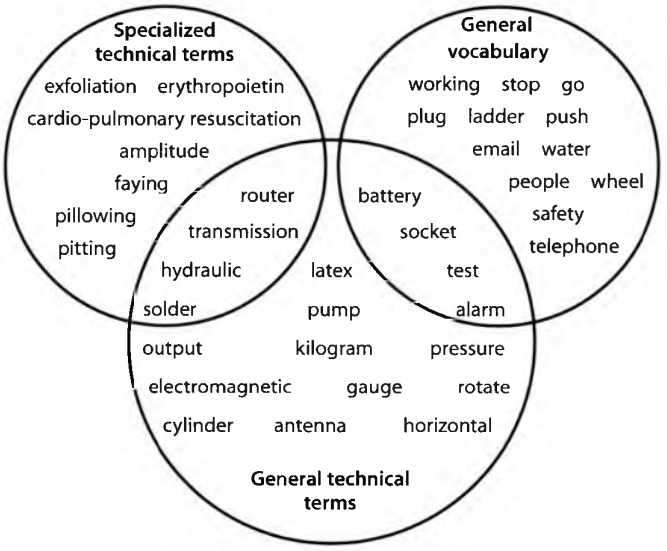
As well as having differing needs, learners may have differing expectations as to what words they will learn on their course. This will probably need explanation and class discussion early on. Teachers should be ready to make the rationale clear. This explanation can be done either in English or the learners' mother tongue, if teachers feel able to do this.

One approach is to have the class brainstorm technical words that they need for their jobs. Write them on the board or on slips of paper. Then ask the students to group them as to whether they are:

- Specialized technical terms – words specialists need;
- General technical terms – words lots of technicians and engineers need.

Point out that there is another group of words that they need for their job that are not particularly technical at all.

Then construct a diagram with circles, showing overlaps if appropriate. Explain that you will be focusing on useful general words and general technical terms – not the specialized terms.



Most technical terms in *Tech Talk* should pose no difficulties for teachers. They lie within the vocabulary of an educated layperson, and the book is extensively illustrated to aid comprehension. Where there are terms that might be unfamiliar to less technically inclined teachers, they are accompanied by notes in the appropriate section of this teacher's book.

A technical approach to language

Be aware that teaching technical English students can be rather different from teaching business or general English students. Obviously every learner brings their own individual personality to the learning process, so generalizations are dangerous. But during our research for this book sufficient teachers (and students) mentioned the points below for us to feel they are worthy of mention here.

- Practical problem-solving tasks are appreciated over tasks that involve sharing experiences or developing social relationships.
- Too much static deskwork can be counter-productive and it is best interspersed with activities where students can stand up and move around the class.
- Activities where students can physically manipulate things are often particularly motivating. So realia in the form of equipment, tools, or pictures, flash cards, and words or labels mounted or printed on cards that can be moved around are extremely useful.
- Teachers should try to ensure explanations and practice activities are very clear and systematic. The use of diagrams, tables, and charts is generally much appreciated.
- In a general or business English class we might encourage students to guess the meaning of new words from context. However, be aware that technical English learners often need to understand in greater detail and with more precision.
- Whilst precision is appreciated, ambiguity is not. So unless it impinges on accuracy, wherever possible, *yes* or *no* answers should be favoured over *maybes*.

On a related but personal note, as we switched from business to technical English to write this book, we embarked on a steep technical learning curve. We're delighted to report that it was a wonderful experience. Not only did the technical content matter turn out to be hugely interesting to work with, but in our experience, the technical English learner brings unsurpassed creativity and good humour to the classroom. We had a lot of fun developing and piloting these materials and earnestly hope other users experience the same enjoyment.

1 What's up?

Jobs
Present Simple vs. Present Continuous
Present Perfect: *How long have you been working here?*

Emails
Common expressions for opening and closing emails
Forms of address (*Dear Mr Brown, Hi,* etc.)
Common expressions for signing off, requesting, attaching documents, and so on
Formal and informal writing styles
Email subject lines

Jobs

This section includes:

- a contrast of the Present Simple and Present Continuous tenses.
- Present Perfect practice.
- *Do you ... ? Are you ... ? How long have you been ... ?* questions.
- jobs and work vocabulary.

> **Note**
> A key task at the start of the course is to find out what your students' jobs involve (or will involve) so that you can organize work that is relevant to the specific needs of the individuals in your class. This section provides opportunities to ask questions and gather information about their jobs. It will be helpful to keep notes of things that the students tell you that you can refer back to later in the course.

1 Begin with closed books. Ask the students individually:

- what their jobs are (or will be).
- how long they've been doing them and some of the key things they involve.
- how long they've been learning English.
- why they decided to take this course (or why someone else decided they should take it).

> **Note**
> Students may confuse the Present Simple, Present Continuous, and Present Perfect forms when answering your questions. This unit will provide practice in these forms. At this point simply explain:
> *I work ...* = a regular or long-term activity.
> *I'm working ...* = a temporary or short-term activity.
> *I've worked / been working ...* = an activity that started in the past and is still continuing today.

Then open books and read exercise 1. If necessary, explain that an online course takes place over the internet, in a virtual classroom where teachers and students don't meet face-to-face in the same physical space.

Your students may have attended different kinds of online course. For example, some courses include real-time classes in web conference sessions and others may just involve working with written materials from the web. Ask about how the classes were conducted as well as whether students found them useful.

Extra discussion questions

1 *Would you like to take an English language course like this one online? Why / Why not?*

2 *What are the benefits of online classes (convenience, cost and time savings, etc.)?*

3 *What are the benefits of face-to-face classes (human interaction, speaking practice, etc.)?*

2 Check the students understand what they have to do before playing the recording. Make sure they have pens ready to jot down their answers.

Answers

1 Responsible for group security
2 London
3 Facility manager
4 A month
5 Building a new warehouse
6 Shanghai
7 Technical support
8 Two weeks
9 Bangalore, India
10 Website designer
11 A day
12 IT manager
13 Two weeks
14 Top secret IT project

Check answers with the whole class by asking questions to elicit the answers: e.g.
Where does George Paterson work?
How long has April been with the company?

3 2 After the students have guessed the missing words, play the recording again. Pause in appropriate places to allow them to check their answers.

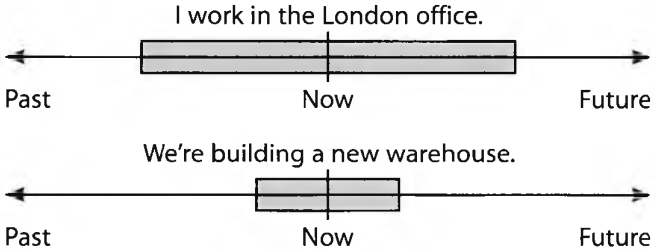
Answers

1 work	4 speak
2 building	5 getting on
3 provide	6 settling in

Extra activity

Draw two time lines on the board or flipchart like this. Point out that the key difference is between things that

- are generally true in the long term.
- are true now, but only temporarily.



Give more examples and ask whether you're talking about a long-term or a short-term activity:

- *I'm designing a new production line for our Swedish plant. = short term*
- *We provide support 24 / 7. = long term*
- *What kind of products do they produce? = long term*
- *He's visiting some suppliers in China. = short term*
- *She speaks five languages. = long term*
- *They're staying at the Hilton Hotel. = short term*

4 The students complete the exercise individually. When they have finished, put the students in pairs to check their answers.

Answers

1	1	'm staying	3	design
	2	work	4	'm looking for
2	1	run	4	are developing
	2	makes	5	involves
	3	produce	6	travel

Call on a student to read the first text aloud. Tell the class to listen carefully and correct any mistakes they hear. If there is disagreement, encourage the class to discuss why they think answers are wrong / right.

Repeat this procedure with the second text. Then draw attention to the *Present Perfect* language note.

Ask:

- *Which tense do we use for completed actions in the past?* (The Past Simple.)
- *Which tense do we use for actions that began in the past and are still in progress?* (The Present Perfect.)

5 First student **A** should ask student **B** the questions and then they should reverse roles and **B** should ask **A** the questions.

Explain that you generally expect students to reverse roles in exercises like this on this course. It means they can maximize their speaking practice.

6 Call on individuals to supply answers to the first one or two questions to demonstrate how the exercise works. Then instruct the students to work alone to complete it.

Check answers before you move on to pair practice. (As in exercise 5, when the students have finished asking and answering the questions the first time, they should reverse roles.)

Answers

1 What company do you work for?
2 Have you been working there long?
3 Do you live in London?
4 Where are you based?
5 How long have you been based there?
6 Are you working on any interesting projects?
7 How are you getting on?
8 What languages do you speak?
9 How long have you been learning English?
10 Are you taking any other training courses at the moment?

7 Discussion of jobs can be very useful (if not essential) in classes where students don't know one another. But there are some contexts where you may wish to keep this discussion brief, for example with students who work in the same company or department and know one another well, or with pre-work students who haven't yet entered the work environment. In these contexts, a different discussion can be more interesting. See the extra activity below.

Note

In some corporate cultures, job titles can be very vague. For example, people may have a title like *Specialist* or *Representative* or they may simply be listed in the corporate structure under the group they work for such as *Corporate Compliance* or *Production Services*. So be aware that some students may have difficulty saying what their job title is in English, and be prepared to help them explain what their role is. Focus on their function and what they do, rather than on what they are called.

8 As in the Student's Book. Listen to the introductions carefully and make a note of any good phrases and expressions or mistakes you hear. After the students have introduced themselves and answered questions, provide feedback.

Extra activity

Begin by telling the class about something you do in your free time (e.g., go sailing) and then elicit questions they could ask to find out more, e.g.:

How long have you been sailing?
Are you a member of a sailing club?
When did you join it? / How long have you been a member?
Do you have your own boat?
When did you buy it? / How long have you had it?
How much did it cost?

Then instruct the students to work in pairs or small groups and tell each other about their hobbies or leisure activities. Their partner(s) should ask appropriate questions.

Emails

This section provides practice in understanding and writing emails. It's the first of several sections that focus on writing skills. Later sections will look at punctuation and improving on drafts (Unit 14) and style and concision (Unit 16). This section practises:

- writing clear and brief email subject lines.
- common expressions for making requests, thanking, offering help, passing on information, apologizing, and attaching documents.
- formal and informal openings and closings.

1 Warm up to the topic by finding out about the emails your students need to send and receive. Ask:

Do you

- *receive a lot of emails in English? (How many / Who from?)*
- *get a lot of spam? (At work / At home?)*
- *check email continuously throughout the day or only at certain times? (Why? Which approach is best?)*
- *print emails out? (Why / Why not?)*
- *ever use emoticons? (Why / Why not? Who with?)*
- *ever use the BCC? (blind carbon copy, sometimes called a blind courtesy copy) address field? (When / Why?)*

Have you ever

- *sent an important / confidential email to the wrong person? (If so, what happened?)*

Then move on to the reading activity in the Student's Book. The students can work alone or in pairs to perform the matching task.

Answers

1c, 2e, 3b, 4f, 5a, 6d

2 As in the Student's Book.

Answers

1 Emails 3 and 4 are more formal; emails 1, 2, 5, and 6 are less formal.

2 Formal words and phrases in email 3:
Dear Ms Olssen
We are very sorry that …
We have taken action to ensure …
We value your business and appreciate your giving us the opportunity to serve you.

Formal words and phrases in email 4:
I'm writing regarding …
we understand you will …
Please send … and confirm …
Thank you for your help.

Informal words and phrases in email 1:
Hi Birgit,
Just a quick note to let you know …
All the best,

Informal words and phrases in email 2:
Hi everyone,
Feel free to ask if you have any questions.
I'll go crazy!
Cheers,

Informal words and phrases in email 5:
Frank,
I've checked out flights …
Best wishes,

Informal words and phrases in email 6:
Hi Marie,
Thanks for getting back to me
the mix up
We thought perhaps …
;-)
See ya!

3 Titles such as Mr, Mrs, or Ms are quite formal and reserved for people we don't know well. We address men as Mr. Women can be Miss (unmarried), Mrs (married), or Ms (unspecified marital status – Ms is very common).

4 It is OK to start an email without saying *Hi* or *Dear* and research shows that native speakers often do. *Hi* can be used on its own or followed by a first (given) name. E.g. *Hi Mary.* *Dear* needs to be followed by a title and surname or a first name, e.g. *Dear Mr Smith, Dear Mary.*
It's not appropriate to start an email with just a surname, e.g. *Smith.*

5 a Professional contacts you don't know:
We value your business and appreciate your giving us the opportunity to serve you.
Thank you for your help.

b Colleagues and friends you know well:
Otherwise I'll call you when I get back.
We thought perhaps someone wanted to mass produce Hubble telescopes. ;-)
Feel free to ask if you have any questions, but please don't ask me to move your presentation – I'll go crazy!

c Both:
Would you like me to issue the ticket?

Culture note
In American English, commas are generally used after the opening and closing:
Dear Ms. Smith,
Hi Jim,
Thank you,
In British English they are sometimes omitted:
Dear Ms Smith
Hi Jim
Thank you
Similarly, in British English, full stops are uncommon after a title, but they are required in American English:
(British) *Dear Mr Jones*
(American) *Dear Mr. Jones,*
The title *Dr* is rarely used by British speakers unless they are addressing a physician. Americans often use *Dr.* to address someone with a PhD / doctorate, particularly in academic settings.

Culture note
Research shows that native English speakers often sign off emails with no closing – they simply write their name. A simple *Thanks* is another common closing.
In some cultures where correspondence styles are different this might be perceived as abrupt or even rude. Be ready to point out that it's perfectly acceptable in English.

3 As in the Student's Book.

Answers
Refund for bearing housings = email 4, f.

Suggested answers

Email 1	Away on business till 7 October / Contact details
Email 2	Schedule for quality circle meeting / Draft of schedule for quality circle meeting
Email 3	New parts shipped / Shipment update
Email 5	Your trip to Nice / Ticket for Nice trip
Email 6	Specifications for lenses / Lens specs / Hubble telescopes ;-)

4 As in the Student's Book.

Answers

Request action	*Could you ... ; Please send ...*
Thank people for help	*Thanks for ... ; Thank you for your help*
Offer help	*Would you like me to ... ?; Feel free to ask if you ...*
Explain the reason(s) for the email	*I'm writing regarding ... Just a quick note to ...*
Apologize	*We are very sorry that ...*
Send an attachment	*Attached is ...*

Extra activity

The class brainstorms more phrases that can be used to request action, thank people for help, etc. Write the phrases on the board and compare them for level of formality.

More phrases:
Request action: *Can you ... ; I'd be grateful if you could ... ; I'd appreciate it if you could ...*
Thank people for help: *It was (very) kind of you to ... ; It was (very) nice of you to ...*
Offer help: *Could I ... ?; Do you want me to ... ?; Let me know if you'd like me to ...*
Explain the reason for writing: *The reason I'm writing is ... ; Just a short message / note about ... ; I'm writing about ...*
Apologize: *I'm afraid (that) ... ; I would like to apologize for ...*
Send an attachment: *Here's the ... you wanted; I'm attaching ... ; Please find the ... you asked for attached.*

5 This is an opportunity for the students to gather their ideas before they begin writing. Collect suggestions for openings and closings but don't write them on the board at this stage. Then ask what a suitable subject line might be.

6 Make sure the students write the emails clearly and legibly as other students will need to be able to read them later.

Set a time limit for this activity – e.g. *You have seven minutes* – and count down periodically, e.g. *You have five minutes left.* This will help to ensure groups finish at similar times.

Possible answers

1 Grinder documentation
Dear Ms Green,
I am sorry that it has taken me so long to reply, but I was on a business trip last week.
I am attaching the documentation you requested.
Please don't hesitate to contact me if there is anything else I can do for you.
Kind regards,

2 Overtime request
Dear All,
First, I'd like to thank you all for the hard work you did to get the Carstain project finished on time. I really appreciated it.
And now I must ask you to continue your efforts for a little longer. The deadline for the Falaway project is approaching, and there are a few more things that need to be done. So could you all work overtime this evening?
As a token of my appreciation, I'm ordering pizza for everyone.
Thanking you all in advance.
Best regards

7 Depending on what the students have written, appropriate replies might be quite short.

When the students have finished, ask each pair or group to read the first emails and their replies to the class. Encourage the class to listen carefully and correct any mistakes they hear. Or if space allows, lay the emails out on a table and ask the students to circulate and read everyone's emails and replies. Can they spot any errors?

Discussion points:

- The email to the client should have been more formal in style. Were the emails they wrote appropriate?
- Some students may have just written *Thank you* in reply to the email attaching the documentation. Is it appropriate to send an email that just says *Thanks*? (People commonly do.)
- Should emails always be short and to the point? When is it OK to write longer emails?

Extra activity

Read this problem to the class and tell them to take notes. Then tell them to write the email.

We urgently need to order some oil filters for some old machines we use in your production area. The last time we ordered them, they had the part number FT128-C. When we checked the manufacturer's website, we couldn't find the filters listed on their spare parts page. Maybe the manufacturer has stopped producing them or has replaced them with another filter. Could you write and ask the manufacturer how we can get them?

2 Tell me about it

Specifications
Measurement and dimensions vocabulary
Question forms

Features and benefits
Technical vs. persuasive description

Specifications

A specification is a detailed description of how something is designed or made. Meeting specifications is often key in technical jobs and this section covers some basic question forms and language for discussing them.

The measurements used here are all metric. Some students may also need to use imperial measurements. Practice with imperial measurements and conversions will be tackled later in the book in Unit 14 and there are also conversion tables on page 107 of the Student's Book.

Extra activity

Begin with a quick review of *wh-* question words. Ask the class to brainstorm all the *wh-* question words (*where, what, which, when, who, whose, why*) and write them on the board.

Write the word *How*. Point out that we use it on its own, but we also use it in phrases. Ask the students to brainstorm common phrases (*how much / many / long / often / big,* etc.)

1 Direct attention to the picture of the Hover Airboard Scooter and ask if anyone has ever ridden on something like this. Call on individual students to say whether they would like to.

2 The specifications task is a kind of puzzle. The students need to work out what goes where in the specifications sheet on the bottom right of the page. Demonstrate how the activity works by doing the first one or two measurements with the whole class, e.g. *1200 mm including handle – What do you think this measurement is? The height? OK, write* height *next to the measurement in the specifications list. Write in pencil. Now what about 1600 mm? …*
The students can work alone or in pairs to complete the list. Don't correct wrong answers at this stage.

The students check their answers with the complete specifications chart in file 6 at the back of the book.

Answers
1j, 2e, 3k, 4o, 5b, 6l, 7d, 8f, 9h, 10g, 11a, 12i, 13c, 14n, 15m

3 Demonstrate how this activity works with one or two of the specifications. Then allow the students to work in pairs or groups to complete the rest. One student should take the role of scribe and write the questions down.

When they have finished, go through the specifications one by one and collect questions from the class. Write the more difficult questions on the board.

Possible answers

1 How high is it? What's its height?
2 How wide is it? What's its diameter?
3 How fast can it go? What's the maximum / top speed?
4 What's the (maximum) braking distance?
5 What's the maximum load it can carry?
6 How long can you ride it on a full tank?
7 What's it made of?
8 What kind of / sort of engine does it have?
9 How much fuel does the tank hold? / What's the maximum capacity of the fuel tank?
10 What kind of / sort of fuel does in take?
11 How heavy is it? / How much does it weigh?
12 How big is it the container it's shipped in? / What are the shipping dimensions?
13 What colours does it come in? What colours is it made in?
14 How long does it take to deliver? / What is the delivery time?
15 How much does it cost?

4 3 Pause the recording after each speaker and allow the students time to find the answers in the specifications.

Answers

1 25km/h.
2 Fibreglass, high-impact plastic shell, aluminium frame, rubber skirt.
3 $27,000.
4 Blue, green, and yellow.
5 100 kg; yes.
6 It's petrol driven and it runs on 85 octane, unleaded fuel.
7 No, it has a four-stroke Briggs & Stratton engine.
8 About an hour.
9 The box / container is 800 mm high, 1,800 mm wide and 1,800 mm long.
10 About six metres.

Extra activity

In pairs or groups, ask the students to think of one or two more specifications they would like to know about this scooter, e.g.:

How high it can hover.
How far it can travel on a full tank of fuel.
How much noise it makes.
How many people it can carry.

Write their questions on the board or flipchart and ask the students to think about what the specifications might be.

---

5 As in the Student's Book. Point out that *How long … ?* is used to ask about both distance and time.

Answers

1 weight	4 cost	7 take
2 wide	5 made of	8 come in
3 heavy	6 kind of	9 last

6 This is another puzzle activity. The students can complete it alone or in pairs.

Answers

1 Materials	7 Weight
2 Colours	8 Voltage
3 Capacity	9 Resolution
4 Fuel	10 Speed
5 Pressure	11 Memory
6 Maximum water output	12 Dimensions

7 Demonstrate how this activity works with a student. Then move on to pair practice.

8 4 Pause the recording in appropriate places to allow time for the students to note the answers.

Answers

640 cm long; 3.4 metres high; top speed 40 km/h; max. load 1 tonne; weighs 4.5 tonnes; grey, waterproof leather; fuel = bamboo, bananas, and peanuts; emissions = CO_2 and methane; memory = 100% perfect

9 If your students don't guess the answer immediately, play the recording again. Pause it after bamboo, bananas and peanuts and hint that it might not be a machine or device.

Answer
It is an Indian elephant.

If your students still haven't guessed what it is, tell them to turn to file 39 on page 103 in the Student's Book.

