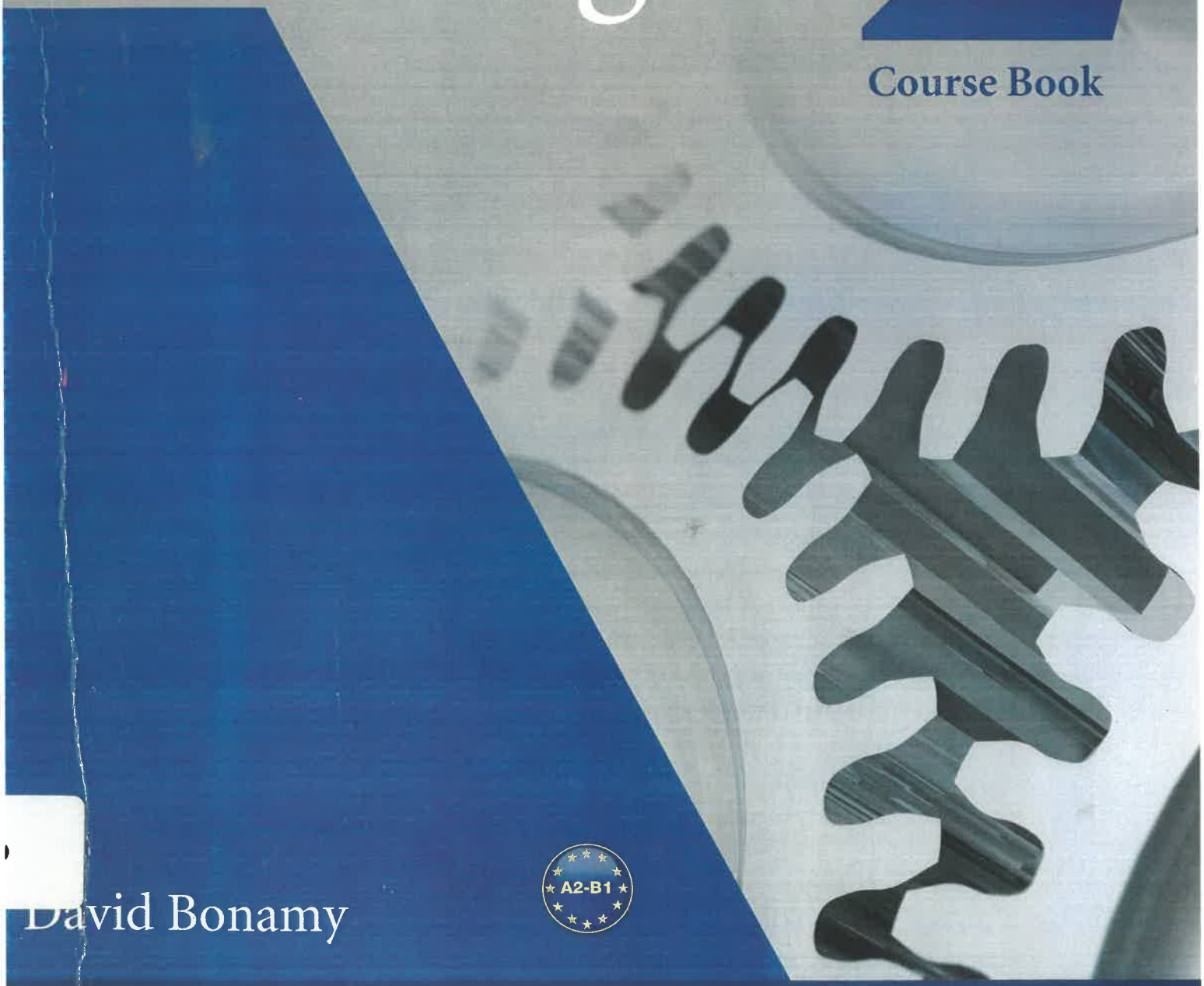
Technical English 2

Course Book



A2-B1

David Bonamy

ALWAYS LEARNING

PEARSON

Week 1

2 Work

1 Routines

Start here

1 Would you like to work on an offshore oil platform? Why/Why not? Discuss with a partner.

Listening

2 04 Tore and Ken work on different oil platforms. Listen to their phone call and complete the information on the left.

TORE
ON DUTY: ___ weeks.
ON LEAVE: ___ weeks.
KEN
ON DUTY: ___ weeks.
ON LEAVE: ___ weeks.

3 Listen to Tore (T) and Ken (K) again and complete the conversation.

T: *Hi, Ken. How are things on your rig?*
K: Hi, Tore. Well, we (1) _____ very hard at the moment. But I (2) _____ on leave tomorrow.
T: *That's great. Where* (3) _____*? Back home?*
K: I usually (4) _____ home to Nigeria. But this time I (5) _____ to France for a holiday.
T: *Ah, fantastic.* (6) _____ *two weeks on, two weeks off?*
K: No, I (7) _____ three on and three off. How about you?
T: *I* (8) _____ *two two.*
K: When's your next leave?
T: *I'm on the helicopter right now! I* (9) _____ *to Norway!*

onshore ≠ offshore
on duty ≠ off duty
on leave = on holiday

Language

The present simple is used to talk about (1) regular or routine events; (2) job descriptions; (3) processes

The present continuous is used to talk about (1) things happening now; (2) things happening temporarily around now; (3) plans or intentions for the near future.

Speaking

4 Work in pairs. Ask each other about the changes in the work routine.

A: What does Tore usually do from six to seven forty-five?
B: He usually supervises the deck crew. But not today.
A: What's he doing today?
B: He's operating the main crane.

Changes to Monday morning duty roster for today only (because of staff illness)

	06.00–07.45	08.00–09.45	10.00–10.45
BILL	~~inspect underwater pipes~~ check diving equipment	~~supervise divers~~ inspect blowout preventer	~~conduct safety drill~~ attend safety meeting
TORE	~~supervise deck crew~~ operate main crane	~~operate main crane~~ train new deck crew	~~work in control room~~ work on deck
ADEL	~~check generators~~ repair power line	~~do maintenance work~~ supervise electricians	~~test electrical switches~~ write safety report

5 05 Listen to these oil rig workers talking about their jobs. Tick their jobs on the organisation charts.

BILL	TORE	KEN	ADEL
SUB-SEA CREW	**DECK CREW**	**DRILL CREW**	**ELECTRICAL DEPARTMENT**
Sub-Sea Engineer ↓ Assistant Sub-Sea Engineer	Crane Operator ↓ Assistant Crane Operator; ↓ Roustabout	Driller ↓ Assistant Driller ↓ Derrick Man; ↓ Pump Man	Maintenance Supervisor ↓ Chief Electrician ↓ Electrician

6 Complete the job descriptions. Use the correct form of these verbs.

maintain operate repair report supervise

1 The Assistant Sub-Sea Engineer *repairs* and _____ the platform and the pipes under the sea. He _____ to the Sub-Sea Engineer.
2 The Assistant Crane Operator _____ and _____ the cranes on the main deck. He _____ to the Crane Operator.
3 The Assistant Driller _____ the drilling equipment. He _____ the Derrick Man and the Pump Man. He _____ to the Driller.
4 The Chief Electrician _____ and _____ all the electrical equipment on the rig. He _____ three electricians. He _____ to the Maintenance Supervisor.

Speaking

7 Work in pairs. Act the parts of two of the oil rig workers. Ask each other about your jobs.

What's your job? What do you do?
I'm an Assistant Driller. I operate the drilling equipment.
Do you supervise anyone? Who do you supervise? Who reports to you?
Who do you report to? Who supervises you?

8 Write down your job title and a short job description. If you do not have a job, think of a job you want when you finish all your training.

9 Work in pairs. Ask each other about your jobs.

Grammar workshop 1

Week 1

Present simple and present continuous

1 Complete the email by putting the verbs in brackets in the correct form, either present simple or present continuous.

Hi Bonnie,

Thanks for your email. It's good to know you **1** 're settling (settle) into your new job. We **2** ..... (have) a rather stressful time here at Connors at the moment. I **3** ..... (work) on three different projects. I really **4** ..... (need) to finish two of them before the end of the month and the deadlines **5** ..... (get) very close. Every week my manager **6** ..... (find) something extra for me to do as well. Sometimes I just **7** ..... (tell) him I can't but it isn't easy. Still, I **8** ..... (expect) I'll survive. I'm on holiday next month so I **9** ..... (look) forward to that!

Hope to meet up with you soon,

Best wishes
Mark

- Usually the verb ***have*** is a state verb.
  *Our company **has** (= possesses) three offices in Scotland (NOT 'is having').*
  (In an informal style, we can also use *have/has got* in this case.)
- In expressions where it does not mean 'possess', we can use it in the continuous.
  *The manager **is having** lunch at the moment.*

2 Business English students sometimes confuse these two uses. Choose the correct form of *have* in the following sentences.

1 'Where are your colleagues?' 'They *have / are having* a drink in the bar.'
2 We *have / are having* a number of products which might interest you.
3 You can't come in now because the department *have / are having* a meeting.
4 We *have / are having* a really good new designer in our department.
5 We *have / are having* a big meeting room with an electronic whiteboard and computer.
6 'Why is the training room empty?' 'The team *all have / are all having* coffee in the canteen.'
7 I can't do that today because I *have / am having* too much other work to do.
8 My colleague *has / is having* a really interesting time at the trade fair.

Position of time phrases

- Short time adverbs of frequency like ***sometimes*** usually go after the verb *to be* but before another main verb.
  *We **always** meet at 9 o'clock.*
  *He is **sometimes** late.*
- Frequency expressions like ***every day*** usually go at the end of the phrase.
  *We speak on the phone **every day**.*
  *The manager is having lunch **at the moment**.*

Put the words in brackets in the correct position in these sentences.

