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# Curriculum Development in Vocational Education and Training Schools

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## Annex 26

**Delivery of Foreign Language in Occupation  
Packages of the Learning Materials for:  
Cadaster and Drilling Technician  
Grade: 9, 10, 11**

## Contents

Exit level of the whole period of Foreign Language education 9 <sup>th</sup> – 12 <sup>th</sup> grade .....	4
Entry and Exit Level.....	5
Description of language skills Exit level .....	6
GRADE 9 .....	8
Description of module content and learning objectives.....	8
Description of language skills.....	11
Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 9 .....	14
Vocabulary focus for reading and listening comprehension .....	16
Vocabulary Learning Strategies .....	18
Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 9 .....	20
Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 9.....	22
GRADE 10 .....	26
Description of module content and learning objectives.....	26
Description of language skills.....	29
Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 10 .....	34
Vocabulary focus for reading and listening comprehension .....	36
Vocabulary Learning Strategies .....	38
Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 10 .....	40
Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 10.....	43
GRADE 11 .....	48
Description of module content and learning objectives.....	48
Description of language skills for the Module .....	52
Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 11 .....	56
Vocabulary focus for reading and listening comprehension .....	58
Vocabulary Learning Strategies .....	60
Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 11 .....	62
Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 11.....	65
Focus on developing communicative skills through interaction activities and strategies .....	70
Methodological tip.....	72

Communication/ Interaction .....	73
Understanding an interlocutor: .....	75
Conversation .....	76
Informal discussion (with friends or members of the team) .....	77
Formal discussion (meetings, instructions, briefings) .....	78
Goal-oriented co-operation .....	79
Obtaining goods and services .....	80
Information exchange .....	81
Interviewing and being interviewed .....	82
Using telecommunications.....	83
Written interaction .....	84
Correspondence.....	85
Notes, messages and forms .....	86
Online interaction .....	87
Online conversation and discussion .....	88
Goal-oriented online transactions and collaborations .....	89
Interaction strategies.....	90
Asking for clarification (can be first introduced) .....	90
Taking the floor .....	90
Co-operating .....	90
Additional suggestions:.....	91
GLOSSARY.....	96
Audio Files for Occupation Cadaster and Drilling Technician .....	120

## Exit level of the whole period of Foreign Language education 9<sup>th</sup> – 12<sup>th</sup> grade

<p>Target group and position</p>	<p>Students in vocational schools trained to acquire qualification “Cadaster and Drilling Technician” in 9<sup>th</sup>, 10<sup>th</sup>, 11<sup>th</sup> and 12<sup>th</sup> grade who need to communicate in English to native speakers and non-native speakers in English; students who will need English as part of their job to communicate on a frequent or occasional basis to foreigners at their work place using digital means of communication or related to digital means of communication. They do not usually need a foreign language in demanding interactive situations.</p>
<p>Entry level and Exit level</p>	<p>Listening A1+ towards A2</p> <p>Reading A1+ towards A2</p> <p>Spoken interaction A1+ towards A2</p> <p>Spoken production A1+ towards A2</p> <p>Writing A1+ towards A2</p> <p>The levels are described according to the Common European Framework of Reference for Languages: learning, teaching, assessment (CEFR). CEFR was designed to provide a transparent, coherent and comprehensive basis for the elaboration of language syllabuses and curriculum guidelines, the design of teaching and learning materials, and the assessment of foreign language proficiency.</p>

## Entry and Exit Level

According to the European Framework of reference

	A1	A2	B1	B2	C1	C2
<b>Listening</b>						
<b>Reading</b>						
<b>Spoken Interaction</b>						
<b>Spoken Production</b>						
<b>Writing</b>						

	<b>Entry level</b>
	<b>Exit level</b>

## Description of language skills Exit level for the whole period of education

Level of language skills	General language skills	Professional language skills
Understanding  Listening A2	Can understand phrases and the highest frequency vocabulary related to areas of most immediate personal relevance (e.g. very basic personal and family information, shopping, local geography, employment).	<ul style="list-style-type: none"> <li>➤ Can follow everyday conversations if speech is carefully articulated though words and expressions may need to be repeated.</li> <li>➤ Can understand information about everyday events if speech is clear and pronunciation – standard.</li> <li>➤ Can understand the main points in a well-structured, factual presentation in my area of work or interest.</li> <li>➤ Can understand the main points in TV and radio broadcasts, advertisements, commercials, presentations and promotions if speech is clear, comparatively slow and topic is familiar.</li> <li>➤ Can understand the main aspects of longer talks/meetings referring to routine work-related matters when standard language is used.</li> </ul>
Reading A2	Can read very short, simple texts. Can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and can understand short simple personal letters.	<ul style="list-style-type: none"> <li>➤ Can understand short, simple texts composed of the most common words and expressions including international words.</li> <li>➤ Can understand short, simple job-related texts and letters/orders.</li> <li>➤ Can understand standard routine correspondence (letters, faxes, e-mails), e.g. concerning simple arrangements</li> <li>➤ Can identify familiar and predictable information in advertisements, leaflets and timetables.</li> <li>➤ Can understand simple operating instructions, e.g. in lifts, on public telephones, cash machines, etc.</li> <li>➤ Can scan simple written materials such as brochures and short newspaper articles and extract factual information I need</li> <li>➤ Can read and extract the necessary information related to my work tasks.</li> </ul>

<p>Spoken interaction A2</p>	<p>can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar topics and activities.</p> <p>can handle very short social exchanges, even though I can't usually understand enough to keep the conversation going myself.</p>	<ul style="list-style-type: none"> <li>➤ Can handle most situations likely to arise in business and on travelling to a country where the language is spoken.</li> <li>➤ Can handle a conversation as long as it concerns routine activities within a familiar and/or predictable context.</li> <li>➤ Can hold a spontaneous conversation on familiar topics of personal and professional interest.</li> <li>➤ Can give or seek personal views and opinions on familiar topics in an informal discussion with friends/colleagues, agreeing and disagreeing politely.</li> </ul>
<p>Spoken production A2</p>	<p>Can connect phrases in a simple way in order to describe experiences, events, hopes and ambitions related mostly to my professional life. Can briefly give reasons and explanations for opinions and plans related to familiar professional, everyday and social issues.</p>	<ul style="list-style-type: none"> <li>➤ Can give comparatively detailed accounts of experiences, events, work processes etc.</li> <li>➤ Can give routine information about own area of work/department/company/product.</li> <li>➤ Can give a brief summary of a story, e.g. the plot of a book or film and make comments on it.</li> <li>➤ Can give reasons for my plans, opinions, decisions and actions.</li> </ul>
<p>Writing A2</p>	<p>Can write short, simple notes and messages, relating to matters in areas of immediate need. Can write a very simple personal letter, for example thanking someone for something.</p>	<ul style="list-style-type: none"> <li>➤ Can write short letters, fax messages, e-mail messages, memos following a sample</li> <li>➤ Can write SMSs using standard abbreviations.</li> <li>➤ Can take notes related to matters of immediate interest in work</li> <li>➤ Can fill in forms or questionnaires briefly describing personal and job-related information.</li> <li>➤ Can produce short messages, faxes or e-mails with simple variations on memorised language.</li> <li>➤ Can give directions how to get to a meeting, place or company in a written form.</li> <li>➤ Can give short accounts of past or present events and activities, or of future plans.</li> <li>➤ Can briefly describe something or somebody.</li> </ul>

## GRADE 9

### Description of module content and learning objectives

<p>Module objectives</p> <p>9<sup>th</sup> grade</p> <p>Module 1</p> <p>Focus on vocabulary</p> <p>Use of terminology in the foreign language</p>	<p>The module is skill-oriented and emphasizes on developing and consolidating practical skills in a variety of relevant work-related contexts. It focuses both on fluency in language use as well as on accuracy.</p> <p>Students learn and practice <b>how to</b>:</p> <p>General linguistic range</p> <ul style="list-style-type: none"> <li>• use isolated words/signs and basic expressions in order to give simple information about themselves.</li> <li>• use a very basic range of simple expressions about personal details and needs of a concrete type.</li> <li>• use some basic structures in one-clause sentences with some omission or reduction of elements.</li> </ul> <p>Vocabulary range</p> <ul style="list-style-type: none"> <li>• effectively apply and make use of a basic vocabulary repertoire of words/signs and phrases related to particular concrete situations.</li> </ul> <p>Grammatical accuracy</p> <ul style="list-style-type: none"> <li>• employ very simple principles of word/sign order in short statements. Shows only limited control of a few simple grammatical structures and sentence patterns in a learnt repertoire.</li> </ul>
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<p>Module 2</p> <p>Professional communication in the foreign language</p>	<p>Vocabulary control</p> <ul style="list-style-type: none"> <li>• control a narrow repertoire dealing with concrete, everyday needs.</li> <li>• pronounce a very limited repertoire of learnt words and phrases which can be understood with some effort by interlocutors used to dealing with speakers of the language group.</li> <li>• reproduce correctly a limited range of sounds as well as stress for simple, familiar words and phrases.</li> <li>• reproduce sounds in the target language if carefully guided.</li> <li>• articulate a limited number of sounds, so that speech is only intelligible if the interlocutor provides support (e.g. by repeating correctly and by eliciting repetition of new sounds).</li> </ul> <ul style="list-style-type: none"> <li>• use the rhythm and intonation of a limited repertoire of simple words and phrases intelligibly, in spite of a very strong influence on stress, rhythm and/or intonation from the other language(s) they speak; their interlocutor needs to be collaborative.</li> </ul> <p>Students learn and practice <b>how to</b> Interact with colleagues or customers generally and more specifically for the level <b>how to</b>:</p> <p>Verbally</p> <ul style="list-style-type: none"> <li>• establish basic social contact by using the simplest everyday polite forms of: greetings and farewells; introductions; saying please, thank you, sorry, etc. However, repair of communication is often required</li> <li>• adapt well-rehearsed, memorised, simple phrases to particular circumstances through limited lexical substitution and difficulties in articulating less familiar words is usual.</li> <li>• communicate basic information about personal details and needs of a concrete type in a simple way.</li> <li>• communicate very basic information about personal details in a simple way, while pausing is expected and usual to search for expressions</li> <li>• manage very short, isolated, rehearsed utterances using gesture and signalled requests for help when necessary.</li> </ul>
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In Writing

- write short messages, e-mail messages using a template.
- write SMSs using standard abbreviations.
- can fill in forms with personal details (job, age, address, etc).
- can write simple isolated phrases and sentences, which I have memorized or copied.
- can write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.

