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# Technical English

## Basics

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Lösungen  
3. Auflage

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Das vorliegende Buch wurde auf der Grundlage der neuen amtlichen Rechtschreibregeln erstellt.

3. Auflage 2008

Druck 5 4 3 2 1

Alle Drucke derselben Auflage sind parallel einsetzbar, da sie bis auf die Behebung von Druckfehlern untereinander unverändert sind.

ISBN 978-3-8085-7198-9

© 2008 by Verlag Europa-Lehrmittel, Nourney, Vollmer GmbH & Co. KG, 42781 Haan-Gruiten  
<http://www.europa-lehrmittel.de>  
Umschlaggestaltung: tiff.any GmbH, Berlin  
Layout und Satz: tiff.any GmbH, 10999 Berlin  
Druck: Druckerei Raimund Roth GmbH, 42655 Solingen

# 1 Visiting people abroad

## Activity 1, page 7: Comprehension

1. LEONARDO is a language learning programme offered by the EU. It supports exchange visits of students to other countries of the EU.
2. Hanover and Bristol are twin towns.
3. Frank's hosts live in a suburb of Bristol.
4. They are training for different jobs in mechanical engineering.
5. It means you get your theoretical and practical training at different places.
6. The English students get their practical training at different firms in and around Bristol.
7. The English trainees get their theory training at a vocational college.

## Activity 2, page 9: Finding information in a text

- a) Bristol is situated in south-west England. It is an industrial city with about 500 000 inhabitants. It is twinned with Hanover in Germany. There are a number of modern industries in Bristol. It has a very rich history and a lot of buildings remind of Bristol's former Glory. Clifton Suspension Bridge was built by Isambard Kingdom Brunel. Bristol is also a multicultural city. There are a lot of activities and festivals in and around Bristol every year.
- b) I live in a place called ... It is situated about 100 km south of Hanover in Germany. ... is a village in a rural area and has about 1600 inhabitants. There is no industry in our village but the surrounding area is very beautiful. Our local sports club offers a large variety of activities for young and old people. ...

## Activity 3, page 9: Vocabulary

- |                      |                          |
|----------------------|--------------------------|
| 1. estuary           | 7. suburb                |
| 2. inhabitants       | 8. skills                |
| 3. base/headquarters | 9. suspension bridge     |
| 4. leading           | 10. constructor/engineer |
| 5. aircraft          | 11. gorge                |
| 6. supersonic        | 12. steam                |

## Activity 4, page 9: Translation

1. Bristol is a very lively industrial town in south-west England.
2. Bristol has a long history, which is closely connected to seafaring.
3. The colonies in America were supported from here.
4. Today Bristol has more than half a million inhabitants and is an important industrial city.
5. Clifton Suspension Bridge is an important building, which spans the river Avon at a height of 245 feet.

### Activity 5, page 10: Answering questions

1. Mrs. Honeywell is the principal of City of Bristol College.
2. The college is the third largest in the UK. It was formed by a merger of three colleges. City of Bristol College offers a large variety of full time and part time courses.
3. It is a modern college and has excellent facilities. For example, they have modern computers and other learning equipment as well as a large library with about 50 000 books, a large number of magazines and CDs and of course PCs with full internet access.
4. The answer can't be found in the text. Individual answers.
5. Students of the Home Economics Department prepared the buffet.
6. They come together to discuss the programme for the week.

### Activity 6, page 11: Answering questions

1. Eileen comes from a village near Bristol called Easter Comptom.
2. She does an NVQ course at a firm called "Click-Clock".
3. The firm produces cardboard packaging machines.
4. John Granger works at British Aerospace in Filton.
5. They have to go back to their room because they are getting some information about the programme for the week.

### Activity 7, page 12: Introducing oneself

My name is .... I'm 19 years old. I live in a village about ... km south of .... I am a trainee structural mechanic with a firm called .... Once a week I attend a vocational college in .... where I get my theoretical training. I still live with my parents because I don't earn enough money to afford a flat of my own. After my training I want to study mechanical engineering at the Fachhochschule. My hobbies are playing football and breeding chicken.