1 I check my emails from home. (sometimes)
  I sometimes check my emails from home.
2 She is in the office on Mondays. (never)
3 They promote people from within the company. (often)
4 We have a shareholders meeting. (twice a year)
5 My PA doesn't deal with matters like this. (usually)
6 He comes to the board meeting. (every week)
7 They use artificial flavourings in their products. (never)
8 Those suppliers aren't very reliable. (always)
9 The hotel is fully booked in July. (often)
10 We are reviewing a number of our policies. (currently)

Week 4

Writing

Emails can be written in a formal or an informal style. Usually they are shorter and more like spoken English than letters.

1 **Match the verbs (1–10) with the more formal verb (a–j) with the same meaning.**

1 talk about	a assist
2 ask	b contact someone
3 ask for	c enquire
4 help	d meet
5 think about	e purchase
6 get	f request
7 buy	g inform someone
8 get together	h receive
9 let someone know	i discuss
10 get in touch with someone	j consider

2 **Look at the following ways to begin and end emails. Number each list in order of how formal you think the beginnings and endings are. (1 = most formal; 5 = least formal).**

Beginnings
Dear John
Dear Mr Green 1
Hi John
John
Hello John

Endings
Yours sincerely 1
Best wishes
All the best
Bye for now
Kind regards

3 **Number these two lists from 1–4, depending on how formal you think the expressions are. (1 = most formal; 4 = least formal).**

Requests
Could you …
Can you …
I would be grateful if you could …
Please could you …

Apologies
We are sorry about …
Sorry about …
We would like to offer our sincere apologies for …
Please accept our apologies for …

4 **Below are a list of phrases from two emails about the same meeting. Write the formal and informal phrases with the same meaning in the table in the order they appear in the email.**

to discuss the schedule for training day
Looking forward to your reply
~~Hi Andy~~
but I could manage the week after
Can we get together sometime
Susan Jackson
to talk about the schedule for training day
but perhaps you could suggest a suitable time for the week after
let me know
~~Dear Mr Morris,~~
I'm pretty booked up next week
Sue
I would like to arrange a meeting
My diary is very full for next week

Formal	Informal
Dear Mr Morris,	Hi Andy

5 **You have arranged a meeting with a member of staff from another department. Unfortunately you cannot now attend. Write an email to your colleague.**

- explaining why you cannot meet
- apologising for the change of plan
- suggesting an alternative day and time

You have not worked with this person before so keep the tone friendly but formal. Write 30–40 words.

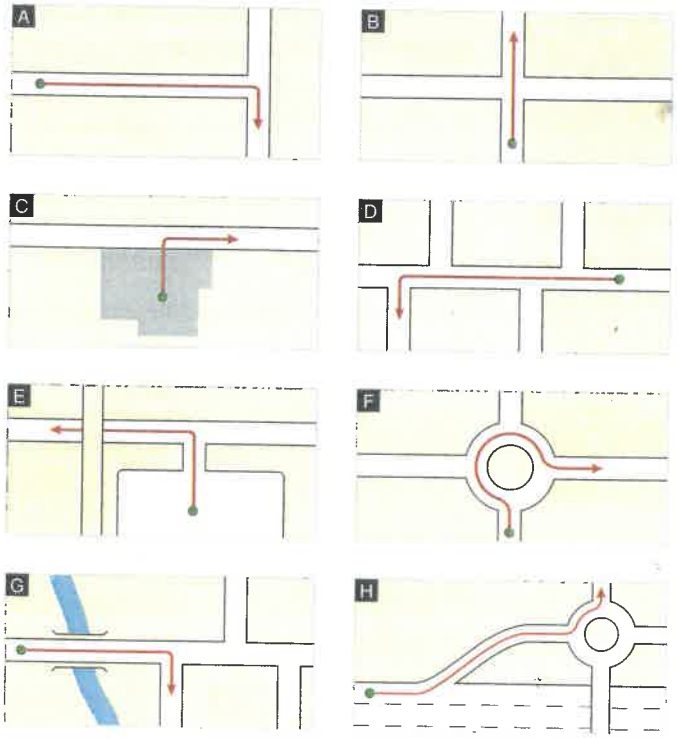
Week 5

3 Directions

Start here **1** Identify these landmarks on the photo.

flyover gantry motorway
roundabout slip road underpass

Reading **2** Match the directions with the maps.

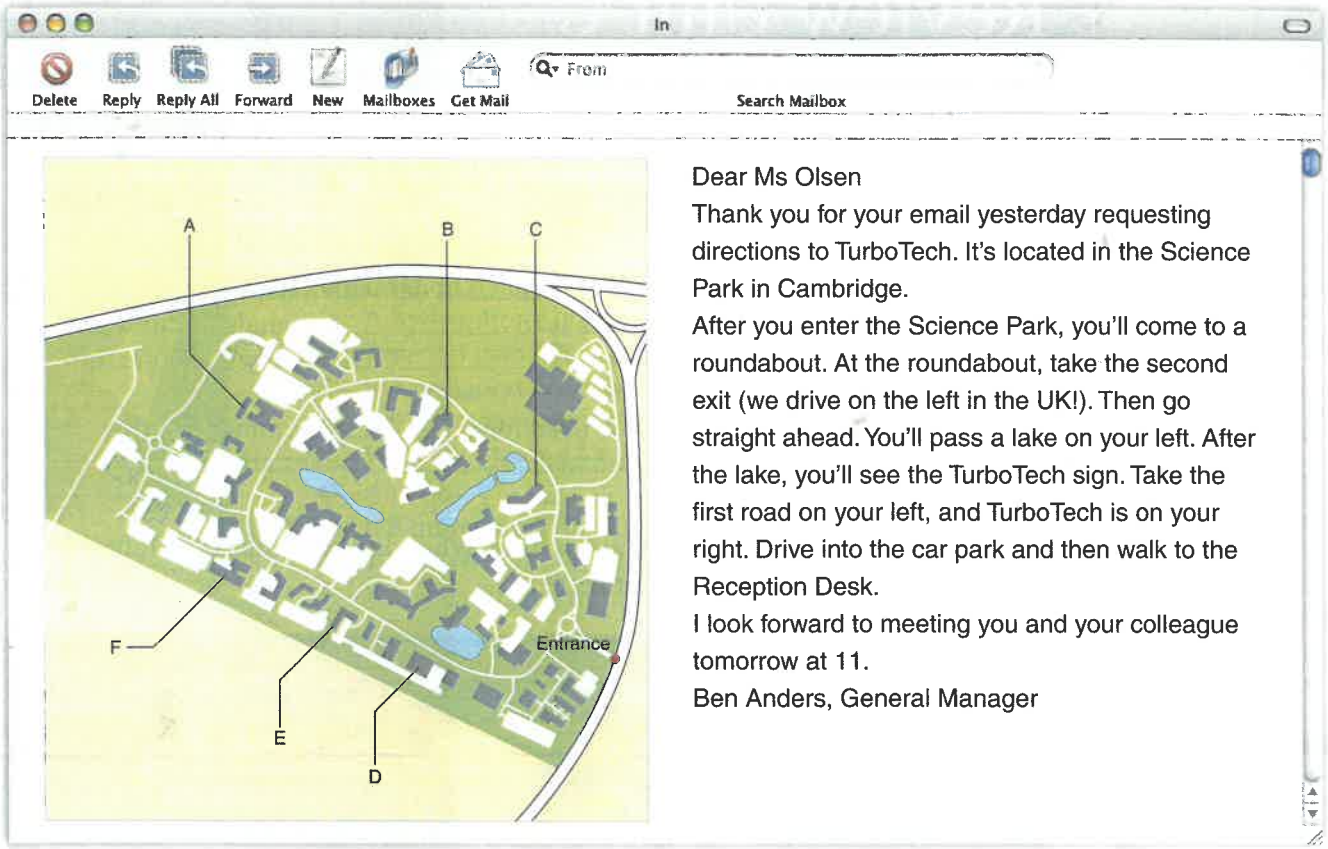


1 take the second turning on the left
2 take the third exit from the roundabout
3 turn right at the T-junction
4 come out of the building and turn right
5 go straight ahead at the crossroads
6 leave the motorway by the slip road and turn left at the roundabout
7 go over the bridge and take the first road on the right
8 come out of the car park and turn left under the flyover

Language

First describe the situation ...	then give the instruction
There is a STOP sign at the end of the road.	Turn left here.
There are two sets of traffic lights on this road.	Turn right at the second set.
When you come out of the station,	turn right into Market Street.
You'll see a police station on your left.	Don't turn left here. Take the second turning on the left.
If you cross a bridge over the river, you've gone too far.	Do a U-turn. Go back across the bridge. Then take the first turning on the right.

Reading **3** Read this email and mark TurboTech on the map.



Dear Ms Olsen

Thank you for your email yesterday requesting directions to TurboTech. It's located in the Science Park in Cambridge.