10 Give the students a few moments to think of an object. They often choose cars so you may want to tell them that cars are not allowed and they must think of something else. Prompt them slowly with other ideas, e.g.: *It might be a device you have in your kitchen; a tool you have in your garage; something you use in the garden; a device you find in an airport or a hospital …*

Variation

With groups of students who all work within the same company, you can tell them to give the specifications of one of the products or services their company provides. The specifications must be specific enough for the other students to guess which particular model or product it is.

Features and benefits

Features are important and interesting physical descriptions of a product and they form part of its technical specifications. Benefits describe how the product will help customers solve their problems and they explain what the customer will gain by using the product.

Features are frequently the focus for people working in technical spheres, while benefits are the focus of people working in sales or marketing. However, many people working in technical areas also need to be able to sell their ideas and products.

This section of the book focuses on the difference between features and benefits and goes on to provide practice in describing benefits:

- *It's affordable / light / safer / more stable,* etc.
- *It's easy to lift / carry / transport,* etc.
- *It can prevent … / save … / help you to …* , etc.

1 5 Direct attention to the picture. Collect answers to the questions from the class before playing the recording.

Possible answers
The bike has two rear wheels.
The wheels tilt and provide greater stability at low speeds.
The chain is covered, which ensures children can't get their clothing caught up in it.

2 5 Play the recording again, pausing where necessary to allow the students time to note their answers.

Answers

1 weighs	4 stable
2 easy to	5 completely covered
3 has; allows	6 don't have to
Features: 1, 3, 5	Benefits: 2, 4, 6

3 Draw attention to the photograph and ask the students what they think the product does. Then move on to the reading task.

Answers
The left-hand text describes the benefits and the right-hand text describes the features.

4 As in the Student's Book. When checking answers, ask why and encourage discussion.

Answers
1 The right-hand text is more technical.
2 The left-hand text explains how the LifeStraw can solve problems.
3 Benefits are traditionally used to sell products (though of course features can be important as well).

Extra discussion questions

1 *Do these people generally focus on features or benefits: sales people, engineers, marketing people, scientists?*
2 *Do engineers and scientists ever need to sell their products or ideas?*
3 *When is it important to be able to describe both features and benefits? Why?*

5 The students can work in pairs or small groups. Tell them to list as many benefits as they can. Collect answers from the class and write the benefits they suggest on the board.

6 As in the Student's Book. Compare these benefits with ones the students suggested in 5.

Answers

1 Its total area is 2.88 m^2.
2 The Hypno PQ tent is supported by air, not tent poles.
3 It weighs 1.22 kg out of its bag and 1.4 kg when packed.
4 It comes with a pump and it can be erected in less than a minute.

7 As in the Student's Book. Check the students understand all the words and expressions in the language box, e.g. *affordable* (not expensive so most people will have enough money to be able to buy it).

Answers

1 It allows / helps ...
It's easy to erect / move / carry.
You don't have to ... .
2 It's safer / more stable / quicker / less likely to fall over.
3 It can purify ... / prevent ... / save ... .
4 It's affordable / light / helpful.

8 If the room you're in doesn't contain many interesting objects, ask the students to think of something they have bought recently (or are planning to buy) and describe its features and benefits instead.

9 Make sure the students understand that their partner is looking at a different object. Explain that they will need to describe their object to their partner (what it's like, how it works, etc.) before discussing its features and benefits.

Collect answers from the class and write some of the features and benefits on the board. Then allow the students to check the answers in file 17 on page 94. Compare the answers in the book with the answers the students thought of.

10 This task can be performed in pairs or small groups if students are working in the same field or company. Otherwise it is best performed individually.

- Give the students a few minutes to prepare what they will say. They should look at the questions and can make notes if they wish.
- Depending on class size, call on students one by one to talk about their products or services, or organize group work.
- Encourage the students who are listening to ask questions.

Extra activity

Tell the students to think of a product or service that they have seen or read about which they thought was really cool. Ask them to explain what it was like and why they liked it. Note some of the things they say. Then ask if they are features or benefits.

3 What's next?

Giving Instructions
Sequencers – *first, then, next, after that, when, once*
Giving reasons and warnings: *otherwise, or else*

Mechanisms
Relative clauses
which and *that*
Machine part vocabulary

Giving instructions

This section is the first of several that involve giving instructions. As well as sequencing expressions, the focus here is on giving reasons or warnings. The key goals are:

- to distinguish between things that are advisable, things that are necessary, and things that shouldn't be done.
- to provide explanations for why things should be done in a particular order or way.

1 If any students have done any of these three tasks, encourage the class to ask them questions and find out more about it. Conduct the prediction task as a class brainstorming session:

- The students call out words they expect to hear and you (or a student you've appointed) write them on the board.
- Alternatively the students can predict the words in pairs or groups and write them down. Make sure they write them down, so they can see if they're right when they listen to the recording.
- If you have a large group and time constraints, tell some groups to list the words they think they will hear in the first conversation, others to list words they will hear in the second, and so on.

If any words the students list seem unusual or strange, ask them to explain why they think they will hear them.

2 6 Tell the students to give themselves one point for each word they listed that they hear. Then play the recordings. Stop after the first conversation. Find out which words they predicted and how many points they got.

3 6 Make sure the students understand what they need to do. Then play the wall paper stripper recording again, pausing where necessary to allow the students to note their answers.

Check answers and correct mistakes.

Answers
Necessary: 1, 3
Advisable, but not necessary: 2, 6
Things you shouldn't do: 4, 5

4 6 Allow the students to read the questions first and then play the patio recording again. Check answers.

Answers
1 You could hit / have problems when you come to lay the slabs.
2 You need 8 cm for the gravel and 4 cm for the concrete slabs or paving stones.
3 So water will drain off.

5 6 Play the hypnotizing recording again, pausing where necessary for the students to write. Check answers.

Answers
1 First; make sure
2 Once
3 Be careful; or else
4 It's important to; otherwise
5 After that

Read the information in the language box. *When* and *once* are similar in meaning. Be ready to provide more examples if necessary.

When the temperature falls below 21°C, the thermostat automatically switches the heater on.

Once the concrete has set, the tiles can be laid.

6 As in the Student's Book.

Answers
Painting a door: a4, b3, c2, d5, e1
Changing a toner cartridge: a5, b4, c2, d3, e1

Variation

Tell the students they can read the instructions in the correct order, or the wrong order – it's their choice. If it's the wrong order their partner must try to spot the errors.

Extra activity

1 Dictate the ten instructions below to the class. They should write them down.

1 *Get a piece of paper.*
2 *Wait for the bulb to cool.*
3 *Stick it in a bottle.*
4 *Switch the lamp back on.*
5 *Throw it into the sea.*
6 *Write a message on it.*
7 *Grasp it lightly but firmly and turn anticlockwise.*
8 *Turn off the switch.*
9 *Roll it up.*
10 *Insert a new bulb and turn clockwise.*

2 Explain there are instructions for two different tasks here but they are muddled up. Tell the students to sort them out and put them in order.

3 Ask what the instructions are for and get the students to dictate them back to you, using sequencing words and expressions.

Possible answers
1 Replacing a light bulb:
First, turn off the switch.
Once the bulb has cooled, grasp it lightly but firmly and turn anticlockwise.
Then insert a new bulb and turn clockwise.
Finally, switch the lamp back on.

2 Sending a message:
First, get a piece of paper.
Next, write a message on it.
Once you've rolled it up, you can stick it in a bottle.
Then throw it into the sea.

7 Read the language box first. Set a time limit, e.g., *You have five minutes to complete these sentences.* When they have finished, the students compare their endings with a partner before you check answers with the class.

8 Give the students a few minutes to prepare their instructions. Be available during this time to help individuals with vocabulary they might need. For students who choose to give instructions for changing a tyre or repairing a leaking tap, some useful vocabulary is provided in the diagrams on page 13.

9 The instructions can be delivered to small groups or the class.

Extra activity

The students think of tasks they have to do or procedures they have to follow at work and instruct another student how to do them.

Mechanisms

This section looks at six machines and provides practice in:

- relative clauses – *which* and *that*.
- machine part vocabulary.

It finishes with a mini presentation which gives the students an opportunity to present a device they have created and to suggest improvements.

1 This can be a team game. Collect a couple of ideas for extinguishing a candle from the class and then put the students in teams and tell them they have two or three minutes to think of as many more ways as possible. One person in each team should make notes and the team with the most wins.

Possible answers
Cover it with a glass to starve it of oxygen.
Put it in a bucket of sand.
Cut the wick off.
Pinch the flame.
Blow it out.
Pour water on it.
Use a fire extinguisher.
Stick it on a windowsill and let the wind blow it out.

2 Give the students a few moments to work out how the machine works. Then elicit a description from the class. Try to avoid providing unknown vocabulary at this stage.

3 As in the Student's Book.

Answers

1	ball	4	watering can	7	wooden platform
2	basket	5	funnel	8	weight
3	pulley	6	umbrella	9	bellows

4 Read the language note with the class. Then the students rewrite the descriptions individually or in pairs. Call on students to read their descriptions to the class and check answers.

Possible answers
Here's a machine which extinguishes candles by blowing air. It's a device which you operate by hand. You pull a ring which tilts a wooden platform. It drops a heavy ball onto some bellows which are at the end of the bed.

Here's another device which is fully automatic. It uses bellows which you position under the bed. You just get into bed, which depresses the bellows. It forces air along the hose, which blows out your candle.

5 Point out that there are some clues to help them in the top right corner of page. The students can work individually or in pairs.

Answers

1	fuse	6	hook	11	wheel
2	rocket	7	chute	12	belt
3	broom	8	loop	13	hammer
4	boxing glove	9	tray	14	spring
5	scales	10	cam	15	bellows

6 When they have finished, elicit from the class:
- how each machine works.
- suggestions for improvements.

Possible answers
a When the rocket is lit, the fuse burns down and the rocket takes off, which pulls the boxing glove. The glove tips the scales, which pushes the broom up to the bucket. The bucket tips and pours out water, which extinguishes the candle.
b The front of the car has a kind of hook attached to it. When the car rolls down the chute, the hook catches a loop which tilts a board. When the board tilts, a heavy metal ball falls. The ball is attached to one end of a lever and the other end of the lever is attached to a glove. When the ball falls, it pulls the lever and the glove knocks the candle off a shelf and into a tray of sand or water.
c The wheel is connected to a band which rotates a cam. As the cam goes round it pushes the handle of a hammer up and down. The hammer hits the handles of the bellows and forces air out of them which blows out the candle.

7 Allocate a stretch of time for this activity and set a time limit (e.g. eight minutes) to ensure that teams finish at approximately the same time. Count down as the work progresses so the students know how long they have left, e.g. *You have four minutes left.*

If possible, give teams large pieces of paper and felt pens to draw their devices on, or suggest they draw their devices on the board. This will enable other teams to see them easily when they come to present them.

Be available while this activity is in progress to provide help with vocabulary.

If some students finish earlier than others, keep them busy by asking them to think of improvements or ways they could make their devices more complicated.

8 Call students to the front of the class to present their devices. Warn the students who are listening that they will need to suggest improvements. Other categories for a final class vote could be:

- the safest.
- the most original.
- the most complicated.

The vote can be conducted with a point system from 1–5, with 5 being the maximum number of points a device can get and 1, the lowest.

Extra activity

Play a relative clauses game. Write these points on the board.

Things which:

1 are heavy.
2 are round.
3 are spherical.
4 are made of glass.
5 have a handle.
6 have a frame.
7 tilt.
8 contain water.
9 have legs.

Tell teams they have four minutes to make a list of things in the pictures on pages 14 and 15 which meet this description. The team with the most wins.

Review and Remember 1

Jobs

1 The students should complete these statements using their own ideas. If the students haven't started work yet, tell them to complete this and the next exercise with information about someone they know well who has a job (e.g. someone in their family) or information from one of the photocopiable role cards on page 93 of this Teacher's Book.

2 and **3** As in the Student's Book.

How does it work?

1 This can be played as a game. Teams have three minutes to list items. After two minutes, they read their lists and award themselves one point if another pair has listed the item and five points if it's original. The winner is the team with the most points.

2 As in the Teacher's Book.

Answers

1 casing
2 stars
3 bursting charge
4 fuse
5 time fuse
6 lifting charge

Size and distance

1 As in the Student's Book. Check answers and draw attention to the question *How much does it weigh?* Ask: *Is* weigh *a noun, an adjective or something else?* (It's a verb.)

Answers

1 width
2 What's the width? How wide is it?
3 height
4 high
5 deep
6 What the depth? How deep is it?

2 This is a pairwork information gap activity which reviews measurements and dimensions vocabulary.

Answers

1 21 miles
2 7,699 km
3 300,000 km/s
4 10 tonnes
5 2 kg
6 3.9 km
7 508 m
8 100 m
9 243 Earth days
10 2 m
11 59 kilos
12 97.3 m

4 How's it done?

Describing fixes
Repair vocabulary
Explaining effects: *It was so (adjective) …*

Explaining processes
Active vs. passive
Present and Past Passive forms

Describing fixes

This section introduces the themes of damage and repair, which will be returned to and practised further later in the book (e.g. Unit 12). It includes:

- some common damage vocabulary: e.g. *rust, corrosion, stuck.*
- some practical repair verbs: e.g. *fix, clean, lubricate.*

It also includes practice of:

- expressions with prepositions + *–ing*, e.g. *before replacing, instead of using, good for sticking*, etc. (There will be further practice of this in Unit 10.)
- the expression: *It was so … (that) …* , e.g. *It was so rusty (that) I couldn't move it.*

It finishes with a mini-presentation task where students describe a repair problem they had and how they fixed it.

1 As in the Student's Book.

> **Note**
> Mr Fixit is very similar to a product marketed in the US and UK as WD-40. Your students may be familiar with it or another similar product. WD-40 actually has a fan club and doing a web search for *WD-40 fan club* will take students to a website where they can read messages about how it has been used.

2 As in the Student's Book.

Answers
1 Cleans – Gets under dirt and grease, making it easy to wipe them away. Dissolves adhesives, making it easy to remove tape and sticky labels.
2 Protects – Shields metal surfaces from moisture and other corrosive elements. Prevents rust and corrosion.
3 Lubricates – Keeps moving parts running smoothly. Soaks into rust. Loosens and frees metal parts that are stuck.
4 Displaces moisture – Dries out electrical systems and prevents short circuits.

3 As in the Student's Book.

Answers

1 wipe	5 soaks
2 prevents	6 shields
3 running smoothly	7 are stuck
4 dissolves	

4 Demonstrate how the activity works with the first picture. Ask what the problem is and elicit ways Mr Fixit could help. The students discuss the next three pictures in pairs. When they've finished, elicit their ideas and check answers.

Answers
a It would lubricate the moving parts of the fan so it turns easily and quietly.
b It would loosen and free the metal parts that are stuck.
c It would dissolve the adhesives on the sticky label making it easy to remove.
d It would displace the moisture in the car's electrical system.

5 7 Play the recording, pausing after each conversation to collect answers.

Answers
1d, 2c, 3b, 4a

6 7 Before they listen again, see if the students can remember any words to fill the spaces. Then listen again, pausing the recording where necessary to allow the students to write answers.

Answers
1 ignition; so wet; freezing
2 peeling; so firmly stuck; residue; soak
3 so rusty; budge; tug; came out
4 so much noise; squirted; did the trick

7 Read the language box and ask the students to make up their own sentence using *so ... that*, e.g.
The key was so bent I couldn't get it in the lock.
The battery got so hot it melted the casing.

Then the students work individually to complete the sentences. Allow the students to compare their answers with a partner. Then collect ideas from the class.

8 As in the Student's Book.

Answers

1	checked	5	used	9	soaked
2	lubricated	6	sprayed	10	gave
3	wiped	7	dissolved	11	squirted
4	did	8	peeled	12	loosened

9 Try to allocate a stretch of time for this activity because it is often very engaging for technical English students.
- Prompt the students with ideas first: *It could be a problem you had with something in the house or flat, a machine, a car, or bike.*
- Give them a few minutes to think of something and prepare what they're going to say.
- The students can describe their fixes to the whole class, or if your class is very large, work in groups.
- Tell the students who are listening to interrupt and ask questions if they want to know more.

Extra activity

If there is time at the end of your lesson, put the students into pairs and give one student in each pair the Student A text and the other student the Student B text on photocopiable page 94 of this Teacher's Book. Tell them to ask each other questions to complete the information about WD-40.

Explaining processes

In this section the students will be reading about a movie making process and discussing how special effects are achieved. The section includes both Present and Past Passive forms. There will be further practice of other Passive forms later in Unit 11 (perfect and modal forms). This section is more concerned with when to use passive (as opposed to active) forms.

1 As in the Student's Book.

2 Make sure the students understand that the pictures are out of sequence and their task it to number them chronologically. Let them compare their answers with some other students before you check them with the whole class.

Answers
a3, b4, c2, d1, e5

3 Read the language box and then demonstrate what you want the students to do.
- Read a sentence from the text and ask if it's active or passive and why (either it's about what someone / something does or it's about what happens to someone / something).
- Repeat with another sentence until the students have the idea.
- Tell the students to find two more active and two more passive examples.

Answer

The chroma key process is used in the movie industry to create special effects [PASSIVE]. It enables actors and actresses to look as if they are in dangerous situations, when in fact they're perfectly safe [ACTIVE]. Here's how it works [ACTIVE].

1 First, a green background is created in the studio [PASSIVE]. Often a wall and floor are painted green, or sometimes a fabric screen is erected [PASSIVE]. If it's fabric, extra care is taken to ensure that it's smooth and evenly lit [PASSIVE].
2 Next, an actor or actress is videoed in the studio against the green background [PASSIVE]. They could ride a bike, hang from a ladder, or stand on their head, but they can't wear any green clothes [ACTIVE]. Only the background is green [ACTIVE].
3 The video is then taken to the editing room [PASSIVE]. Because human skin is a warm colour with very few green tones, it's possible to select just the green background and replace it with a transparent layer [ACTIVE]. This is easily done with video editing software [PASSIVE]. (Sometimes directors prefer to work with blue instead of green [ACTIVE]. Both colours work well [ACTIVE].)
4 The video is now ready to be combined with a new background scene [PASSIVE]. This could be a shot of a dangerous location like a fiery volcano, a tall skyscraper, or perhaps a fast-moving river [ACTIVE].
5 The background scene is placed 'behind' the actor or actress and the two images are mixed [PASSIVE]. The director gets the exciting shot they need, but with no risk to the actor, actress, or the movie budget [ACTIVE].

4 The key point here is (as before) it depends on whether we're interested in what someone / something does or what happens to someone / something.

Answers

1a, 2a, 3b, 4a, 5a, 6b, 7a, 8b

5 Set a time limit for this discussion (e.g., five or ten minutes) to ensure everyone finishes at approximately the same time.

6 Go through the shots in 5 one by one, calling on different pairs or groups to describe their solutions. Then let the students turn to file 31 on page 100 and read what movie producers have done in the past to get these shots.

5 Where are you?

Welcoming visitors
Greetings and farewells
Requests, offers, apologies and thanks

Tracking
Quantifiers: *much, many, a lot of, too many, plenty of, several, both, all, loads of, a couple of*
(a) little vs. *(a) few*

Welcoming visitors

While many people don't need to travel in their job, many need to receive foreign visitors and make them welcome. This section practises common phrases and expressions used to:

- greet and welcome and say goodbye to guests and visitors.
- give directions.
- make and respond to requests, offers, thanks, apologies, and farewells.

1 This can be a whole class or small group discussion.

2 8 The students need to read sentemces a–h before they listen. Make sure they understand what they need to do. Then play the recording once through without pausing.

Answers
a3, b8, c7, d1, e2, f4, g5, h6

3 8 As in the Student's Book.

Answers
1e, 2g, 3d, 4h, 5f, 6c, 7a, 8b

Extra activity

Write these expressions on the board:

1	Can't complain.	4	Not too bad, thanks.
2	Just great, thanks.	5	Don't ask!
3	Could be worse.	6	Could be better.

Explain that a standard reply to *How are you?* is *Fine thanks, and you?* but there are more informal responses that we can use when we know the other person well. Ask the students which expressions they might use if:

a everything is OK.
b nothing particularly good or bad has happened.
c they have had a bad day.

Can they think of more responses?

4 When the students have completed the table, elicit alternative expressions. This is an opportunity to find out what expressions your students know and check their understanding of how they're used. Ask *Would you use this expression:*

- *with people you don't know well or people you're less familiar with?*
- *for big apologies / requests or minor ones?*

Note
With requests and apologies, there are two important factors at work:
how well we know people
how big the request or apology is
We use short, direct requests and apologies with both strangers and people we know very well.
To a waiter: *A cup of coffee, please.*
To a close friend: *Sorry I'm late.*
We use longer and more indirect requests and apologies with people we know a little but not a lot.
To a new business contact: *I'd appreciate it if you could send me an estimate.*
Small impositions require no apology:
Let's sign you in.
Larger impositions require more explanation:
The traffic's been a bit heavy, so I'm afraid I won't get to you by ten thirty.

Possible answers

1 Could you ... / I'd really appreciate it if you could ...
2 Yes, of course. / Yes, no problem.
3 That's very kind of you. / Thank you.
4 You're welcome. / Not at all.
5 Do you want a hand? / Do you need any help?
6 I can manage. / Thanks, that's very kind of you.
7 I'm afraid ...
8 That's OK. / That's all right. I understand.

5 As in the Student's Book.

6 and **7** Use the first picture to demonstrate what's expected with the class. Then move on to pair practice.

8 As in the Student's Book.

Answers

1 saying goodbye
2 saying goodbye
3 greeting someone
4 saying goodbye
5 greeting someone
6 greeting someone
7 saying goodbye

Note

Sometimes students confuse what we say at first meetings with what we say at subsequent meetings, e.g. *Nice to meet you* vs. *Nice to see you*. We might say *Nice to meet you* and (as we leave) *It was great meeting you* the first time we meet someone.
At subsequent meetings we might say *It's nice to see you (again)* or *How are you doing?* and *How are you?*

9 After the students have practised, ask pairs to come to the front of the class to perform their conversations. When each pair has finished, praise and correct as necessary.