### Activity 8, page 12: Completing a dialogue

1. What would you like to drink?
2. Anything to eat?
3. I have.
4. I have never been to Germany.
5. Have you got/Do you have your own flat?
6. What do your parents do?
7. Have you got brothers or sisters?
8. Where do you live, Frank?
9. And have you got brothers or sisters?
10. And you? What are you going to do?
11. And where are you going to study?
12. And what about you?
13. What is that?

### Activity 9, page 13: Writing a dialogue

- Eileen: Frank, you told me you are training to be an industrial mechanic at VW. Can you tell me what exactly you do there?
- Frank: I have to do a lot of things. As an industrial mechanic you work in maintenance and repair. Our main job is to keep the machinery in good condition. We have to do all the necessary maintenance work, or in case of a failure we have to find out what is wrong and repair it as fast as possible.
- Eileen: I see, it seems to be a very responsible job.
- Frank: Oh yes. And sometimes we are very busy.
- Eileen: What about your home town Hildesheim, what is it like?
- Frank: It's a nice town. It's not too big, but we have all the facilities you need.
- Eileen: Lucky you! My home village is boring at times. Fortunately, Bristol is not too far away. At weekends I regularly meet friends there and we go to the disco together.
- Frank: So you know some nice places here in Bristol. What about going out together with some people of our group? Shall we arrange something for Friday evening?
- Eileen: Good idea, we can ask John and his girlfriend and some others, too. The "Louisiana" is a good place to go to. Not too expensive and not too noisy either.
- Frank: Okay, let's meet there at nine p.m.

### Activity 10, page 13: Writing a report

Eileen is a trainee toolmaker at "Click-clock" in Bristol. She lives together with her parents in a village near Bristol called Easter Compton. She has never been to Germany but she is planning to go there the following year. After her apprenticeship she wants to study mechanical engineering in Bristol.

Frank is a trainee industrial mechanic at VW in Hanover. He is in his third year. He lives at his parents' house in a suburb of Hildesheim. He has already been to England but he has never been to Bristol before. He also wants to study mechanical engineering.

### Activity 11, page 14: Answering questions

1. They sent him a letter in which they invite him to come and visit them.
2. The general direction he has to go is north.
3. He has to leave the motorway at junction 12.
4. His friends' home is about three miles away from the motorway.
5. They live in Peregrine Close in Quedgeley, which is a suburb of Gloucester.

## Activity 12, page 15: Translation

1. Take the motorway to the North.
2. Drive to the West at junction 14.
3. Turn right at the third traffic light.
4. After two km you will see a roundabout in front of you.
5. Drive into the roundabout and turn towards Cheltenham at the second exit.
6. Follow this road for about half a mile.
7. Then drive straight on at the next traffic light.
8. Turn left at the next traffic light.
9. Turn into Gloucester Road after 200 metres.
10. Look to the left and you will see our house.

### Hinweis: The North/the north

“North” wird groß geschrieben, wenn der nördliche Landesteil gemeint ist. Handelt es sich hingegen um die Himmelsrichtung, schreibt man “north” klein.

The North: the northern part of a country

**Example:** The North will be dry and bright.

The north: in the north or facing the north

**Example:** The north side of the building does not get much sun.

## Activity 13, page 16: Describing the way

- a) Drive down Mayville Avenue towards the roundabout. Leave the roundabout at the third exit and drive into Meadowsweet Avenue. At the next crossing there is a church at the left corner. Turn right there and stay on this road until you come to the A 4147. Turn left into Station Road and follow this road until you come to a big roundabout. Leave the roundabout at the opposite side. The road is now called Filton Road. Stay on this road which is later called Avon Ring Road. It leads you directly to the motorway M 32.
- b) You end up at Bristol Parkway Station
- c) Leave the M 32 at junction 1. Turn right into Avon Ring Road and follow this road. It is later called Filton Road. Drive straight on until you reach a roundabout. Leave this roundabout at the opposite side and carry on until you reach a railway line. Drive under the railway bridge and leave the A 4147 at the next road to the right. Turn right again and after a bend you will see Filton Station to the right.