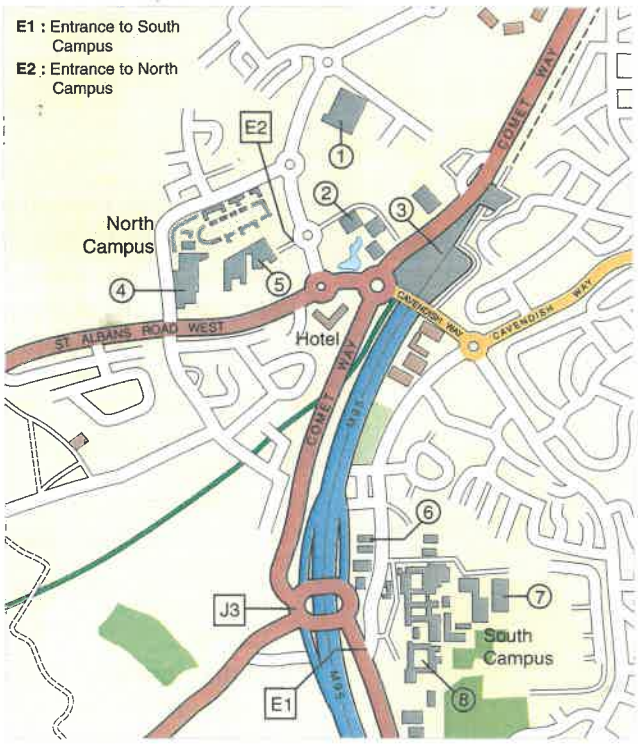
After you enter the Science Park, you'll come to a roundabout. At the roundabout, take the second exit (we drive on the left in the UK!). Then go straight ahead. You'll pass a lake on your left. After the lake, you'll see the TurboTech sign. Take the first road on your left, and TurboTech is on your right. Drive into the car park and then walk to the Reception Desk.

I look forward to meeting you and your colleague tomorrow at 11.

Ben Anders, General Manager

Listening **4** 18 Listen to these telephone directions and mark the Engineering Department and the Sports Centre on the map.

Note: the university is in a country which drives on the left.



Speaking **5** Work in pairs, A and B. Give each other telephone directions to places on the map in 4.

Student A.
Turn to page 112.

Student B.
Turn to page 114.

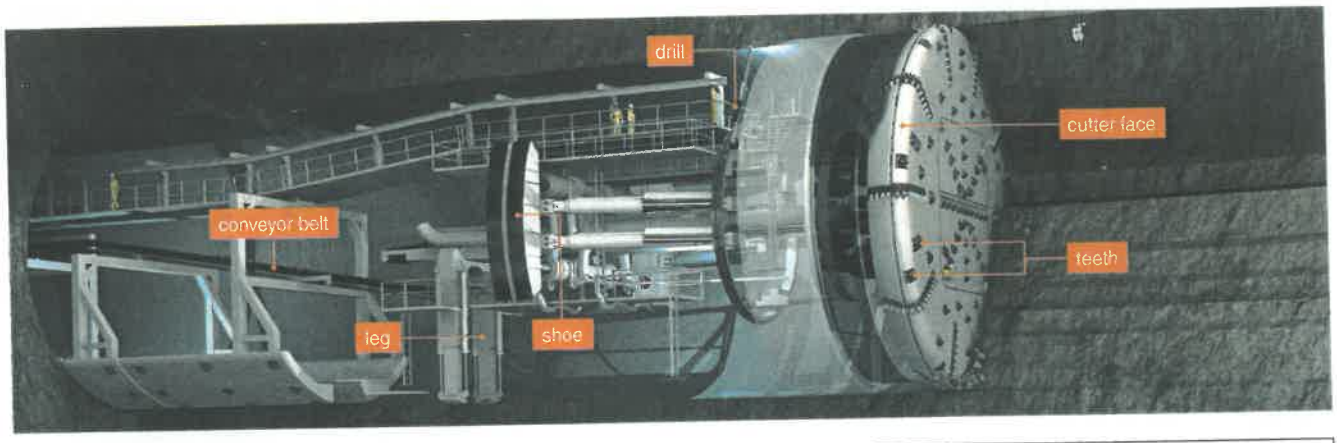
Task **6** Work in pairs. List three local places you know.

- Tell your partner how to get there.
- Listen to your partner's directions and draw sketch maps.
- Exchange maps with your partner and check the details.

Week 6

4 Processes

1 Infrastructure



Start here **1** What is this? What does it do? How does it work? Discuss with your partner.

Listening **2** 12 Listen and complete the specifications chart.

MB471/316 Tunnel Drill Specifications	
Length	
Diameter	
Speed	
Manpower needed	
Cost	

Reading **3** Read this article and put these headings in the correct place.

Collecting the rocks Controlling the movement Moving the cutter
Cutting the rock surface Strengthening the roof Supplying the electricity

THE MB471-316 TUNNEL DRILL – one of the largest hard-rock drills in the world

1 _____
The face of the cutter has 85 teeth. Each tooth is 60 cm long. The cutter face rotates about seven times a minute. When it rotates, the teeth cut large circles into the surface of the rock.

2 _____
Pieces of rock fall to the ground. They are collected by large scoops. They are then dropped into chutes. When the cutter face rotates upwards, the rocks fall onto conveyor belts. They are then carried to the rear of the machine.

3 _____
Hydraulic cylinders push the body of the cutter slowly forwards. As it moves forwards, steel shoes move outwards and grip the tunnel walls. At the same time, two legs push down and lift the machine off the floor.

4 _____
Fifteen electric motors supply the machine with 6,375 horsepower. The power is connected to the cutters by means of a 13,800-volt cable.

5 _____
There are two drills attached to steel arms. These are located immediately behind the cutters. When the machine moves forwards, holes are drilled into the roof of the tunnel. Then the holes are filled with bolts and cement. This strengthens the roof.

6 _____
The machine operator sits in a cabin at the heart of the machine. Here he/she controls its speed and direction. Video cameras monitor the cutter and the tunnel.

Vocabulary **4** Make a list of all the names of parts of the body and clothing in the text in 3.

5 List other technical contexts where the items in 4 are used.

Example: 'teeth' are also found on gears.

Language In an active sentence, the subject = the agent. The subject does the action.

Subject = agent	Active verb	Object
Hydraulic cylinders	push	the cutter.
Large scoops	collect	the rocks.

In a passive sentence, the subject is NOT the same as the agent. The subject does not do the action. The agent does the action to the subject.

Subject	Passive verb		Agent
	be	Past participle	
The cutter	is	pushed	by hydraulic cylinders.
The rocks	are	collected	by large scoops.

6 Change this set of instructions into a description of a process, using the passive and the words in the box.

finally first next now then

How to change the oil in a car

1 Run the engine for a few minutes.	5 Put the oil drain plug on
2 Switch off the engine.	6 Take off the oil filler cap.
3 Take off the oil drain plug.	7 Pour in the new oil.
4 Empty the old oil into a container.	8 Put the oil filler cap back on.

Begin: First the engine is run for a few minutes. Then it is switched off. Now the …

7 Make a set of instructions about a process you know about. Then rewrite it as a process description in the passive.

Examples of processes: food manufacture, steel making, canning, assembling computer components, manufacturing a CD, dairy processing.

8 Fill in the gaps, using the correct form of the verbs in brackets.

1 Large drills _____ (make) holes in the roof of the tunnel. Then the holes _____ (fill) with bolts and cement.
2 A large propeller _____ (push) the hovercraft forwards. The propeller _____ (drive) by a powerful engine.
3 Hot water _____ (flow) from the engine into the radiator. Here it _____ (cool) by the fan.
4 The robot _____ (monitor) by a computer. This computer also _____ (control) all the other robots in the building.
5 First, the rusty machine parts _____ (bring) into the factory. Then they _____ (clean). Then the rust _____ (remove). Next the parts _____ (paint). Finally, they _____ (take) out of the factory again.

9 Make a list of headings for the main stages of a process you know about. Make each heading begin with a verb ending in ***-ing***, like the ones in 3.

Example: Moulding and shaping steel – 1 Melting the steel; 2 Casting; 3 Cooling; 4 Rolling the steel; 5 Straightening; 6 Cutting.

10 Give a short talk to the class explaining your process. Use your headings.

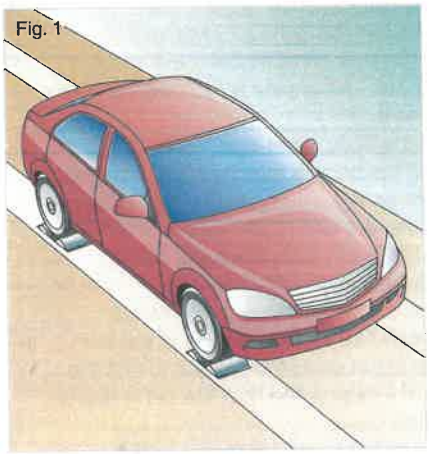
Week 7

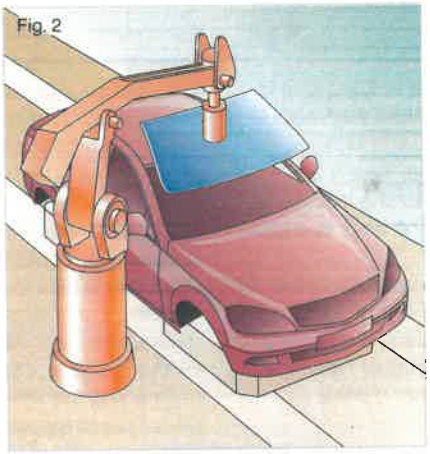
2 Manufacturing

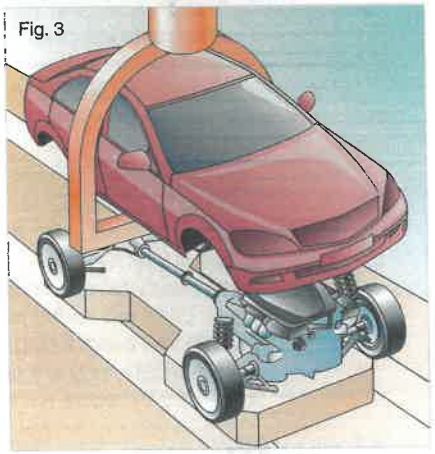
Start here

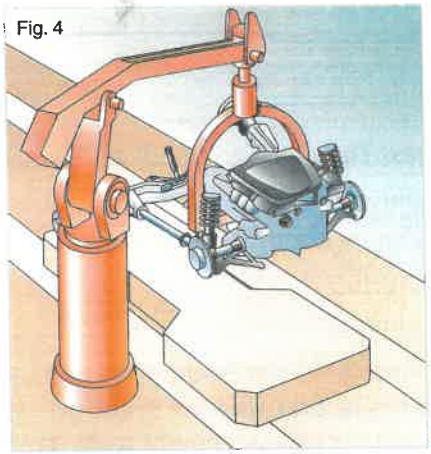
1 What do you know about cars? Discuss with a partner the location and function of these parts: *body*, *chassis*, *drive shaft*, *axle*, *transmission*.

