

A Lesson in a Lab

Task: Preparing a report on a simple scientific experiment

INTRODUCTION

Vocabulary and listening

1 Choose the correct answers to the quiz.

- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

1) a 2) a 3) a 4) a 5) b 6) b 7) b

Now listen and check your answers.

Tapescript

- 1 Water exists as a solid, a liquid and a gas.
- 2 When you heat a metal, it expands.
- 3 Steel is a mixture of iron and other substances.
- 4 Two-thirds of the earth's surface is water.
- 5 The distance of the sun from the earth is 150,500,500 kms.
- 6 The earth is 4.6 billion years old.
- 7 The earth is forty-nine times larger than the moon.

2 Put these words in pairs or groups.

- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) air-gas-oxygen 2) contract-expand
- 3) earth-sun-moon 4) gas-liquid-solid

3 Answer these questions.

- Read out the words and have the class repeat them after you. Make sure they know what they all mean.
- Ask the questions to the class.

ANSWERS

- 1) Electricity, iron, some metals and air are natural.
- 2) Steel, some metals and glass are man-made.
- 3) Electricity and some metals (alloys for example) can be man-made and occur naturally.

VOCABULARY AND SPEAKING

1 Look at these numbers.

- Practise saying the numbers with the students. With the long numbers (e.g. 52,470,383), make sure the students have the correct intonation.

Now look at these numbers. There are two mistakes. Can you find them?

- Ask the students to find the errors individually.
- Call back the answers from the class.

ANSWERS

- 1) The word "thousand" is missing after "four hundred and seventy".
- 2) The word "one" (or "a") is missing before "hundred million".

Additional practice

- Write a series of similar long numbers on the board (e.g. 38,927,574) for the students to write down the way we say them, and then say them out loud.

Teaching Tip:

Saying Large Numbers

It is a good idea to build up to long number, by having the students say an increasing sequence, e.g.:

4 four
44 forty-four

- 444 four hundred and forty-four
 4, 444 four thousand, four hundred and forty-four
 44, 444 forty-four thousand, four hundred and forty-four

The reason for using the same numbers throughout is that the students can concentrate on the "mechanics" of saying these long numbers: where to say "million", "thousand" and "hundred" and the up-up-down intonation pattern.

2 Look at these fractions.

- Read through the fractions and have the students repeat them after you.

Now say these fractions.

- Elicit the fractions from the students as a class.

ANSWERS

- 1) two-fifths 2) five-eighths 3) nine-tenths
 4) three-eighths 5) five-sixths

3 Describe the fractions in activity 2 as percentages.

- Read the instructions and the example. Make sure the students know what to do.
- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) A quarter is the same as 25%.
 2) One third is the same as 33.33% (thirty-three point three three recurring percent).
 3) Four-fifths is the same as 80%.
 4) One tenth is the same as 10%.
 5) Three-quarters is the same as 75%.
 6) One half is the same as 50%.
 7) Two-thirds is the same as 66.66% (sixty-six point six six recurring percent).
 8) Two-fifths is the same as 40%.
 9) Five-eighths is the same as 62.5% (sixty-two point five percent).

- 10) Nine-tenths is the same as 90%.
 11) Three-eighths is the same as 37.5% (thirty-seven point five percent).
 12) Five-sixths is the same as 83.33% (eighty-three point three three recurring percent).

4 Read these questions aloud and say the answers.

- Put the students into pairs to take turns asking and answering the questions.
- Circulate, monitor and help where necessary.
- Call back the answers from the class.

ANSWERS

- 1) 3,000,000 2) 48,046,000
 3) 50,000,000 4) 265,693,096
 5) 750,375,000 6) 80,000,000

5 Work in pairs. Give your partner five sums. Use numbers over a million. Your partner must find the answers.

- Ask the students to use a mixture of percentages, additions and fractions, as in the previous activity. The students must work out the answers to their own questions first, but leave the answers off the paper they write the questions on.
- The students should exchange questions and write the answers out on paper as they would say them (i.e. in words, not just in figures).
- Then they take it in turns to ask and answer each other's questions.

Extension

- They can use the same questions to ask other students in the class for more practice.

GRAMMAR 1

Degrees of comparison 1

1 Look at the sentence from Introduction activity 1.

- Read through the sentence and make sure that the students understand them.

Now answer the questions.

- Ask the whole class the questions.
- Call back the answers from the class.

ANSWERS

- 1) It is more usual to say "I went there twice".
- 2) 20 metres long
- 3) 400 kg

2 Make sentences about the comparative sizes of the pairs. Use the words in the brackets.

- Put the students into pairs to talk about the pictures. They should keep a note of their guesses.
- Call back the answers from the class.