## 2 Cars and Tools

### Activity 1, page 19: Which car parts do you know?

No.	English	German
1.	headlight	Scheinwerfer
2.	indicator	Blinklicht
3.	bonnet	Motorhaube
4.	windscreen wiper	Scheibenwischer
5.	wing mirror	Seitenspiegel
6.	boot	Kofferraum
7.	number plate	Nummernschild
8.	wing	Kotflügel
9.	exhaust pipe	Auspuff(rohr)
10.	bumper	Stoßstange
11.	tyre	Reifen
12.	fuel gauge	Tankanzeige
13.	speedometer	Tacho
14.	steering wheel	Steuerrad
15.	gear stick	Schalthebel
16.	handbrake	Handbremse
17.	ignition switch	Zündschloss
18.	accelerator	Gaspedal
19.	brake pedal	Bremspedal
20.	clutch	Kupplung

### Activity 2, page 21: Understanding the text

- a) 1. False. They are repairing the car at Drake's Garage.  
 2. False. Keith has got trouble with his battery.  
 3. True.  
 4. False. There was no need to replace any fuse.  
 5. True.  
 6. False. It is Keith who believes that the alternator does not work.  
 7. True.
- b) 1. – f)  
 2. – a)  
 3. – d)  
 4. – c)  
 5. – b)  
 6. – e)
- c) Possible answers: spanner, ratchet, Phillips screwdriver, bladed screwdriver, hammer.

### Activity 3, page 21: Vocabulary

1. fuse
2. alternator, generator
3. spanner, ratchet
4. battery
5. relay
6. scrap yard
7. twice

### Activity 4, page 21: Translation

1. I don't need an open-jawed spanner. Please hand over a ring spanner.
2. I have (already) changed/substituted the battery twice.
3. Where did you buy the battery?
4. A new alternator is quite expensive, isn't it?
5. The new battery is flat again.
6. Overloads can damage the alternator/generator.
7. Two relays don't work.

### Activity 5, page 22: Working with tools

- |    |  |    |  |
|----|--|----|--|
| a) | <ol style="list-style-type: none"><li>1. Ringschlüssel</li><li>2. Maulschlüssel</li><li>3. Feile</li><li>4. Meißel</li><li>5. Knarre/Ratsche</li><li>6. Nuss</li><li>7. Seitenschneider</li><li>8. Schraubstock</li><li>9. Messschieber</li><li>10. Schraubendreher</li><li>11. Inbusschlüssel</li><li>12. (Flach)Zange</li><li>13. Steckschlüssel</li><li>14. Lötkolben</li><li>15. Multimeter</li><li>16. Kreuzschlitzschraubendreher</li><li>17. Hobel</li><li>18. elektrische Bohrmaschine</li><li>19. Kneifzange</li><li>20. Säge</li></ol> | b) | <ol style="list-style-type: none"><li>1. ring spanner, open-ended spanner</li><li>2. ring spanner, open-ended spanner, torque wrench</li><li>3. socket wrench</li><li>4. multimeter, screwdriver, soldering iron</li><li>5. hammer, chisel, side cutter, screwdriver, knife, electric drill</li><li>6. hammer, pair of pincers, saw, plane, electric drill</li></ol>                         |
|    |  | c) | <ol style="list-style-type: none"><li>1. tighten/loosen hexagonal nuts</li><li>2. tighten/loosen screws</li><li>3. solder wires or electronic components</li><li>4. cut wires</li><li>5. measure voltage/electric current</li><li>6. drive nails into wood/walls</li><li>7. saw wood/shorten wooden boards</li><li>8. pull nails out of wall/wood</li><li>9. drill holes into wall</li></ol> |