## Description of language skills

Level of language skills	General language skills	Professional language skills	Examples Teaching and learning resources developing these occupational skills
<b>Listening A1</b>	<p>can recognise familiar terminology for the occupation and very basic phrases concerning immediate concrete surroundings when people speak/sign slowly and clearly.</p> <p>Can understand phrases and the highest frequency vocabulary related to areas of most immediate professional relevance (e.g. very basic information, shopping, local area, employment, prices, etc.).</p>	<ul style="list-style-type: none"> <li>➤ Can understand figures, prices and times given slowly and clearly in an announcement by other people in work environment or in a shop.</li> <li>➤ Can recognise relevant terminology, words and numbers that they already know in simple, short recordings, provided these are delivered very slowly and clearly</li> <li>➤ Can understand instructions addressed carefully and slowly to them and follow short, simple directions (adding, subtracting, multiplying, dividing)</li> <li>➤ Can understand in outline very simple information being explained in a predictable situation like a guided tour or process of calculation, provided the delivery is very slow and clear and that there are long pauses from time to time.</li> <li>➤ can understand phrases and expressions related to the most immediate priority in the work environment provided speech is clearly and slowly articulated</li> <li>➤ Can understand simple technical information, such as operating instructions for everyday equipment</li> <li>➤ Can extract the essential information from short, recorded passages dealing with predictable everyday work matters</li> <li>➤</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercise 5, 6 and 7 from Unit 1: Geology, p. 4-6</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 3: History of the Earth, p. 8-9</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 4: Parts of the Earth, p. 10-11</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 6: Describing Geologic Time, p. 14-15</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 7: Measuring Geologic Time, p. 16-17</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 11: Numbers and Basic Math, p. 24-25</p> <p>Book 1 Exercise 5, 6 and 7 from Unit 14: Tables and Graphs, p. 30-31</p>
<b>Reading A1 towards A1+</b>	<p>can understand familiar names, words/ signs and very simple sentences, for example on notices</p>	<ul style="list-style-type: none"> <li>➤ Can understand from a letter, card or e-mail the event to which they are being invited and the information given about day, time and location.</li> <li>➤ Can recognise times and places in very simple notes and text messages from friends or colleagues (e.g. "Back at 4</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercise 2, 3 and 4 from Unit 1: Geology, p. 4-6</p> <p>Book 1 Exercise 2, 3 and 4 from Unit 3: History of the Earth, p. 8-9</p> <p>Book 1 Exercise 2, 3 and 4 from Unit 4: Parts of the Earth, p. 10-11</p>

	<p>and posters or in catalogues.</p> <p>can find specific, predictable information in simple everyday material, such as advertisements, prospectuses, menus and timetables, and I can understand</p>	<p>o'clock" or "In the meeting room"), provided there are no abbreviations.</p> <ul style="list-style-type: none"> <li>➤ Can understand short, simple messages sent via social media or e-mail (e.g. proposing what to do, when and where to meet).</li> <li>➤ Can understand simple everyday signs such as "Parking", "Station", "Dining room", "No smoking", etc.</li> <li>➤ Can understand very short, simple, instructions used in familiar everyday contexts (e.g. "No parking", "No food or drink"), especially if there are illustrations.</li> <li>➤ Can find information about places, times and prices on posters, flyers and notices.</li> <li>➤ Can find and understand simple, important information in advertisements, programmes for special events, leaflets and brochures (e.g. what is proposed, costs, the date and place of the event, departure times).</li> <li>➤ Can understand store guides (information on which floors departments are on) and directions (e.g. where to find lifts).</li> <li>➤ Can understand basic work information (e.g. times when work starts, breaks are scheduled, meals are served).</li> </ul>	<p>Book 1 Exercise 2, 3 and 4 from Unit 5: Landforms, p. 12-13            Book 1 Exercise 2, 3 and 4 from Unit 6: Describing Geologic Time, p. 14-15            Book 1 Exercise 2, 3 and 4 from Unit 7: Measuring Geologic Time, p. 16-17            Book 1 Exercise 2, 3 and 4 from Unit 8: Measurements 1, p. 18-19            Book 1 Exercise 2, 3 and 4 from Unit 10: SI Units, p. 22-23            Book 1 Exercise 2, 3 and 4 from Unit 11: Numbers and Basic Math, p. 24-25            Book 1 Exercise 2, 3 and 4 from Unit 14: Tables and Graphs, p. 30-31</p>
<p><b>Spoken interaction A1 towards A1+</b></p>	<p>can interact in a simple way provided the other person is prepared to repeat or rephrase things at a slower rate and help me formulate what I am trying to express.</p>	<ul style="list-style-type: none"> <li>➤ Can understand and use basic, formulaic expressions such as "Yes", "No", "Excuse me", "Please", "Thank you", "No thank you", "Sorry".</li> <li>➤ Can recognise simple greetings.</li> <li>➤ Can greet people, state their name and take leave in a simple way.</li> <li>➤ Can understand a number of familiar words/signs and recognise key information (e.g. numbers, prices, dates and days of the week), provided the delivery is very slow, with repetition if necessary.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b>            Book 1 Exercise 1, 7 and 8 from Unit 1: Geology, p. 4-6            Book 1 Exercise 1, 7 and 8 from Unit 3: History of the Earth, p. 8-9            Book 1 Exercise 1, 7 and 8 from Unit 4: Parts of the Earth, p. 10-11            Book 1 Exercise 1, 7 and 8 from Unit 5: Landforms, p. 12-13            Book 1 Exercise 1, 7 and 8 from Unit 6: Describing Geologic Time, p. 14-15            Book 1 Exercise 1, 7 and 8 from Unit 7: Measuring Geologic Time, p. 16-17            Book 1 Exercise 1, 7 and 8 from Unit 8: Measurements 1, p. 18-</p>

		<ul style="list-style-type: none"> <li>➤ Can make an introduction and use basic greeting and leave-taking expressions.</li> <li>➤ Can ask how people are and react to news.</li>   <li>➤ Can ask people for things and give people things.</li> <li>➤ Can handle numbers, quantities, cost and time.</li> </ul>	<p>19</p> <p>Book 1 Exercise 1, 7 and 8 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercise 1, 7 and 8 from Unit 11: Numbers and Basic Math, p. 24-25</p> <p>Book 1 Exercise 1, 7 and 8 from Unit 14: Tables and Graphs, p. 30-31</p>
<b>Oral production A1</b>	can use simple phrases and sentences to describe where I live and people I know.	<ul style="list-style-type: none"> <li>➤ Can produce short phrases about themselves, giving basic personal information (e.g. name, address, family, nationality).</li> <li>➤ Can produce simple, mainly isolated phrases about people and places.</li>   <li>➤ Can describe themselves (e.g. name, age, family), using simple words/signs and formulaic expressions, provided they can prepare in advance.</li> <li>➤ Can express how they are feeling using simple adjectives like “happy” or “tired”, accompanied by body language.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The language user produces an oral text which is received by an audience of one or more listeners.</li> <li>▪ Examples: reading a written text aloud, speaking from notes or visual aids (diagram, pictures, charts, etc.)</li> <li>▪ Acting out a rehearsed role</li> </ul> <p>See above exercises for speaking interaction:</p> <ul style="list-style-type: none"> <li>▪ Distribute role cards – students read their role cards</li> </ul> <p>Write a diagram of the role play words/sentences on the board</p>
<b>Written production A1</b>	can produce simple isolated phrases and sentences.	<ul style="list-style-type: none"> <li>➤ Can give basic personal information (e.g. name, address, nationality), perhaps with the use of a dictionary.</li> <li>➤ Can use simple words/signs and phrases to describe certain everyday objects (e.g. the colour of a car, whether it is big or small).</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercise 9 from Unit 1: Geology, p. 4-6</p> <p>Book 1 Exercise 9 from Unit 3: History of the Earth, p. 8-9</p> <p>Book 1 Exercise 9 from Unit 4: Parts of the Earth, p. 10-11</p> <p>Book 1 Exercise 9 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercise 9 from Unit 6: Describing Geologic Time, p. 14-15</p> <p>Book 1 Exercise 9 from Unit 7: Measuring Geologic Time, p. 16-17</p> <p>Book 1 Exercise 9 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercise 9 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercise 9 from Unit 11: Numbers and Basic Math, p. 24-25</p> <p>Book 1 Exercise 9 from Unit 14: Tables and Graphs, p. 30-31</p>

Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 9

2 teaching hours per week

<b>Topics from the Curriculum Package</b>	<b>Resources</b>	<b>Comments Teaching and learning focus and methods Linguistic aspects/teaching and learning methods</b>
INTRODUCTION	<b>From Geology, Express Publishing, 2022</b> Book 1 Unit 1: Geology, p. 4-6	
TOPOGRAPHIC DRAWING	<b>From Geology, Express Publishing, 2022</b> Book 1 Unit 8: Measurements 1, p. 18-19 Book 1 Unit 10: SI Units, p. 22-23 Book 1 Unit 11: Numbers and Basic Math, p. 24-25 Book 1 Unit 14: Tables and Graphs, p. 30-31	
CARPTOGRAPHY AND PHOTO-GRAMMETRY	<b>From Geology, Express Publishing, 2022</b> Book 1 Unit 3: History of the Earth, p. 8-9 Book 1 Unit 4: Parts of the Earth, p. 10-11 Book 1 Unit 5: Landforms, p. 12-13	

<p><b>GENERAL GEOLOGY AND HYDROGEOLOGY</b></p>	<p><b>From Geology, Express Publishing, 2022</b>            Book 1 Unit 6: Describing Geologic Time, p. 14-15            Book 1 Unit 7: Measuring Geologic Time, p. 16-17</p>	
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**Assessment:**

- Self-assessment: According to the scale in the self-assessment grid of the Common European Framework (CEF)
- Tutor assessment: Tests, quizzes, case studies, simulations, role plays
- Final assessment: Test, case study

**Recommended learning time:**

- 60 hours face to face learning
- 60 hours individual learning

## Vocabulary focus for reading and listening comprehension

**Getting Started** provides warm-up questions about the chapter topic. The questions' main purpose is to activate students' prior knowledge about the topic before they read the passage or listen to the audio file. The 'Get Ready!' exercise includes suggestions of questions that can serve this function. The teachers can also ask additional questions related to the school and occupational environment to activate students' prior knowledge.

### Target words (terms)

Each unit introducing target words and asks students to assess their knowledge of each word both before and after they work through the chapter. Vocabulary learning is incremental (gradual, step-by step). Revision is required at least 3-4 times during the school year in various contexts. Even if students do not achieve productive mastery of every word by the time the chapter is finished, the process can show partial improvement (for example, from *no knowledge* to *receptive knowledge*). By avoiding a *no knowledge / full mastery dichotomy*, the process can show smaller degrees of learning. We would expect every student to learn enough about the target words to show some improvement, which should maintain and enhance their motivation.

Reading presents a reading passage that has been graded in various levels of difficulty. The embedding of the target vocabulary in these texts ensures that it is not introduced in isolation, but in meaningful contexts. There is also a great deal of target vocabulary in these texts that is not specifically focused on in the chapter, and that provides natural recycling in new contexts of words students have already studied.

In addition, the passages are suitable for a wide range of reading-based tasks that can be constructed by the teacher to ensure mastering of target words. This integration of reading and vocabulary allows the study of lexis in programs that



have a reading focus, and promotes the beneficial concurrent improvement of reading and vocabulary skills. For example, at the end of each passage, there are exercises (Reading Comprehension) that focus on comprehension ranging from literal details, recognition of true/false, matching of terms with definitions and filling gaps with targeted words.

Focusing on Vocabulary means:

- Word Meaning features a variety of exercises designed to help students learn the meaning of each of the twenty-four target words.
- Word Families provides practice in recognizing and using the various derivative word forms that make up a word's family (or words of the same category).
- Collocation exercises are designed to improve students' intuitions about the collocations a word takes (mouse, LED mouse, laser mouse, ball mouse).

## Vocabulary Learning Strategies

To learn target words well, students will need to continue meeting and learning these word families outside of this book. This means you will need to use vocabulary strategies to maximize your learning. Below, we describe a number of these vocabulary learning strategies.

### USING A DICTIONARY

One of the most important reasons to use a dictionary is to discover a word's meaning. However, many words have more than one meaning, and you must be careful to choose the one that matches the context.

**3 Match the words or phrases (1-8) with the definitions (A-H).**

- |              |                          |
|--------------|--------------------------|
| 1 __ Mac     | 5 __ hardware            |
| 2 __ Windows | 6 __ software compatible |
| 3 __ macOS   | 7 __ processing speed    |
| 4 __ Linux   | 8 __ vulnerable          |

- A a computing device
- B being able to run different programs
- C an operating system developed by Apple
- D an operating system that uses open source software
- E a measure of how fast a computer operates
- F an operating system developed by Microsoft
- G a computer developed by Apple
- H open to attack

Teachers can design similar tasks using a dictionary or the glossary to the teaching and learning resources as part of this package.

### GUESSING FROM CONTEXT

Guessing the meaning of a new word from context is a very good way to supplement the learning of vocabulary from a book like this. You can get clues from the surrounding words and the construction of the sentences.

Teachers can use short texts for guessing from context. The teachers can ask questions such as:

What is the meaning of .....?

What are the clues that helped you discover this meaning?

How could this help you understand the meaning of .....?

### EXTENSIVE READING

Although students gain a lot of benefits from studying words, they also need to see or hear them in many contexts to understand how to use them appropriately. One of the best ways to gain this wide exposure is to read extensively. The repeated exposure to words in reading will help students remember their spellings and meanings, and will also show the other words they commonly occur with. In other words, by reading widely, you will eventually begin to get a feel for which words collocate with the words you are learning.

### USING INTERNET TOOLS

Nowadays, there are many Internet sites that can help your learning. Teachers can use internet sources for allowing for extensive reading and seeing target words in many contexts to understand how to use them appropriately.

## Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 9

**From Geology, Express Publishing, 2022**

	Unit	Topic	Reading	Vocabulary/ Target words and phrases	Comments / additional target words and phrases
<b>Book 1</b>					
	1	Geology	Reading a webpage (filling in the gaps)	astronomy, biology, chemistry, educational, environmental, geology, historical geology, history, industrial, physical geology, physics	
	3	History of the Earth	Reading a flyer (true/false statements)	celestial body, collision, evolution, particle, planet, planetesimal, solar nebula, solar system, sun, terrestrial	
	4	Parts of the Earth	Reading a textbook chapter (true/false statements)	atmosphere, biosphere, core, crust, geosphere, hydrosphere, lithosphere, mantle, stratosphere, troposphere	
	5	Landforms	Reading a webpage (multiple choice questions)	canyon, escarpment, hill, island, lake, mountain, peninsula, plain, plateau, pond, river, tributary, valley	
	6	Describing Geologic Time	Reading an email (multiple choice questions)	age, ago, ancient, BYA, eon, epoch, era, geologic time scale, MYA, period, present	

	7	Measuring Geologic Time	Reading a textbook chapter (true/false statements)	absolute dating, carbon-14 dating, correlation, decay, fossil, half-life, hiatus, radiometric dating, relative dating, tree-ring dating, unconformity	
	8	Measurements 1	Reading a guide (true/false statements)	centimeter, convert, foot, imperial, inch, kilogram, kilometer, length, meter, metric, mile, pound, ton, tonne, weight	
	10	SI Units	Reading a poster (multiple choice questions)	amount, base unit, derived unit, force, joule, molar mass, mole, newton, pascal, pressure, SI	
	11	Numbers and Basic Math	Reading a chart (true/false statements)	add, divide by, equal, -hundred, less, minus, multiply by, over, plus, subtract, times	
	14	Tables and Graphs	Reading a report summary (multiple choice questions)	bar graph, column, legend, line graph, pie chart, row, scatter plot, table, x-axis, y-axis	

Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 9

(using the description of the teaching/learning content you can indicate when during the school year you plan to use the relevant units and exercises for developing of language skills; under comments you can indicate whether revision is needed and when)

*From Geology, Express Publishing, 2022*

	Unit	Topic	Reading	Listening	Speaking	Writing	Comments
<b>Book 1</b>							
	1	Geology	Reading a webpage (filling in the gaps)	Listening to a conversation between an advisor and a student (true/false statements);  Completing a conversation	Acting out a dialogue between an advisor and a student	Filling out an email	
	3	History of the Earth	Reading a flyer (true/false statements)	Listening to a conversation between a radio host and a geologist (multiple choice questions);	Acting out a dialogue between a radio host and a geologist	Filling out a summary of an interview	

				Completing a conversation			
	4	Parts of the Earth	Reading a textbook chapter (true/false statements)	Listening to a conversation between two students (multiple choice questions);  Completing a conversation	Acting out a dialogue between two students	Filling out the student's notes	
	5	Landforms	Reading a webpage (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out an email	
	6	Describing Geologic Time	Reading an email (multiple choice questions)	Listening to a conversation between a student and a professor (true/false statements);  Completing a conversation	Acting out a dialogue between a student and a professor	Filling out a report corrections sheet	
	7	Measuring Geologic Time	Reading a textbook chapter (true/false statements)	Listening to a conversation between a professor and a	Acting out a dialogue between a professor and a student	Filling out the student's notes	

				student (multiple choice questions);  Completing a conversation			
	8	Measurements 1	Reading a guide (true/false statements)	Listening to a conversation between a geologist and an assistant (multiple choice questions);  Completing a conversation	Acting out a dialogue between a geologist and an assistant	Filling out a note	
	10	SI Units	Reading a poster (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out a self-evaluation sheet	
	11	Numbers and Basic Math	Reading a chart (true/false statements)	Listening to a conversation between two interns (multiple choice questions);  Completing a conversation	Acting out a dialogue between two interns	Filling out intern's notes	



	14	Tables and Graphs	Reading a report summary (multiple choice questions)	Listening to a conversation between a company manager and an analyst (true/false statements);  Completing a conversation	Acting out a dialogue between a company manager and an analyst	Filling out a report summary	
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## GRADE 10