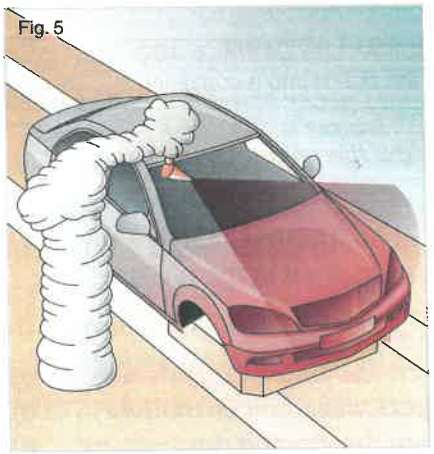
2 The photos show the main stages in assembling a car, but they are in the wrong order. Write the figure numbers in the correct boxes in the flow chart.

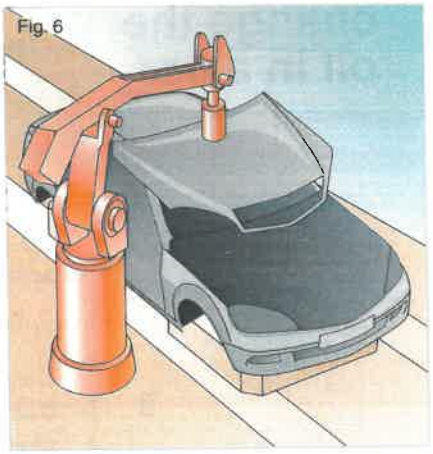


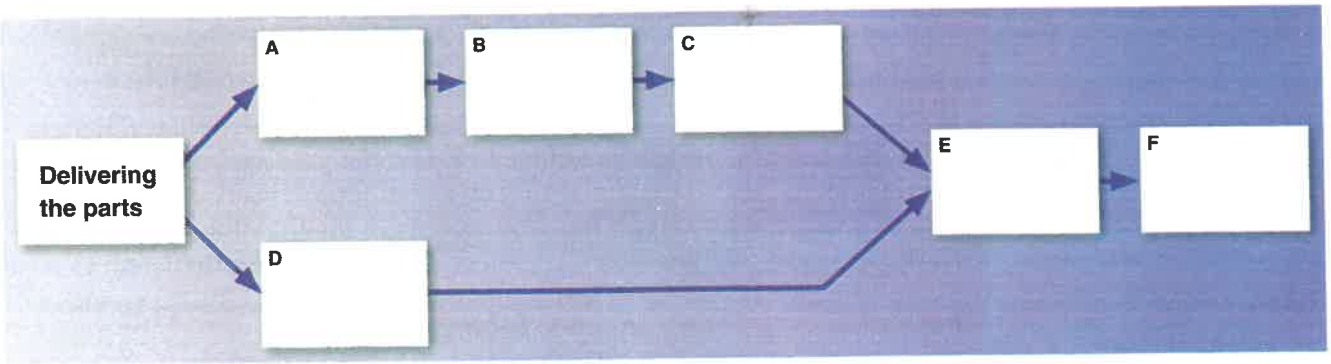












3 Make captions for the six photos with the verbs and nouns in the box. Use verbs ending in ***-ing***.

add attach install paint test weld body chassis finished car parts

Example: Fig 6. Welding the body panels to the body frame.

Reading **4** Read this website of a car company and check your answers to 2 and 3.

Assembling a car

First, the parts are delivered by truck or rail to the *delivery area* of the car assembly plant. From here, some parts are taken to the body shop, and other parts are transported to the chassis line. The parts are carried around the plant by forklift trucks or conveyor belts.

In the *body shop*, the panels are welded to the frame to form the body of the car. This is done by more than 400 robots.

Then the body is taken to the *paint shop*. Here it is cleaned and painted by robots. Special clothing is worn by the robots to protect the paint. After this, the body is checked by human workers to look for faults.

Next, the painted body moves along a conveyor belt to the *trim line* and many parts are added to it. For example, the instrument panel, the air conditioning system, the heating system and the electrical wiring are all installed here. The windscreen is inserted by robots using laser guides.

Meanwhile, in the *chassis line*, components are added to the chassis. First, the chassis is turned upside down, to make the work easier. Then the fuel system, the transmission, the suspension, the exhaust system, the axles and the drive shaft are all installed. Next the chassis is turned over (rightside up). The engine is lowered into the chassis and connected to it.

Now the chassis and the body move simultaneously to the *final assembly line*. Here the body is attached to the chassis, and all the final parts are added. The tyres and the radiator are added here. The hoses are connected, and the radiator and air conditioner are filled with fluid. The car's central computer is also installed here.

Lastly, the finished car and all electrical systems are tested. The car is filled with fuel and the engine is started for the first time. The car is put on special rollers to test the engine and the wheels. If it passes the test, the car is finally driven out of the assembly plant.

Language *to* + verb is used to talk or write about the purpose of an action.

Why do you paint the car body? To protect it from rust.
The car body is painted to protect it from rust.

Speaking **5** Match actions with their purposes. Refer to the text in 4.

	action		**purpose of action**
1	workers weld thin metal sheets to a frame	a)	to check the movement of the wheels
2	they turn the chassis upside down	b)	to make the car body
3	the robots wear special clothes	c)	to inspect it for faults in the paint
4	they turn the chassis rightside up	d)	to protect the wet paint from dust
5	workers put the finished car on rollers	e)	to install the fuel system easily
6	workers check the car body by hand	f)	to lower the engine into it

6 In pairs, ask and answer the questions in 5. Use the passive form in the question.

A: Why are thin metal sheets welded to a frame?
B: To make the car body.

7 Ask questions to get these answers. Refer to the text in 4.

1 They're delivered by truck or rail.
2 They're welded together in the body shop.
3 They're carried by forklift trucks or conveyor belts.
4 To look for faults in the paint.
5 It's done by human workers.
6 It's done using laser guides.

Week 8

5 Descriptions

1 Uses

Start here

1 Think of some tools or devices you use. Discuss why they are useful with a partner.

Reading

2 Read these advertisements and match the objects with their descriptions.

A

B

C

D

1 Use the X-beam wrench for loosening tight and rusty old bolts without hurting your hand. The ends are at ninety degrees to each other, so you always grip a wide, flat surface, not a narrow edge.

2 What do you do if your car battery goes flat in a storm, and you don't have jump leads or roadside assistance? The Black & Decker Simple Start allows you to start your car without getting wet. It plugs into the 12-volt socket in your car, and it's designed to restart your car in ten minutes.

3 This is designed to jump, dive, roll and move over and under water at 30 mph using a 175-hp engine. Innespace Sea Breacher is a two-seat, 5-metre long, underwater vehicle, shaped like a dolphin. It acts as a jetski and as a fast submarine.

4 Have you forgotten where you put your keys? Use this smart device to find them. Simply attach the electronic tag to your keys. Then, if you can't find them later, switch on Loc8tor, and it will point in the right direction – not only left or right, but up or down too. It will show you where your keys are. At the same time, the tag on your keys will emit a beeping sound.

Speaking

3 Discuss the objects in 2 with a partner. What do you think of them? Are they useful for you?

Listening

4 13 Listen to these inventors answering questions about their inventions. Identify the inventions.

a) Invention number _____
b) Invention number _____
c) Invention number _____

5 Listen again and complete the dialogues.

A: So, tell me about your invention. What's it for?
B: It's (1) _____.
A: OK. And what about this device. What's it used for?
B: It's (2) _____.
A: Tell me about this invention. What can it be used for?
B: You (3) _____.

Language

Present simple	*What does the carburettor do? It mixes air and petrol.*
for* + verb *-ing	*What's this tool for? It's for hammering in nails. What's this machine used for? It's used for producing drinking water.*
***to* + verb**	*You use this machine to charge batteries. This device is designed to find lost objects.*
***act as* + noun**	*The fan of a hovercraft acts as a propeller.*

Speaking

6 Work in pairs. Make questions and answers about the uses of the devices in 2.

A: What's this device used for?
B: It's used for turning nuts and bolts without hurting your hand.

7 What do you think these devices are used for? Discuss them with your partner.

Vocabulary

Many nouns end in *-er* or *-or*. These are often *agent nouns*. An agent noun shows the person or thing that does an action, e.g. A *calculator* (n.) is a machine. It *calculates* (vb.) sums.
Note these changes of spelling when you add *-er/-or*:

- double the final consonant after a short vowel. *Example: propel → propeller*
- delete the final *-e*. *Example: receive → receiver*

8 Find the agent nouns for the verbs in the box. Use a dictionary if necessary.

calculate conduct contain generate receive stabilise transmit

9 Fill in the blanks. Use nouns from the list in 8.

1 The number pad on a computer can be used as a _____ .
2 Your body can act as a _____ of electricity in a thunderstorm.
3 A car engine functions as a _____ when it recharges the battery.
4 The antenna on a mobile phone operates as a _____ and as a _____ of radio signals.