Extra activity

Ask pairs of students to prepare dialogues for these situations. Then call them to the front of the class to perform them. Praise and correct as necessary.

1 You are expecting a visitor at 12.00, but you have to attend an important meeting that probably won't finish until 12.15–12.30. Ask your colleague to help.

2 You are on a business trip abroad and have gone to a restaurant with a supplier. You don't understand what one of the dishes on the menu is. Ask your partner for help.

3 You parked your car in a no parking zone near your one of your customer's factories. Now the car has gone. You think the police have towed it away. Ask you partner for help.

Tracking

This section provides practice of quantifiers such as *much, many, a lot of, too many, plenty of, a couple of,* etc.

It provides practice in countable and uncountable nouns and contrasts the use of:

- *both* and *all*.
- *several* and *any*.
- *loads of* and *too many*.
- *neither* and *none*.
- *(a) little* and *(a) few*.

1 Draw attention to the picture of the CCTV (Closed-Circuit Television) sign and ask if the students think security cameras make towns and cities safer. Then discuss the questions in the book.

2 As in the Student's Book.

Answer

Eight different devices track him:
CCTV cameras
Credit card with an RFID chip
RFID key
Mobile phone
The internet (visiting websites, doing searches)
Speed cameras
GPS navigation system
His PC at work

3 Write the list of devices that track Hank Shaw on the board. The students work in pairs or groups to discuss questions 1–3. When they have finished collect the opinions and encourage discussion.

Extra discussion questions

1 *What technologies could be used in your place of work or study in order to:*
   a record who enters or leaves the premises?
   b restrict the use of the computer system (e.g. blocking some websites, forbidding the use of the system for personal business)?
   c record email communications and / or phone calls?
   d collect data on people's work performance: e.g. how many minutes people spend using different computer applications, how many key strokes they make in an hour?
   e track or trace things that move (e.g. goods, vehicles, people, etc.)?

2 *Which of these technologies would you like to see in other places? Which ones would be useful in:*
   a a shop?
   b a school for young children?
   c your home?

---

4 Read the language box before the students look at the text again.

Answers

any = C / U	a couple of = C
some = C / U	a few = C
another = C	billions of = C
the = C / U	little = U
a lot of = C / U	several = C
plenty of = C / U	all = C / U
loads of = C / U	many = C
lots of = C / U	few = C
much = U	
a little = U	

5 As in the Student's Book. Go round the room and ask individual students to tell you whether the words in the box are countable, uncountable, or both.

Answers
time = C / U, equipment = U, document = C, device = C, information = U, data = C / U, people = C, research = U, satellite = C, email = C, spam = U, technology = C / U, privacy = U

Notes
People is plural: *one person, two people.*
Data is normally an uncountable noun, but it can also be a countable noun, especially in technical English when the singular is *datum.*
Technology is normally uncountable if you are talking about machinery or equipment.

6 Tell the students to discuss these pairs of sentences with a partner. Collect answers from the class before they turn to file 40 for answers.

7 Read the language box and check that the students understand before they do the exercise. Further questions:
- *If you have few friends, do you probably feel lonely?* (Yes.)
- *If you have a few friends, do you probably feel lonely?* (No.)
- *Does it mean you have enough friends, but not many?* (Yes.)
- *If you earn little money, do you have enough money to pay your bills?* (Probably not.)
- *If you have a little money, do you have enough to get by?* (Yes.)

The students can do the exercise on their and own then compare their answers with some other students before you check them with the whole class.

Answers

1 a few	5 few
2 a little	6 a little
3 little	7 few
4 a few	8 little

8 Give the students a few minutes to read statements and prepare what they want to say before they start discussing. When they've finished, ask each pair or group to summarize their opinions on one of the subjects.

Extra activity

Hold a class debate on one or more of these issues:

- CCTV helps make urban areas more secure and more should be installed.
- Intelligence agencies should be allowed to monitor private individuals' PCs.
- Companies should not monitor their employees' phone calls, emails, or web activity.
- A chip card which can store details of a person's medical history, blood group, the medication they are currently taking, etc., is a great idea and could help save lives.
- Criminals should be forced to wear GPS tracking devices when they are released from prison so that the police can monitor their movements.
- Only terrorists and criminals have anything to fear from modern surveillance technology.

Debate procedure:

- People who agree with the statement speak first. They explain their position and nobody interrupts.
- The people who disagree speak second. They explain their position and nobody interrupts.
- Both sides have three minutes to discuss and prepare a rebuttal.
- The people who disagree give their rebuttal first, followed by the people who agree.
- Each side can ask questions. Then the teacher and class vote.

6 Looking ahead

Planning
First Conditional
if, unless, in case

Making comparisons
more / less / fewer than
Intensifiers: *much / far / a lot, a little / slightly / a bit*

Planning

An important aspect of planning is anticipating things that might go wrong. This section covers some key grammar for making contingency plans:
the First Conditional
if, unless, and *in case*

1 If the students do not know what a furnace is, explain that it is a machine which produces heat, like a large oven. Furnaces are often used to smelt metal or incinerate waste.

Answers
1 The company designs, constructs, and installs furnaces.
2 The start-up technicians provide hands-on training to the operators and maintenance crews.
3 Students' own comments.

2 9 Make sure the students have pencil and paper ready to take notes before you play the recording.

Answers
The potential problems they talk about are:
- whether the site is ready.
- the power supply and if it has been installed.
- the platform and whether it will need strengthening.
- the tools and what they will do if anything is missing.
- what they'll do if the courier takes too long.

3 9 Play the recording again, pausing where necessary to give the students time to complete the sentences.

Answers
1 'll be a big problem
2 will install it
3 'll strengthen it
4 'll get it couriered it over
5 'll improvise

4 Write the following phrases on the board before the students start, to help **B** with their responses.
- *Don't worry.*
- *That's not a problem.*
- *Relax. Everything's going to be fine.*

When the students have finished, do the activity again with the whole class. Call on different students to take the roles of **A** and **B**. Find out if pairs thought of different responses and check answers.

Possible answers
2 We'll take a taxi / catch a bus / wait.
3 We'll buy them locally / get them flown in / improvise.
4 We'll hire a translator / give them English lessons / learn Chinese.
5 We'll find an intermediary / ask headquarters to replace them / organize some team building activities.
6 We'll make excuses / put pressure on headquarters / hire more translators.
7 We'll buy new ones / rent a satellite phone / communicate via email.
8 We'll eat in international restaurants / get food flown in / cook for ourselves.
9 We'll get flown out / go to a hospital.
10 We'll ask for an extension / fly more staff over / blame the subcontractors.

5 10 Let the students read the questions before listening.

Answers

1 She wants to get to the airport early in case there are queues at security.
2 She can't fly unless she's eaten first and she wants lunch at the airport in case she doesn't like the food on the plane.

6 Read the language box first. Tell the students to discuss the sentences in pairs before collecting answers from the whole class.

Answers

1 I'll be there at 8.30 if I miss the 7 o'clock train. =
It's possible that I will miss the 7 o'clock train. If I miss it, I'll be there at 8.30.
I'll be there at 8.30 unless I miss the 7 o'clock train. =
It's possible that I will miss the 7'clock train. If I *don't* miss it, I'll be there at 8.30.
2 Leave home early if the traffic's bad. =
It's possible that the traffic will be bad. If you see or hear that it is bad, you should leave home early.
Leave home early in case the traffic's bad. =
It's possible that the traffic will be bad. Therefore you should take the precaution of leaving home early.

7 Do the first one with the whole class and then tell the students to work individually. Let them compare their answers with some other students before you check them with the whole class.

Possible answers

1 they ask us for identification.
2 the safety guard is in place.
3 we won't be able to read our clients' files.
4 something was left out.
5 I'll forget them.
6 I have a glass of milk before bed.
7 our car gets towed away.
8 we'll run out of petrol.
9 we'll have to buy some when we get there.

Extra activity

Ask students to tell the class about a few things they like to take with them when they go:

- on holiday.
- on a business trip which involves an overnight stay.

Write the words *if, unless,* and *in case* on the board and ask them to use the words to explain why.

8 Set a time limit for this discussion (e.g., ten minutes) to ensure that groups finish at approximately the same time. Be available to help with vocabulary the students need.

9 Encourage discussion when the groups read their lists to the class.

The students should:

- explain why they want to take items.
- ask questions if they think other students are taking unnecessary or unhelpful items.

When they have finished, the class could decide which pair or group had:

- the longest list.
- the most useful items.
- the most original or unusual ideas.

Extra activity

1 Tell the students to write a list of jobs that they are planning to do in the next few weeks.
2 Elicit things that could disrupt their plans and write them on the board: e.g. illness, missing items or information, bad weather, people changing their mind.
3 Working in pairs or groups, the students explain what they'll do if these things happen.

Making comparisons

Many technical decisions need to factor in environmental impact. In this section the students will compare the environmental effects of different courses of action. They will practise:

- Comparatives and superlatives:
  more / less / fewer than ... , etc.
- Intensifiers and de-intensifiers:
  much / far / a lot
  a little / slightly / a bit

1 As in the Student's Book. When the students have finished reading the text, ask them:

- if any of the facts surprised them. Which?
- if they have done / do anything to reduce their carbon footprints. What?

> **Note**
> Your carbon footprint is the total amount of CO_2 your activities produce, either directly, e.g. by driving a car, or indirectly, e.g. by using a washing machine which uses electricity generated at a power station.
> The period used to measure these CO_2 emissions is normally a year.

2 As in the Student's Book.

Answers

1 bad	3 more	5 best
2 larger	4 fewer	

3 As in the Student's Book.

Answers

1 the biggest	5 less
2 less harmful	6 fewer
3 the best	7 far
4 worse	8 slightly

4 Give the students a few moments to study the chart before asking the questions.

> **Note**
> The students may be surprised to see that Qatar is top. Qatar has a small population and a hydrocarbon-intensive economy.

5 As in the Student's Book.

Answers
1F, 2F, 3T, 4F, 5T, 6F

6 As in the Student's Book. Ask the students to work in pairs or small groups and to discuss which actions would have the greatest impact and to rank them from 1 (most effective) to 5 (least effective).

When they have finished, tell them to check their answers in file 35 on page 101.

Answers
a3, b1, c2, d5, e4

7 Make sure the students understand they just need to write a list at this stage. They will be able to discuss the items later. Set a time limit for this activity, e.g. two or three minutes.

Possible answers
Buy a smaller car.
Drive at lower speeds.
Form a carpool and travel to work with colleagues.
Heat food in a microwave oven rather than an oven.
Plant trees to shade your house from the summer sun .
Buy locally produced food.
Buy products which have less packaging.
Use a laptop rather than a desktop computer.
Use energy saving light bulbs.
Recycle newspaper, glass, plastic, etc.

8 After the students have discussed their lists, open the discussion to the class. Call on pairs / groups to tell the class about some of:

- the best ideas they had.
- the most unusual ideas they had.
- the things they have already tried.

Extra discussion question

CO_2 emissions speed up global warming. What signs of global warming are you most concerned about?

Review and Remember 2

Processes

1 As in the Student's Book.

Answers
Diamond: a4, b3, c1, d2
Car parts: a3, b1, c2
Coffee beans: a3, b4, c1, d2

2 As in the Student's Book.

Answers
Diamond: First the raw diamonds are mined and then they are cut, polished, and mounted.
Car parts: First the car parts are heated, and then they are rolled and pressed.
Coffee beans: First the coffee beans are picked. Then they are dried, roasted, and ground.

Socializing

As in the Student's Book. When they have completed the matching task, the students can practise the sentences with a partner:

- First **A** reads the left-hand comments and **B** responds.
- Then **A** closes their book. **B** reads the left-hand comments and **A** has to try to remember the responses (**B** can prompt them with clues to help).
- Then **B** closes their book, **A** reads the left-hand comments and **B** responds.

Answers
1g, 2e, 3i, 4a, 5c, 6j, 7b, 8d, 9f, 10h

Carbon footprint

1 Warn the students that this is a challenging quiz and they may not know all the answers. Tell them to mark their answers with a pencil or pen. (They will be able to check them later.)

Also tell them to underline any words or phrases that they don't know or find interesting while they're reading. When everyone has finished, collect these words from the class. Invite other students to explain them before explaining them yourself, if necessary.

2 When the students have read the answers, find out how many questions they got right.

3 As in the Student's Book.

7 Can you explain?

Rules and regulations
Can / can't / must / mustn't / (don't) have to
Should / shouldn't / ought to
Is/Are (not) allowed to
Mustn't vs. *don't have to*

Equipment documentation
Locating information in a manual
Noun phrases

Rules and regulations

The focus of this section is on rules and regulations and it includes practice of modal and semi-modal verbs used to talk about permission and obligation.

1 If your students have not driven abroad, you should still be able to elicit rules that are different in other countries. Some points to ask about:

- which side of the road people drive on
- speed limits / speeding fines
- whether drinking and driving is permitted and if so, how much alcohol drivers can drink (blood alcohol concentration limits vary even within the EU, *e.g. UK 0.8 mg/ml, Sweden 0.2 mg/ml*)
- parking fines
- emission regulations
- tolls, road taxes

2 11 Focus attention on the pictures, and ask what each one is. Make sure the students understand the instruction before playing the recording.

Answers

1 map – They cost €15.
2 speed limits – Motorways: You mustn't drive faster than 130 km/h when it's dry or 110 km/h when it's wet. You are allowed to drive 110 km/h on dual carriageways when it's dry.
3 insurance – She doesn't have to have extra insurance to drive to Spain.
4 clock – She has to return the car by 6:30 on Friday, otherwise she will have to pay for an extra day.
5 petrol – She should return the car with a full tank of petrol. It's cheaper that way.
6 wine – She can probably drink a glass of wine. The limit is 0.5 mg/ml.

3 As in the Student's Book.

Answers

1 has to
2 isn't allowed to
3 doesn't have to
4 can
5 has to
6 doesn't need to
7 ought to
8 can

4 This sorting exercise focuses on the meaning of the verbs. When you have checked your students' answers, check they know how to form sentences and questions with these verbs as well:

Modal verbs (*must, can, should, ought to*)

- How do we form questions? (Reverse the word order – no auxiliary verb, e.g. *You can take it* ➜ *Can I take it?*)
- How do we form negatives? (+ *not*, e.g. *You shouldn't do that, I mustn't do that.*)

Semi-modals (*have to, have got to, need to*)

- How do we form questions? (Use the auxiliary verb *do*, e.g. *Do we have to?*)
- How do we form negatives? (Use the auxiliary verb *don't*, e.g. *You don't need to do that.*)

allowed to

- How do we form questions and negatives? (It's a passive expression so use the verb *be*, e.g. *Is he allowed to ... ?*, *They aren't allowed to ... .*)

Answers

1 can
2 mustn't, can't, are not allowed to
3 must, have to, have got to, need to
4 don't have to, don't need to
5 should, ought to
6 shouldn't

Note

Must often expresses someone's personal views or feelings: *I must get to bed earlier tonight. Have to* is more common than *must* and it usually expresses external obligations, e.g.
What time do I have to return the car?
There are important differences in meaning between *have to* and *must* in their negative forms.
You mustn't do it (It's wrong / prohibited / bad).
You don't have to do it (It's not a requirement, it's not necessary).
Must not is not generally used in American English. *Not allowed to* is more common.
Ought to is much less common than *should*, and not generally used in its negative form (*oughtn't*).
In spoken English *may* is generally only used to talk about permission in questions, e.g.
May I take one of these maps?
However, your students may encounter *may* (and *may not*) being used to say actions are allowable (or not allowable) in written technical documentation, e.g.
The safety cover may be removed to allow for cleaning.

5 One person in each group or pair should dictate the rules and the others should write the rules. After dictating, the person who dictated should check spellings. Allocate a stretch of time for this activity and set a time limit, e.g. five minutes, to ensure that everyone finishes at approximately the same time. Count down periodically while the students are working, so they know how long they have left, e.g. *You have three minutes left.*

Variation

Set the activity up as a game. Tell the students:

- they will get 1 point for every point they have listed that is correct.
- they will lose 1 point for each incorrect answer.
- they will lose 1 point for every verb in exercise 4 that they don't use.

Answer

Security regulations vary from country to country and may be relaxed or tightened over time. See points raised in the Student's Book for items to address.

6 When groups have finished comparing their rules, collect feedback. Ask the class:

- How many rules did you have? Who had the most?
- What interesting rules did you have?
- Did you agree about all of the rules?

7 When the students have selected their roles, tell them to take a couple of minutes to read the topics and prepare what they will say before they start.

Variation

Instead of talking about their own country, the students can tell one another about the rules and customs of another foreign country that they know well.

Equipment documentation

This section practises noun phrases – phrases that are constructed around a noun. Noun phrases are particularly frequent in manuals and technical documentation, and this section also has practice in locating information in equipment documentation.

Noun phrases can be problematic for English learners. Depending on the native tongue, it can be difficult to work out their meaning. In English, the final noun in a phrase is generally the 'head' noun, and the key to understanding whatever it is we're talking about. So for example, a *book case* is a case that you keep books in. A *case book*, on the other hand, is a book about different cases. In other languages, the first noun might be the key to the object being talked about.

1 Check that the students understand the meaning of the headings before they start. Provide explanations if necessary.

Answers
1b, 2e, 3c, 4a, 5d

2 Let the students compare their answers with a partner before you check them with the whole class.

Answers

1 page 60	3 page 51	5 page 43
2 page 24	4 page 7	

3 As in the Student's Book.

Answers
a maintenance routine
b routine maintenance

4 Read the language note on noun phrases. Then ask the question. Also check that the students have understood that the first noun is usually singular. Read these pairs of examples and ask the students to identify which one is correct:

- *a ten-pounds note* or *a ten-pound note*
- *a nine-volts battery* or *a nine-volt battery*
- *a two-metres ladder* or *a two-metre ladder*
- *a twenty-litres tank* or *a twenty-litre tank*

Answers for above examples
a ten-pound note
a nine-volt battery
a two-metre ladder
a twenty-litre tank

Depending on their jobs, some students may be able to give you some examples of test equipment and describe some equipment tests that they know.

Possible answers
Test equipment is machines or devices which can be used to test or check something.
An equipment test is a test or check that you run on machines and devices to see if the are working properly.

Extra activity

Ask different students to explain the difference between:

- a race horse and a horse race.
- a guest house and a house guest.
- a boat house and a house boat.
- a market town and a town market.
- milk chocolate and chocolate milk.
- a water fountain and fountain water.
- a camera box and a box camera.
- an equipment manual and manual equipment.

Answers

A race horse is a horse that runs in races, and a horse race is a race between horses with riders.
A guest house is a small hotel, and a house guest is a person who stays in your house a short time.
A boat house is a building where a boat is kept, and a house boat is a boat that people can live on and is usually kept in a particular place on a canal or river.
A market town is a place where a public market takes place regularly, and a town market is a place goods are offered for sale.
Milk chocolate is chocolate which is made from milk, cocoa, and other ingredients, and chocolate milk is a drink which is made of milk and chocolate.
A water fountain is a structure which produces a jet or stream of water, and fountain water is the drinking water which is produced by a fountain.
A camera box is a box-like container for a camera, and a box camera is usually a simple camera which looks like a box and has a fixed focus and single shutter speed.
An equipment manual is a book which explains how to use, maintain, etc. a certain piece of equipment or machine, and manual equipment is equipment on machinery that requires someone to operate it.

---

5 As in the Student's Book.

Answers

1 a ten-year guarantee
2 a steel pipe
3 control adjustments
4 a four-door car
5 equipment instructions
6 hazard warnings
7 a three-metre-long hose
8 a user manual

6 Demonstrate how this activity works with a student before moving on to pair practice. Each student should explain four items.

7 Require that the students only make useful and realistic pieces of equipment, e.g. *a clock fire* is not realistic, nor useful, so it wouldn't count. The activity can be played as game if you like. Teams can award themselves 1 point for each item they think of, or 2 points if no other team has thought of it.

Possible answers

alarm clock
clock radio
alarm bell
door alarm
fire door
radio headset
telephone headset
internet radio
internet phone
fire bell
bicycle bell
radio alarm clock

8 As in the Student's Book.

Note
These inventions are known as *chindogu* in Japan, where they were invented. *Dogu* is Japanese for *tool* and *chin* is Japanese for *weird* (*chindogu* = weird tool).
To qualify as a chindogu, an invention needs to have almost no practical use. They generally solve a problem (but probably not a big problem) in an unconventional or elaborate way. More chindogus can be found by doing a web search for the International *Chindogu* Society.

9 When the students have completed their sketches of the devices, display them on the wall if possible so that they can view one another's sketches and ask questions. Hold a class vote and decide which one was:

- the best.
- the funniest.
- the most creative.
- the craziest.

10 As in the Student's Book.

8 Take Care

Causes and results
Cause and effect verbs: *lead to, result in*, etc.
Negative prefixes: *in-, un-; dis-*, etc.

Reporting accidents
Past Simple vs. Past Continuous

Causes and results

The topic of this section is ergonomics. Ergonomics is the study of equipment and workplace design and how it affects people's ability to work safely and efficiently.

This section provides practice in:
- language we use for talking about causes and their results.
- negative prefixes.