### Description of module content and learning objectives

<p>Module objectives</p> <p>10<sup>th</sup> grade</p> <p>Module 1</p> <p>Focus on vocabulary</p> <p>Use of terminology in the foreign language</p>	<p>The module is skill-oriented and emphasizes on developing and consolidating practical skills in a variety of relevant work-related contexts. It focuses both on fluency in language use as well as on accuracy.</p> <p>Students learn and practice <b>how to</b>:</p> <p>General linguistic range</p> <ul style="list-style-type: none"> <li>• Use some simple structures correctly but still systematically makes basic mistakes</li> <li>• Pronounce words and phrases generally clear enough to be understood but still has a strong influence on stress, rhythm and intonation from the other language spoken</li> <li>• Clearly pronounce familiar words although repetition is needed from time to time</li> <li>• produce sounds in the target language if carefully guided. It may affect intelligibility, requiring collaboration from interlocutors.</li> <li>• Use effectively and close to independently a repertoire of basic language which enables them to deal with everyday situations with predictable</li> <li>• Convey very basic content, though they will generally have to compromise the message and search for words/signs.</li> </ul> <p>Vocabulary range</p> <ul style="list-style-type: none"> <li>• effectively apply and make use of a basic vocabulary repertoire of words/signs and phrases related to particular concrete situations.</li> <li>• Use sufficient vocabulary for the expression of basic communicative needs.</li> <li>• Use sufficient vocabulary for coping with simple survival needs.</li> </ul>
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<p>Module 2</p> <p>Professional communication in the foreign language</p>	<p>Grammatical accuracy</p> <ul style="list-style-type: none"> <li>• employ very simple principles of word/sign order in short statements. Shows only limited control of a few simple grammatical structures and sentence patterns in a learnt repertoire.</li> <li>• Use some simple structures correctly, but still systematically makes basic mistakes; nevertheless, it is usually clear what they are trying to say.</li> </ul> <p>Vocabulary control</p> <ul style="list-style-type: none"> <li>• control a narrow repertoire dealing with concrete, everyday needs and in professional context</li> <li>• Clearly pronounce enough to be understood, but conversational partners will need to ask for repetition from time to time.</li> <li>• Can deal with situations affected by a strong influence by the other language(s) they speak on stress, rhythm and intonation, requiring collaboration from interlocutors.</li> <li>• Demonstrate an intelligible pronunciation when communicating in simple everyday situations, provided the interlocutor makes an effort to understand specific sounds.</li> <li>• Communicate with the interlocutor when systematic mispronunciation of phonemes might hinder intelligibility, provided the interlocutor makes an effort to recognise and adjust to the influence of the speaker's language background on pronunciation.</li> <li>• use the rhythm and intonation of everyday words and phrases intelligibly, in spite of a strong influence on stress, intonation and/or rhythm from the other language(s) they speak.</li> </ul> <p>Students learn and practice <b>how to</b> Interact with colleagues or customers generally and more specifically for the level <b>how to</b>:</p> <p>Verbally</p> <ul style="list-style-type: none"> <li>• Can make and respond to invitations, suggestions, apologies, etc. using learnt phrases and memorized exchanges</li> <li>• Can handle very short social exchanges, using everyday polite forms of greeting and address</li> <li>• Can expand learnt phrases through simple recombination of their elements</li> <li>• Can ask for attention</li> <li>• adapt well-rehearsed, memorised, simple phrases to particular circumstances through limited lexical substitution and difficulties in articulating less familiar words is usual.</li> </ul>
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- Can expand learnt phrases through simple recombinations of their elements.
- Can use simple techniques to start, maintain or close a short conversation.
- Can give an example of something in a very simple text using “like” or “for example”.
- Can communicate what they want to say in a simple and direct exchange of limited information on familiar
- communicate basic information about basic professional details and needs of a concrete type in a simple way.
- communicate very basic information about professional topics in a simple way, while pausing is expected and usual to search for expressions
- manage very short, isolated, rehearsed utterances using gesture and signalled requests for help when necessary.

#### In Writing


- write short messages, e-mail messages, memos following a sample
- write SMSs using standard abbreviations and basic repertoire of written words and phrases
- fill in forms with details related to standards work situations
- write simple isolated phrases and sentences, which I have memorized or copied.
- write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.
- take notes related to matters of immediate interest in work
- write simple isolated phrases and sentences, which he/she have memorized or copied.
- write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.
- give information about matters of personal and professional relevance (e.g. likes and dislikes, family, pets) using simple words/signs and basic expressions.
- produce simple isolated phrases and sentences.
- describe in very simple language what a familiar object looks like.

## Description of language skills


Level of language skills	General language skills	Professional language skills	Examples Teaching and learning resources developing these occupational skills
<p><b>Understanding Listening A1+</b></p>	<p>Can understand phrases and the highest frequency vocabulary related to areas of most immediate personal relevance (e.g. very basic personal and family information, shopping, local area, employment). Can catch the main point in short, clear, simple messages and announcements.</p>	<ul style="list-style-type: none"> <li>➤ can understands phrases and expressions related to the most immediate priority in the work environment provided speech is clearly and slowly articulated</li> <li>➤ can identify the topic of discussion</li> <li>➤ can follow speech which is very slow and carefully articulated</li> <li>➤ can understand instructions addressed carefully and slowly</li> <li>➤ Can catch the main point in short, clear, simple message and announcements</li> <li>➤ Can understands simple technical information, such as operating instructions for everyday equipment</li> <li>➤ Can extracts the essential information from short, recorded passages dealing with predictable everyday work matters</li> <li>➤ Can understand words/signs and short sentences in a simple conversation (e.g. between a customer and a salesperson in a shop), provided people communicate very slowly and very clearly.</li> <li>➤ Can follow a very simple, well-structured presentation or demonstration, provided it is illustrated with slides, concrete examples or diagrams, it is delivered slowly and clearly with repetition, and the topic is familiar.</li> <li>➤ Can understand the outline of simple information given in a predictable situation, such as on a guided tour of work environment (e.g. "This is where the master works").</li> <li>➤ Can understand simple directions on how to get from X to Y, by foot or public transport.</li> <li>➤ Can understand basic instructions on times, dates and numbers, etc., and on routine tasks and assignments to be carried out.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercises 5, 6 and 7 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercises 5, 6 and 7 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercises 5, 6 and 7 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercises 5, 6 and 7 from Unit 14: Tables and Graphs, p. 30-31</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 2: Properties of matter, p. 6-7</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 5: Chemical Processes, p. 12-13</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 11: Minerals, p. 24-25</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 12: The Hydrologic Cycle, p. 26-27</p>

		<ul style="list-style-type: none"> <li>➤ Can understand straightforward announcements (e.g. of a cinema programme or sports event, that a train has been delayed), provided the delivery is slow and clear.</li> <li>➤ Can pick out concrete information (e.g. places and times) from short recordings on familiar everyday topics, provided they are delivered very slowly and clearly.</li> </ul>	<p>Book 2 Exercises 5, 6 and 7 from Unit 13: Groundwater, p. 28-29</p> <p>Book 2 Exercises 5, 6 and 7 from Unit 14: Running Water, p. 30-31</p>
<p><b>Reading A1 towards A1+</b></p>	<p>Can read very short, simple texts. Can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and can understand short simple personal letters.</p>	<ul style="list-style-type: none"> <li>➤ can read and extract the necessary information related to working environment and the occupation.</li> <li>➤ can extract the important information and main points from short specialised texts, manuals, orders, instructions, etc.</li> <li>➤ can get a general understanding of an occupation-specific text.</li> <li>➤ Can understand very simple formal e-mails and letters (e.g. confirmation of a booking or online purchase).</li> <li>➤ Can understand everyday signs and notices, etc. in public places, such as streets, restaurants, railway stations; in workplaces, such as directions, instructions, hazard warnings.</li> <li>➤ Can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus, reference lists and timetables.</li> <li>➤ Can locate specific information in lists and isolate the information required (e.g. use catalogues to find a service or tradesman).</li> <li>➤ Can understand texts describing people, places, everyday life and work environment, etc., provided they use simple language.</li> <li>➤ Can understand information given in illustrated brochures and maps (e.g. the principal attractions of a city).</li> <li>➤ Can understand a short factual description or report within their own field, provided simple language is used and that it does not contain unpredictable detail.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercises 2, 3 and 4 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercises 2, 3 and 4 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercises 2, 3 and 4 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercises 2, 3 and 4 from Unit 14: Tables and Graphs, p. 30-31</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 2: Properties of matter, p. 6-7</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 5: Chemical Processes, p. 12-13</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 11: Minerals, p. 24-25</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 12: The Hydrologic Cycle, p. 26-27</p>

		<ul style="list-style-type: none"> <li>➤ Can understand simple, brief instructions, provided they are illustrated and not presented in continuous text.</li> </ul>	<p>Book 2 Exercises 2, 3 and 4 from Unit 13: Groundwater, p. 28-29</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 14: Running Water, p. 30-31</p>
Spoken interaction <b>A1+</b>	Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar topics and activities. Can handle very short social exchanges, even though cannot usually understand enough to keep the conversation going myself.	<ul style="list-style-type: none"> <li>➤ can exchange information on a variety of simple and routine matters directly related to the immediate work environment.</li> <li>➤ can ask questions, confirm information and avoid misunderstanding</li> <li>➤ can handle a simple conversation in order to obtain goods and services</li> <li>➤ can handle simple social exchanges with customers/colleagues, e.g. introductions, invitations, apologies.</li> <li>➤ can ask and answer simple questions about someone's preferences, requests, purchases and orders.</li> <li>➤ Can interact in a simple way but communication is totally dependent on repetition at a slower rate, rephrasing and repair.</li> <li>➤ Can ask and answer simple questions, initiate and respond to simple statements in areas of immediate need or on very familiar topics.</li> <li>➤ Can understand questions and instructions addressed carefully and slowly to them and follow short, simple directions.</li> <li>➤ Can understand what is said clearly, slowly and directly to them in simple everyday conversation; can be made to understand, if the interlocutor can take the trouble.</li> <li>➤ Can understand everyday expressions aimed at the satisfaction of simple needs of a concrete type, delivered directly to them in clear, slow and repeated language by a sympathetic interlocutor.</li> <li>➤ Can take part in a simple conversation of a basic factual nature on a predictable topic (e.g. their home country, job, school).</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercises 1, 7 and 8 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercises 1, 7 and 8 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercises 1, 7 and 8 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercises 1, 7 and 8 from Unit 14: Tables and Graphs, p. 30-31</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 2: Properties of matter, p. 6-7</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 5: Chemical Processes, p. 12-13</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 11: Minerals, p. 24-25</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 12: The Hydrologic Cycle, p. 26-27</p>