Task

10 Work in small groups. Choose one of these objects with your group.

a tin can, a belt, a brick, a tyre, a water pipe

- brainstorm as many unusual uses for them as you can
- write down your best ideas
- present your group's best ideas to the class

Examples: ***A tin can*** *– You can use it to store pencils. You can put flowers in it. You can use it as a cup. Two or three cans together can act as a door bell,* etc.

Week 9

1 Action

1 Teamwork

Start here

1 Discuss these questions with a partner.

- How many mechanics work in a pit-stop crew in a big race?
  a) about 4 b) about 10 c) about 20
- What jobs do they do? List the most important jobs.

Reading

2 Read this interview with the head of a pit-stop crew. Check your answers to 1.

Making every second count

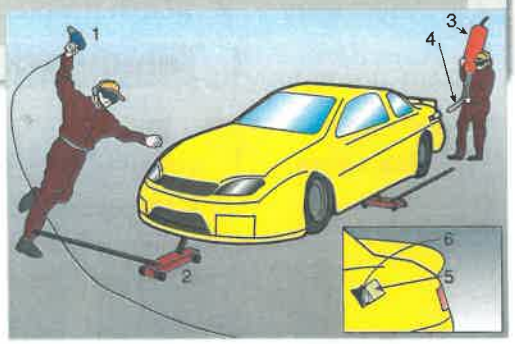
How do mechanics service a car so quickly in the middle of a car race? Will Peters is chief mechanic and crew leader of a pit-stop crew. Here he explains his work.

I'm the crew leader, and I have twenty mechanics in my crew. It's dangerous work, so we wear fire suits and safety helmets. I have five teams: *wheel-gun*, *wheel-on*, *wheel-off*, *wheel-jack* and *fuel*.

Every second is important in the middle of a race, so everyone moves quickly and works together as a team.

– 30 secs	I give the order: 'Get ready!' The four *wheel-on* mechanics bring out the new wheels. The tyres are still covered in warm blankets. The team leader adjusts the air pressure in the tyres.
– 10 secs	The car enters the pit lane, and slows down. The driver presses a button in his cockpit. This opens the fuel flap.
– 3 secs	The car approaches the garage. I signal to the driver: STOP. The driver slows down and drives towards the crew. The *wheel-gun* team leader signals with his hand, and the driver stops the car next to the wheel guns.

00:00 secs	The four *wheel-gun* mechanics run to the car. They loosen the nuts with their wheel guns. Then they move back quickly.
00:01 secs	The two *wheel-jack* team members run to the car, and place the jacks under the front and rear of the car. They raise the car off the ground and move back quickly.
00:01.5 secs	Then three members of the *fuel* team move forward. One carries the fuel nozzle, and the other two carry the fuel hose. (It weighs 40 kg!). The front fuel mechanic pushes the nozzle into the fuel socket on the car. They then switch on the fuel pump.
00:02 secs	The *wheel-off* mechanics move forward. They take the old wheels off and take them away quickly.
00:02.5 secs	Now the *wheel-on* guys move forward. They take the warm blankets off the new wheels, put the new wheels on the car, and move back quickly. On the other side of the car, another mechanic puts his arm into the cockpit and cleans the driver's visor.
00:03 secs	The *wheel-gun* guys move forward and tighten the nuts. Then they raise a hand to signal that everything is OK.
00:04 secs	The *wheel-jack* people lower the car to the ground and take the jacks away. Now everyone is waiting. The *fuel* guys are still pumping fuel into the car. They hold the fuel nozzle and hose in place until all the fuel is in the car.
00:05.5 secs	I signal to the driver: SELECT FIRST GEAR. He pushes the gear lever into first gear, and waits.
00:06.5 secs	The fuel pump switches off, and the fuel guys pull out the fuel nozzle. Another *fuel* team member cleans spilled fuel off the car, and moves back quickly. Immediately, I signal to the driver: GO.
00:07 secs	The car moves to the end of the pit lane. The driver presses the button to close the fuel flap.
00:10 secs	The car speeds up and leaves the pit lane. It's in the race again.



3 Label the parts.

flap hose jack nozzle socket wheel gun

4 Complete this checklist of instructions for each team.

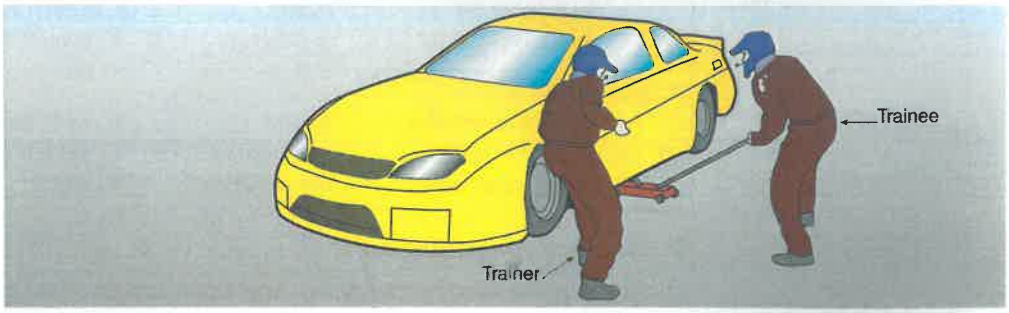
TEAM 1: WHEEL-JACK	
1	_____.
2	Raise the car off the ground.
3	WAIT
4	_____.
5	Take _____.
TEAM 2: WHEEL-GUN	
1	Loosen the wheel nuts on the old wheels.
2	WAIT.
3	Tighten the wheel nuts on the new wheels.
4	_____.
TEAM 3: WHEEL-OFF	
1	Take the old wheels off.
2	_____.

TEAM 4: WHEEL-ON	
1	Bring out the new wheels.
2	Adjust _____.
3	WAIT.
4	Take the covers _____.
5	_____.
TEAM 5: FUEL	
1	Push _____.
2	Pump _____.
3	_____.
4	_____.

2 Training

Start here

1 02 You are a trainee pit-stop mechanic. A trainer is giving you instructions. Listen and write numbers 1–10 to show the correct order of instructions.

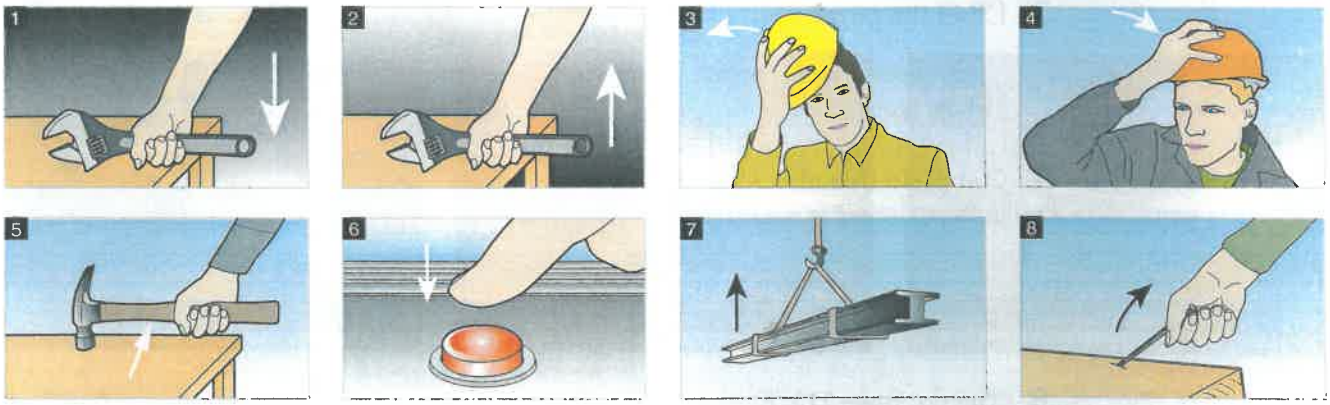


Tighten the wheel nuts.		Adjust the air pressure in the tyre.	
Raise the car with the jack.		Bring the new wheel out.	
Loosen the wheel nuts.		Put the new wheel on.	
Take the old wheel off.		Put the jack under the car.	
Take the old wheel away.		Lower the car and take the jack away.	

Vocabulary

2 Match the pictures with the verbs in the box.

lift up pick up pull out push in put down put on take away take off



Language

Imperative	Present continuous	Present perfect
Take the tyres off.	I'm taking the tyres off now.	I've taken the tyres off.
Take off the tyres.	I'm taking off the tyres now.	I've taken off the tyres.
Take them off.	I'm taking them off.	I've taken them off.
Not: ~~Take off them.~~	Not: ~~I'm taking off them.~~	Not: ~~I've taken off them.~~

3 03 Listen and respond to these instructions quickly. Confirm (a) what you are doing and then (b) what you have done.

Example: 1 (You hear) Bring out the new tyres. (You say) Right. I'm bringing them out now. OK, I've brought them out.

Speaking **4** Work in pairs. Make dialogues between a supervisor (S) and a trainee (T) from the checklists.