Warm-up questions

1 *Is anyone responsible for health and safety in your workplace or school?*

2 *What sorts of thing do they check?*

1 Check the students understand the instructions. Then tell them to complete the task in pairs.

Answers
1 Not balancing a heavy load evenly could cause back problems.
2 Having to holding the drill in this position could result in RSI (a repetitive strain injury).
3 The ladder is badly positioned and stretching to reach the bulb could result in the man falling off the ladder and breaking his arm, leg, etc.
4 The conveyor belt is positioned too high, which could lead to RSI.
5 The worker is using a poor lifting technique. Bending your back like this and not putting your hands under the box could result in back injury.
6 The seat of the chair is too high and the woman is not able to sit and work in an upright position. This could cause back problems and / or RSI.
7 Not having any wrist or elbow support might lead to RSI.
8 Inadequate lighting and work requiring good visibility could result in eye strain.
9 The controls are badly positioned, requiring the machine operator to stretch to reach them. This could cause RSI.

2 Explain ergonomics if necessary:

> **ergonomics** *(n sing)* the study of working conditions, especially the design of equipment and furniture, in order to help people work more efficiently.
>
> Oxford Advanced Learner's Dictionary

Answer
7,1

3 If necessary, explain that a prefix is a letter or several letters that we can add to the beginning of a word to change its meaning. Some prefixes create words with opposite meanings.

Answers

non-(essential)	im(practical)
in(efficient)	un(necessary)
dis(comfort)	

4 As in the Student's Book.

Answers
1 insufficient, improper
2 inadequate, unnatural, unnecessary
3 non-fatal
4 non-stop
5 disorganized, unsafe

Put the students in pairs or groups and give them a couple of minutes to think of words with negative prefixes. When collecting answers, check that the words they have listed are actually negatives, e.g. *imagine* is not the opposite of *agine*!

Extra activity

Choose some words from the box below and ask the students which prefix forms its opposite.

in-	non-	dis-	un-	im-
active	compliance	agree	block	mobile
audible	essential	appear	breakable	patient
capable	negotiable	connect	controlled	perfect
competent	payment	continue	finished	polite
complete	sense	infect	lock	possible
correct	smoker	like	protected	practical
dependent	stick	qualify	stick	probable

5 Read the language box. When the students have had time to study the example of causes and results, read the following sentences to them one by one and elicit endings:

1 Working too close to a computer screen can cause ... (Answer: eyestrain)
2 Electric shocks are often caused by ... (Possible answer: putting your hand inside machines or equipment which has not been switched off or unplugged at the mains).
3 Not wearing ear protection when working with loud machines can lead to ... (Answer: hearing problems).
4 A lot of injuries that are caused by falling over are due to ... (Possible answers: wet floors, cables lying on the floor, tools and equipment that have been left in walkways and aisles)
5 Lack of safety guards on machines can result in ... . (Possible answer: serious or fatal injuries).
6 High blood pressure can result from ... (Possible answers: too much stress at work, not enough exercise).

Demonstrate activity 5 with a student before moving on to pair practice.

Possible answers
See answers to exercise 1 on the previous page.

6 As in the Student's Book.

Answers
1 training
2 re-design of tools
3 training
4 re-design of equipment
5 training
6 re-design of furniture and training
7 re-design of furniture and training
8 re-design of the workplace
9 re-design of equipment

7 Demonstrate this activity with the class with the first pictures. Then move on to pair or group practice.

Possible answers
1 The remote control should be redesigned so that that the buttons are placed on it in a more logical manner, and the emergency stop button should be placed at the top of the remote control.
2 The sign should be redesigned to make it clear that they should turn left and not right at the traffic island.
3 The door should have windows or be made of glass so that people can see whether there is someone on the other side of it.
4 Staff should be given training so that they know about the dangers of leaving or propping fire doors open.
5 The step should be made more visible, either by painting it a different colour, fixing clearly visible strips to it, better lighting, etc.
6 The gas canisters should be redesigned so that they are clearly different from one another. Canisters with explosive gasses in them should also have prominent warning labels to that effect on them.

8 This can be a whole class or small group discussion. If several ideas are presented, ask the students which idea is the most effective / practical.

Extra discussion question:

What technological advances have led to ergonomic problems in the workplace?

Reporting accidents

The health and safety theme is continued in this section with the topic of workplace accidents. The language focus is the Past Simple and Past Continuous tenses in narratives.

Most companies have procedures that must be followed in the event of an accident, and supervisors are usually required to write detailed reports on the causes, damage, and / or injuries that resulted. The tense forms in this section are presented in a written accident report. The narratives are presented in audio recordings which are mostly sound effects. The students will practise the tenses through telling the stories.

Warm-up questions

1 *Have you ever had an accident at work or at school. (What happened?)*

2 *Could it have been avoided? How?*

---

1 12 As in the Student's Book. Play the recording without pausing. If the students have difficulty here, prompt them with these questions:

- Who was injured? A man or a woman?
- What were they doing?
- Why did the man scream?
- What did his colleagues do?

If necessary, play the recording a second time for the class to check their answers.

2 If necessary, explain that a 'short circuit' is a failure in an electrical circuit where an electric current travels along the wrong route. In this case, the current flowed from an electrical part in the photocopier through Christopher Patterson's ring.

3 As in the Student's Book.

Answers

2 Where was Mr Patterson at the time?
3 What was he doing?
4 Did he switch the machine off first?
5 What caused the short circuit?
6 What happened when he got the electric shock?
7 What did the paramedics do?

4 As in the Student's Book.

5 As in the Student's Book.

Answers

1 was carrying, tripped
2 exploded, was opening, cut
3 was talking, wasn't paying, drove
4 was trying, knocked, spilt / spilled
5 slipped, fell, was repairing, had to
6 caught, caused
7 wanted, was, was wearing, got

6 There are no right or wrong answers here. Ask the students to look at the three pictures and speculate about what could happen.

7 13 Stop after each recording. As you elicit sentences from the students, write them on the board and construct short narratives. Highlight the use of Past Simple and Continuous forms.

Possible answers

1 A man was standing on a ladder and drilling a hole in the wall when he hit a water pipe. Water shot out of the pipe and the man fell off the ladder.
2 A man was taking a photograph of his girlfriend. She was standing on a rotten wooden pier. When she stepped back, one of the planks snapped and she fell into the water.
3 A man was sitting in a tree and sawing off a branch. He opened a can, had a drink, and carried on sawing. But he was sitting on the wrong side of the branch. The branch snapped and the man fell.

8 14 Allocate a stretch of time for this activity, perhaps 15–20 minutes. It has four parts:

1 Put the students in pairs or groups and make sure they understand the instructions for parts 1 and 2. Then play the recording. Offer to play it again if they'd like.
2 Set a time limit for this activity – for example *You have three minutes to prepare your version of the story before you report back.*

3 Prompt the students to discuss any differences in their versions. If asked, play the recording again.
4 Lay the different witness reports the students wrote out on a table so they can compare their versions. Discuss discrepancies.

Possible answer
Accident witness report
Date, Time & Location of Accident:
Students' own ideas
Name Phone No. of Witness:
Students' names / tel. nos.
Describe the accident in detail (explain the situation and exactly what happened):
Emily Smith was driving down Arch Street when she had a problem. At first the engine of her car was just making a funny noise, but then it died. She thought perhaps her petrol tank was empty so she got out of the car and walked round to the back of the vehicle. She removed the petrol tank cap, lit a match, and looked inside. The flame ignited the petrol and the fuel tank exploded. She was shocked but fortunately she was not badly injured.

9 Let's imagine

Materials
Material properties vocabulary
would and *could*

Inventions
Mixed conditionals
First vs. Second Conditional

Materials

Materials science is a wide field of study. It involves the properties of matter science, physics, chemistry, and engineering. With nanotechnology, new materials are constantly being invented. This section provides practice in:

- describing the properties of different materials.
- the language we use to talk about hypothetical situations using *would* and *could*.

1 Set a time limit for this activity, e.g. *You have three minutes.*

Possible answers

Material	Objects
steel	car bodies, cables, casings and housings, pipes
wool	clothing, carpets, blankets, seat covers
silver	spoons, forks, bowls, cups, coins
concrete	buildings, paving stones, garden ornaments
cardboard	boxes, packaging
wood	houses, furniture, floors, boats, bridges
ceramic	tiles, dinnerware, washbasins, catalytic converters
plastic	casings and housings, pipes, cutlery, toys
polystyrene	food packaging, insulation panels, boat buoyancy
glass	windows, glasses, lenses, monitors, bottles
leather	shoes, belts, bags, seat covers, saddles
foam rubber	packaging, padding for mattresses, furniture, pillows
cotton	clothing, threads, bedclothes, bandages
wax	candles, polish, models
rubber	tyres, balls, gloves, rubber bands, shoes, mats
silicone	aquarium joints, automotive grease, insulation, toys

2 Elicit suggestions from the class, writing useful words and phrases on the board.

Possible answers

Material	Properties
steel	strong and hard
wool	a good insulator and resists water in its natural state
silver	very ductile and malleable and has the highest electrical conductivity of any metal
concrete	can be mixed and poured and then hardens into a very durable material
cardboard	relatively light, sturdy, and easy to produce
wood	good elastic strength, good insulation properties, relatively easy to shape
ceramic	hard, water-resistant, brittle, chemically stable
plastic	relatively cheap to produce, can be shaped easily by moulding, casting or foaming; is light
polystyrene	light, a good thermal insulator and relatively cheap to produce
glass	chemically stable, can be made transparent, is brittle, is a poor conductor of heat
leather	high tensile strength, resistant to tear, puncture, and fire; provides good heat insulation
foam rubber	light, can be produced to be flexible for use in mattresses and cushions, etc. or rigid and used to insulate buildings, refrigerators, etc.
cotton	can be spun into a strong yarn, is cool in warm climates, breathes, easy to wash and is relatively light

wax	waterproof, melts at a relatively low temperature
rubber	waterproof, highly elastic, tough and a good electrical insulator
silicone	heat-resistant, flexible, non-stick

3 Call on individual students for answers and encourage discussion: *Do you agree? Any other ideas?*

4 Let pairs discuss the questions for a couple of minutes before collecting feedback from the class.

5 Demonstrate this activity with one or two examples before moving on to pairwork.

Answers
1f, 2d, 3h, 4g, 5a, 6b, 7e, 8c

6 As in the Student's Book.

Answers
1 The contraction of *would* is *'d*.
2 We use *would* and *could* when we are talking about hypothetical situations and imagining future possibilities.

Note
The contraction *'d* is used for both *would* and *had*.

7 Read the language note and draw attention to the contracted form of *would* (*'d*).

When the discussions have finished, call on pairs / groups to tell the class about different uses they thought of. Which ones were the most original / unusual?

Inventions

This section provides more practice in talking about future possibilities. It contrasts two conditional forms:
- First Conditionals (real possibilities)
- Second Conditionals (unreal possibilities)

1 Begin with closed books. Ask the students:
- to name some of the greatest inventions.
- to name some modern inventions they would not want to live without.

Open books and see if they named any inventions in the pictures. Then do the activity.

Answers

an mp3 player	an electric blanket
a sticky note pad	a USB memory stick
a TV remote control	an electric toothbrush
a lawn mower	a GPS navigation system

2 15 Check the students understand the instructions. Then play the recordings. Pause at the end of each one so they have time to make notes.

Answers

Invention	Prototype / Imaginary	How it works / could / would
1 Alarm clock	Prototype	It can be switched off by waving your hand in front of it.
2 A drowsiness detector	Prototype	Sensors monitor eyelid movements for signs of tiredness.
3 Cash card with a second PIN for emergencies	Imaginary	The emergency PIN would call the police.
4 Self-extinguishing cigarette	Prototype	When the cigarette burns down to the filter, a tiny detonator explodes, bursting a bag containing water which extinguishes the cigarette.
5 Intelligent speed bumps	Imaginary	Smart polymer materials would expand if a vehicle drove over them too fast resulting in a big bump for vehicles that were speeding, but would allow a car driving within the speed limit to drive over them smoothly.

3 As in the Student's Book.

Answers

1	filter	6	detonator
2	give up	7	withdraw
3	motion detector	8	drowsiness
4	scary	9	violent
5	set off	10	burst

4 15 As in the Student's Book.

5 Let the students compare their answers with some other students before you check them with the whole class.

Answers

1d = the drowsiness detector
2a = cash card with two PINs
3e = alarm clock
4c = intelligent speed bumps
5b = self-extinguishing cigarette.

6 As in the Student's Book. Point out that we do not normally use *will* or *would* in the *if* clause of the sentence.

7 There are no right or wrong answers here. It depends what the students think. Make sure they mark their answers with a pen or pencil as they will be important for the next exercise.

8 Demonstrate how the activity works with a student before moving on to pair practice.

9 Allocate a stretch of time to this activity. Depending on your class size, individuals can present the products alone or in pairs or groups.

1 Give the students some time to prepare before making their presentations.
2 Give the students a few moments to read the questions and make their decisions.
3 Let them discuss their decisions with some other students before collecting feedback from the class.

Review and Remember 3

Future possibilities

1 and **2** As in the Student's Book.

Notes

1 According to a recent UN report, the world's population will grow to about 8.9 billion by 2050.
2 Estimates on how much oil and gas is left vary, but most geologists agree that the combined reserves of oil and gas is equivalent to 3,500–5,000 billion barrels of oil. BP estimates that there is enough oil to last for another 40 years.
6 Some engineers believe that supersonic trains may be a possibility. Supersonic trains would have to travel in special tunnels where the air has been removed.
7 Forecasts show that if internet access grows at its current rate, 50% of the world's population will have access to it by 2030.
10 About 18% of Americans currently telecommute at least some days of the week.

Causes and results

1 Demonstrate how the activity works by doing the first one with the whole class. Then move on to pair / group practice.

Possible answers

	Possible causes	Possible results
a	natural disaster at a large oil field or a refinery; supply problems (strikes at refineries or a lorry drivers' strike, etc.); terrorist attacks at oil fields, refineries	sharp rise in fuel prices and of all products which are produced using oil; a lot of companies and households switch from oil to another source of fuel; fall in CO_2 emissions
b	an epidemic caused by a virus or bacteria; pollution at the company's plant; food poisoning	unable to meet delivery times; the healthy staff have to do overtime or introduce an extra shift; the company hires temporary staff
c	a virus; the company's network has been hacked and the data has been corrupted; hardware problems with the server or mainframe; a bug in the software	unable to process orders or do any kind of work which requires data stored on the network; a production stop; a breakdown in communication between the company's suppliers and its customers

2 The students can work alone or in pairs. When they've finished, ask their emails to read them to the class. Praise good language and prompt the class to correct any mistakes they hear.

Explaining uses

Extra activity

Put the class in teams. Tell them to look at the picture on page 45 and note down all the things they can see that begin with the letter B. Give them one minute. The team with the most wins. (This can be repeated with other letters, e.g. C)

Things beginning with B:
ball of string, biscuit tin, brick, brooms, bottle, boot, ball

Things beginning with C:
Coat hangers, cone, crate

This can be a whole class discussion or the students can discuss their ideas in pairs or groups before reporting back to the class.

Demonstrate the role play with a student before the whole class does it.

Airport rules

1 As in the Student's Book.

Answers
1 b, d 2 a, c, d 3 a, d

2 Remind the students that *must* and *have to* have similar meanings in their positive forms, but different meanings in their negative forms. (Many languages do not make the *mustn't / don't have to* distinction and the meaning is gathered from context.)

must ≈ have to

mustn't	don't have to
not allowed to	needn't
forbidden	not necessary

Answers
1 mustn't
2 mustn't
3 don't have to
4 don't have to
5 don't have to
6 mustn't

10 What's cooking?

Explaining how
Chemical reactions vocabulary: *melt, displace, absorb, dilute,* etc.
Preposition + *-ing*: *before / without / instead of / after / by*

Making conversation
Active listening strategies
used to do vs. *(get) used to doing*

Explaining how

Molecular gastronomy is a branch of science that studies the physical and chemical processes that occur in cooking. Some of the world's top chefs employ molecular gastronomy research to improve their cooking and create new and novel dishes such as egg and bacon ice cream, sardine on toast sorbet, and snail porridge, or as here, carbonated strawberries and ice cream made with liquid nitrogen.

This section looks at science in the kitchen and it includes:

- vocabulary for describing chemical reactions: *melt, displace, absorb, dilute.*
- further practice in preposition + *-ing* expressions.

1 Find out whether your students are good or bad cooks. Reassure the bad cooks that this section is more about science than cooking. Tell the good cooks they may get some ideas to try in their kitchens at home.

Then proceed to the reading task.

> **Note**
> ***recipe* and *prescription***
> Depending on their native tongue, some students may confuse these words.
> A *recipe* is the instructions for cooking or preparing something to eat.
> A *prescription* is a piece of paper from a doctor listing the medicine a patient should take.

2 As in the Student's Book.

Answers
1 It takes about 5 or 10 minutes to prepare the strawberries and 30 minutes for the strawberries to absorb the CO_2.
2 Dry ice does not have a liquid form; it turns from a solid into a gas.
3 The strawberries taste or feel unusual because the CO_2 will dissolve on your tongue creating bubbles and a sparkling sensation in your mouth.

3 As in the Student's Book.

Answers
by cutting
without touching
instead of melting
before putting
after lying
If a verb follows a preposition, it takes the *–ing* form of the verb, i.e. the gerund.

4 As in the Student's Book.

Answers

1 making	3 wearing	5 adding
2 stirring	4 serving	

5 As in the Student's Book.

Answers

2 before	5 instead of	8 Before
3 by	6 after	9 instead of
4 without	7 by	10 after

6 Direct attention towards the pictures and ask *What's the problem here?* before moving onto pair / group discussion.

Extra activity

Further science questions for class discussion:

1 *Why does the flesh of an apple turn brown when it's sliced and exposed to air? How can you slow this process down?*

2 *Why might the shell of an egg crack when it's placed in boiling water? How can you prevent this?*

3 *What can make the skin of a potato soft when you bake it in an oven? How can you make the skin crispy?*

Answers

1 Apples contain organic compounds which gradually combine with oxygen in the air. Cutting an apple releases a protein which speeds up the oxidation process. Refrigerating the apples will slow down the process. But the best way to stop an apple turning brown is to dip the pieces in lemon juice immediately after slicing. The juice contains citric acid, an antioxidant that prevents the compounds oxidizing.

2 The rounded end of an egg contains a small air bubble. When eggs are placed in boiling water, the air inside the bubble expands, and because of the increase in pressure, the shell can crack. Instead of putting the eggs in boiling water, you can put them in cold water and gradually increase the heat. This gives the shell more time to expand. Or you can avoid the problem by pricking the rounded end of the egg with a pin before cooking. The hole provides an exit route for the expanding gas.

3 A potato is around 75% water. As it heats up, the water expands and escapes through its skin, making it moist and soft. To make the skins crispy, prick the potatoes with a fork and rub them in oil and salt before baking them. The holes provide an exit route for the steam, the oil helps the salt to stick to the skin, and the salt absorbs excess moisture.

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8 Write these expressions on the board and be available to help the students with any vocabulary they might need.
It's a kind of soup / main dish / dessert / vegetable / fruit, etc.
It's made of ... .
It's similar to ...
It's served hot / cold / with ... .
It is (not) spicy.

Making conversation

Technical English students often identify soft skills and socializing as being important for their work. Making a good first impression, keeping a conversation going, and building rapport is key here. This section includes practice with:

- useful topics and language for socializing with new acquaintances.
- active listening strategies.
- practice in expressions with *used to do, used to doing,* and *get used to doing.*

1 As in the Student's Book.

Note
There are no right or wrong answers here. What is / isn't considered an acceptable conversation topic varies from culture to culture and individual to individual. However, Anglo-Saxon speakers tend to avoid topics and comments which:

- sound negative.
- sound dogmatic.
- are unpleasant.
- are too personal.
- don't invite or encourage the other person to comment.

Possible answers
The topics to avoid are 4, 7, 11, 14, 15, 19. The others are generally OK.

2 As in the Student's Book. Prompt the students to suggest more rules and ask whether they think these rules are always appropriate for making conversation with people from other cultures.

3 16 Pause after each recording to collect answers to the questions.

Answers

1 Topic: Someone they both know – George Wilson – and a knee operation.
Golden rule that was broken: the second speaker did not show much interest, ask any questions, or say anything to help keep the conversation flowing.

2 Topics: Where they come from, the weather, and the second speaker's family.

Golden rules that were broken: the first speaker doesn't react to what the second speaker says and the conversation sounds more like an interrogation.

3 Topics: Movies and work.
Golden rule that was broken: The second speaker's responses are very negative.

4 As in the Student's Book.

Possible answer
The second speaker could have asked questions or reacted like this:

A *I heard George Wilson was in hospital ... George Wilson?*
B *Yes. I didn't know you knew George. He works on my team.*
A *I heard he had an operation on his knee ... is that right?*
B *Yes, that's right. The operation went really well and he's out of hospital now.*

5 16 As in the Student's Book.

Answer
The woman didn't respond to the question she was asked:

B *No, I'm from Scotland. Have you ever been there?*
A *Do you like it here?*

She didn't show any interest or react appropriately to:

B *Yes, very much. My wife loves our apartment and our children like their new school.*

Instead she asked, *Is it cold in England?* which shows she hadn't listened when the man said he was from Scotland.
She also showed she hadn't been listening when she asked, *Are you married?* and *Do you have children?* because the man had already mentioned his wife and children.

6 As in the Student's Book.

Answers
1 She showed sympathy and tried to be positive.
A *No. I had to work on the night shift last month .*
B *Oh, that's a pity. Still, you're back on the day shift now.*
2 Again she showed sympathy.
A *Yes, I just got used to working nights and they put me back on the day shift.*
B *That must be difficult for you.*

7 17 After playing the recording, tell the students to discuss the question in pairs. Then collect answers.

Possible answer
The speakers followed the three golden rules of conversation.

8 17 See if the students can remember any of the missing words. Then play the recording again, pausing where necessary to allow them to write.