### Activity 6, page 23: How to exchange an alternator

Step No.	Action	Tool
1.	Clamp ground from battery	open-ended spanner/ring spanner
2.	Loosen and remove fan belt	open-ended spanner/ring spanner
3.	Remove all plugs and wires from the back of the alternator	screwdriver, pliers
4.	Unscrew alternator	open-ended spanner/ring spanner
5.	Put in new alternator and fasten screws with torque key	open-ended spanner/ring spanner/torque key
6.	Insert all plugs	pliers
7.	Put in fan belt and tighten it	open-ended spanner/ring spanner
8.	Connect ground to negative pole of battery	open ended spanner/ring spanner

### Activity 7, page 23: How to give a jump start correctly

- |               |                  |               |
|---------------|------------------|---------------|
| 1. batteries  | 5. connect       | 9. damage     |
| 2. voltage    | 6. metal part    | 10. defective |
| 3. jump-leads | 7. negative pole | 11. remove    |
| 4. unloaded   | 8. switch on     |               |

### Car quiz, page 24

- |                    |                      |           |
|--------------------|----------------------|-----------|
| 1. windscreen      | 6. accelerator       | 11. brake |
| 2. ignition switch | 7. bumper            | 12. wing  |
| 3. clutch          | 8. hood              | 13. tyre  |
| 4. fuel gauge      | 9. exhaust pipe      |           |
| 5. indicator       | 10. windscreen wiper |           |

#### William Durant

Durant, William C. (1861–1947): The founder of General Motors Corporation. Durant began his career with a horse-drawn carriage company in 1886 and took over Buick in 1904, forming the General Motors (GM) Company in 1908. He lost control in 1910 to Chevrolet but regained ownership in 1915. He was forced out for good in 1920 and founded his own company, Durant Motors, Inc., in 1921.

# 3 Measuring

## Activity 1, page 27: Understanding the text

1. The lady in the weather forecast talked about six inches of rain.
2. Tobias was reminded of his school where he heard about the differences between the metric system used in Germany and the imperial system used in Great Britain.
3. Sarah says that in everyday life everybody talks about inches, feet, pints, and Fahrenheit.
4. Sarah mentions feet (talking about the height of a person), pint (drinking beer in a pub), and degrees Fahrenheit (measuring temperature).
5. Individual answers, e.g.:
  - Square inch = 6,45 cm<sup>2</sup>
  - Yard = 91,44 cm
  - Mile = 1,6 km
  - Pound = 453,59 g
  - Gallon (GB) = 4,54 l
  - Gallon (US) = 3,78 l

## Activity 2, page 28: Imperial versus metric measures

- a)
1. Six inches: 25.4 mm times 6 equals 152.4 mm.
  2. Six feet two: 30.5 cm times 6.2 equals 189.1 cm.
  3. A pint of beer equals 0.57 litre.
  4. 66.2 degrees Fahrenheit equal 19 degrees Celsius:  
$$^{\circ}\text{C} = (^{\circ}\text{F} - 32) \times \frac{5}{9}$$
$$x \text{ } ^{\circ}\text{C} = (66.2 \text{ } ^{\circ}\text{F} - 32) \times \frac{5}{9}$$
$$x = 19$$
- b)
1. 50 m = 166.7 feet
  2. 163 cm = 5.34 feet
  3. 20 °C = 68 °F
  4. -15 °C = 5 °F
  5. 1 l = 1.75 pints
- c)
1. imperial
  2. pint
  3. Celsius
  4. plus

## Activity 3, page 29: Comprehension

- a)
1. commonly
  2. manufactured
  3. similarity (oder: if two things are similar)
  4. more precise

- b)
1. The system used worldwide is the International System of Units.
  2. A common measuring system is necessary because people in business and industry must know whether their manufactured goods achieve certain qualities.
  3. Length first was based on a defined unit. Scientists used a special bar as the defined unit for a meter.
  4. Now length is defined more precisely. One meter is defined as the distance which light moves in a vacuum in  $\frac{1}{299\,792\,458}$  of a second.

### Activity 4, page 30: Translation

1. Many centuries different measures were used worldwide never having caused any problems.
2. The metric system is suited best for modern industry and international business (connections).
3. All units of measurement are based on only a few fundamental (basic) units.
4. Velocity, for example, is based on length (distance) and time.