ANSWERS

- 2) Winter is four times colder in Harbin than in Beijing.
Winter is four times as cold in Harbin as in Beijing.
- 3) Mount Qumolangma is about six times higher than Mount Tai.
Mount Qumolangma is about six times as high as Mount Tai.
- 4) My aunt's house is twice as large as my house.
My aunt's house is two times larger than my house.
- 5) Tom weighs over twice as heavy as Lily.
Tom is over twice heavier than Lily.

READING AND VOCABULARY

1 Put these words in the correct order to describe the stages of a scientific experiment.

- Ask the class to order the words.

ANSWER

aim-method-result-conclusion

2 Read Passage A and choose the best title for it.

- Have the students read through the passage. Check that they know what all the metals are.
- Call back the answers from the class, and ask for reasons.

ANSWER

The Reaction of Metals

3 Read the passage again. Answer these questions.

- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) Potassium, calcium and sodium.
- 2) It burns to form an oxide.
- 3) Magnesium, aluminium and zinc.
- 4) It has a slow reaction.
- 5) No, it doesn't.

4 Read Passage B and fill in the table.

- Explain that this activity involves some careful close reading of the passage, and practises a skill which will be useful for science classes.
- Ask the students to do the activity on their own.
- Ask them to check their answers in pairs.
- Call back the answers from the whole class.

ANSWERS

	Iron in dry air	Iron in air-free water	Iron in ordinary water
Stage A (Starting experiment)	cotton wool nails	oil layer water nails	water nails
Stage B (1 week later)	cotton wool nails	oil layer water nails	water nails
Stage C (Result)	Iron does not rust	Iron does not rust	Iron rusts

5 Read Passage B again. Complete the sentences.

- Read through the sentences as the students follow, and have them repeat anything you feel they need to practise.
- Ask the students to answer the questions individually.

- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) air 2) does not rust 3) boil, air
4) some oil, air 5) nail, air

6 Find these words in the Passages A and B. Check you understand what they mean.

- Read through the words in the box and have the students repeat them after you, paying particular attention to stress.
- Ask the students to work in pairs to find the meaning of the words in their dictionaries.

POSSIBLE ANSWERS

Bunsen burner: You use a Bunsen burner to heat things when you do an experiment.

test tube: You put things into a glass test tube to mix them, or to heat them, or to keep them.

balance: You use a balance to weigh the things you use in an experiment.

crucible: A crucible is a ceramic bowl which you use to heat things to a very high temperature.

tongs: You use tongs to pick up things which are too hot or dangerous to pick up with your hands.

VOCABULARY

1 Look at the decimals below.

- Read through the examples and have the class repeat them after you.
- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

Now write and say these numbers as decimals.

- Have students write the numbers as decimals.
- Call back the answers from the class.

ANSWERS

- 1) point five (or: nought point five)
2) two point two five
3) point seven five (nought point seven five)
4) thirty point five
5) twelve point three

2 Look at pieces of equipment. When do you use them?

- Read the names of the pieces of equipment and have the students repeat them.
- Put them into pairs to discuss what they are used for.
- Call back answers from the class.

LISTENING AND WRITING

1 You will hear a conversation in which a teacher helps a student do an experiment. Read the Aim below and predict the Result.

- Read out the Aim to the class, and ask for their predictions. Note them on the board.

2 Listen to the conversation. Was your prediction for activity 1 correct?

- Play the tape through once and ask answers from the whole class.

3 Listen again and complete the description of the scientific experiment.

- Remind the students how they usually write up science experiments. Completing the description involves some careful reading for specific information (scanning) and reorganising the information.
- Ask the students to complete the description on their own, and then to check their answers in pairs.
- Play the recording again.
- Call back the answers from the whole class.

ANSWERS

Aim: to find out if there's a change in weight when magnesium burns in air.

Apparatus: Magnesium, Bunsen burner, a balance, a crucible.

Method: First, put the magnesium in the crucible. Then put the crucible on the balance and weigh it. Next, heat the magnesium. Light the Bunsen burner and hold the crucible over it. Finally, weigh the magnesium again.

Result: It weighs a little more than before.

Conclusion: There is a change in weight when magnesium burns in air.

Tapescript

(Mr C = Mr Chen, Z.K. = Zhou Kai, L.K. = Li Kang)

Mr C: OK, boys and girls, we're going to do an experiment. Come a bit closer. The closer you are, the more you'll see! That's right! Now, what's the aim of this experiment, Zhou Kai?

Z.K.: We want to find out if there's a change in weight when magnesium burns in air.

Mr C: That's right. So what do we need first?

Z.K.: Um ... We need some magnesium. How much do we need? What about this piece? Is this piece OK?

Mr C: No, we need rather more than that — about two and a half grams. We need a piece which is much bigger than that.

Z.K.: OK ... And we need a bunsen burner ... a balance ... and a crucible to put the metal in ... Here they all are ... Where do we go from here?

Mr C: Well, first, put the magnesium in the crucible. Then put the crucible on the balance and weigh it.

Z.K.: OK ...

Mr C: How much does it weigh? Take a look, everyone. Is it any heavier?