Answers
1 Did, use to
2 nuisance, getting used to

9 Read the language note. Then give the students a minute or two to note their answers. Collect answers from the class and correct any mistakes you hear.

10 When the students have done this, tell the B students to close their books. A reads the statements again and B has to recall the answers. Then students reverse roles and repeat.

Answers
1b, 2g, 3h, 4a, 5d, 6c, 7e, 8f

11 Give the students a minute or two to read their instructions and prepare what they will say. Then begin the role plays. Observe your students' body language during the role plays.

12 Call on pairs to describe to the class what happened. Also draw attention to any interesting body language that you saw.

13 Read the instructions and then demonstrate how this game works with a student.

Extra activity

1 Put the students in groups. Tell them they are going to act out a conversation where some customers are having lunch with their suppliers.

2 Decide which students are the customers and which are the suppliers.

3 Suppliers and customers both choose two different conversation topics from exercise 1 that they want to talk about – but keep them secret.

4 The role play begins and the suppliers and customer should try to introduce their topics naturally into the conversation.

5 If anyone else tries to steer the conversation onto topics they've chosen, they should try to find a natural way to steer it back.

6 Questions for feedback at the end:

- *What topics did other people want to talk about?*
- *Did you allow them to?*
- *Who was most skilful at guiding the conversation?*
- *How did they do it?*

11 What do you think?

Making predictions
Expressing certainly and uncertainty: *may, could, might, probably will / won't, almost certainly will / almost certainly won't*

Weighing alternatives
Gradable and ungradable adjectives: *cold – freezing, hot – boiling*, etc.

Making predictions

There are many different grammatical forms we can use to talk about the future in English. The form we select depends on the situation and how certain we feel. This section looks at some common ways in which we express certainty and uncertainty:

- *may, could, might*
- *probably will / won't*
- *will almost certainly / almost certainly won't*

The notion of expressing certainty will be returned to later on in the book in Unit 18, where there are more expressions to do with likelihood.

1 Set a short time limit for this activity, e.g. two minutes, to encourage the students to skip over words they don't know and focus on the global meaning.

Variation

Tell the students they're going to read an article. Set a time limit of just one minute. When the time is up, tell them to turn their books over so they cannot read the text any more. Call on students to tell you about what they read.

Repeat the procedure for one more minute and collect further feedback.

Continue until they have been able to tell you that there are five predictions and what each one is about.

Answers
1 Nathan Myhrvold's prediction
2 Terry Sejnowski's prediction
3 Bruce Lahn's prediction
4 Elizabeth Loftus's prediction
5 Chris McKay's prediction

2 The students can work alone or in pairs. Let them compare their answers with a partner before checking answers with the class. Check there are no other words they don't know (e.g. *brilliant = very intelligent*).

Answers

1	metamaterials	6	nanotechnology
2	evidence	7	plant
3	breakthrough	8	transplants
4	cells	9	donors
5	organs	10	Turing Test

3 Set a time limit for this discussion, e.g. five minutes. Collect opinions from the class.

4 As in the Student's Book.

Answers
But one organ we might not want to do this with is the brain.
We probably won't want to put a human brain in an animal body.
New materials and inventions are likely to be developed.
In the next 50 years we may find evidence of alien life.
We could also find alien life forms here on Earth.
Over the next 50 years we will probably become expert at planting more memories.

5 *Might* suggests there is a smaller chance of something happening than *may*, but the difference is small.

Answers

1 will almost certainly	4 could
2 is / are likely to	5 may not
3 might	6 probably won't

6 When the students have finished collecting ideas, encourage them to use the phrases in 5. Encourage discussion by asking why, *e.g. why do you think that certainly won't happen?*

Extra activity

Ask the students to think of one or two more things that could happen in the next 20 years or so, and make them write a prediction of their own.

Weighing alternatives

The context of this section is survival problems – dilemmas where disagreements are likely to arise and agreement needs to be expressed. The language work includes:

- restating to show support and agreement.
- gradable adjectives.

1 Draw attention to the title of this section. Ask the students what things we normally weigh.

After asking the questions in the book, focus on the picture and ask:

- *What problems might the people in this vehicle have?*
- *What do you think these people should do if their car breaks down?*
- *If you were preparing to drive across a desert, what are some of the things you'd take with you?*

2 18 As in the Student's Book.

Answer
Problem: Their vehicle has broken down and it is impossible to repair it.
Alternatives: To wait by the vehicle and hope someone finds them or walk to the next town.

3 When the students have discussed the questions, play the recording again, pausing where necessary so they can check their answers.

Answers
1 The drive shaft has broken.
2 The alternatives are a) to stay by the vehicle and wait for help or b) to walk to the next town.
3 The next town is 30 km away.
4 It could take days for a search party to find them.
5 Students' own ideas.

4 As in the Student's Book.

Answer
If they walk, they will become exhausted in the heat.

5 Read the language note. Then demonstrate how the activity works by doing the first one with the class.

6 As in the Student's Book.

Answers

1 excellent	6 filthy
2 exhausted	7 tiny / minute
3 boiling	8 freezing
4 huge	9 terrible
5 starving	10 furious

7 Demonstrate how this activity works with a student. Then move onto pair practice.

8 As in the Student's Book.

9 Filling in the checklist of useful and not very useful items is best done as pair work or a small group activity as the students may not always agree on whether they are important or not and will have to justify why something belongs in the *Extremely useful*, *Useful*, or *Not very useful* columns. Tell the students that after they have discussed these points, they will hear a survival expert talking about them.

Answers

Items	Extremely useful	Useful	Not very useful
A large knife	✗		
An empty cigarette lighter (no fuel)	✗		
One space blanket per person	✗		
A compass			✗
A map		✗	
A roll of aluminium foil	✗		
A cosmetic mirror	✗		
A loaded gun		✗	
One pair of sunglasses per person	✗		
A bottle of whiskey			✗
A large bag of jelly bean sweets		✗	

10 19 As in the Student's Book.

Extra discussion questions

1 *Which item that is not listed in the checklist was mentioned in the interview?*

2 *What would it be useful for?*

Answers

1 A tyre.
2 It could be burnt and used to signal for help.

12 What's the problem?

Handling complaints
Providing explanations and making promises
Mitigating language: *seems, appears, looks, sounds*

Describing damage
Go / get / become + adjective
Damage vocabulary: *bent, clogged, rusty, cracked,* etc.

Handling complaints

On one level, handing complaints involves taking logical steps to identify causes and then fixing problems. On another level it involves dealing with human beings who have been affected by the problems and satisfying their needs. This section aims to provide practice in dealing with the human side of the problem. The students will listen to a bad and then a good model of customer care and practise:

- making complaints and explaining problems.
- giving explanations and apologies and promising to fix things.
- verbs that make problems seem less serious such as *seems, looks, appears, sounds.*

1 20 Ask the students:
- to think of a complaint they've had to make (e.g. about a product that didn't work properly or a service that wasn't performed well).
- what the complaint was about.
- whether they were satisfied with the way their complaint was dealt with (Why / Why not?).
- whether they would buy another product or service from that company (Why / why not?).

Then move on to the listening activity.

2 20 Let the students read the questions before playing the recording again. Pause where necessary to collect answers.

Answers
1 A project planner program.
2 The order reference number is X6-792-44.
3 No, he copied and pasted the activation key.
4 To switch off the antivirus program and reinstall the software again.

3 Set a time limit for this activity, e.g. five minutes, before collecting the students' suggestions.

4 21 Play the recording once without stopping.

5 21 Play the recording again, stopping in appropriate places to collect answers.

Possible answers
The help-desk worker:
- identified herself and greeted the caller.
- was sympathetic when she heard about the problem.
- told the caller where to look for the information she needed and thanked him for giving it to her.
- explained what she was doing and apologized for the delay in calling up his details.
- checked whether the problem might have been caused by using lower-case letters.
- explained what the problem might be and then guided the caller through the steps he had to make.
- offered to help again if the caller needed further assistance.

6 Read the language note. Make sure the students understand that *a tentative statement* means that what you are saying sounds cautious, unsure, and maybe more polite.

Answers

1 Three of the packages in the shipment don't seem to be here.
2 It looks like you might be charging us too much.
3 It sounds as if your purchasing department might have lost our order.
4 There appear to be insufficient funds in your account.
5 You seem to have put the wrong supplier number on your invoice.
6 We're not happy with the installation work. The wiring looks as if it is loose.
7 You appear to have underestimated the costs.
8 It sounds like you might have used the wrong kind of cartridges.

7 Let the students compare their answers with a partner before taking class feedback.

Answers

a7, b8, c6, d4, e2, f3, g1, h5

8 Use the first statement to demonstrate how this works, e.g. *I'm terribly sorry I'm late*. Then tell the students to complete the rest.

Possible answers

1 The traffic was terrible.
2 I was in a meeting.
3 There was a computer error.
4 One of our machines has broken down.
5 I have to go to a funeral.

9 Give the students two or three minutes to read their roles and prepare what to say before they start. Point out that:

- the **A** students should prepare ways to explain their problems (see the language box *Explaining problems*).
- the **B** students should prepare ways to deal with problems (see the language box *Dealing with complaints*).

When the students have finished the task, let **B** read **A**'s role information and check they've identified and solved all the problems.

Describing damage

Dealing with damage is a recurring theme in technical English. This section covers:

- damage vocabulary: *bent, twisted, rusty,* etc.
- expressions for describing changes for the worse with *go / get / become* + adjective.

1 22 Make sure the students have a pen and paper ready to make notes before you play the recording.

Answers

1 The car was leaking brake fluid. The windscreen smashed and the front got dented when the car hit a tree.
2 The pipes got bent when they were trodden on and one or two joints are going rusty.
3 The water pressure is very low. A hose could be twisted or the filter could be clogged.

2 22 Play the recordings again, pausing at the end of each one to give the students time to write down the answers.

Answers

1 Jack didn't realize the light that went on was a warning light.
2a To prevent them from climbing on the pipes and bending them.
2b To lubricate some rusty joints.
3 The filter could be clogged / blocked.

3 Read the language note first. When the students have produced lists, collect answers from the class, writing any new words on the board. Good examples will help the students to understand the meanings of the expressions, so try to collect lots.

Possible answers

1 go rusty or get corroded – nails, cars, chains, locks (memories can also get rusty)
2 get bent – a key, cutlery such as a spoon
3 get dented – side panels of a car, cardboard boxes
4 get burnt or scorched – furniture, clothes when you're ironing them, food
5 get dirty – clothes, furniture, a floor
6 get blocked or clogged – a pipe, a tube, a filter
7 go off (*go bad* in American English) – milk, butter
go stale - bread
go mouldy - cheese
8 get cracked – ceramics, bones, ribs
get broken – a glass, teeth, a leg, a pencil, an agreement, a promise, a rib, a heart

4 As in the Student's Book.

Answers

1 get blocked or clogged
2 get bent
3 get cracked or broken
4 get dirty
5 go off
6 get burnt or scorched
7 get dented
8 go rusty or get corroded

5 This exercise is designed to elicit more damage vocabulary. The students will be able to check their answers in 6.

Answers

1 go flat (American English: *go dead*)
2 go blunt
3 get crumpled or creased
4 get torn
5 get stained
6 get jammed
7 get dusty
8 get squashed
9 get scratched
10 get chipped
11 get lost or go missing
12 get tangled

6 As in the Student's Book.

Possible answers

1 money, jewellery, a mobile phone
2 a knife, a razor blade, a saw
3 a rope, an electrical cable, hair
4 eyeglasses, a piece of furniture, a window
5 the paint on a car, the paint on a bicycle, fingernail varnish
6 a battery, a tyre, a fizzy drink
7 a shirt, the covering on a chair, a piece of paper
8 clothing, paper, the pages of a book
9 books, a lamp, CDs
10 clothing, furniture, carpet
11 an egg, an insect, a plant
12 a lock, a door handle, a bicycle wheel

7 When the students identify something that could get broken or damaged, ask them how, e.g. *a vase could get smashed / chipped / cracked / broken.*

8 When the students have completed the role play, tell them to swap roles and do it again.

Review and Remember 4

Prepositions + *-ing*

1 As in the Student's Book.

Answers

1 He fixed the light by replacing the bulb.
2 I built the cabinet without looking at the instructions.
3 They carried the piano up two flights of stairs without stopping.
4 I guessed what was in the box by shaking it.
5 She managed to remove the cover without breaking it.
6 We got rid of the smell by opening the windows.
7 I loosened the labels by squirting them with Mr Fixit.

2 As in the Student's Book.

Possible answers

1 coming / having me.
2 seeing you / meeting you.
3 trying it / going there tonight?
4 walking / going by bus.
5 handing in my resignation / throwing my computer out of the window.
6 speaking it / writing in Italian.
7 having 30 days to pay/paying by credit card.
8 taking a break / going to Spain on holiday.

3 As in the Student's Book.

Damage

1 As in the Student's Book.

Answer

S	Q	U	A	S	H	E	D	F	X	X	X
C	C	L	O	G	G	E	D	X	L	X	X
R	R	O	X	X	B	E	N	T	X	A	S
A	U	B	R	O	K	E	N	X	L	D	T
T	S	X	X	C	H	I	P	P	E	D	A
C	T	X	A	T	H	X	X	T	A	I	I
H	Y	R	N	X	X	E	N	O	K	R	N
E	C	R	E	A	S	E	D	R	I	T	E
D	U	S	T	Y	D	X	X	N	N	Y	D
B	C	O	R	R	O	D	E	D	G	X	X

2 As in the Student's Book.

Answers

1 get jammed
2 go flat
3 get chipped
4 get corroded
5 go blunt
6 go flat
7 get cracked
8 go stale

3 As in the Student's Book.

Possible answers

1 get jammed – a door, a window, a lid, paper (in a copying machine), a button or knob
2 go flat – a battery, a tyre, fizzy drinks, a ball
3 get chipped – paintwork, a vase, a cup, teeth, a windscreen
4 get corroded – batteries, pipes, barrels, cars, nails
5 go blunt – knives, scissors, razor blades, axes
6 go flat (see 2)
7 get cracked – a mirror, a glass, a wall, a bone, an egg
8 go stale – bread, cakes, biscuits

4 Allow the students to discuss these questions in pairs or small groups. Then check answers with the class.

Possible answers

1 The engine could run dry.
2 The battery could run down/go flat.
3 It could go off.
4 The ceiling could collapse. The house could get flooded.
5 The disposal unit could get jammed and the knife could get bent.
6 They could get burnt or scorched.
7 The keys could stick or you could damage your hard drive or the computer could short circuit.

How does it work?

1 Any four words are acceptable, but each one must come from a different circle.

2 Make sure the students understand they need to make noun phrases. If necessary, remind them that the final noun will be the thing they are talking about, so the example is a kind of furniture.

3 Encourage the students to be creative here.

13 What have you done?

Skills and experience
Present Perfect vs. Past Simple: finished actions

Reporting progress
Mixed passive forms: *has been done / has to be done / can't be done / should be done / is being done*, etc.

Skills and experience

As well as contrasting the Present Perfect and Past Simple, this section practises expressions for describing personal qualities, e.g.:

- *good / bad at*
- *experienced in*
- *willing to*
- *interested in*, etc.

1 Find out if your students have ever done any volunteer work. If so, ask them to tell the class what kind of work it was and who they did it for.

If necessary, explain that volunteer work is unpaid work that someone may do to help a charity or their local community, e.g. organizing an event to raise money for the victims of an earthquake or helping old and / or disabled people.

2 Tell the students to underline any words or expressions they don't know while they are reading. Explain any unknown words or expressions before asking which jobs they would be good at / bad at.

3 As in the Student's Book.

4 23 Give the students time to read the questions before you play the recording.

Answers
1 The job as a conservation scientist in the Amazon jungle.
2 There is no right or wrong answer here.
- On the plus side, Emily speaks some Portuguese, has worked in remote conditions, has experience in troubleshooting and fixing mechanical problems, and is positive and willing to work hard and learn.
- On the downside, she has no experience of working on a scientific project or living and working in a tropical rainforest.

3 She might also be good at:
- converting vehicles for disabled drivers.
- supervising the water and sanitation project.
- managing the inventory of the disaster relief agency.

5 23 Play the recording again, pausing where necessary to give the students time to write their answers.

Answers
1F, 2T, 3F, 4F, 5T, 6F, 7F

6 As in the Student's Book.

Answers

1	played	6	had
2	haven't taken	7	has been
3	have you done	8	studied
4	joined	9	have you had
5	qualified	10	been

7 Split the class into two groups. Tell the groups to read their instructions carefully. If time is running short, allocate more students with the role as interviewers; otherwise allocate the roles 50:50.

Interviewers can work in groups to prepare their questions, or if you prefer, the whole

class can brainstorm questions before the interviews begin.

Remind the candidates that they should only select one of the jobs. (To make the interviewers' job more difficult, candidates should not necessarily choose the jobs they said they would be good at in 2.)

Reporting progress

Many technical jobs involve a good deal of project work. In this section the students will practise talking about how a project is going and saying what:

- has been done.
- is being done.
- will be done / has to be done / can't be done / should be done, etc.

The language work focuses on passive forms and includes continuous, perfect, and modal forms.

1 24 Begin with closed books. Warm up to the topic by asking students to tell the class what kinds of projects they are involved in, what kinds of things they have to report on, and who they report to.

Open the book and focus attention on the picture. Ask what kind of project is going on here. Make sure the students have pencil and paper ready to note their answers. Play the recording.

Answers

- bad weather / heavy rain at the weekend
- traffic problems and parked cars
- an excavator breaking a water main

2 24 Allow students time to correct the errors before playing the recording again. This time pause in appropriate places to check answers.

Answers

1 Half the cable has been laid.
2 The trenches haven't been filled in.
3 Delays have been caused by the weekend's heavy rain.
4 The water main has been repaired.
5 The project has to be completed by Friday.

3 The students should work alone to complete the rules in the language box. When they have finished, ask a student to read the sentences to the class and prompt the other students to correct any mistakes they hear.

Answers

1 have been caused
2 are being towed away
3 has been repaired
4 is being laid
5 should be filled in
6 has to be done
7 can't be extended

4 Demonstrate how this activity works with a student. Then move on to pair practice.

Answers

1 The framing
2 Laying the foundations
3 Installing the heating
4 The framing has to be finished.
5 The heating should be done (in fact, everything except the electrics should be done by the end of the month).

5 Allow the students two or three minutes to make notes. Then collect the answers from the class. Be ready to help with any unknown vocabulary.

Answers

Work that's being done:

- The roof is being tiled.
- The sand and rubble is being removed.
- A window is being fitted.
- Electricity is being connected.
- A fence is being constructed.
- The outside wall is being painted.
- A hole (for a pond) is being dug.
- Trees and shrubs / bushes are being planted.
- Outside lights are being installed.
- The path is being paved.

Causes of delay to a project like this (possible answers):

- Bad weather, e.g. heavy rain or snow, strong winds.
- Delays in deliveries of materials and fittings or deliveries of the wrong materials and fittings.
- Hold-ups on one job which has to be done before others can be started / completed.

- Doing things in the wrong order, e.g. plastering the walls before the cables and pipes have been installed.
- Stoppages caused by pay disputes, e.g. owner refuses or can't pay the contractor or the contractor can't / won't pay his subcontractors or workers.
- Rework caused by using the wrong materials.
- Rework caused by poor-quality work.
- Changes to the original plans.
- Getting the authorities to connect the necessary utility lines.
- Getting the necessary (building) permits from the authorities.
- Past pollution of the site, e.g. the soil is polluted with oil, heavy metals, etc.
- Discovery of objects of archaeological interest.

6 Demonstrate how the activity works by writing an example question and answer on the board, *e.g.*

A: Has the outside wall been painted?
B: No, it should have been painted yesterday, but we couldn't finish the job because of the rain.

Highlight the passive forms in the sentences. Explain that the questions and answers could also be in the active form. Remind the students we use the passive when we are more interested in the action, e.g. *Has the wall been painted?* than who did it, e.g. *Has Joe painted the wall?*

Encourage students to use passives in their conversations but don't correct any questions or answers that aren't in the active. Just point at the board and encourage the students to rephrase their questions and / or answers.

7 As in the Student's Book. When the students have finished, call on some students to tell you about their projects and develop further class discussion.

14 What's that exactly?

Technical writing
Punctuation and capitalization
Making corrections and improvements on written drafts

Measurements and conversions
Saying calculations
Saying results and approximations

Technical writing

This section focuses on accuracy in writing technical texts and provides practice in:

- checking and correcting written drafts.
- punctuation and capitalization.

1 Ask the students whether they:

- use a spelling checker on their computer. Why / Why not?
- use a grammar checker on their computer. Why / Why not?
- use an English grammar and spell checker on their computer when they are writing documents in English. Why / Why not?

Then do the exercise in the Student's Book. The students will correct errors in the text in the next activity, so don't worry if they don't spot them all here.

2 25 Play the recording, pausing where necessary for the students to make the corrections. Check to see if the students have made all the corrections and play the recording again if necessary.

Answers
Roof surface spray cooling system.
This ~~new~~ innovation in temperature control cools water during the night. W~~w~~ater is sprayed over a building's roof and left to cool through evaporation and radiation. The coo~~l~~led water is then collected, stored, and used to cool the building the ~~the~~ next day.

In tests, this ~~fantastic~~ system cooled up to two gallons per square foot of roof surface to ~~temperatures well~~ 12 degrees F below the minimum night air temperature.