### Activity 5, page 30: Instruments for measuring distances

- a)
1. geometric triangle
  2. folding rule
  3. ruler
  4. vernier calliper
  5. micrometer
- b)
1. scale, 2. straight line, 3. length, 4. analogue/digital, 5. angles, 6. metal workers,
  7. millimetres, 8. available, 9. distances, 10. technical drawing

### Activity 6, page 31: Vernier callipers

a)

No.	German	English
1.	Schiene	main beam/bar
2.	Messschenkel für Innenmessung	inside jaws
3.	Schieber	slider
4.	beweglicher Messschenkel	movable jaw
5.	fester Messschenkel	fixed jaw
6.	Messschenkel für Außenmessung	outside jaws
7.	Feststellschraube	clamp screw
8.	Skala	scale
9.	Tiefenmessgerät	depth bar
10.	Nonien	vernier scale

### Activity 7, page 32: What vernier callipers can be used for

1. jaws
2. part
3. external
4. exact
5. fixed
6. movable
7. dimension
8. internal
9. workpiece
10. side

### Activity 8, page 32: Vocabulary

- a) 1. fixed
2. screw
3. scale
4. opposite
5. example
- b) 1. something manufactured
2. relating to the inside of something
3. having the ability to do something
4. piece of equipment for some special purpose
5. to leave one position to go to another

### Activity 9, page 33: Understanding the text

1. Tom's day was fine, he got an A in his maths test, and physics was quite interesting, too.
2. Tom's mother asks him to help her.
3. Newton was an English scientist.
4. It is the kilogram.
5. The standard measure of one kilogram is a cylinder, made of a special material, with 39 mm in diameter and 39 mm in height.
6. One day Newton was sitting under an apple tree when all of a sudden an apple fell down on his head.

### Activity 10, page 34: Newton's law

1. gravitational force
2. Newton
3. kilogram
4. meter
5. second
6. mass
7. kilogram
8. acceleration because of gravity
9. meter per second square (d)

### Activity 11, page 35: Talking about Kelvin

Do you know anything about Kelvin?

Yes (sure). Kelvin's name actually was William Thomson. He was born in Ireland in 1824. His father taught him and his brother at home. At the age of ten he began to study at the university of Glasgow. This might sound a little strange for us today but at that time it was not really unusual for intelligent young people. Only five years later he received his first prize. In 1892 he was ennobled and that is why we know him as Lord Kelvin today. He loved his work and was showered with honours. At the age of 75 he decided to leave the field to younger ones. He died in 1907 and is buried in Westminster Abbey in London.

### Activity 12, page 35: Instruments for measuring temperature

- |                       |                   |                            |
|-----------------------|-------------------|----------------------------|
| 1. instrument         | 5. capillary tube | 9. measuring               |
| 2. whether            | 6. temperature    | 10. bimetallic thermometer |
| 3. weather            | 7. expands        | 11. expansion              |
| 4. liquid thermometer | 8. falls          | 12. scale                  |

### Activity 13, page 36: Fundamental laws of science

- |         |         |         |          |
|---------|---------|---------|----------|
| 1. – d) | 4. – c) | 7. – j) | 10. – g) |
| 2. – a) | 5. – b) | 8. – f) |          |
| 3. – e) | 6. – i) | 9. – h) |          |

### Activity 14, page 37: Understanding the text

1. Kathy and David are apprentices.
2. They are in the workshop at the moment.
3. David is showing Kathy how to work with a multimeter.
4. David mentions a display, a range selector, and two leads with a probe tip each.
5. a) ampere (amp), symbol A  
b) volt, symbol V
6. Current must flow through the consumer.
7. If you want to measure voltage, you have to connect the multimeter in parallel.