		<ul style="list-style-type: none"> <li>➤ Can ask for and provide everyday goods and services.</li> <li>➤ Can give and receive information about quantities, numbers, prices, etc.</li> <li>➤ Can make simple purchases by stating what is wanted and asking the price.</li> <li>➤ Can understand questions and instructions addressed carefully and slowly to them and follow short, simple directions.</li> <li>➤ Can ask and answer simple questions, initiate and respond to simple statements in areas of immediate need or on very familiar topics.</li> <li>➤ can ask and answer questions about my own area of work using simple language.</li> <li>➤ can ask for and give directions referring to a map or plan.</li> <li>➤ can discuss in a very simple way events, activities and plans.</li> <li>➤ can take simple telephone calls or put callers through.</li> <li>➤ can make arrangements concerning meeting points/date/time/arrival and departure, when simple language is used.</li> </ul>	<p>Book 2 Exercises 1, 7 and 8 from Unit 13: Groundwater, p. 28-29</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 14: Running Water, p. 30-31</p>
<p><b>Oral production A1+</b></p>	<p>can use simple phrases and sentences to describe where I live and people I know.</p>  <p>Can use a series of phrases and sentences to describe in simple terms my family and other people, living conditions, my</p>	<ul style="list-style-type: none"> <li>➤ can describe myself and my environment, using simple language.</li> <li>➤ can give a simple account of my work place, my job or company.</li> <li>➤ can produce simple mainly isolated phrases about people and places related to my occupation.</li> <li>➤ can read a very short, rehearsed statement – e.g. to introduce a person, propose a product.</li> <li>➤ Can give a simple description or presentation of people, living or working conditions, daily routines. likes/ dislikes, etc. as a short series of simple phrases and sentences linked into a list.</li> <li>➤ Can describe themselves, what they do and where they live.</li> </ul>	<ul style="list-style-type: none"> <li>▪ The language user produces an oral text which is received by an audience of one or more listeners.</li> <li>▪ Examples: reading a written text aloud, speaking from notes or visual aids (diagram, pictures, charts, etc.)</li> <li>▪ Acting out a rehearsed role</li> </ul> <p>See above exercises for speaking interaction:</p> <ul style="list-style-type: none"> <li>▪ Distribute role cards – students read their role cards</li> </ul> <p>Write a diagram of the role play words/sentences on the board</p>



	<p>educational background and my present or most recent job.</p>	<ul style="list-style-type: none"> <li>➤ Can describe simple aspects of their everyday life in a series of simple sentences, using simple words/signs and basic phrases, provided they can prepare in advance.</li> <li>➤ Can name an object and indicate its shape and colour while showing it to others using basic words/signs, phrases and formulaic expressions, provided they can prepare in advance.</li> <li>➤ Can use a very short prepared text to deliver a rehearsed statement (e.g. to formally introduce someone, to propose a toast).</li> </ul>	
<p><b>Written production A1</b></p>	<p>Can produce simple isolated phrases and sentences.</p> <p style="text-align: center;"></p> <p>Can produce a series of simple phrases and sentences linked with simple connectors like “and”, “but” and “because”.</p>	<ul style="list-style-type: none"> <li>➤ can write short letters, messages, e-mail messages, memos following a sample</li> <li>➤ can write SMSs using standard abbreviations.</li> <li>➤ can take notes related to matters of immediate interest in work</li> <li>➤ can fill in forms with personal details (job, age, address, etc.</li> <li>➤ can write simple isolated phrases and sentences, which I have memorized or copied.</li> <li>➤ can write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.</li> <li>➤ Can give information about matters of personal relevance (e.g. likes and dislikes, family, pets) using simple words/signs and basic expressions.</li> <li>➤ Can produce simple isolated phrases and sentences.</li> <li>➤ Can describe in very simple language what a room (or a familiar object) looks like.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 1 Exercise 9 from Unit 5: Landforms, p. 12-13</p> <p>Book 1 Exercise 9 from Unit 8: Measurements 1, p. 18-19</p> <p>Book 1 Exercise 9 from Unit 10: SI Units, p. 22-23</p> <p>Book 1 Exercise 9 from Unit 14: Tables and Graphs, p. 30-31</p> <p>Book 2 Exercise 9 from Unit 2: Properties of matter, p. 6-7</p> <p>Book 2 Exercise 9 from Unit 5: Chemical Processes, p. 12-13</p> <p>Book 2 Exercise 9 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercise 9 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercise 9 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercise 9 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercise 9 from Unit 11: Minerals, p. 24-25</p> <p>Book 2 Exercise 9 from Unit 12: The Hydrologic Cycle, p. 26-27</p> <p>Book 2 Exercise 9 from Unit 13: Groundwater, p. 28-29</p> <p>Book 2 Exercise 9 from Unit 14: Running Water, p. 30-31</p>

## Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 10

2 teaching hours per week

<b>Topics from the Curriculum Package</b>	<b>Resources</b>	<b>Comments Teaching and learning focus and methods Linguistic aspects/teaching and learning methods</b>
TOPOGRAPHIC DRAWING	<b>From Geology, Express Publishing, 2022</b> Book 1 Unit 8: Measurements 1, p. 18-19 (revision) Book 1 Unit 10: SI Units, p. 22-23 (revision) Book 1 Unit 14: Tables and Graphs, p. 30-31(revision)	
GEODESY AND CARTOGRAPHY COMPUTER PROGRAMS	<b>Materials from User Guides of the software programs used (NetCad):</b> <ul style="list-style-type: none"> <li>- menus</li> <li>- commands</li> <li>- User Guide instructions</li> </ul>	
CARPTOGRAPHY AND PHOTO-GRAMMETRY	<b>From Geology, Express Publishing, 2022</b> Book 1 Unit 5: Landforms, p. 12-13 (revision)	
GENERAL GEOLOGY AND HYDROGEOLOGY	<b>From Geology, Express Publishing, 2022</b> Book 2 Unit 2: Properties of matter, p. 6-7 Book 2 Unit 5: Chemical Processes, p. 12-13 Book 2 Unit 7: The rock cycle, p. 16-17 Book 2 Unit 8: Igneous Rock, p. 18-19 Book 2 Unit 9: Sedimentary Rock, p. 20-21 Book 2 Unit 10: Metamorphic Rock, p. 22-23 Book 2 Unit 11: Minerals, p. 24-25	

	Book 2 Unit 12: The Hydrologic Cycle, p. 26-27 Book 2 Unit 13: Groundwater, p. 28-29 Book 2 Unit 14: Running Water, p. 30-31	
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### Assessment:

- Self-assessment: According to the scale in the self-assessment grid of the Common European Framework (CEF)
- Tutor assessment: Tests, quizzes, case studies, simulations, role plays
- Final assessment: Test, case study

### Recommended learning time:

- 60 hours face to face learning
- 60 hours individual learning

## Vocabulary focus for reading and listening comprehension

**Getting Started** provides warm-up questions about the chapter topic. The questions' main purpose is to activate students' prior knowledge about the topic before they read the passage or listen to the audio file. The 'Get Ready!' exercise includes suggestions of questions that can serve this function. The teachers can also ask additional questions related to the school and occupational environment to activate students' prior knowledge.

### Target words (terms)

Each unit introducing target words and asks students to assess their knowledge of each word both before and after they work through the chapter. Vocabulary learning is incremental (gradual, step-by step). Revision is required at least 3-4 times during the school year in various contexts. Even if students do not achieve productive mastery of every word by the time the chapter is finished, the process can show partial improvement (for example, from *no knowledge* to *receptive knowledge*). By avoiding a *no knowledge / full mastery dichotomy*, the process can show smaller degrees of learning. We would expect every student to learn enough about the target words to show some improvement, which should maintain and enhance their motivation.

Reading presents a reading passage that has been graded in various levels of difficulty. The embedding of the target vocabulary in these texts ensures that it is not introduced in isolation, but in meaningful contexts. There is also a great deal of target vocabulary in these texts that is not specifically focused on in the chapter, and that provides natural recycling in new contexts of words students have already studied.

In addition, the passages are suitable for a wide range of reading-based tasks that can be constructed by the teacher to ensure mastering of target words. This integration of reading and vocabulary allows the study of lexis in programs that have a reading focus, and promotes the beneficial concurrent improvement of reading and vocabulary skills. For example, at the end of each passage, there are exercises (Reading Comprehension) that focus on comprehension ranging from literal details, recognition of true/false, matching of terms with definitions and filling gaps with targeted words.

Focusing on Vocabulary means:

- Word Meaning features a variety of exercises designed to help students learn the meaning of each of the twenty-four target words.
- Word Families provides practice in recognizing and using the various derivative word forms that make up a word's family (or words of the same category).
- Collocation exercises are designed to improve students' intuitions about the collocations a word takes (mouse, LED mouse, laser mouse, ball mouse).