1	• put new tyres on • tighten wheel nuts • adjust air pressure	*done* *in progress* *not yet done*	4	• switch off electricity • test all circuits • find any faults	*done* *in progress* *not yet done*
2	• take cover off • repair computer • take out damaged chip	*done* *in progress* *not yet done*	5	• strip off old paint • plaster holes in wall • buy new paint	*done* *in progress* *not yet done*
3	• replace burnt wire • switch on power • check other wires	*done* *in progress* *not yet done*	6	• take apart telephone • put it together again • test it	*done* *in progress* *not yet done*

Phrases to gain more time:
Hang on. Just a minute.
One minute. Nearly finished.
Almost done.

S: How are you getting on?
T: I've put the new tyres on. I'm still tightening the wheel nuts. It's almost done.
S: OK, good. Have you adjusted the air pressure yet?
T: No, I haven't done that yet. I'll do it next.

Language *yet* is used with present perfect questions and negatives to emphasise the period of time up to now.

Has Bill finished that job yet? The speaker wanted or expected Bill to finish the job before now. *John hasn't cleaned the car yet.* The speaker wanted or expected John to clean the car before now.

Task **5** Work in small groups. Choose one of these car jobs. With your group, make a set of instructions for doing the job.


Changing a wheel


Cleaning a spark plug


Checking the oil level

6 Turn to page 111. Find useful instructions from the list. Revise your own set of instructions. Rewrite them if necessary, and make them short and simple.

7 Roleplay this situation with someone from another group with a different job.

Student A. You're the manager of a garage. You're showing a new trainee how to do the job. Tell the trainee how to do the job, but don't look at your set of instructions. Give instructions, and check how the trainee is getting on.
First of all, loosen the wheel nuts. Have you done that yet? Good. Right. Now lift up the car with the jack. OK? Well done.

Student B. You're a new trainee in the garage. Follow the manager's instructions. Mime the actions if you can. Tell the manager how you're getting on.
Hang on. Just a minute. No, not yet. I'm still loosening the wheel nuts. It's almost done. OK, I've finished. I've taken it off. What do I do next?

1 Action 2 Training

Task exercise 6 page 7

Find instructions for your job.

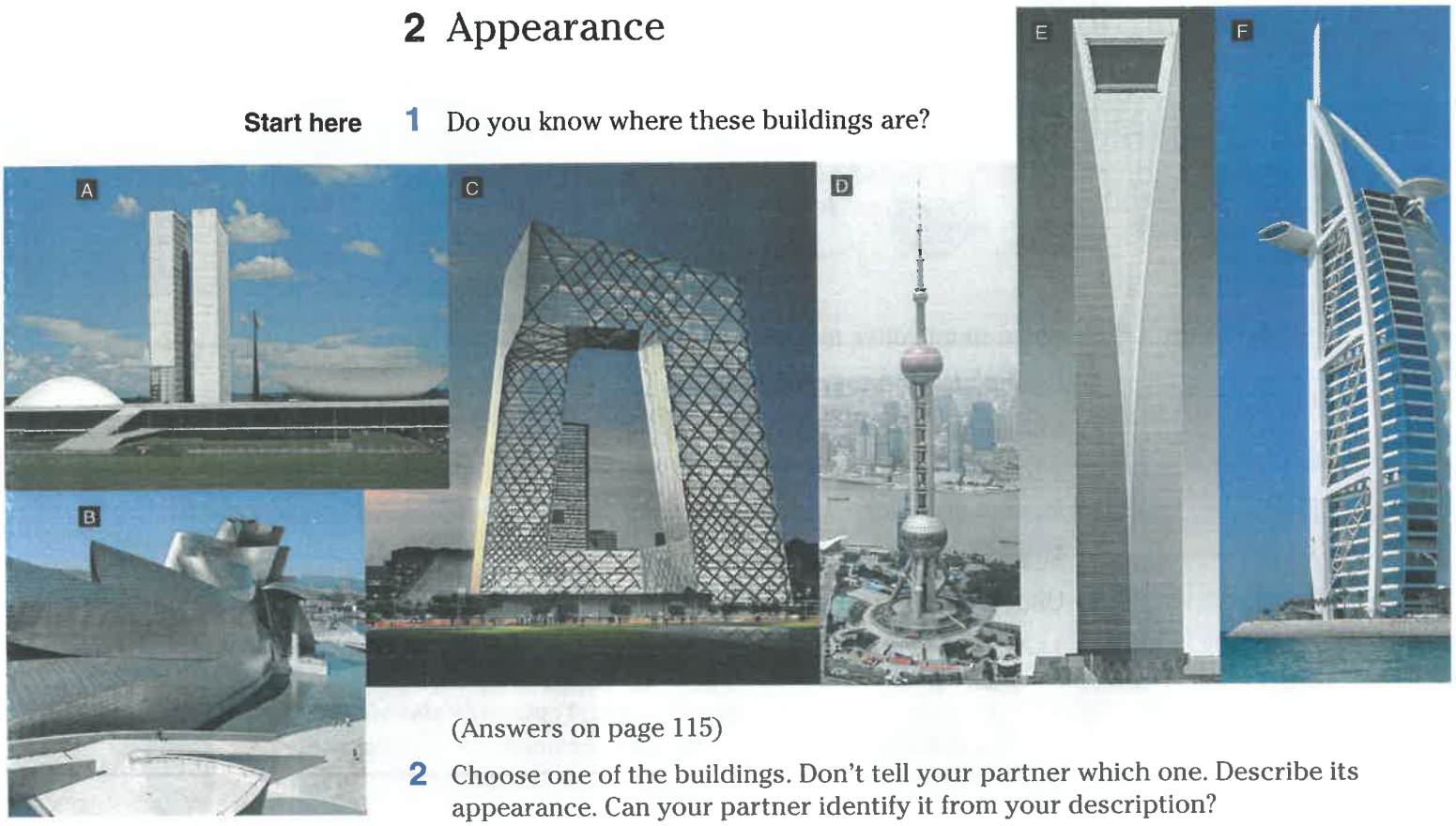
How to ...
change a wheel – clean a spark plug – check the oil level

Put the oil filler cap on.
Clean the spark plug.
Take out the dipstick.
Clean the oil off the dipstick.
Take off the spark plug cover.
Lift up the car.
Take out the dipstick again.
Loosen the spark plug.
Check the oil level.
Lower the car.
Loosen the wheel nuts.
Place a jack under the car.
Tighten the wheel nuts.
Take off the oil filler cap.
Put back the dipstick.
Switch off the engine.
Replace the spark plug in the socket.
Add some oil (if necessary).
Tighten the oil filler cap.
Put the new wheel on.
Remove the spark plug from the socke
Take away the jack.
Put on the wheel nuts.
Tighten the spark plug.
Replace the spark plug cover.
Take off the wheel nuts.
Take off the old wheel.

Week 10

2 Appearance

Start here **1** Do you know where these buildings are?



(Answers on page 115)

2 Choose one of the buildings. Don't tell your partner which one. Describe its appearance. Can your partner identify it from your description?

Reading **3** Read these newspaper cuttings. Match the descriptions with the buildings.

1 This building looks like a huge ship, an ocean liner, sailing up the river. One part of the building is shaped like three hulls. The other part looks like the decks and the bridge.

2 The building looks like a TV transmitter. It has three spherical structures. The bottom two are connected by a structure which is shaped like a ladder. It looks like three onions on a skewer! The foot of the building has legs, like a tripod.

3 It's triangular at the base, but thin and rectangular at the top. It looks like a huge chisel, with an empty space in the middle of the blade.

4 The skyscraper is shaped like a giant sail. The sail is standing on a short surfboard in the sea.

5 This building is in three parts. In the centre there's a tall H-shaped building. On the left there's the top part of a dome. It looks like an upside-down plate. On the right there's the bottom part of a dome, like a soup bowl.

6 It consists of three L-shaped structures, attached to each other. It looks like a square link in a chain.

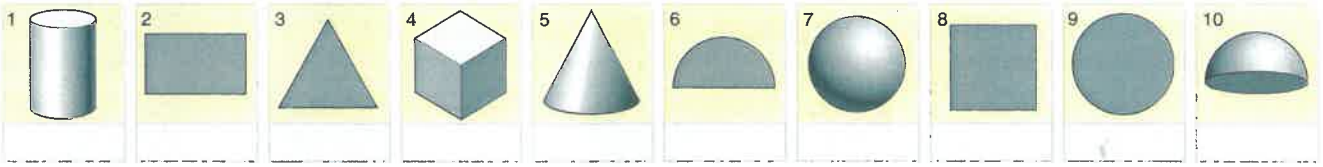
Language You can describe the *shape* or *appearance* of something in these ways:

- *The building* ***looks like*** *a TV transmitter.*
- *The building* ***is shaped like*** *a dome. It's a dome-****shaped*** *building.*
- *The plan is* ***in the shape of*** *an L. It's an L-****shaped*** *plan.*
- *The screen is* ***in the shape of a circle****. It's a* ***circular*** *screen.*

4 Describe the buildings in the photos in 2. Cover up the texts in 3.

Vocabulary **5** Match the nouns to the shapes.

circle cone cube cylinder hemisphere rectangle
semicircle sphere square triangle



6 Write an adjective for each noun.

Example: cylinder – cylindrical

7 Underline the stressed syllable in each word.

1	tri ang le	3	cir cu lar	5	tri ang u lar	7	rect ang le
2	rect ang u lar	4	cy lin der	6	circ le	8	cy lind ric al

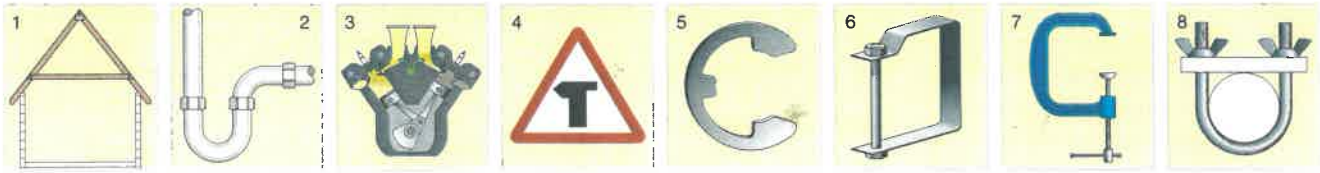
8 14 Listen and check your answers to 7.