3 As in the Student's Book.

Answers

?	question mark
.	full stop
,	comma
/	slash or forward slash
-	hyphen
( )	brackets
'	apostrophe
ABC	capital letters
!	exclamation mark

4 As in the Student's Book.

Answers
1 a capital letter
2 a question mark
3 commas
4 brackets
5 a hyphen
6 a slash
7 an exclamation mark
8 an apostrophe

5 As in the Student's Book

Answers
1 A sentence should begin with a capital letter and end with a full stop.
2 Use commas to separate items in a list when you write letters, emails, reports, PowerPoints, manuals, instructions and other documents.
3 Don't use commas, which aren't necessary.
4 Don't use question marks inappropriately?
5 Never use multiple exclamation points!!!!!
6 It's important to use apostrophe's correctly.
7 Only proper nouns should be capitalized.

8 By the way, remember not to use chat or text abbreviations.
9 Don't abbreviate.
10 It's important to avoid colloquialisms, ain't it isn't it?
11 Check your spelling.
12 Check to see if you missed any words out.
13 Verbs has have to agree with their subjects.
14 Be carefully to use adjectives and adverbs correctly.
15 Don't use no double negatives.
16 Roughly speaking, Good technical writing is more or less specific.
17 Short sentences are generally best, so avoid long sentences which go on and on because your readers will find it more difficult to know when one idea has stopped and another has begun and it will prevent you from getting your point across clearly and effectively.

6 This is one of the most enjoyable writing activities the authors have ever used.

- Bear in mind that increasing the running distance is good. If your classroom is small, consider using space outside the classroom as well.
- Make sure the students dictate quietly – possibly even whisper so other pairs can't hear.
- The teacher should take on a mean persona when managing this task. Curiously, the more demanding and strict we seem, the more enjoyable it is for the students. So when a pair says they have finished, read their text. Most probably it will contain errors. As soon as you see one, simply say *There's an error* and hand it back. Ignore all pleadings to say what the error is. They will have to go back to their texts and find it themselves. You'll probably need to repeat this several times.
- When the grammar and spelling are OK, there will probably still be punctuation errors. At that point say *And what about punctuation?* Again, let them fix the errors themselves.
- Aim to leave at least five minutes for feedback at the end to ask *What did you learn?* The errors that needed correcting often point to language that needs attention in the classroom.
- Possibly the most important thing to learn from this task is the value of grammar and spelling checkers. In our experience, students are reluctant to turn on English spelling and grammar checkers when they are writing English on their computers. But the fact is, they can make a huge improvement to the students' work for relatively little effort. Running back and forth across the classroom is the hard way to improve written accuracy. In contrast, turning on a grammar and spelling checker is very easy.

Extra discussion question

Have you ever used a translation program? If so, what did you think of it?

Measurements and conversions

This section covers:

- imperial and metric measurements.
- saying calculations: *plus, minus, multiplied by, divided by,* etc.
- making approximations.

Note
Most English-speaking countries officially use the metric system, although the imperial system is still used for certain things, e.g. pints of beer and miles per gallon* (to talk about the fuel consumption of a vehicle). However, the USA is a notable exception. In day-to-day life most people still use the imperial system and people working on technical jobs with US companies often need to understand and be able to convert metric units into imperial, and vice versa.
*US and UK pints and gallons are not the same. A gallon is eight pints in both countries, but a US pint is smaller. See page 107 of the Student's Book for conversions.

1 Begin with closed books and ask the students some questions. Find out if they:

- sometimes have to work with imperial measurements.

- know the names of imperial measurements we use to measure:
  - length (inches, feet, yards, miles).
  - weight (ounces, pounds, stones, hundredweights, tons).
  - volume (pints, gallons).
- know any other systems than Celsius for measuring temperature (Kelvin, Fahrenheit).
- know of any instances where metric and imperial measurements have been confused. (A well known example is the Mars Climate Orbiter which is believed to have crash landed on the wrong side of Mars on 9 September, 1999. It seems there was a miscommunication between the two teams of scientists, with one team using metric measurements and the other imperial.)

Then do activity 1 in the Student's Book.

Answers
1 France.
2 A metre was originally calculated to be one ten millionth of the distance from the equator to the pole.
3 A decimetre is a 1 / 10 of a metre.
4 One cubic decimetre is a litre.
5 One litre of water weighs a kilogram and a thousand litres of water weigh a tonne.
6 Most notably, the USA.
7 Students' own answers.

2 As in the Student's Book.

Note
In the eighteenth century, it was assumed that the circumference of the earth is unchanging. Since then, geophysicists have shown that this is not the case, and the world's circumference is not constant.
The International System of Units is often referred to as SI. The abbreviation comes from the French: Le Système International d'Unités. SI was developed in 1960 from the older metric system and it is not static. Units of measurement are created and definitions are modified by international agreement as the technology of measurement progresses.

3 As in the Student's Book.

Answers
1 a ten millionth
2 1,000
3 10
4 Fahrenheit , ounces, yards, feet, inches, stone, pounds, miles, gallons, pints

4 As in the Student's Book.

Answers

1	plus	4	multiplied by	7	works
2	minus	5	times	8	roughly
3	take away	6	divided by		

5 26 As in the Student's Book. Play the recording, pausing where necessary for the students to write the answers.

Answers

1	aluminium and nylon	5	230
2	8.5	6	€18.50 each
3	120	7	12%
4	110		

6 26 As in the Student's Book. Play the recording again, pausing where necessary for the students to write the answers.

Answers
a bar x 14.4 = PSI
b °C x 9 / 5 + 32 = °F
c total price (1,850) – 12% (222) = discounted price (1,628)

7 As in the Student's Book. This number puzzle works with any numbers the students may think of.

8 This can be organized as a team game. The students read their sums out one by one and the first team to call out the correct answer scores a point.

Note

More information on international measurements

To avoid confusion between commas and points in large numbers, some influential standards bodies have suggested leaving spaces between digits in long numbers. So for example, the speed of light in a vacuum is exactly 299 792 458 m/s.

In American English, a billion = 1,000,000,000 (a thousand million, or 10^9). In the past in British English, a billion = 1,000,000,000,000 (a million million, or 10^{12}). The American meaning of billion has now taken hold in the UK.

Milliard is a European term for a thousand million. It has very occasionally appeared in British newspapers, but in the UK the term *billion* is the one that's widely used and known.

A common way to express motor vehicle fuel efficiency is litres per hundred kilometres. For example: 9.8 litres per 100 kilometres (9.8 L / 100 km). But there are variations. Norwegians, for example, say *x liter på mila*, which means that a vehicle uses x litres of fuel per 10 km driven.

Horsepower is not a metric measurement, but it's commonly used to describe the power of a vehicle in the UK and US. The metric measurement is kilowatts.

In American English, October 1, 2009 could be written as 10/1/2009. It is not written as 1/10/2009. To avoid confusion, write the month as a word. For example: 1 October 2009 or October 1 2009. In ISO 8601 notation, you would write 2009-10-01.

15 Where does it go?

Describing location
Direction expressions: *heads north, veers to the left, runs parallel to, goes between*, etc.

Getting organized
Multi-part verbs: *clean up, hold onto, come up with, get rid of*, etc.

Describing location

This section:
- reviews some common prepositions of location and direction.
- practises some expressions for describing direction.

1 As in the Student's Book.

Answer

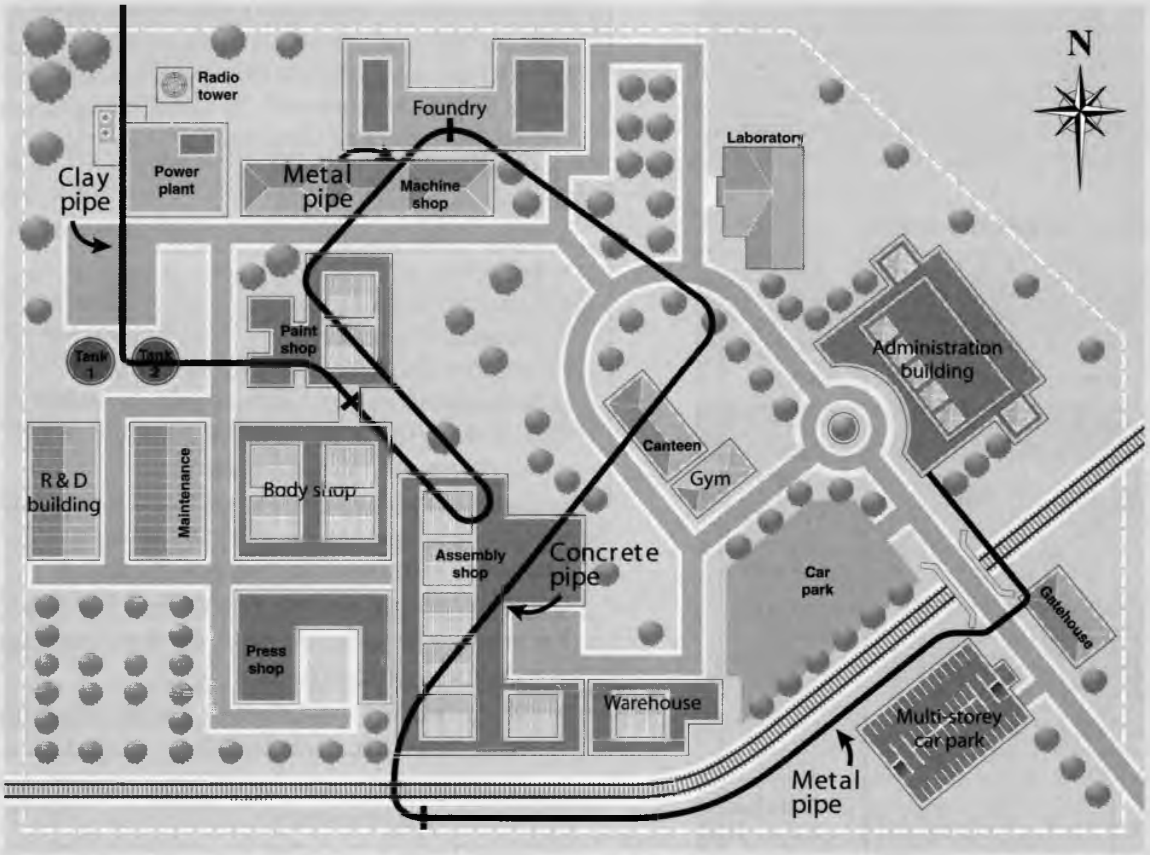
2 Let the students compare their answers with a partner before you check them with the whole class.

Possible answers

1 The maintenance building is between the R&D building and the body shop.
2 The paint shop is next to the body shop.
3 The R&D building is near the maintenance building.
4 There' a radio tower behind the power plant.
5 The lab is located in the north-east corner of the site.
6 You go over a railway track to enter the site.
7 The railway track runs past the warehouse and assembly shop.

3 (27) Play the recording once without pausing. Tell the students to compare their site plan with a partner's and see whether they have drawn lines in the same places. If there are discrepancies, play the recording a second time and pause in appropriate places to let them check their answers and answer the questions in 4.

Answer



4 27 Let the students compare their answers with a partner before you check them with the whole class.

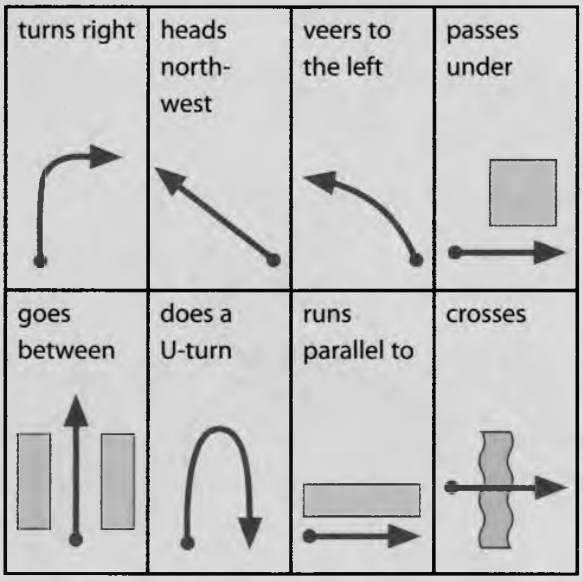
Answers
1 Sections of the pipe are made of metal, concrete, and clay (see site map on page 67 of the Teacher's Book).
2 The metal and clay sections were traced using radio transmitters and the concrete sections were traced using acoustic locators.

5 27 Explain that *to veer* means to change direction or course suddenly.

Answers
1 trace, runs
2 changes, turns
3 runs parallel, until, gets, point, level
4 veers, passing under
5 does a U-turn, reaches
6 between, exits

6 As in the Student's Book.

Possible answers



7 As in the Student's Book.

8 When the students have finished describing and drawing the position of the utility lines, tell them to compare their diagrams and check that they match.

Getting organized

The topic of this section is 5S – a method for organizing a workplace and keeping things orderly. It is focuses on language for describing practical, physical tasks.

It practises:
- separable multi-part verbs: *clean up (clean it up)*, *put away (put them away)*, etc.
- inseparable multi-part verbs: *hold onto (hold onto it)*, *take care of (take care of it)*, etc.

1 As in the Student's Book.

2 The students can read alone or in pairs and then discuss their answers with a partner.

Note
Most technical English learners are familiar with 5S or similar concepts such as lean production, six sigma, or kaizen. 5S came from Japan originally where the Ss stand for Japanese words. They can't be translated exactly but roughly speaking they are:
- Seiri (Sort)
- Seiton (Straighten)
- Seiso (Shine)
- Seiketsu (Standardize)
- Shitsuke (Sustain)

5S proponents claim it improves workplace morale and efficiency because nobody wastes time looking for things and it's quickly obvious when things are missing or awry.

3 Students can discuss the questions in pairs or groups before you collect feedback. Encourage discussion with further questions, e.g. ask the students if:
- their homes are tidier or better organized than their workplace. Why / why not?
- they have spent a lot of time looking for something recently.
- they have a lot of things at home that they don't really need or haven't used for a long time. What?

4 28 Play the recording, pausing after each conversation to elicit the answers.

Answers
1 sweeping and shining
2 sorting
3 straightening

5 28 Let the students read the questions before playing the recording again and collecting answers.

Answers
1 The floor's dirty and has been scratched by a machine that's been vibrating.
2 They ask maintenance to check the machine out.
3 Someone needs to sweep up so that they can see whether equipment is leaking.

6 28 Play the recording again, pausing in appropriate places to collect answers.

Answers
1 the boxes
2 some plastic sheeting
3 some broken tools
4 clearing the work area
a2 b1 c4 d3

7 28 Play the recording again, pausing in appropriate places for the students to write their answers.

Answers
1 got round to
2 tidy up
3 figure it out
4 come up with
5 work something out

Read the language box and ask the students which verbs in **7** are separable (*put away*, *tidy up*, *figure out*, *work out*).

> **Note**
> *Up* in phrasal verbs often means *completely*, e.g. *sweep up*, *clean up*.

8 This is a challenging activity. In addition to multi-part verbs, it also practises pronouns (*it* and *them*). Demonstrate how it works by doing the first few with a student. In weaker classes, demonstrate it all the way through, calling on different students to supply the answers. Then move on to pair practice. When pairs have finished, call on different students to do the activity again and check answers.

Answers
1 You need to clean up the work area. – Yes, I'll clean it up.
2 Put away the ladders first. – Yes, I'll put them away.
3 Then get rid of the boxes. – Yes, I'll get rid of them.
4 But hold onto the plastic sheeting. – Yes, I'll hold onto it.
5 Just work out the best way to store it. – Yes, I'll work it out.
6 Then tidy up the store rooms. – Yes, I'll tidy them up.
7 Sort through the tool boxes. – Yes, I'll sort through them.
8 Throw away any broken ones. – Yes, I'll throw them away.
9 Then check out the oil pump unit. – Yes, I'll check it out.
10 There's a leak you need to see to. – Yes, I'll see to it.
11 Figure out what's causing it. – Yes, I'll figure it out.
12 And you need to get round to painting the ceiling sometime. – Yes, I'll get round to it.
13 So look for ways to work faster. – Yes, I'll look for them.
14 Well, I'll leave you to get on with the cleaning then. – Yes, I'll get on with it.
15 Great. Keep up the good work! – Yes, I'll keep it up.

Extra question

What's the difference between cutting up a tree and cutting down a tree?

Answer
Cutting up = cutting into smaller pieces
Cutting down = felling it, removing the whole tree

9 Set a time limit for parts 1 and 2, for example, five minutes. Tell the students to make a note of any good ideas they have so that they can report back to the class in part 3.

Extra discussion questions

Does your company operate a suggestion scheme? If not, do you think it should? If so, what kind of rewards or incentives does it offer?

Review and Remember 5

Converting measurements

1 As in the Student's Book.

Answers
1c, 2g, 3h, 4a, 5e, 6i, 7b, 8f, 9j, 10d

2 This can also be run as a team quiz. Teams get two points for a correct answer. If they can't answer, the question goes to another team, who can score a bonus point.

Extra questions

1 *Should units of measurement that are named after a person begin with a capital letter? For example, watts are named after John Watt, so should you write watt or Watt?*

2 *Is a micrometer a millionth of a metre?*

3 *Does* K *stand for a thousand in computer related terms?*

4 *What's the difference between kilobits and kilobytes?*

5 *What's the difference between Celsius and Centigrade?*

Answers

1 Unit names should only have a capital letter when they appear at the start of a sentence. There is one exception though: degrees Celsius.

2 No. A micrometer (pronounced MICrometer) is an instrument for measuring small things very accurately. A micrometre (miCROMetre) is a millionth of a metre .

3 Theoretically *a kilobyte* should mean 1,000 bytes but it actually means 1,024 bytes (or two to the power of ten). Megabyte is another unclear term. Sometimes it means 1,048,576 bytes (a kilobyte squared), sometimes it means 1,000,000 bytes, and sometimes it means 1,024,000 bytes.

4 A byte is made of 8 bits. There is a lot of confusion here, but kB is the standard abbreviation for kilobyte and kbit is the recommended abbreviation for kilobit, although is often written kb.

5 Centigrade is an old term for Celsius and you should probably use the term degrees Celsius.

What's happened?

As in the Student's Book. Lots of changes are possible. If necessary suggest a few possibilities to give the students ideas, e.g.:
files opened / closed.
lights on / off.
students swap seats.

Allow three or four minutes for each pair to work out what's happened.

Prepositions

As in the Student's Book.

Answers

1	on	7	on top of
2	in front of	8	on the bottom of
3	near	9	in
4	behind	10	over
5	next to	11	on
6	in	12	below

Have you ever ... ?

Demonstrate how this activity works with a student. Then move on to pair practice.

Extra activity

This game can be played in groups or as whole class activity.

Demonstrate how it works by telling the class three facts about your life. Two should be about unusual things that have happened to you or that you've done. One should be something that hasn't happened or you haven't done. They should ask questions and then guess which sentence was incorrect.

Then tell the students to write three sentences about unusual things that have happened in their lives. Two should be true and one should be false.

The students then read their sentences to the class and everyone ask questions and guesses which sentence is false.

16 To be precise

Being concise
Writing style – creating a warm, professional tone

Text abbreviations
Short words for emails and text messages

Identifying parts
Engine part vocabulary

Being concise

This section provides more practice in writing emails. It focuses on:

- style and professional tone.
- avoiding repetition.

1 The students can work alone or in pairs. Encourage discussion of the last question. While the second email is professional, some students may feel it is too abrupt or unfriendly for some contexts. An ideal might fall between the two examples. The goal in most business emails is to achieve a warm, professional tone.

Answers

1 The second email
2 The first email
3 The second email
4 The first email
5 Students' own answers

2 The students should do this activity alone.

Possible answer

Hi Yoko
Thanks very much for the specifications.
It would be great to discuss the schedule when you're in the UK later this month. Would you like to come to our main office in Leighton Buzzard on Friday 21st?
It would also be good to have a preliminary discussion on the phone. Is there a convenient time for me to call this week?
Best wishes
Stephen

3 As in the Student's Book.

4 Let the students compare their answers before you check them with the whole class

Possible answers

1 Please send us your flight ~~details~~ and ~~please send us your~~ hotel details.
2 Any information you can provide ~~or give us~~ would be appreciated.
3 I'll arrange a tour of our facilities~~, factory and offices~~ so you can see what we do.
4 We'd like to discuss ~~and talk about~~ the specifications with you.
5 I'm attaching some numbers ~~and figures~~ for the project ~~in the attached file~~.
6 Don't hesitate to let me know if there's anything else I can do ~~and please tell me if I can help in any way~~.

5 29 Make sure the students have pen and paper ready to take notes before playing the recording. Play it again if necessary to ensure the students know what they need to write.

One student should write and the other should dictate and check spelling, etc. When the students have written their emails, display them so they can see what other students have written. If there is information missing, play the recording again and ask the students to identify what it is.

Possible answer

Subject: Quotes for printed circuit boards?
Hi John,
I'm attaching drawings of the printed circuit boards we need. We expect to use 2,500 a month. We may need to change the design a little, but these drawings should be good enough to get accurate price estimates.
Could you get quotes from 3 or 4 suppliers and can we meet on Thursday 18th to discuss them? If you can get samples by Thursday, too, that would be great, but we understand this may not be possible.
Many thanks for your help,

Text abbreviations

This brief section contains common abbreviations found in English text messages. They can be very confusing for English learners, but also amusing when they know what they mean.

1 Find out:
- if your students ever receive English text messages.
- if they contain abbreviations that they don't understand.

Then move on to the exercise. Encourage the students to say the letters aloud if they're not sure.

Answers

1 for	4 today	6 excellent
2 you	5 tomorrow	7 no one
3 are		

2 Let pairs of students work it out. Then call on a pair to read the conversation to the class and check answers.

Answer

A: Happy birthday to you.
B: Thank you.
A: Want to celebrate?
B: I can't tonight.
A: Why not? Are you OK?
B: Everyone is working late.
A: Oh, I see. Is anyone looking at you?
B: No. No one.
A: Get out of there before anyone sees you leave.
B: OK.
A: Great. See you later.