## Vocabulary Learning Strategies

To learn target words well, students will need to continue meeting and learning these word families outside of this book. This means you will need to use vocabulary strategies to maximize your learning. Below, we describe a number of these vocabulary learning strategies.

### USING A DICTIONARY

One of the most important reasons to use a dictionary is to discover a word's meaning. However, many words have more than one meaning, and you must be careful to choose the one that matches the context.

**3 Match the words or phrases (1-8) with the definitions (A-H).**

- |              |                          |
|--------------|--------------------------|
| 1 __ Mac     | 5 __ hardware            |
| 2 __ Windows | 6 __ software compatible |
| 3 __ macOS   | 7 __ processing speed    |
| 4 __ Linux   | 8 __ vulnerable          |

- A a computing device
- B being able to run different programs
- C an operating system developed by Apple
- D an operating system that uses open source software
- E a measure of how fast a computer operates
- F an operating system developed by Microsoft
- G a computer developed by Apple
- H open to attack

Teachers can design similar tasks using a dictionary or the glossary to the teaching and learning resources as part of this package.

### GUESSING FROM CONTEXT

Guessing the meaning of a new word from context is a very good way to supplement the learning of vocabulary from a book like this. You can get clues from the surrounding words and the construction of the sentences.

Teachers can use short texts for guessing from context. The teachers can ask questions such as:

What is the meaning of .....?

What are the clues that helped you discover this meaning?

How could this help you understand the meaning of .....?

### EXTENSIVE READING

Although students gain a lot of benefits from studying words, they also need to see or hear them in many contexts to understand how to use them appropriately. One of the best ways to gain this wide exposure is to read extensively. The repeated exposure to words in reading will help students remember their spellings and meanings, and will also show the other words they commonly occur with. In other words, by reading widely, you will eventually begin to get a feel for which words collocate with the words you are learning.

### USING INTERNET TOOLS

Nowadays, there are many Internet sites that can help your learning. Teachers can use internet sources for allowing for extensive reading and seeing target words in many contexts to understand how to use them appropriately.

## Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 10

**From Geology, Express Publishing, 2022**

	Unit	Topic	Reading	Vocabulary/ Target words and phrases	Comments / additional target words and phrases
Book 1					
	5	Landforms	Reading a webpage (multiple choice questions)	canyon, escarpment, hill, island, lake, mountain, peninsula, plain, plateau, pond, river, tributary, valley	
	8	Measurements 1	Reading a guide (true/false statements)	centimeter, convert, foot, imperial, inch, kilogram, kilometer, length, meter, metric, mile, pound, ton, tonne, weight	
	10	SI Units	Reading a poster (multiple choice questions)	amount, base unit, derived unit, force, joule, molar mass, mole, newton, pascal, pressure, SI	
	14	Tables and Graphs	Reading a report summary (multiple choice questions)	bar graph, column, legend, line graph, pie chart, row, scatter plot, table, x-axis, y-axis	



<b>Book 2</b>					
	2	Properties of Matter	Reading a guide (true/false statements)	atom, compound, electron, element, gas, ion, isotope, liquid, matter, molecule, neutron, proton, solid, subatomic particle	
	5	Chemical Processes	Reading an article (multiple choice questions)	bonding, carbon, chemical alteration, hydrogen, hydrolysis, nitrogen, oxidation, oxygen, reaction, silicon, soluble, solution	
	7	The Rock Cycle	Reading a poster (multiple choice questions)	aggregate, consolidation, crystallization, igneous rock, lithification, magma, melt, metamorphic rock, metamorphism, pressure, rock, rock cycle, sedimentary rock	
	8	Igneous Rock	Reading an encyclopedia article (true/false statements)	aphanitic, coarse, cool, extrusive, fine, intrusive, magnification, mineral grain, phaneritic, porphyritic, pyroclastic, texture	
	9	Sedimentary Rock	Reading a brochure (true/false statements)	chemical sediment, compaction, deposit, detrital sediment, gravel, limestone, pore space, sand, sandstone, sediment, silt, solid	
	10	Metamorphic Rock	Reading a textbook chapter (true/false statements)	aureole, contact metamorphism, continental crust, dynamic metamorphism, fluid activity, foliated, index mineral, intrusion, mylonite, nonfoliated, regional metamorphism, shield	
	11	Minerals	Reading a webpage (true/false statements)	calcite, carbonate, cleavage, color, composition, crystalline, hematite, inorganic, luster, magnetite, metallic, mineral, naturally occurring, quartz, range, silicate	
	12	The Hydrologic Cycle	Reading a poster (filling in the gaps)	advection, cloud formation, condensation, evaporation, hydrologic cycle, infiltration, precipitation, residence time, runoff, sublimation, transpiration, vapor	
	13	Groundwater	Reading a report (multiple choice questions)	aquiclude, aquifer, artesian, capillary fringe, groundwater, hydrostatic pressure, permeability, porosity, spring, subsidence, water table, well, zone of aeration, zone of saturation	

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	14	Running Water	Reading a textbook chapter (multiple choice questions)	channel, channel flow, channel roughness, discharge, flow, frictional resistance, gradient, laminar, sheet flow, stream, turbulent, velocity	
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Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 10

(using the description of the teaching/learning content you can indicate when during the school year you plan to use the relevant units and exercises for developing of language skills; under comments you can indicate whether revision is needed and when)

*From Geology, Express Publishing, 2022*

	Unit	Topic	Reading	Listening	Speaking	Writing	Comments
Book 1							
	5	Landforms	Reading a webpage (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out an email	
	8	Measurements 1	Reading a guide (true/false statements)	Listening to a conversation between a geologist and an assistant (multiple choice questions);	Acting out a dialogue between a geologist and an assistant	Filling out a note	

				Completing a conversation			
	10	SI Units	Reading a poster (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out a self-evaluation sheet	
	14	Tables and Graphs	Reading a report summary (multiple choice questions)	Listening to a conversation between a company manager and an analyst (true/false statements);  Completing a conversation	Acting out a dialogue between a company manager and an analyst	Filling out a report summary	
<b>Book 2</b>							
	2	Properties of Matter	Reading a guide (true/false statements)	Listening to a conversation between two students (multiple choice questions);  Completing a conversation	Acting out a dialogue between two students	Filling out a chemistry quiz	

	5	Chemical Processes	Reading an article (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out a note	
	7	The Rock Cycle	Reading a poster (multiple choice questions)	Listening to a conversation between a student and a professor (true/false statements);  Completing a conversation	Acting out a dialogue between a student and a professor	Filling out a chart	
	8	Igneous Rock	Reading an encyclopedia article (true/false statements)	Listening to a conversation between a student and a professor (true/false statements);  Completing a conversation	Acting out a dialogue between a student and a professor	Filling out a worksheet	
	9	Sedimentary Rock	Reading a brochure (true/false statements)	Listening to a conversation between a tour guide and a tourist (multiple choice questions);  Completing a conversation	Acting out a dialogue between a tour guide and a tourist	Filling out a brochure	

	10	Metamorphic Rock	Reading a textbook chapter (true/false statements)	Listening to a conversation between an assistant and a geologist (multiple choice questions);  Completing a conversation	Acting out a dialogue between an assistant and a geologist	Filling out a worksheet	
	11	Minerals	Reading a webpage (true/false statements)	Listening to a conversation between a reporter and a geologist (multiple choice questions);  Completing a conversation	Acting out a dialogue between a reporter and a geologist	Filling out an interview	
	12	The Hydrologic Cycle	Reading a poster (filling in the gaps)	Listening to a conversation between two students (multiple choice questions);  Completing a conversation	Acting out a dialogue between two students	Filling out a worksheet	
	13	Groundwater	Reading a report (multiple choice questions)	Listening to a conversation between two surveyors (true/false statements);  Completing a conversation	Acting out a dialogue between two surveyors	Filling out a groundwater report	

	14	Running Water	Reading a textbook chapter (multiple choice questions)	Listening to a conversation between a geologist and an intern (true/false statements);  Completing a conversation	Acting out a dialogue between a geologist and an intern	Filling out an assessment of running water	
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## GRADE 11