9 Underline the correct words.

1 A surfboard sail is roughly *triangle/triangular* in shape, with one curved side.
2 A food tin (or can) is basically a metal *cylinder/cylindrical*.
3 TVs and computers normally have *rectangle/rectangular* screens.
4 Don't cut that wood with the hand saw. It's quicker to use the *circle/circular* saw.
5 My bass amplifier is the new *cube/cubic* model. It's exactly 30 x 30 x 30 cm.
6 The Earth is not a perfect *sphere/spherical*. It is flatter at the poles.
7 The spaceship's re-entry capsule is in the shape of a *cone/conical*.
8 A protractor is a *semi-circle/semi-circular* instrument for measuring angles.

10 Match the names of the objects in the box with their pictures.

A-frame E-clip G-clamp G-clip T-junction U-bend U-bolt V-engine



Task **11** Work in pairs, A and B. Play ***twenty questions***.

Student A: Think of an everyday object. It could be a vehicle, a tool, a measuring instrument or a useful device. Don't tell your partner what it is. Answer your partner's questions.

Student B: Ask a maximum of 20 questions and try to guess Student A's object. You can't ask directly *What is it?* But you can ask questions like these:

- **appearance:** *What does it look like? What colour is it? What shape is it?*
- **use:** *What's it for? What's it used for? What does it do?*
- **materials:** *What's it made of?*
- **dimensions:** *How long is it? How wide is it?*
- **properties:** *Is it flexible? Is it water-resistant?*

When you have finished, change roles.

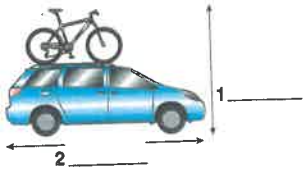
Week 11

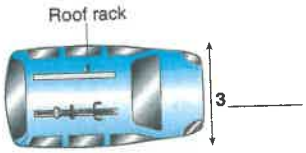
3 Comparison

1 Limits

Start here **1** What do these road signs tell you?

Listening **2** 09 A customer wants to drive her car onto a car ferry. Listen to her phone conversation with the sales staff of the ferry company. Complete the approximate specifications of the customer's vehicle on the left.

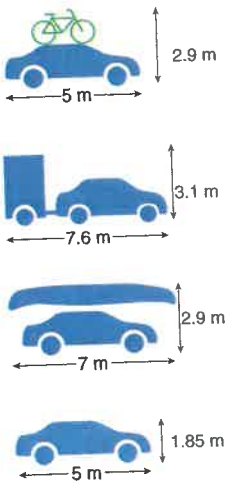




3 Listen again and complete the conversation.

- How (1) _____ ?
- It's just under (2) _____ metres wide.
- OK, that's fine. The vehicle must not be (3) _____ 2 metres.
- Great.
- (4) _____ ?
- It's exactly (5) _____ metres long.
- Please measure it again carefully. It must not be (6) _____ 7 metres.
- OK, I'll do that and get back to you.
- (7) _____ ?
- It's just over (8) _____ metres high, including the bicycles.
- Mm, that's too high. The vehicle must not be (9) _____ 2.9 metres.
- OK, I'll take the bikes off.

Reading **4** Read the SuperFerries web page. Which vehicles on the left can board the ferry? What are the vehicle types (*large car*, *standard car*, etc.)?



http://www.superferries.com

SuperFerries

Home Rates Schedules News About us Contact Search

SuperFerries is a cars-only service: we do not take coaches or lorries.

WEIGHT AND DIMENSION LIMITS FOR ALL VEHICLES

Vehicles must not be heavier than 3.5 tonnes. They must not be wider than 2.0 m, longer than 7.0 or higher than 2.9 m.

STANDARD CAR: A 'standard car' must not be longer than 5.0 m, wider than 2.0 m or higher than 1.85 m. It must carry a maximum of five passengers. If it carries more than five persons, it becomes a 'large car'.

LARGE CAR: A 'large car' must not be longer than 7.0 m, wider than 2.0 m or higher than 2.9 m. It must carry no more than nine passengers.

HIGH CAR: A 'high car' must not be higher than 2.9 m, longer than 5.0 m or wider than 2.0 m. It must carry a maximum of five passengers. This vehicle type allows passengers to put extra luggage on the roof of their cars, within the limits.

CAR AND TRAILER: A car and trailer must not be longer than 7.0 m, higher than 2.9 m or wider than 2.0 m. It must carry no more than nine passengers over the age of three.

Language

The comparative form of single-syllable adjectives ends in *-er*, e.g. *longer, wider*. Two-syllable adjectives ending in *-y* also end in *-er*, e.g. *noisy* → *noisier*.

Notice the spelling changes: *big* → *bigger*; *wide* → *wider*; *easy* → *easier*.

than is used after the comparative adjective, e.g. *The van is higher than the car.*

Irregular comparatives: *better, worse, farther/further, more* and *less*.

more + adjective is used with adjectives of more than one syllable, e.g. *more expensive*. *less* is used with all types of adjective, e.g. *less cheap, less expensive*.

If something is the wrong dimension for something, or above a limit, you can say: *The lorry is too wide for the bridge. The bridge is not wide enough for the lorry.*

5 Explain the problem.

The bridge is 2.7 metres high, but the lorry is 2.9 metres high. The lorry is too high for the bridge.

1 height of bridge: 2.7 m; height of lorry: 2.9 m
2 width of ship: 12.2 m; width of canal: 11.5 m
3 length of plane: 19.3 m; length of hangar: 18.8 m
4 diameter of CD: 12.2 cm; width of box: 11.3 cm
5 thickness of coin: 3 mm; width of slot: 2.88 mm
6 length of screw: 5.5 cm; length of hole: 4.35 cm

Task

6 Work in pairs. Read the text, then discuss the invention. Do you think people will buy it? Give your reasons. Make notes of your discussion.

- compare it with (a) a normal car and (b) a small aircraft
- list (a) its strengths and (b) its weaknesses

The road-ready plane

1 in flying mode

2 in car mode

You can park it in your garage, drive it to your nearest airfield, fly it to your destination, land it, then drive off the runway, along a road to your workplace. In the air, it has a wingspan of 8.4 m, a length of 5.7 m and a height of 2 m. It can fly at a speed of 185 kph for 740 km on a single tank of fuel. The tank holds 76 litres of super-unleaded petrol. In car mode, it can go 17 km per litre of fuel, and can travel at normal car cruising speeds, but it has only two seats and no space for luggage. The cost of the road-ready plane is approximately £75,000.

Writing

7 Work individually. Reply to this email from your company director. Use the notes from your discussion.

Hi Bob
What do you think about the road-ready plane? Could you put a few ideas in an email to me? Perhaps you can use these headings:

1 What it can do.
2 What it can't do.
3 Comparison with small plane.
4 Comparison with car.
5 Main strengths.
6 Main weaknesses.
7 Recommendation (that is, should we buy one for our company executives?)

Thanks. Tom.

3 Equipment

1 07 Read the quiz and circle your answers. Then listen and check.

1 How far away is the nearest star?
a) 3.46 b) 4.24 c) 4.36 light years away.

2 How deep is the deepest part in the world's oceans?
a) 6,742 metres b) 8, 213 metres c) 10,911 metres

3 On the Mohs scale of mineral hardness, which of these materials is the hardest?
a) silver b) glass c) iron

4 Which of these gases is the least common in the atmosphere?
a) oxygen b) hydrogen c) nitrogen

5 What was the hottest temperature on Earth, recorded in 1922?
a) 49° Celsius b) 53° Celsius c) 58° Celsius

6 What was the coldest temperature on earth, recorded in 1983?
a) –78° Celsius b) –89° Celsius c) –97° Celsius

2 08 **Listen and complete** the sentences.

1 The nearest star _____ is called Alpha Centauri. It's _____ and can be seen from the southern hemisphere.

2 A _____ ship sent down an _____ probe to the deepest point on the seabed at a place called the Marianas Trench in the _____.

3 The Mohs scale of mineral hardness _____. It ranges from talc, which is _____ on the scale, to diamond, which is _____. Silver is _____ of the three materials and glass is _____.

4 The _____ of these three gases is nitrogen. Hydrogen is _____ than oxygen and is _____ of these three gases.

3 Read the headings in the specification table for four luxury yachts, then delete the wrong answers below.

NAME	COST	LENGTH	TOP SPEED	MAX GUESTS	NO. OF CREW
Alysia	$116.7m	85.3m	33kph	36	34
Oceanco 702	$111.8m	82m	35kph	12	28
O'Mega	$64.1m	82.6m	30kph	32	–
Sherakhan	$55.4m	69.8m	10kph	26	–

1 Sherakhan is the (*most / least*) expensive of the yachts.
2 Oceanco 702 is (*as expensive as / not as expensive as*) Alysia.
3 The second longest yacht is (*Sherakhan / O'Mega / Oceanco 702 / Alysia*).
4 Alysia is the (*fastest / second fastest / slowest*) of the yachts.
5 (*More / Fewer*) guests can stay on O'Mega than on Alysia.
6 There are (*fewer / more*) crew members per guest on Alysia than on Oceanco 702.