Z.K.: Um ... It weighs two and a half grams. Do you want me to write that down?

Mr C: Yes, write it down. What next?

Z.K.: Yes ... Um, next, we're going to heat the magnesium. So I light the Bunsen burner. After that, I hold the crucible over it ... Oh look, it's burning with a white light! It's getting brighter and brighter!

Mr C: It's pretty, isn't it? Keep the noise down, boys and girls, please.

Z.K.: Um ... lastly, we need to weigh the magnesium again ... It weighs four grams now.

Mr C: So what does that tell you?

Z.K.: It weighs a little more than before.

Mr C: How much more?

Z.K.: 1.5 grams more.

Mr C: And what does that mean?

Z.K.: It means that there is a change in weight when magnesium burns in air.

Mr C: You've got it! Well done! So now, let's do the same experiment with copper. Come along, Li Kang, it's your turn now. What do you think will happen if you heat copper?

L.K.: I think it'll be a lot heavier than magnesium. Shall I begin?

Mr C: Yes, go ahead!

GRAMMAR 2**Degrees of comparison 2****1 Look at these sentences. Answer the questions below.**

- Read through the sentences as the students follow.
- Ask the students to answer the questions in pairs.
- Call back the answers from the class.

ANSWERS

A1, 2, 3 B2, 3 C1

2 Use the words below to write sentences as in the example.

- Ask the students to write sentences individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) The hot metal is getting bigger and bigger.
- 2) The magnesium is getting hotter and hotter.
- 3) The sun is getting stronger and stronger during the morning.
- 4) The sea is becoming warmer and warmer.

Culture Box: Fixed Expressions

There are a number of fixed expressions in English which follow this pattern. They are supposed to express general and universal truths. You may care to write them on the board and ask the students to comment on them:

- a) The bigger, the better. (i.e. Anything big is necessarily better than anything small.)
- b) The higher, the fewer. (i.e. The higher up you go, the fewer people/things there are.)
- c) The bigger they are, the harder they fall. (Used in fighting and sport, when the opposition is bigger than you are, they will have more pain when they fall down.)

4 Compare the items/people you know. Use one of these expressions.

- Read the instructions and the example. Make sure the students know what to do.
- Ask the students to answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWER

Students' own answers.

PRONUNCIATION

Intonation in questions

1 Listen to the intonation of these sentences. The student is asking his teacher questions. Does the voice go up or down at the end?

- Ask the class what they think happens in the sentences before they listen to the tape.
- Play the tape and ask them again.

ANSWER

Wh- questions often fall at the end. Yes/No questions often rise.

3 Look at these sentences.

- Read through the sentences as the students follow.
- Ask the students to complete the activity individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- A They should underline:
- a) a bit closer b) rather more
 - c) a little more d) a lot heavier
 - e) any heavier f) (very) much bigger
- B They should circle:
- a) bit b) rather c) little
 - d) lot e) any f) much

Tapescript

- 1) How much do we need?
- 2) What about this piece?
- 3) Is this piece OK?
- 4) Where do we go from here?
- 5) Do you want me to write that down?

2 Listen again and repeat the questions. Use the correct intonation.

- Play the tape and practise the sentences chorally and individually.
- Go through the *Learning to learn* box with the students. Ask them to give one or two more examples.

EVERYDAY ENGLISH

Choose the correct meaning.

- Ask the students to choose the correct meanings individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

1) a 2) b 3) a 4) b 5) a

FUNCTION

Words and expressions of sequence

Look at the words in *italics*. When do we use them?

- Read through the examples as the students follow.
- Call back the answers from the class.

ANSWER

We use them to indicate the stages of a process.

CULTURAL CORNER

- Ask the students to read the passage and answer the questions individually.
- Put the students in pairs to compare their answers.
- Call back the answers from the class.

ANSWERS

- 1) Because he has moved to a new school with good facilities and teachers.
- 2) *Students' own answers.*

TASK

Preparing a report on a simple scientific experiment

- 1 **Work in pairs. Think of an easy scientific experiment that you have done in the science laboratory.**
- 2 **Look at the description of an experiment in *Vocabulary and reading Passage B* again.**
- 3 **Write about your experiment using these headings:**

Aim, Equipment, Method, Result, Conclusion

- Read the instructions. Make sure the students know what to do.
- Put the students in pairs and ask them to think of a simple experiment.
- Have the students read Text B again.
- Ask the students to write about the experiment using the headings.
- Put the students together with two or three other pairs who have written about the same experiment to read each other's work.
- If you want, two or three pairs could read out their experiment notes.

MODULE FILE

- This section lists the main areas of language dealt with in the module.
- You may want to use it for repetition, and pronunciation revision, or you may want to give the students ten minutes to go through it, ticking the things they are confident they know, putting a question mark next to those things they are not sure of, and a cross next to those they don't know. This should then be the basis of their own revision of the module.