### Activity 15, page 37: Measuring electric current

- |              |           |                     |
|--------------|-----------|---------------------|
| 1. measuring | 3. circle | 5. electric current |
| 2. ammeter   | 4. order  | 6. in series        |

### Activity 16, page 37: Measuring voltage

- |                    |            |                |
|--------------------|------------|----------------|
| 1. symbol          | 3. centre  | 5. in parallel |
| 2. circuit diagram | 4. measure |                |

# 4 Health and Safety at Work

## Activity 1, page 41: Understanding the text

- a)
1. Ann and Mike know each other from vocational school. They are in the same class.
  2. Mike was not at school today.
  3. The accident happened to Mike yesterday when he has almost finished work.
  4. Mike wanted to sharpen his knife. He was in a hurry, so he decided not to wear protective goggles.
  5. The doctor removed a splinter from Mike's eye.
  6. Mike's eye feels like there is still some sand inside.
  7. Ann and Mike are laughing about Mike's joke. He said from now on he would always wear protective goggles even when he was sharpening a pencil.
  8. Ann wants to visit Mike later.

- b) Possible answer:

One day my friend Peter was working in the workshop on a running engine of a bus. The place he was standing at was dirty with spilled oil from the previous job which he had not cleaned up. Peter slipped and lost balance. He tried to hold onto something (to keep his balance) but unfortunately his hand got caught in the running engine and cut off a fingertip. All in all he was lucky not to lose his whole hand.

## Activity 2, page 42: Working with words

- a)
- |                 |             |                   |
|-----------------|-------------|-------------------|
| 1. falling down | 3. falls    | 5. hearing damage |
| 2. lung disease | 4. grinding |                   |
- b)
1. Safety at work protects everybody.
  2. Safety equipment is necessary for the safety of everybody.
  3. A first aid kit is important to have at home too.
  4. Some toxic gases are odourless.
  5. Loud noises can impair/damage your hearing.
  6. A clean workplace is an important defence against accidents.
  7. Accident prevention is an issue for everybody.

## Activity 3, page 42: Talking about safety

- a) Possible answers:
1. The nearest first aid box is at the caretaker's office. (Give an accurate description)
  2. I leave this room, turn to the left and go down the stairs to the ground floor. The caretaker's office is at the end of the corridor. It is the last door on the right-hand side. On the right-hand side of the door is a button which calls the caretaker. (Give accurate description)
  3. Wearing personal protective equipment is your first line of defence against accidents.

4. Somebody could drink the toxic liquid accidentally, thinking it might be something to drink. Serious injuries could be caused.
5. Safety is more than following rules. To be truly safe, make safe work habits second nature. Take responsibility for noticing, reporting, and correcting hazards. Take care of everybody.

b) Possible answers:

Hairnet; used on turning devices. Long hair is easily tangled in drive shafts or drills.

Guard; used on machines and devices with dangerous points. It prevents the operator or other persons coming into contact with dangerous points.

Lifting crane; for lifting and manual handling of heavy loads. It prevent injuries to the back caused by manual handling of heavy loads.

Ladder; used when working in higher positions. It guarantees a suitable and safer standing platform.

Know how; required for anything we do. It prevents carelessness and makes you aware of typical dangers.

### Activity 4, page 44: Questions

1. Warning signs are yellow coloured with a black periphery. They are triangular. Specific hazards can be indicated by black symbols.
2. Prohibition signs and warning signs differ in colour and form. Warning signs require a specific action whilst prohibition signs stipulate behaviour.
3. First aid signs identify locations of first aid facilities such like stretcher and first aid kits. Emergency signs identify a secure escape in case of fire or other hazard situations.
4. Warning signs are located in areas where specific hazards are unpredictable. They require special and specific attention.
5. In hazardous areas the warning signs have black symbols or they have additional information.

### Activity 5, page 45: Understanding the text

1. ... wounds, what to do in case of unconsciousness, how to place somebody in the recovery position and much more.
2. ... needed to ensure that first aid is available at all times.
3. ... expire after some time.
4. ... observing signs and safety regulations.
5. ... safety.
6. ... from danger.
7. ... for help.