3 As in the Student's Book. Finish with a discussion of whether it is a good idea to use abbreviations like this in emails and text messages that they write.
Advantage: They are quick.
Disadvantage: The person they are writing to may not understand them.

Identifying parts

This section provides practice in describing machines and mechanisms. It reviews machine part vocabulary and includes common phrases for:
- classifying parts.
- describing components and features.
- describing components and connections.
- saying what parts and devices do.

1 As in the Student's Book. Do not correct or supply words at this stage.

2 The students can work alone or in pairs. Let them compare their answers with some other students before you check them with the whole class.

Answers

1 Cam	6 Piston rings
2 Spark plug	7 Piston
3 Exhaust valve	8 Connecting rod
4 Intake valve	9 Crankshaft
5 Combustion chamber	10 Sump

3 Tell the students that they will be identifying parts in a different way. Give them a few moments to study the language box.

4 and **5** As in the Student's Book. If students don't know the answers, avoid helping them at this stage. Explain that they will find out soon.

Answers

a hook	k fuse
b gauge	l blade
c syringe	m plunger
d rollers	n gears
e funnel	o spring
f sprocket	p spirit level
g nozzle	q washer
h conveyor belt	r lens
i chain	s fan
j pulley	t compass

Extra activity

Read the descriptions in **4** again. How are the parts and devices identified?

Find examples of identification by class, adjectives, components or features, etc. from the language box.

6 Make sure the students read the descriptions slowly and clearly so their partners can understand.

7 One student writes. The other dictates and checks spellings. Some students may remember that they have seen most of these devices before. They appeared in Unit 3 (Mechanisms), but don't allow them to refer back. They can check their descriptions with the ones there later.

Point out that *bellows* and *scales* are always plural.

Possible answers
Hinge: A piece of metal which joins two sides of a box or door so it can open and close
Bellows: A piece of equipment for blowing air into or through something
Chute: A tube or passage that things slide down
Scales: Equipment used for weighing something
Tray: A shallow box with no lid

Extra activity

1 How could you identify the scales, tray, chute, etc. in terms of:
   a the class of things they belong to?
   b what they're like (adjectives to describe them)?
   c their components and features?
   d what they do?
   e their purpose (what they're used for)?

17 What's gone wrong?

Organizing schedules
Perfect tenses: Present, Past, and Future Perfect

Faults and hazards
Warnings
Speculating expressions: *may affect, could have been caused by, might result in,* etc.

Organizing schedules

As the end of the course approaches, the grammar and listening work in this section becomes more challenging. It includes three different perfect tenses and asks students to compare and contrast them. The goals are to improve:

- understanding of discussions about schedules.
- awareness and recognition of the perfect aspect.

1 The students work alone to number the events. Let them compare their answers with a partner. Then call on students to read the story. See if other students agree. Question any answers that sound illogical.

Possible answers
a2 b6 c1 d3/4 e3/4 f5

2 As in the Student's Book.

Answer
The part hasn't arrived and they haven't repaired the machine yet.

3 30 When the students have finished, check their answers. If necessary, play the recording again, pausing in appropriate places so they can supply answers.

Encourage discussion about what they would tell the maintenance crew by asking *What motivates people more: complaints or praise?*

Answers
1 In two weeks.
2 A week ago.
3 The rotor.
4 A week.
5 The machine broke down because it hadn't been serviced properly.
6 They've been doing a great job, and we know they can solve this problem.

4 30 Play the recording again, pausing in appropriate places to collect answers. 4 and 6 are past time. 2 and 5 are future time. Encourage discussion of 1 and 3 before pointing out that they are a mixture. They describe events in the past that have present importance. Explain that perfect tenses connect two times and read the language note.

Answers

1 I've just	4 had worked, damaged
2 'll have run	5 will have been
3 It's, been	6 hadn't been serviced

5 Allow the students to study the diagrams in the language note and check with a partner before you collect answers.

Answers
1 The Future Perfect.
2 The Present Perfect.
3 The Past Perfect.

6 If necessary, demonstrate how this matching task works by doing the first one with the class.

Answers
1d, 2a, 3e, 4c, 5f, 6b

7 As in the Student's Book.

Answers
1 Things that happened first: 1, 2, 3, b, c, f
Things that happened later: 4, 5, 6, a, d, e
2 The Past Perfect.
3 The Past Simple.

8 Allow the students a couple of minutes to make their lists. Then call on students to say what they will have done.

9 This activity has two parts. First, the students write three tasks in their diaries. (Explain that it's their choice when, and they can write them in any place where they have room.) Then they role play a scheduling conversation.

10 As in the Student's Book.

Answer
A forgot to prepare their PowerPoint presentation.
B forgot to keep Friday evening free to have a drink with **A**.

Faults and hazards

In this section the students will read written warnings and learn vocabulary for describing hazards. It provides practice in speculating about:

- past causes: *could have been caused by, may not have been tightened,* etc.
- future effects: *may cause … , might result in … ,* etc.

1 This can be a pair / group or whole class discussion. It introduces the themes of sub-standard and faulty work.

2 Avoid providing explanations for unknown words at this stage. (There will be a vocabulary check next.)

Answers
1c, 2a, 3b, 4e, 5f, 6d

3 Let the students compare their answers with some other students before you check them with the whole class.

Answer
1 ingested
2 scorch
3 intermittent
4 posing
5 choking
6 adverse
7 shatter
8 evidence
9 short

4 If necessary, explain that a product recall happens when a retailer or manufacturer asks customers to return a product because of safety problems.

5 The students can read the text alone or in pairs.

Answer
1 Scorching and the melting of the mounting block.
2 Some of the screws on the mounting block may not have been tightened sufficiently.
3 Stop using it and call Shallybank Electrical.

6 After collecting answers, read the language note.

Answer
may affect = present
may not have been = past
can cause = present or future
might have been = past
could lead to = future
may cause = present or future

7 Demonstrate how this activity works with the class before moving on to pair practice. Pairs should write their answers down. This is a challenging activity. Tell weaker classes that one sentence for each situation is sufficient, but they should try to mix the tenses.

Possible answers

1 We could have lost a major customer.
Our sales may fall substantially next year.
2 There could have been a transport workers strike.
The government may offer them higher pay.
3 Someone might have started it deliberately.
There may be a police investigation.
4 Immigration rates might have fallen.
Health care costs could rise.
5 It might not have rained for weeks.
Sales of bottled water could rise.
6 Raw material costs may have risen.
Consumers may have to pay a lot more for cars in the future.
7 You may have been worrying about something.
You might have to ask the doctor for advice.
8 Someone may have stolen it.
You might never get it back.

8 Write these expressions on the board:
A possible cause. It could / may / might be …
A possible result. It could / may / might result in … .
A possible past cause: It could / may / might have been caused by …

Then follow the instructions in the Student's Book. When the students need to write sentences, point to the sentences on the board.

18 What are the chances?

Security
Should and *be supposed to*
Should(n't) have done

Discussing risks
Likelihood expressions: *more / less likely, There's no chance ... , What are the odds?*, etc.

Security

This section is about security breaches – situations where security was compromised. It contrasts *be supposed* to and *should* with *was supposed to* and *shouldn't have done*.

1 Begin by finding out about security in the students' places of work or school, e.g. ask: *What are the most secure areas of the building(s)? Why?*

What security procedures do the people who work there have to follow?

Then go on to do activity **1**.

2 31 As in the Student's Book.

Answer
Policy number 4.

3 As in the Student's Book.

Answers
1 Photos of a new prototype.
2 The head of security.
3 Six (half a dozen).
4 Installing some cabling.
5 Investigate.
6 Because they needed to work on it (they couldn't work on it when it was under the sheets).

4 31 Play the recording again, pausing where necessary to allow the students to complete the sentences.

Answers
1 was supposed to be
2 Everyone's supposed to
3 should have been
4 shouldn't have done that

5 Write *should / shouldn't* and *are / aren't supposed to do* on the board. When the students have finished their discussions in pairs or groups, call on them to provide examples of the target language in sentences.

6 Write *should have* and *shouldn't have* on the board. Remind the students we use these forms to talk about past events that didn't happen. Demonstrate how this activity works with a student before moving on to pair / group practice. When the students have finished their discussions, call on them to provide examples of the target language in sentences.

7 The students can work alone or in pairs.

Answers
1 They pretended to lose their key and someone let them in.
2 It was unlocked.
3 Useful information.
4 By phoning the company, imitating the CFO's voice, and asking for it.
5 No, they were security consultants.

8 As in the Student's Book.

Possible answers

1 Employees shouldn't have let them in the front door or into the secure areas.
The CFO should have locked his computer.
Employees should have shredded important documents before they put them in the rubbish.
The cleaner shouldn't have given them a bin.
Employees shouldn't have given them the CFO's password.
The computer network should have been more secure.
2 Better training of employees on security matters.
A more secure computer network.
3 Students' own answers.

Extra discussion questions

1 *Have you ever known someone who has been involved in a breach of security?*

2 *Have you ever had security problems yourselves? What happened?*

Discussing risks

This section provides more practice in talking about certainty, uncertainty, and probability. The focus here is on expressions we use to compare likelihood:

- *more / less likely*
- *There's no chance ...*
- *What are the odds ... ?*

1 Before you begin, focus attention on the photograph. Find out whether any of your students are cyclists and how they feel about cycling in traffic.

2 32 When the students have discussed the questions, play the recording again, pausing where necessary to check their answers.

Answers

1 He's a traffic psychologist from the University of Bath and he's been researching helmets (an important safety issue for cyclists).
2 Overtaking vehicles are more likely to come closer if you're wearing a helmet.
3 He did an experiment. His bike was fitted with an ultrasonic distance sensor and he recorded about two thousand three hundred motorists overtaking him.
4 Cyclists need room to deal with obstacles in the road.
5 He put on a long wig so it looked like he had long hair in order to find out whether it makes a difference if drivers think they're overtaking a female cyclist.
6 If motorists think you're female, the chances are they'll give you more room.
7 No, he tends not to.
8 There's no chance of that because he came (and will be travelling home) by car.

3 As in the Student's Book.

Answers

1 are more likely to	4 the chances are
2 more likely	5 the odds
3 less likely	6 no chance

4 When the students have made their decisions, collect answers from the class and ask why. Encourage discussion.

5 This information gap activity also provides practice in saying large numbers. Tell the students to use the example questions to help them ask their questions. When they have finished, let them look at one another's roles to check their answers. Encourage discussion of the ones they found surprising.

Answers

1 The chances of winning a jackpot in the UK lottery are 1 in 13,983,815.
2 Your chances of being hit by lightning this year are about 1 in 83,930.
3 The odds against dying from a shark attack are 300,000,000 to 1.
4 The odds against dying from contact with a poisonous animal like a snake are 100,000 to 1.
5 The likelihood of being on a plane with a drunken pilot is 1 in 118.
6 The likelihood of suffering a severe appendicitis attack in your lifetime is 1 in 700.
7 There's a 1 in 20 chance that your identity will be stolen this year.
8 There's a 1 in 150 chance that you'll suffer from heartburn today.
9 The odds against dating a supermodel are 880,000 to 1.
10 The odds of your marriage to a supermodel lasting a lifetime are 50:50.

6 and **7** Students discuss the puzzle in pairs or small groups. Then they check their answers on page 103 of the Students' Book.

8 and **9** Students discuss the puzzle in pairs or small groups. Then they check their answers on page 95 of the Students' Book.

Extra activity

1 Dictate these six statements to the class:

1 *2,000,000 Americans die from falling out of bed every year.*
2 *We're less likely to suffer injury from falling over in the shower than from shaving.*
3 *There's a 1 in 2,600 chance that we'll be injured by our clothing this year.*
4 *The likelihood of dying in a traffic accident is higher if you walk than if you go by car.*
5 *If you work in manufacturing, you're more likely to die in an accident than an office worker is.*
6 *The odds of dying from heart disease, cancer, or a stroke are higher than the odds of dying from an accident.*

2 Tell the class to discuss the statements with a partner and mark them T if they think they're true and F if they think they're false.

3 Tell them you're going to read a text to them so they will find out if they're right or not. Then read this:

Everything in life is risky. And that includes sleeping. Every year about 1 in 2,000,000 Americans dies from falling out of bed. And things get worse if they get up and go to the bathroom. 1 in 6,500 are injured somehow by their toilet. Fortunately, the likelihood of being seriously injured by falling over in the shower is only 1 in 1,000,000. We're much more likely to have an accident with a razor. 1 in 7,000 people requires medical attention from shaving injuries annually.

Getting dressed is dangerous, too. We run a 1 in 2,600 risk of being injured by part of our clothing like a zip or button.

Do take care going to work, especially if you're walking along American city streets. Nearly a third of people killed in traffic accidents are pedestrians. In fact, every year pedestrians run a 1 in 40,000 risk of dying in a traffic accident. And the odds are even worse (1 in 11,000) for people riding in cars.

Unfortunately, things don't get better at work. Even for American office workers, the likelihood of dying in any year because of a job-related accident is 1 in 37,000. In manufacturing, it's 1 in 23,000 and for people like train engineers and bus drivers the odds are 1 in 4,500.

But don't let all this worry you. You are much less likely to die from an accident from than heart disease, cancer, or a stroke. And it's comforting to know that the odds against being hit by an aeroplane falling out of the sky are 25,000,000 to 1.

4 Check their answers. Re-read parts of the text where necessary. Find out which students got the most right.

Answers

1 False – 1 in 2,000,000 Americans die from falling out of bed.
2 True – the likelihood of being seriously injured by falling over in the shower is only 1 in 1,000,000, but 1 in 7,000 get injured from shaving.
3 True – There's a 1 in 2,600 risk that we'll be injured by our clothing this year.
4 False – The likelihood of dying in a traffic accident is lower if you walk than if you go by car. Pedestrians run a 1 in 40,000 risk of dying in a traffic accident but it's 1 in 11,000 for people riding in cars.
5 True – The odds of dying in a work-related accident if you work in manufacturing are 1 in 23,000. If you work in an office, it's 1 in 37,000.
6 False – they are lower.

Review and Remember 6

Speculating

1 and **2** When the students have finished part one, tell them to work in pairs to check their answers. One student reads the start of a sentence and the other reads the ending.

Answers

1b – past	5f – future
2e – past	6d – future
3h – future	7c – past
4g – past	8a – past

Project reviews

1 and **2** Let the students discuss the pictures in pairs and small groups. Tell them to write as many different sentences as they can.

Possible answers

The customer should have described it better.
The sales person shouldn't have promised so much.
The project leader should have realised there was something wrong.
The analyst should have fixed the problem.
Everyone should have documented the project.
They should have finished the installation properly.
They should have provided support.
They shouldn't have overcharged the customer.
Someone should've found out what the customer really wanted at the start.

Call my bluff

1 Explain that *to bluff* means to deceive someone by making them think something's true when it isn't. 'Call my bluff' is a classic English definitions game.

2 The files in the back of the Student's Book contain definitions of:
an andiron – a support for wood in a fireplace.
a flail – a tool for knocking the hard shells off rice.
a crook – a tool for catching sheep.
a monocle – a circular lens that is used as a single eyeglass (like glasses, but for one eye only).
a thingamabob – something you don't know the name of.
a twist tie – a thin metal wire used to tie plastic bags.
a chuck – part of a machine that holds something tightly.

Safety or security?

1 As in the Student's Book.

Answers

1c, 2a, 3b, 4g, 5f, 6e, 7d

2 As in the Student's Book.

Possible answers

1 safety	6 safety
2 security	7 security
3 both	8 safety
4 safety	9 security
5 security	10 both

Appendix 1

Working with Tech Talk: *some practical suggestions*

In the first lesson

1 Make sure everyone knows each other's name. Devote some energy to learning them before you open the books. Introduce yourself. Shake hands with class members and say *Hi / Hello, I'm ...* and say who you are. Encourage the students to:
   a answer back with *Hello, I'm ... .*
   b introduce themselves to other class members in the same way. (In large classes they can stand up and walk around the room to do this.)

   Try to name the class. Look at each student in turn, and say their name. Don't worry if you can't remember them all first time. Let them remind you and correct your pronunciation. After you have named everyone, call on another student to try to do the same thing. Let everyone have a go at naming the class.

   Write your name in large letters on a piece of folded card or paper and stand it up on the desk. Tell your students to do the same thing. The cards will serve as useful memory prompts for the first few lessons.

2 Check your students' dictionaries. Ideally they should all have a good up-to-date bilingual dictionary and a learners monolingual dictionary such as the *Oxford Advanced Learner's Dictionary*.

   As the course progresses, encourage the students to look words up in their dictionaries. Where appropriate, point out dictionary features such as [U] [C] uncountable / countable nouns.

Pairwork and group work

Many activities in *Tech Talk Intermediate* involve pairwork. Often the quickest way to show how they work is by demonstrating them yourself. Play one role and select a more confident student to play the other. Start performing the activity in front of the class and when you are confident that the students understand how it works, pair them up and tell them to do the same thing.

When pairs of students are working with two different sets of information, make sure they just look at their information and not at their partners'. Pairwork telephone calls can be simulated with the students sitting back-to-back, so they can't see one another.

When pairs have completed an activity, they should get into the habit of swapping roles and doing it again. So **A** will become **B** and **B** will become **A**. If necessary, explain to the students that it enables them to practice all the language and maximizes their opportunities for interaction and speaking practice.

Many of the pairwork activities in *Tech Talk Intermediate* can be adapted to one-to-one lesson contexts, with the teacher taking a role in communication activities. In addition to pairwork activities, there are also activities for small groups. With a class of six or fewer, you can run many of these as whole-class activities. With large classes, you'll probably need to divide the students up into smaller groups.

Feedback and correction

Feedback is a major part of our job and also one of the most difficult. There are no hard and fast rules about how it is best accomplished, but here are some points to bear in mind.

It's often handy to have a notepad with you as you walk around listening to pair and group work. If you notice something lots of students are having difficulty with, you can stop the class in mid-activity to explain. Otherwise you can jot down points to go over with the class at the end.

Linguistic accuracy is only one aspect of effective communication. Many of the further practice activities in *Tech Talk Intermediate* are task based, so you can evaluate the students' performance by a much more practical measure: i.e. was the outcome of the task successful? So for example, in a role play task such as the one in Unit 12, exercise 9 (page 55) you can evaluate in terms of

1 whether they got the job done successfully (In this case it means transferring the information accurately).
2 how long it took (Were there any unnecessary delays? Time costs money!).
3 the manner (Would a business contact / customer, etc. have found them easy to work with? Did they sound friendly and helpful?).

Involve the students in the feedback with questions like:
Any questions?
How was it?
Was it useful?
Was it easy / difficult?
Do you want to do it again? (Now / Next week?)

Using recordings and audio scripts

Encourage the students to check their answers to exercises in pairs after listening. It prevents the strongest students answering all the time and gives you an opportunity to gauge how much different students have understood.

Give different students control of the tape recorder or CD player sometimes. It encourages interaction between classmates as they ask for pauses and replays, and it can be revealing as regards how challenging they are finding the recordings.

The audio scripts on pages 109–119 of the Student's Book can be used to create additional activities and exercises. Here are a few ideas for how they can be used.

1 **Read-throughs** After listening to the conversation and doing the exercises, pairs of students take different roles and read through the audio script. When they have finished, they swap roles and do it again.

2 **50-50 read-throughs** As above, but when the students are familiar with both roles, they read it again with only one student looking at the audio script. The student who's looking helps their partner when they falter. When they have finished, they swap over and the other student looks. With short conversations, they may eventually be able to move onto a third stage where nobody looks and they recall the entire conversation.

Mixed language levels

Many technical English classes contain students at different language levels, and you may have learners with English levels ranging from elementary to intermediate. Whilst this isn't an ideal state of affairs, it's generally possible to create a very effective learning environment nevertheless, providing there is a positive group dynamic.

Obviously you need to pitch your speed at a mid-level and try not to let the needs of the higher-level students or the lower level students dominate. Remember to check with the class on a regular basis asking, *Are we going too fast or too slow?* Try to get everyone to agree to the speed you progress and take a vote if necessary. Most students will compromise when they see a group need.

Weaker students can be helped along by setting them extra homework and showing them what they need to do to stay up with the class. Seating them next to a better student who can help them is often helpful. Don't hold the stronger students back though. Encourage them to do extra things in class if they finish activities faster, such as checking out additional vocabulary in a dictionary.

Concentration levels

Fatigue can be a serious problem when learners are combining an English class with a long working day. So pay attention to the group's energy levels and change the pace if they are flagging. Be ready to drop the task in hand and go back to review something you've done before or try a new simpler activity. It's often the case that something that was difficult when your learners were tired, turns out to be very easy for them when they are fresh. Games are extremely useful for changing the pace and providing useful repetitive practice. You'll find lots of activities and games at the end of this book. Teachers will recognize many of them and they have been included because of the particular value they can afford in providing practice in technical classes.

You can often inject more fun and humour into activities by adding a competitive element, e.g. *The first pair to finish is the winner. The group with the longest list is the winner.* You can award points to different teams (and subtract them). You can award prizes and organize rounds of applause. You can have the students vote on things, e.g. *Whose ideas were the best? The most creative? The most practical? The most unusual?* etc. You can have the students place bets and gamble. People generally learn best when they are having fun.

Appendix 2

Games and activities for changing the pace

Many of these games will be familiar to most teachers. They are useful for changing the pace and recycling key language and vocabulary. They can often be adapted to provide useful follow-on practice for Student's Book activities.

1 Alibi

This game requires the students to focus on details and hones their questioning skills. It also provides opportunities to practise past tenses.

Tell the students that a crime was committed at 7 o'clock last night. Adapt the crime to suit their circumstances. For example, perhaps a machine was tampered with or a laptop with important data was stolen from the CEO's desk. Explain that all the students in the classes are suspects and they will shortly be questioned by the police.