### Description of module content and learning objectives

<p>Module objectives</p> <p>11<sup>th</sup> grade</p> <p>Module 1</p> <p>Focus on vocabulary</p> <p>Use of terminology in the foreign language</p>	<p>The module is skill-oriented and emphasizes on developing and consolidating practical skills in a variety of relevant work-related contexts. It focuses both on fluency in language use as well as on accuracy.</p> <p>Students learn and practice <b>how to</b>:</p> <p>General linguistic range</p> <ul style="list-style-type: none"> <li>• Use simple and more complex structures correctly but still systematically makes some mistakes</li> <li>• Pronounce words and phrases generally clear enough to be understood but still has a strong influence on stress, rhythm and intonation from the other language spoken</li> <li>• Clearly pronounce familiar words although repetition is needed from time to time</li> <li>• produce sounds in the target language if carefully guided. It may affect intelligibility, requiring collaboration from interlocutors.</li> <li>• Use effectively and close to independently a repertoire of basic language which enables them to deal with everyday situations with predictable</li> <li>• Convey very basic content, though they will generally have to compromise the message and search for words/signs.</li> <li>• get by using enough language, with sufficient vocabulary to express themselves with some hesitation and circumlocutions on topics such as family, hobbies and interests, work, travel and current events, but lexical limitations cause repetition and even difficulty with formulation at times.</li> </ul>
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	<p>Vocabulary range</p> <ul style="list-style-type: none"> <li>• use sufficient vocabulary to conduct routine everyday transactions involving familiar situations and topics.</li> <li>• Express using sufficient vocabulary basic communicative needs.</li> <li>• Cope with survival and routine needs using sufficient vocabulary for coping.</li> <li>• Communicate using a good range of vocabulary related to familiar topics and everyday situations.</li> </ul> <p>Grammatical accuracy</p> <ul style="list-style-type: none"> <li>• employ a range of principles of word/sign order in short statements. Shows only limited control of a few simple grammatical structures and sentence patterns in a learnt repertoire.</li> <li>• Use a range of structures correctly, but still systematically makes mistakes; nevertheless, it is usually clear what they are trying to say.</li> <li>• Communicate using reasonably accurately a repertoire of frequently used “routines” and patterns associated with more predictable situations.</li> </ul> <p>Vocabulary control</p> <ul style="list-style-type: none"> <li>• control a narrow repertoire dealing with concrete, everyday needs and in professional context</li> <li>• Clearly pronounce enough to be understood, but conversational partners will need to ask for repetition from time to time.</li> <li>• Can deal with situations affected by a strong influence by the other language(s) they speak on stress, rhythm and intonation, requiring collaboration from interlocutors.</li> <li>• Demonstrate an intelligible pronunciation when communicating in simple everyday situations, provided the interlocutor makes an effort to understand specific sounds.</li> <li>• Communicate with the interlocutor when systematic mispronunciation of phonemes might hinder intelligibility, provided the interlocutor makes an effort to recognise and adjust to the influence of the speaker’s language background on pronunciation.</li> <li>• use the rhythm and intonation of everyday words and phrases intelligibly, in spite of a strong influence on stress, intonation and/or rhythm from the other language(s) they speak.</li> </ul>
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<p>Module 2</p> <p>Professional communication in the foreign language</p>	<ul style="list-style-type: none"> <li>• Language features (e.g. word stress) are adequate for familiar everyday words and simple utterances.</li> </ul> <p>Students learn and practice <b>how to</b> Interact with colleagues or customers generally and more specifically for the level <b>how to</b>:</p> <p>Verbally</p> <ul style="list-style-type: none"> <li>• Can make and respond to invitations, suggestions, apologies, etc. using learnt phrases and memorized exchanges</li> <li>• Can handle very short social exchanges, using everyday polite forms of greeting and address</li> <li>• Can expand learnt phrases through simple recombination of their elements</li> <li>• Can ask for attention</li> <li>• adapt well-rehearsed, memorised, simple phrases to particular circumstances through limited lexical substitution and difficulties in articulating less familiar words is usual.</li> <li>• Can expand learnt phrases through simple recombinations of their elements.</li> <li>• Can use simple techniques to start, maintain or close a short conversation.</li> <li>• Can give an example of something in a very simple text using “like” or “for example”.</li> <li>• Can communicate what they want to say in a simple and direct exchange of limited information on familiar</li> <li>• communicate basic information about basic professional details and needs of a concrete type in a simple way.</li> <li>• communicate very basic information about professional topics in a simple way, while pausing is expected and usual to search for expressions</li> <li>• manage very short, isolated, rehearsed utterances using gesture and signalled requests for help when necessary.</li> </ul> <ul style="list-style-type: none"> <li>• Can perform and respond to basic language functions, e.g. information exchange and requests, and express opinions and attitudes in a simple way.</li> <li>• Can socialise simply but effectively using the simplest common expressions and following basic routines.</li> </ul>
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In Writing

- write short messages, e-mail messages, memos following a sample
- write SMSs using standard abbreviations and basic repertoire of written words and phrases
- fill in forms with details related to standards work situations
- write simple isolated phrases and sentences, which I have memorized or copied.
- write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.
- take notes related to matters of immediate interest in work
- write simple isolated phrases and sentences, which he/she have memorized or copied.
- write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.
- give information about matters of personal and professional relevance (e.g. likes and dislikes, family, pets) using simple words/signs and basic expressions.
- produce simple isolated phrases and sentences.
- describe in very simple language what a familiar object looks like.

## Description of language skills for the Module

Level of language skills	General language skills	Professional language skills	Examples  Teaching and learning resources developing these occupational skills
<b>Understanding</b>  Listening <b>A2</b>	Can understand phrases and the highest frequency vocabulary related to areas of most immediate personal relevance (e.g. very basic personal and family information, shopping, local area, employment). Can catch the main point in short, clear, simple messages and announcements.	<ul style="list-style-type: none"> <li>➤ can understand phrases and expressions related to the most immediate priority in the work environment</li> <li>➤ can identify the topic of discussion</li> <li>➤ can follow speech which is very slow and carefully articulated</li> <li>➤ can understand instructions addressed carefully and slowly</li> <li>➤ Can catch the main point in short, clear, simple message and announcements</li> <li>➤ Can understand simple technical information, such as operating instructions for everyday equipment if clearly and slowly articulated</li> <li>➤ Can extract the essential information from short, recorded passages dealing with predictable everyday work matters</li>   <li>➤ can understand enough to be able to meet needs of a concrete type provided speech is clearly and slowly articulated</li> <li>➤ Can follow in outline short, simple social exchanges, conducted very slowly and clearly.</li> <li>➤ Can generally identify the topic of discussion around them when it is conducted slowly and clearly.</li> </ul>	<b>From Geology, Express Publishing, 2022</b>  Book 2 Exercises 5, 6 and 7 from Unit 1: The Scientific Method, p. 4-5 Book 2 Exercises 5, 6 and 7 from Unit 6: Soil, p. 14-15 Book 2 Exercises 5, 6 and 7 from Unit 7: The rock cycle, p. 16-17 Book 2 Exercises 5, 6 and 7 from Unit 8: Igneous Rock, p. 18-19 Book 2 Exercises 5, 6 and 7 from Unit 9: Sedimentary Rock, p. 20-21 Book 2 Exercises 5, 6 and 7 from Unit 10: Metamorphic Rock, p. 22-23 Book 2 Exercises 5, 6 and 7 from Unit 11: Minerals, p. 24-25  Book 3 Exercises 5, 6 and 7 from Unit 1: Plate Tectonics, p. 4-5 Book 3 Exercises 5, 6 and 7 from Unit 2: Plate Tectonics II, p. 6-7 Book 3 Exercises 5, 6 and 7 from Unit 3: Earthquakes, p. 8-9 Book 3 Exercises 5, 6 and 7 from Unit 4: Volcanism, p. 10-11 Book 3 Exercises 5, 6 and 7 from Unit 8: Deserts, p. 18-19 Book 3 Exercises 5, 6 and 7 from Unit 10: Deformation, p. 22-23

		<ul style="list-style-type: none"> <li>➤ Can recognise when people agree and disagree in a conversation conducted slowly and clearly.</li> <li>➤ Can understand and follow a series of instructions for familiar everyday activities such as sports, cooking, etc., provided they are delivered slowly and clearly.</li> </ul>	<p>Book 3 Exercises 5, 6 and 7 from Unit 15: Careers, p. 32-33</p>
<p>Reading <b>A1+ to A2</b></p>	<p>Can read very short, simple texts. Can find specific, predictable information in simple everyday material such as advertisements, prospectuses, menus and timetables and can understand short simple personal letters.</p>	<ul style="list-style-type: none"> <li>➤ can read and extract the necessary information related to working environment and the occupation.</li> <li>➤ can extract the important information and main points from short specialised texts, manuals, orders, instructions, etc.</li> <li>➤ can get a general understanding of a occupation-specific text.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 2 Exercises 2, 3 and 4 from Unit 1: The Scientific Method, p. 4-5</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 6: Soil, p. 14-15</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercises 2, 3 and 4 from Unit 11: Minerals, p. 24-25</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 1: Plate Tectonics, p. 4-5</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 2: Plate Tectonics II, p. 6-7</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 3: Earthquakes, p. 8-9</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 4: Volcanism, p. 10-11</p>

			<p>Book 3 Exercises 2, 3 and 4 from Unit 8: Deserts, p. 18-19</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 10: Deformation, p. 22-23</p> <p>Book 3 Exercises 2, 3 and 4 from Unit 15: Careers, p. 32-33</p>
<p><b>Speaking</b></p> <p>Spoken interaction <b>A1+ to A2</b></p>	<p>Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar topics and activities. Can handle very short social exchanges, even though cannot usually understand enough to keep the conversation going myself.</p>	<ul style="list-style-type: none"> <li>➤ can exchange information on a variety of simple and routine matters directly related to the immediate work environment.</li> <li>➤ can ask questions, confirm information and avoid misunderstanding</li> <li>➤ can handle a simple conversation in order to obtain goods and services</li> <li>➤ can handle simple social exchanges with customers/colleagues, e.g. introductions, invitations, apologies.</li> <li>➤ can ask and answer simple questions about someone's preferences, requests, purchases and orders.</li> <li>➤ can ask and answer questions about my own area of work using simple language.</li> <li>➤ can ask for and give directions referring to a map or plan.</li> <li>➤ can discuss in a very simple way events, activities and plans.</li> <li>➤ can take simple telephone calls or put callers through.</li> <li>➤ can make arrangements concerning meeting points/date/time/arrival and departure, when simple language is used.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 2 Exercises 1, 7 and 8 from Unit 1: The Scientific Method, p. 4-5</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 6: Soil, p. 14-15</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercises 1, 7 and 8 from Unit 11: Minerals, p. 24-25</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 1: Plate Tectonics, p. 4-5</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 2: Plate Tectonics II, p. 6-7</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 3: Earthquakes, p. 8-9</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 4: Volcanism, p. 10-11</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 8: Deserts, p. 18-19</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 10: Deformation, p. 22-23</p> <p>Book 3 Exercises 1, 7 and 8 from Unit 15: Careers, p. 32-33</p>