### Activity 6, page 46: Working with words

- |                 |                 |           |
|-----------------|-----------------|-----------|
| 1. seconds      | 4. familiarised | 6. walk   |
| 2. discharged   | 5. hands-on     | 7. refill |
| 3. instructions |                 |           |

## Activity 7, page 47: How to use a fire extinguisher

- |       |       |       |        |
|-------|-------|-------|--------|
| 1. g) | 4. h) | 7. j) | 10. f) |
| 2. c) | 5. d) | 8. e) |        |
| 3. a) | 6. i) | 9. b) |        |

## Activity 8, page 47: Questions

- I have to be familiarised with the parts of the fire extinguisher.
- When the fire extinguisher is used on electrical equipment the minimum distance is one metre.
- I fight burning liquid from the top with a wide stream of powder.
- The fire extinguisher contains extinguishing powder for ten seconds.
- I have to make sure not to return the cylinder to its place. The used cylinder has to be replaced or to be refilled immediately.

## Activity 9, page 48: Fill a form

a) Individual answer:

		<b>ACCIDENT/INCIDENT REPORT</b>		Safety Office <b>494-2495</b>
<b>PERSONAL</b>	<b>Surname:</b> Mike	<b>First name:</b> Frampton		<b>Date:</b> 2008-11-10
	<b>Home Address:</b> Barker Street, Bristol, DN5 7LY			
	<b>Department:</b> Metal		<b>Phone:</b> 987 654 321	
<b>INCIDENT</b>	<b>Date, Time and Location of Incident:</b> 2008-11-10, 4:55 pm, workshop		<b>Name and Phone of Witnesses:</b> None	
	<b>Describe the incident in detail:</b> While sharpening a tool a splinter hit into the eye.			
	<b>When and to whom was the incident reported?</b> Workshop manager		<b>Did the incident result in an early departure from work?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No	
<b>INJURY</b>	<b>Describe injuries:</b> Foreign-body (splinter) entered the eye. It was not removable by first aid treatment.			
	<b>Briefly describe medical treatment, if needed:</b> Eye covered with an eye-patch			
	<b>Will the injury result in time away from work beyond the day of the incident?</b> <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No		<b>Will further treatment be necessary?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	
<b>Date:</b> 2008-11-10		<b>Person involved in incident:</b> None		

- b) When Mike was almost finished with work he wanted to sharpen his knife on a bench grinder. He was in a hurry so he didn't want to waste time looking for some protective goggles. As soon as the knife touched the grinding disc a splinter hit his eye. Mike was not able to continue sharpening his knife; he had to see the doctor immediately. The doctor removed the splinter from Mike's eye. All this happened because Mike did not wear protective goggles.

### **Activity 10, page 48: Comprehension**

1. False. Watch the area for a few minutes in case it re-ignites.
2. True.
3. True.
4. True
5. False. Always read the instruction that comes with the fire extinguisher beforehand and get familiarised with its parts.
6. True.

# 5 Computer Hardware

## Activity 1, page 51: Parts of a computer system

a)

No.	Component	No.	Component
1	computer (desktop)	6	(cordless/wireless) mouse
2	monitor	7	(cordless/wireless) keyboard
3	scanner	8	external HDD
4	printer	9	USB memory stick
5	joy stick	10	router

b) No.4: Drucker; No.6: (schnurlose) Maus; No.7: (schnurlose) Tastatur; No.8: externe Festplatte

c) Technical data (examples)

a) **computer**

processor: AMD Athlon 64 Dual Core with 2.6 GHz; RAM: 2048 MB DDR 2; HDD: SATA 80 GB etc.