The students then work in pairs to create detailed alibis. They were together last night and they should decide where they were, what they were doing, and exactly what happened. Encourage them to be as detailed as possible, e.g. decide on what they were wearing, what was said, and what order things happened. Warn them that the police will question them on every detail.

Choose a pair and ask one of the students to leave the room. The class then asks the remaining student questions. The other student then returns to the room and the class asks the same questions. The goal is to establish mismatches in the stories.

Further pairs are then questioned in the same way and the class decides who is guilty.

2 Two facts and a lie

A useful game for question practice and enabling the students to get to know one another better.

Start by writing three interesting or curious facts about yourself on the board. Two facts should be true and one should be false. For example:
I lived in Africa for two years.
I used to work for Microsoft.
I have seven brothers and one sister.

Explain that one fact is false. Tell the students they should ask you questions and try to establish which fact you are lying about.

Then ask the students to write three facts about themselves on a piece of paper. Two should be true and one should be false. The class asks questions and tries to establish which is the lie.

3 Organize yourselves

This game is great for getting tired students on their feet, moving about, and practising comparatives and superlatives.

Ask the students to form a line. They should stand in front of you so everyone is facing you and they are one behind the other.

When the line is straight, tell them to make another line, so they are lined up in order of their:
height (e.g. tall people at the back)
month (the month of their birthday)
length of time with their company
cars (their age, their size)
most accidents in their cars
length of time married
wake up time (the time they set their alarm clock in the morning)
journey time (their journey to work)
English skills (who speaks the best English?)
shoe size

The people from the front and back and middle of the line have to say why they're there. *I'm the tallest/shortest, I'm taller than X and shorter than Y,* etc.

Variations

You can also specify the order they should line up, e.g. big feet at the back-> big feet in front, etc.

In large classes form teams to race one another.

4 Make a word

This can be a quick warmer or a break if the students are tired in the middle of a lesson.

Choose a long word, e.g. *environment.*

Group the students in pairs or small teams, set a time limit (e.g. three minutes), and tell them to make as many small words as they can from the letters in the word (e.g. *iron, mention, time, not, net,* etc.) Scores can be calculated on the basis of how many letters there are in the words.

5 Don't say *yes* or *no*

A good game for practising all kinds of question forms and adaptable to practice of different tenses. It raises awareness of auxiliary verbs.

The students are called to the front of the class one-by-one and then class asks them questions. They have to answer the questions without saying the words *Yes* or *No.*

Example:
Q: *Is your name Gunter?*
A: It is.
Q: *Are you an engineer?*
A: *I am.*

The class tries to catch them out and as soon as they say *Yes* or *No*, they are 'out' and the next student comes up. The class can ask *Wh-* as well as *Yes/No* questions. (After a stream of *Wh-* questions, people tend to forget and that's when you catch them out.)

Variation

Give the students topics to ask questions about which are likely to generate questions and answers in a tense you want to practise.

Examples
Past tense – Find out about Gunter's last business trip/ holiday/childhood.
Present continuous – Find out about the projects Gunter is working on now.
Future – Find out what Gunter's plans for the weekend are.

6 Find it!

A simple but entertaining guessing game, useful for practising prepositions of location.

The teacher goes out of the room and the students hide a coin. When you come back in, ask *Yes/No* questions to find out where it is. The students can only answer *yes* or *no.*

Is it near the blackboard?
Is it under a book?
Is someone sitting on it? etc.

When you've found it, a student is sent out and the coin is hidden again. The student is called back in and has to find it by asking questions.

7 Fizz buzz

This game practises numbers.
The students count around the class, 1, 2, 3, etc. But when it's their turn to say a number which you can divide by five, they have to say *fizz* instead. So 3, 4, *fizz*, 6, 7, etc.

When they have got used to *fizz*, introduce the word *buzz*, too. When it's their turn to say a number which you can divide by seven, they have to say *buzz* instead.

Variation

Count downwards instead of up, e.g. *A hundred and one, fizz, ninety nine ...*

8 Labelling

Another game that gets students on their feet and moving around. It can be used to review a variety of vocabulary.

Divide the students into teams (e.g. A, B, and C) and provide each team with lots of labels. Post it notes are ideal, but if not, ordinary slips of paper and adhesive tape will also work.

Tell the students that this is a labelling competition. The goal is to write labels for everything in the room and put them in position. On one side of a label, they should write their team name (i.e. A, B, or C) and on the other side, they should write the name of a thing. (You can demonstrate by writing the word *chair* on a label and sticking it on a chair). At the end of the allotted time (say five minutes), you walk around the room inspecting their work and the team with the most correctly written labels is the winner.

Variations

To review the names of materials, the students have to label different things with the name of the material they are made of, e.g. *plastic, wood.*

To review the names of geometric shapes, the students have to find things to label with different shape descriptions, e.g. *It's rectangular, It's spherical.*

To review the names of joints and fastenings, the students have to label different things with the thing that is fastening or joining them together, e.g. *glue, hinge, staple.*

You can insist on the correct spelling and ban or encourage the use of dictionaries as you see fit.

Labels with words that are duplicated by another group can be disqualified, or words that no other team has thought of can receive extra points.

9 Telephone

This game works best in larger groups.

Whisper a sentence into one student's ear. They then whisper it into another student's ear, and they whisper it to the next student and so on, round the class. The final student says the sentence aloud and the resulting sentence is compared to the original.

Variations

Whisper words so they travel round the circle in two directions.

For spelling practice, whisper the letters of a word into a student's ear. They then have to spell it to the next student, and so on.

Allow the students to write down what they hear and then dictate it to the next student, e.g. an email address.

10 Vocabulary sets

This game is useful for reviewing a variety of vocabulary sets.

Write a list of word categories like these on the board. (The categories can be adapted to suit your class.)

A material
A shape
A colour
A form of transport
Something you can wear
A tool
A vegetable
Something to drink
An uncountable noun
Something in this room

A way in which something can be damaged (broken, scratched, chipped, etc.)

Give the class a letter of the alphabet, e.g. R, and ask them to think of one word beginning with the letter R for each category, e.g. rubber, rectangle, red, rowing boat, etc. Write the words they think of alongside the categories (sometimes it won't be possible to think of a word).

Form teams of three or four students. Make sure stronger students are distributed evenly around different teams.

Tell each team to appoint a secretary to copy the list onto a piece of paper. Give the class another letter of the alphabet, e.g. P, and ask them to repeat the task.

The first team to finish, or the team with the most words after three minutes, is the winner. Then another letter of the alphabet is chosen and the game replayed.

Variation

Allow winning teams to suggest new categories to add to the list.

11 Don't say it!

This game is great for raising concentration levels at the end of a long day.

Incorporate this game into a normal lesson. Explain the rules when the class begins and play the game throughout the lesson.

Get some small sticky labels and write a word on each one. Stick one label on each student's lapel (It's fun if you wear one as well). Everyone can look at their words and everyone else's words, too.

Nobody is allowed to say the word they are wearing. If they do, the person they were talking to at the time (or anyone else who hears them say it) is allowed to take the label and wear it themselves. Then they are not allowed to say the word.

The person with the most labels at the end is the winner.

What happens here is people forget what words they're wearing and it becomes possible to trick them into saying them. This game can become highly competitive and very funny, with everyone leaping to grab a label before anyone else does.

Suitable words for labels will depend what the lesson is, but choose common words that everybody knows and is likely to say. If you've noticed a student tends to use a certain phrase again and again, write in on their label.

12 Draw it

This game can be used to review a variety of words and for injecting some fun into a lesson when a class is tired.

Form teams with two to five students in each team.

Call one team member to you and quietly tell them a word. They should all have the same word. They then return to their group, where they must draw the word. They cannot say anything. The other team members must try to guess the word. The first team to guess the word wins a point. The next team members then come to you and receive another word, which they then draw.

Variation

Instead of drawing the word, the students have to mime it.

13 The store room

This game is useful for reviewing the names of tools, everyday objects, or countable and uncountable nouns.

Write this phrase on the board:
Go to the store room and get ...

Ask the students to suggest some possible words to finish it.

For example:
a hammer, some rope, etc.

Tell the students you are going to make a very long list. So for example the first student says *Go to the storeroom and get a hammer.* Then second one says *Go to the store room and get a hammer and a brush.* The third one might say *a hammer, a brush, and a torch,* so the list gets longer each time.

The goal is to create the longest list possible before someone forgets.

Variations

The items they name must begin with consecutive letters of the alphabet, e.g. an apple, a book, a cart, etc.

14 Describe and draw

As well as being entertaining, this game is useful for practising prepositions of location.

The students work in pairs. One has pencil and paper and the other has a picture that you've given them from photocopiable page 95. (You can also instruct them to use one of the pictures in the Student's Book.)

The student with the picture has to describe it to their partner so they can draw it. Reassure students who are unsure about their drawing abilities that they will not be judged on this. The goal is to position things in the correct place and with as much detail as possible. They can ask their partner questions when they are unclear about anything.

When they have finished, they can compare their drawings to the original.

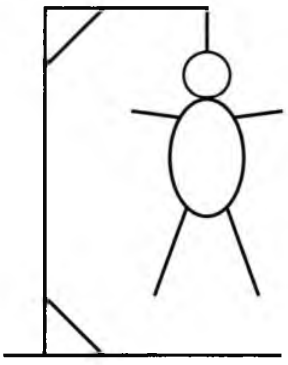
Variation

Provide the students with pictures of machines or devices to describe while their partner draws. When they have finished, they should explain how they work

15 Hangman

This classic game is good for practising the alphabet and spelling.

Think of a word and write a horizontal line on the board to represent each letter. The students take turns to call out letters. Insist on the correct pronunciation of the letters they suggest. If the letter is in the word, write it on the correct line. If not, add a line to the 'hangman'.



The goal is to complete the word before the man is hanged.

Variations

The students take turns to think of a word, come to the board, and draw the hangman.

Students play in teams.

16 Find a person

You need at least six students to play this game. It's great for getting students circulating.

Make a questionnaire with questions such as those below for all your students. Tell them to circulate around the class and collect the information they need to answer the questions. If you know your class well, you can tailor make questions so they fit the individuals in your class.

Find a person who:

- has two or more children. (How old are they?)
- has visited the UK or USA. (When and where?)
- speaks two other languages. (Which ones?)
- knows one or more computer languages. (Which ones?)
- can play a musical instrument. (What?)
- knows how to change the oil in their car. (How do you do it?)
- has appeared in television. (When and what for?)
- is planning to do something nice this weekend. (What?)

Variation

Practise requests, offers, and invitations with questions like these:

Find a person who:

- has at least €50 in their wallet. (Ask if you can borrow €25.)
- knows a good Chinese restaurant near here. (Invite them to dinner there tonight.)
- has their mobile phone with them. (Ask if you can borrow it to make a call.)
- knows the English words for the song *Happy birthday*. (Ask them to sing it to you.)
- is going to eat out at a restaurant or bar tonight. (Ask if you can join them.)

- can speak (choose a language). (Ask if they can translate something for you.)
- has a car. (Ask them to give you a lift somewhere.)
- is not doing anything this weekend. (Invite them to do something with you.)

17 Quiz me

This game practices question forms.

Write the words *who*, *what*, *where*, *when*, *why*, and *how* on the board. Put the students into teams. Tell them they must make up some general knowledge questions using each question word. Brainstorm a few examples first.

When they have finished, organize a quiz show. Call each team to the front and have them answer questions from another team. Score it, e.g. give two points for a correct answer, one point if the team confers.

18 Team work

This game can be used to review a variety of communication tasks and for injecting some fun into a lesson with a large class when they are tired.

Get the students standing up. Tell them you will call out numbers, and when that happens, they should form teams of that number, e.g. 4, (they should form teams with four people in each team). Do it a couple of times to check they get the hang of it.

Explain that if they are slow and are left on their own, they are 'out' and have to sit down.

Give the students a short communication task to do with their group, e.g.:
- Exchange your telephone numbers.
- Exchange your email addresses.
- Spell your names to one another.
- Tell one another your birthdays.
- Say the months of the year.
- Find out who is married and who has children.
- Tell one another your hobbies.

After a while call out a number so the students have to form new groups. When new teams have formed, give them another task. The winner is the last pair remaining.

19 Thingamajig

This game can be used to review new vocabulary.

Write words or phrases you want to review on different slips of paper. A student pulls a slip from the pile and has to make a sentence which uses the words correctly. But in place of the word, they must say *thingamajig*.

For example, if the phrase is *carbon footprint*, they could say, *If you fly to the USA, it will increase your* ***thingamajig***.

Everyone who thinks they know what *thingamajig* is raises their hands. The teacher calls on them to say what the phrase is. If nobody can guess it, the student has to make another sentence using the word, e.g. *People who live in Vietnam have a very small* ***thingamajig***.

20 In the manner of the word

This is a variation of the classic charades game which practices adverbs.

Tell your students to write an action on a slip of paper, for example *paint the ceiling, drill a hole in the wall, change TV channels, write a computer program*. Collect the activities they write.

Then ask them to write an adverb on another slip of paper, for example *slowly, thoroughly, loudly, gently*. Collect the adverbs they write and mix them up.

The students take it in turns to select one activity and one adverb. They must act the activity and adverb together and the class has to guess what they're doing and how.

21 Twenty questions

This classic guessing game is good for practising question forms.

A student thinks of something – anything they like – a device, a sport, a person, etc. The class has 20 questions to find out what it is. Their questions must be answered truthfully, but the person answering can only say Yes or No.

Variation

Cut down the number of questions they can ask and specify the class of object they must think of, e.g. a machine, a form of transportation.

22 Investors

This game taps into the engineering creativity of the students.

The students work in pairs or groups to design a new product for doing something you define. For example:

- cutting the grass
- cleaning high windows
- washing a car
- hanging up clothes
- taking a dog for a walk

They then take it in turns to present their ideas to the class, explaining how the product works and why it is special/different. The other students award a development grant of €100–500 to each product. The team which gets the biggest grant is the winner.

23 Connections

This game often works well in intermediate level classes.

The students are given three to five 'lives' (depending on how long you want the activity to last and how big the group is).

One student says a word, and the student sitting on their right must immediately respond with another word which is connected. Then the student on their right says a word that's connected to that, and so on, going round the class.

The students must respond immediately and anyone in the group can challenge the response on the grounds of 'no connection'.

For example, Student A says *road*, Student B says *cars*, and Student C says *donkeys*. Someone could challenge Student C and ask what cars and donkeys have in common. If Student C can say they are both used to transport people or materials or suggest some other connection, they are OK. If they can't explain what the connection is, they lose a 'life'.

24 Team pictures

This game capitalizes on the students' creativity. It can also illustrate the creative power of collaborative team work.

Demonstrate how this game works with the class first. Call on a student to work with you at the board. You and the student both have a pen. Explain that you are going to draw a picture together but you are not going to talk. You will draw a bit, and then they will draw a bit, then you'll draw a bit, and so on until the picture is completed. You will work as quickly as possible. When you have finished, you will give your picture a title, writing one letter each at a time. Begin by drawing a shape on the board like a triangle or circle.

Once you have demonstrated how to do it, the students work with a partner and produce their own pictures. Possible debriefing questions:

- How did you feel when you were drawing together – surprised? confused? Why?
- How do you feel now about your drawing?
- Did anything interesting happen when you were drawing? What?
- Can we learn anything about creativity or team work from this experience?

25 Attributions

This game is great for getting tired students on their feet and moving about. With an inventive class, it's very amusing.

This game requires a little preparation, but it's well worth the effort. Write the statements below neatly on separate labels and stick one on the foreheads of each student. Explain that they must not look at what it says.

The students should then circulate and talk to one another. They should read what's written on the other person's forehead and treat them as if it were true. They should not tell other students what their label says, so the task is to drop hints. Everyone should try to work out what's written on the label on their forehead.

I'm highly competitive and want to win everything.
I always arrive late for everything.
It takes me ages to make decisions.
I just want to retire.
I'm a little bit deaf.
I'm always telling other people what to do.
I spend money wildly.
I'm addicted to caffeine.
I'm always starting fights.
I love my sports car and I drive too fast.
I'm always cleaning up and tidying everything.
I never buy new clothes and always look untidy.
I'm very mean with money.
I can't spell.
I haven't changed my socks for a week.

Appendix 3

Photocopiable activities

Review and Remember 1

Teacher's Book page 22

Student A

My name's Ben Davis and I'm a forensic scientist. I work for the New York Police Department at their lab in Jamaica, Queens. I've worked there since we moved to New York about 10 years ago. I work together with the crime squad and the pathological department. I'm responsible for carrying out DNA tests on the genetic materials we find at the scene of a crime, but a lot of my work also involves writing reports on the tests we've done.

Student B

Hi, my name's Mandy White. I'm a metallurgist and I work for Rolls Royce – the aero-engine maker, not the car manufacturer. I'm based at their Bristol plant in the south-west of England, and I work in the R&D department. I've been there since I left university in 2007. A lot of my work involves testing new alloys, and I work closely with our lab. I'm currently responsible for a new project which is examining a new ceramic material which we hope to use in a high-pressure compressor.

Student C

Hello, I'm Sarah Jackson and I work for M & W Hanton, a facility management company. I'm an industrial architect so I have to travel a lot and inspect the construction work at our clients' sites. When I'm not travelling, I'm based in Brussels, where our European headquarters is located. I still don't speak much French or Flemish, but nearly all the projects I work on are for large multinational companies where most of the staff speak English. At the moment I have to travel to Copenhagen three or four times a month because we are working on a big project for a large engineering company there.

Student D

I'm Jack Roberts and I studied electrical engineering at Leeds University. When I graduated last year, I was offered a job with a consumer magazine called *Best1*. They run thousands of tests on different consumer products every year. I'm part of a team that's responsible for setting up and running tests on consumer electronics – anything from washing machines to GPS devices. At the moment I'm designing a test for OLED screens, you know organic light emitting diodes. I never thought I would work for a magazine, but I love my job because it is always different and I don't have any boring routine jobs.

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Unit 4

Teacher's Book page 24

Student A

In 1953 a researcher called (name?) _____ was working on a product that could displace water and prevent corrosion on electrical circuitry. He had (how many?) _____ unsuccessful attempts, but then on his 40th try he hit lucky – and that's when WD-40 was born. The name stands for (what?) '_____, 40th attempt'. WD-40 is sold in a spray can and it has a distinctive odour. The product has been very successful and it has many competitors. In (where?) _____, you can buy a similar product called Selleys RP7 and in Germany the common brand is Caramba.

There are (what kind?) _____ sites on the web where people exchange stories about WD-40.

Many handymen think duct tape and WD-40 are the two most useful things to have in your (what?) _____.

Two rules get you through life: If it's stuck and it's not supposed to be, use (what?) _____. If it's not stuck and it's supposed to be, use duct tape.

Student B

In 1953 a researcher called Norman Larsen was working on a product that could displace (what?) _____ and prevent (what?) _____ on electrical circuitry. He had 39 unsuccessful attempts, but then on his 40th try (what happened?) _____ – and that's when WD-40 was born. The name stands for 'Water displacement, 40th attempt'. WD-40 is sold in (what?) _____ and it has a distinctive odour. The product has been very successful and it has many competitors. In Australia, you can buy a similar product called Selleys RP7 and in Germany the common brand is (name?) _____.

There are fan sites on the web where people exchange stories about WD-40.

Many (who?) _____ think duct tape and WD-40 are the two most useful things to have in your tool box.

Two rules get you through life: If it's stuck and it's not supposed to be, use WD-40. If it's not stuck and it's supposed to be, use (what?) _____

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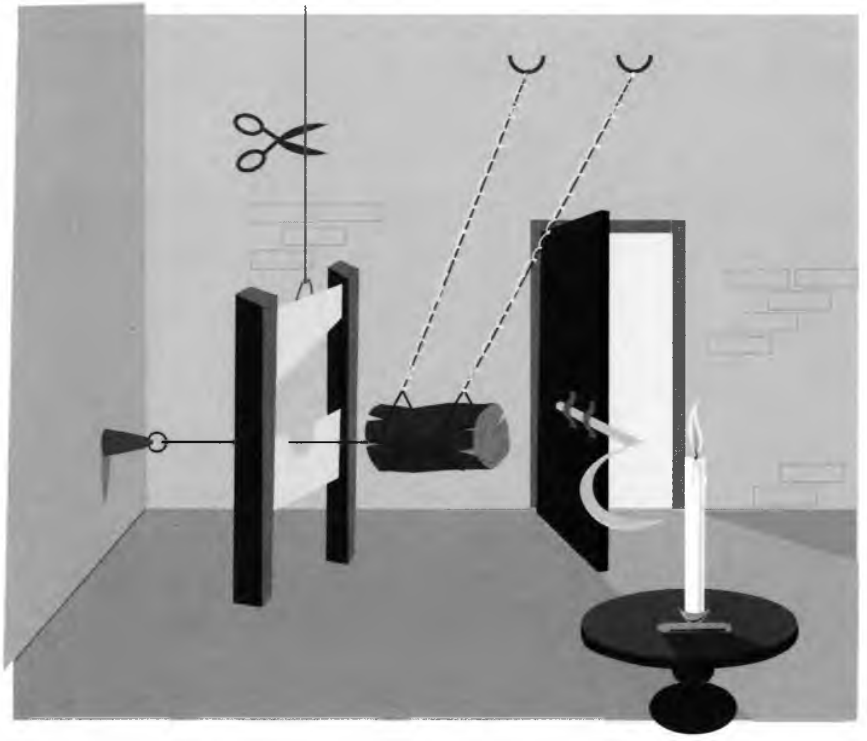
Describe and draw

Teacher's Book page 89

Student A



Student B