Week 12

3 Definitions

Start here

1 Here are some ideas for devices that appeared on a TV programme for inventors and entrepreneurs. Which ideas do you think were successful? Discuss with a partner.

(Answers on page 113)

- Are you a technical entrepreneur?
- Do you have a good idea for inventing and manufacturing a new device?
- Do you think you can sell your device and make a profit?
- Do you need money to start your business?

Explain your idea to a team of rich business experts – the Dragons. Try to persuade them to invest their money in your idea. Here are some ideas from previous programmes:

1 An electronic device for boiling eggs without using water.
2 A boat alarm system for finding an MOB (man overboard).
3 A music website for downloading and mixing dance music.
4 A seat belt adjuster for protecting children in car booster seats.

Listening

2 15 The four inventors in 1 are making their opening statements. Listen and complete the sentences with ***which***, ***who*** or ***that***.

1 My invention is an electronic device (1) _____ can boil eggs without using water.
2 LifeGuard is an alarm system (2) _____ can find someone (3) _____ has fallen off a boat.
3 This is a music website (4) _____ allows you to download and mix dance music.
4 It's a seat belt adjuster (5) _____ protects children in car booster seats.

Language

Word	*be*	Type	Defining relative clause	
			Pronoun	Function
LifeGuard	is	an alarm system	which	can find an MOB.
MusicWorld	is	a website	that	downloads dance music.
Inventors	are	people	who	create new devices.

- *which* is used with things
- *who* is used with people
- *that* can replace *which* or *who*

Vocabulary **3** Fill in the blanks with the most suitable 'type' noun in the box.

device instrument system technician tool vehicle

1 A solar panel is a/an _____. It converts sunlight into electricity.
2 The hovercraft is a/an _____. It carries people over land and sea.
3 A lab assistant is a/an _____. He or she maintains the equipment in a laboratory.
4 A torque wrench is a/an _____. It tightens nuts and bolts.
5 GPS is a satellite _____. It gives the location of objects on the ground.
6 An ammeter is a/an _____. It measures electric current.

4 Combine each pair of sentences in 3 into a single sentence in the form of a definition. Use ***which***, ***who*** or ***that***.

Example: 1 A solar panel is a device which converts sunlight into electricity.

Reading **5** Read this advertisement and answer the questions below.

Alarm pods

Hydrophone

Display

This digital-sonar alarm system transmits a signal to your boat crew if you fall overboard into the water. It consists of three devices: the alarm pod, the hydrophone and the display.

The alarm pod is an egg-shaped device, worn by each crew member, which transmits a digital-sonar coded signal when it is submerged in water.

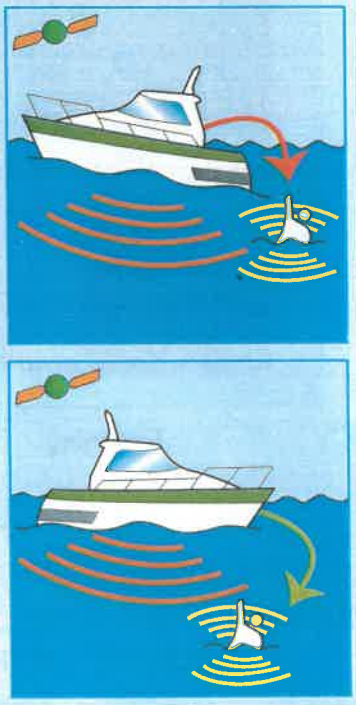
The hydrophone is a transducer, attached to the inside of the boat hull, that listens for signals from the alarm pod.

The display is a control unit, attached to the dashboard of the boat, which shows information from the hydrophone by means of LEDs and digital displays.

When the MOB (man overboard) hits the water, the alarm pod is submerged. The alarm pod has two pins. If these pins are in contact with water for one second, and the contact is constant across the two pins, the pod is activated. It then sends a signal under the water. This signal is picked up by the hydrophone, which relays it to the display.

Four things then happen immediately:

- Bright LEDs in the display show a visible alarm.
- Speakers on the boat sound an audible alarm.
- The MOB's location is shown on the display via the internal GPS system.
- Red and green LEDs navigate the boat to the MOB's location.



1 Which device acts as (a) the transmitter (b) the receiver (c) the controller?
2 Which device is fixed (a) inside the hull (b) on the crew's body (c) on the deck?
3 What happens if drops of rain fall on the pins on the alarm pod? Does the alarm sound? Why/Why not?
4 Does the signal travel from the pod to the display unit (a) directly (b) via the hydrophone (c) via GPS (satellite)?
5 Which word in the text means (a) able to be seen (b) able to be heard?

Task **6** Work in small groups. Decide on an idea for a new invention. In a single sentence, give the definition of your device. Then, in a few sentences, explain how it works.

Sample Final Test for the Course English for Mechanical Engineering 3

Time: 80 minutes

Section A - LISTENING

You will hear a short recording. Answer the questions, complete the gaps and decide whether the sentences are true (T) or false (F). You will hear the recording twice.

Sears Tower

1) In which year was the Sears Tower built? _____

2) New York´s World Trade Center towers were 25 metres taller. T x F

3) How high is the Sears Tower? _____

4) The Sears Tower´s antennas are not included in the total height of the building. T x F

"The Sears Tower is still the (5) _____ Chicago skyscraper. The building consists of nine framed tubes, which are actually nine skyscrapers put together (6) _____ one building. Originally, the plan included (7) _____ tubes…."

8) How many stories do all nine tubes have? _____

9) A lot of tourists visit the Sears Tower´s skydeck. T x F

10) When did Sears sell the building? _____

	10

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OP Vzdělávání pro konkurenceschopnost
ZÁPADOČESKÁ UNIVERZITA V PLZNI
INVESTICE DO ROZVOJE VZDĚLÁVÁNÍ

Section B – USE OF ENGLISH

1. Conversation

Complete the gaps in the short dialogues using the most suitable phrases, sentences or questions.

1) A: Can I speak to Phoebe Norton?

B: I´m _____.

2) A: How _____?

B: Turn left and my office is next to the copy machine.

3) A: _____?

B: A TV is rectangular.

	6

2. Questions

Make questions. Ask about the underlined information.

1) The technician checks the device <u>every six months</u>.

_____?

2) The ship is <u>200 meters</u> long.

_____?

	4

3. Gap-filling

Fill in the gaps with the most suitable word. Use ONE word only.
Contracted forms such as don´t, didn´t ... = 1 word.

1) The CD is _____ big as the DVD.
2) Robin will start cleaning a new tool _____ five minutes.
3) Please _____ turn off the light. I want to read.
4) A spanner is used _____ tightening bolts.
5) Were you driving a car or did you come _____ bus?

	5

4. Gap-filling
Complete each sentence with a suitable word from this list. Choose 7 of the 10 words.

boarding	**Europe**	**flight**	**remove**	**at**	**field**
on	**European**		**wide**	**width**	

1) The laboratory is situated _____ the third floor.
2) Austria is a _____ country.
3) What is the _____ of the garage? I want to buy a new car but I don´t know if it will fit inside.
4) When the paper is jammed in the printer, it´s best to _____ it.
5) There are no classes _____ Christmas.
6) To get on the plane, you need to have a _____ pass.
7) My sister´s _____ of study is Machine Design.

	7

5. Multiple-choice
Circle the letter of the correct option to fill in the gap.

1) The bucket is attached to the string and _____ a swinging motion.
A) maked B) makes C) making D) make

2) This new grinding machine is_____ than the older one.
A) reliable B) most reliable C) less reliable D) reliabler

	2

Section C – READING **Read the text and complete the tasks below.**

How a Piano Works

A piano is an instrument with a keyboard and strings which is designed to produce a lot of musical tones. The main parts of the piano, in particular the grand piano, are the cast iron frame, the pin block, the bridge, the soundboard, the case, the keyboard of 88 keys (52 white and 36 black), the action, and the pedals, as well as the 220 to 240 strings.

The way all of these parts work is very complicated. The first thing is the depression of a key by the pianist. The pressing of the key causes the mechanism to lift levers and depress points of the action, leading to the hammer striking the string. The string then vibrates and the sound is heard for a period of time; it is influenced by a pedal which is pressed by the pianist. The first pedal softens the music by shifting the action. The second pedal shortens the length of time of the note by quickening the attack. The *sostenuto,* the third pedal, lengthens the time of sound heard. The *sostenuto* is mostly used when playing many bass or lower end notes. The strings vibrate across the soundboard to the bridge. The soundboard, cast iron frame and case hold the sound as it flows through and then out of the piano. With the top up, the sound coming out of the piano has not only high tone quality, but also good resonance. The resonance is affected by the wood used in creating the piano. If the wood is of high quality, the resonance is great, but if the piano is poorly constructed with a weak wood, the resonance of the sound will also be of poor quality. If the top of the piano is down, the music is certainly quieter but also has more resonance.

Adapted from: Wolfe,K. (2004)

1. Answer according to the text.

1) What are the main components of a piano? (name at least 3)

_____

2) What is the basic principle of creating one tone of the piano?

_____

3) How does it happen that the string vibrates?

_____

2. Are these statements true (T) or false (F)?

4) Thanks to *sostenuto*, the sound can be heard longer. T x F

5) The quality of wood has no effect on the piano sound. T x F

6) If you do not want the music to be loud, put the top of the piano down. T x F

3. Find the words in the text which have a very similar meaning to the following words.

7) pushing down on _____

8) make, create _____

4. Briefly explain IN YOUR OWN WORDS what it means.

9) quickening _____

10) to lift _____

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