b) **monitor**

19" TFT monitor; contrast ratio: 1000:1; resolution: 1280 × 1024; response time: 8 ms

c) **printer**

print technology: thermal inkjet; print speed: up to 2.5 ppm (normal quality black and color); resolution: 1200 × 600 dpi; number of cartridges: 4; connectivity: USB

d) **USB memory stick**

USB stick 4 GB with software 'carry it easy'; read: 18.5 MB/s; write: 2.5 MB/s

## Activity 2, page 51: Abbreviations

No.	Abbreviation	Complete word
1	RAM	Random Access Memory (Speicher mit beliebigem Zugriff)
2	CD-ROM	Compact Disk – Read Only Memory (Nur-Lese-Speicher)
3	Mbps	Megabits per second (Einheit für Datenübertragungsrate)
4	CPU	Central Processing Unit (Zentraleinheit, andere Bezeichnung für 'Prozessor')
5	GB	Gigabyte
6	DVD	Digital Versatile Disk (Datenträger mit sehr hoher Aufzeichnungsdichte; versatile = vielseitig)
7	BIOS	Basic Input Output System (Basissoftware zum Booten des PC)
8	PC	Personal Computer

No.	Abbreviation	Complete word
9	SATA	Serial Advanced Technology Attachment (spezieller Datenbus für den Datentransfer zwischen Prozessor und Festplatte)
10	ISDN	Integrated Services Digital Network (dienstintegriertes digitales Netzwerk)
11	MPEG	Moving Picture Expert Group (Standard, der Verfahren zur Audio- und Videodatenkompression beschreibt)
12	GHz	Gigahertz
13	USB	Universal Serial Bus (serielles Bussystem zur Verbindung von Peripheriegeräten mit dem Computer)
14	W-LAN	Wireless Local Area Network (drahtloses lokales Netzwerk)

### Activity 3, page 51: Working with words

- |              |                     |
|--------------|---------------------|
| 1. printer   | 6. scanner          |
| 2. hard disk | 7. USB memory stick |
| 3. processor | 8. hub              |
| 4. joystick  | 9. sound card       |
| 5. monitor   | 10. mouse           |

### Activity 4, page 53: Comprehension

- CPU, memory, bus system, controllers, expansion slots
- It performs all logic operation of the computer.
- It consists of a piece of silicon with millions of transistors on it.
- The BIOS first checks if the most important components work properly and then searches and loads the Operating System.
- RAM is a temporary memory which means that the stored data disappears when the power supply is switched off whereas ROM keeps its data in this case. In opposite to RAM you can't write data to ROM, only read them.
- It is a kind of highway on which data travel. Buses are the connection between the CPU and the peripherals.
- Bus width is a measure for the amount of data (number of bits) that is transferred on a data bus at the same time.
- It is either a cable made of a certain number of parallel wires or a certain number of parallel conductor lines on a printed circuit board.
- It is measured in Hertz (MHz, GHz).
- Bi-directional: data travel in both directions  
Uni-directional: data travel only in one direction (from CPU to memory or other components)

### Activity 5, page 53: Working with words

1. circuit board
2. data
3. memory
4. BIOS

### Activity 6, page 53: Modems

- |                 |                |
|-----------------|----------------|
| 1. demodulator  | 6. networks    |
| 2. receive      | 7. services    |
| 3. convert      | 8. speeds      |
| 4. digital data | 9. communicate |
| 5. transmitted  | 10. highest    |

### Activity 7, page 55: Comprehension

1. Alan is an experienced computer user./Alan has been an experienced computer user for many years.
2. Bert has bought a used computer.
3. Bert has got trouble with his sound./with his sound card.
4. Alan comes to Bert's place.
5. Alan suggests to check whether the driver for the sound card has been installed correctly.
6. Bert has already checked the installation of the driver.
7. They only need a Phillips screwdriver.
8. They have to install a new driver.

### Activity 8, page 56: Changing a sound card

First, they have to check if the computer meets the system requirements. Then they must turn off the computer and unplug all peripherals. After having opened the casing, they should loosen the screws of the old sound card and remove it from its slot. After that they can insert the new sound card and fasten it with the bracket and the screws. However, before taking the new sound card out of its bag they must make sure that they have taken precautions against static electricity. Finally, they can close the casing and connect all cables.

### Activity 9, page 56: Translation

1. Alan has got a lot of experience with computers.
2. Bert bought the used computer four weeks ago.
3. Bert has got trouble with the sound of his computer.
4. The fault only occurs when he opens a file on a DVD.
5. First we have to check if the driver of the sound card has been installed correctly.