<p>Spoken production <b>A1+</b></p>	<p>Can use a series of phrases and sentences to describe in simple terms my family and other people, living conditions, my educational background and my present or most recent job.</p>	<ul style="list-style-type: none"> <li>➤ can describe myself and my environment, using simple language.</li> <li>➤ can give a simple account of my work place, my job or company.</li> <li>➤ can produce simple mainly isolated phrases about people and places related to my occupation.</li> <li>➤ can read a very short, rehearsed statement – e.g. to introduce a person, propose a product.</li> </ul>	<p>Oral production (speaking) activities:</p> <ul style="list-style-type: none"> <li>▪ The language user produces an oral text which is received by an audience of one or more listeners.</li> <li>▪ Examples: reading a written text aloud, speaking from notes or visual aids (diagram, pictures, charts, etc.)</li> <li>▪ Acting out a rehearsed role</li> </ul> <p>See above exercises for speaking interaction:</p> <ul style="list-style-type: none"> <li>▪ Distribute role cards – students read their role cards</li> <li>▪ Write a diagram of the role play words/sentences on the board</li> </ul>
<p><b>Writing A1+</b></p>	<p>Can write short, simple notes and messages. Can write a very simple personal letter, for example thanking someone for something.</p>	<ul style="list-style-type: none"> <li>➤ can write short letters, messages, e-mail messages, memos following a sample</li> <li>➤ can write SMSs using standard abbreviations.</li> <li>➤ can take notes related to matters of immediate interest in work</li> <li>➤ can fill in forms with personal details (job, age, address, etc.</li> <li>➤ can write simple isolated phrases and sentences, which I have memorized or copied.</li> <li>➤ can write simple notes to colleagues/friends about appointments (time, place) often using familiar templates, and including greetings, forms of address, formulas to thank and ask for things.</li> </ul>	<p><b>From Geology, Express Publishing, 2022</b></p> <p>Book 2 Exercise 9 from Unit 1: The Scientific Method, p. 4-5</p> <p>Book 2 Exercise 9 from Unit 6: Soil, p. 14-15</p> <p>Book 2 Exercise 9 from Unit 7: The rock cycle, p. 16-17</p> <p>Book 2 Exercise 9 from Unit 8: Igneous Rock, p. 18-19</p> <p>Book 2 Exercise 9 from Unit 9: Sedimentary Rock, p. 20-21</p> <p>Book 2 Exercise 9 from Unit 10: Metamorphic Rock, p. 22-23</p> <p>Book 2 Exercise 9 from Unit 11: Minerals, p. 24-25</p> <p>Book 3 Exercise 9 from Unit 1: Plate Tectonics, p. 4-5</p> <p>Book 3 Exercise 9 from Unit 2: Plate Tectonics II, p. 6-7</p> <p>Book 3 Exercise 9 from Unit 3: Earthquakes, p. 8-9</p> <p>Book 3 Exercise 9 from Unit 4: Volcanism, p. 10-11</p> <p>Book 3 Exercise 9 from Unit 8: Deserts, p. 18-19</p> <p>Book 3 Exercise 9 from Unit 10: Deformation, p. 22-23</p> <p>Book 3 Exercise 9 from Unit 15: Careers, p. 32-33</p>

Teaching/learning contents (guide lines) – Cadaster and Drilling Technician, Grade 11

2 teaching hours per week

<b>Topics from the Curriculum Package</b>	<b>Resources</b>	<b>Comments Teaching and learning focus and methods Linguistic aspects/teaching and learning methods</b>
GEODESY AND CARTOGRAPHY COMPUTER PROGRAMS	<b>Materials from User Guides of the software programs used (NetCad):</b> <ul style="list-style-type: none"> <li>- Menus (revision)</li> <li>- Commands (revision)</li> </ul> User Guide instructions	
DRILING TECHNOLOGY	<b>From Geology, Express Publishing, 2022</b> Book 2 Unit 1: The Scientific Method, p. 4-5 Book 2 Unit 6: Soil, p. 14-15 Book 3 Unit 1: Plate Tectonics, p. 4-5 Book 3 Unit 2: Plate Tectonics II, p. 6-7 Book 3 Unit 3: Earthquakes, p. 8-9 Book 3 Unit 4: Volcanism, p. 10-11 Book 3 Unit 8: Deserts, p. 18-19 Book 3 Unit 10: Deformation, p. 22-23	
GROUND ROCK OBSERVATION	<b>From Geology, Express Publishing, 2022</b> Book 2 Unit 7: The rock cycle, p. 16-17 (revision) Book 2 Unit 8: Igneous Rock, p. 18-19 (revision) Book 2 Unit 9: Sedimentary Rock, p. 20-21 (revision) Book 2 Unit 10: Metamorphic Rock, p. 22-23 (revision) Book 2 Unit 11: Minerals, p. 24-25 (revision)	



ADDITIONAL TOPICS	From <b>Geology, Express Publishing, 2022</b> Book 3 Unit 15: Careers, p. 32-33	
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### Assessment:

- Self-assessment: According to the scale in the self-assessment grid of the Common European Framework (CEF)
- Tutor assessment: Tests, quizzes, case studies, simulations, role plays
- Final assessment: Test, case study

### Recommended learning time:

- 60 hours face to face learning
- 60 hours individual learning

## Vocabulary focus for reading and listening comprehension

**Getting Started** provides warm-up questions about the chapter topic. The questions' main purpose is to activate students' prior knowledge about the topic before they read the passage or listen to the audio file. The 'Get Ready!' exercise includes suggestions of questions that can serve this function. The teachers can also ask additional questions related to the school and occupational environment to activate students' prior knowledge.

### Target words (terms)

Each unit introducing target words and asks students to assess their knowledge of each word both before and after they work through the chapter. Vocabulary learning is incremental (gradual, step-by step). Revision is required at least 3-4 times during the school year in various contexts. Even if students do not achieve productive mastery of every word by the time the chapter is finished, the process can show partial improvement (for example, from *no knowledge* to *receptive knowledge*). By avoiding a *no knowledge / full mastery dichotomy*, the process can show smaller degrees of learning. We would expect every student to learn enough about the target words to show some improvement, which should maintain and enhance their motivation.

Reading presents a reading passage that has been graded in various levels of difficulty. The embedding of the target vocabulary in these texts ensures that it is not introduced in isolation, but in meaningful contexts. There is also a great deal of target vocabulary in these texts that is not specifically focused on in the chapter, and that provides natural recycling in new contexts of words students have already studied.

In addition, the passages are suitable for a wide range of reading-based tasks that can be constructed by the teacher to ensure mastering of target words. This integration of reading and vocabulary allows the study of lexis in programs that have

a reading focus, and promotes the beneficial concurrent improvement of reading and vocabulary skills. For example, at the end of each passage, there are exercises (Reading Comprehension) that focus on comprehension ranging from literal details, recognition of true/false, matching of terms with definitions and filling gaps with targeted words.

Focusing on Vocabulary means:

- Word Meaning features a variety of exercises designed to help students learn the meaning of each of the twenty-four target words.
- Word Families provides practice in recognizing and using the various derivative word forms that make up a word's family (or words of the same category).
- Collocation exercises are designed to improve students' intuitions about the collocations a word takes (mouse, LED mouse, laser mouse, ball mouse).

## Vocabulary Learning Strategies

To learn target words well, students will need to continue meeting and learning these word families outside of this book. This means you will need to use vocabulary strategies to maximize your learning. Below, we describe a number of these vocabulary learning strategies.

### USING A DICTIONARY

One of the most important reasons to use a dictionary is to discover a word's meaning. However, many words have more than one meaning, and you must be careful to choose the one that matches the context.

**3 Match the words or phrases (1-8) with the definitions (A-H).**

- |              |                          |
|--------------|--------------------------|
| 1 __ Mac     | 5 __ hardware            |
| 2 __ Windows | 6 __ software compatible |
| 3 __ macOS   | 7 __ processing speed    |
| 4 __ Linux   | 8 __ vulnerable          |

- A a computing device
- B being able to run different programs
- C an operating system developed by Apple
- D an operating system that uses open source software
- E a measure of how fast a computer operates
- F an operating system developed by Microsoft
- G a computer developed by Apple
- H open to attack

Teachers can design similar tasks using a dictionary or the glossary to the teaching and learning resources as part of this package.

### GUESSING FROM CONTEXT

Guessing the meaning of a new word from context is a very good way to supplement the learning of vocabulary from a book like this. You can get clues from the surrounding words and the construction of the sentences.

Teachers can use short texts for guessing from context. The teachers can ask questions such as:

What is the meaning of .....?

What are the clues that helped you discover this meaning?

How could this help you understand the meaning of .....?

### EXTENSIVE READING

Although students gain a lot of benefits from studying words, they also need to see or hear them in many contexts to understand how to use them appropriately. One of the best ways to gain this wide exposure is to read extensively. The repeated exposure to words in reading will help students remember their spellings and meanings, and will also show the other words they commonly occur with. In other words, by reading widely, you will eventually begin to get a feel for which words collocate with the words you are learning.

### USING INTERNET TOOLS

Nowadays, there are many Internet sites that can help your learning. Teachers can use internet sources for allowing for extensive reading and seeing target words in many contexts to understand how to use them appropriately.

## Guide to Vocabulary Focus Approach – Cadaster and Drilling Technician, Grade 11

**From Geology, Express Publishing, 2022**

	Unit	Topic	Reading	Vocabulary/ Target words and phrases	Comments / additional target words and phrases
<b>Book 2</b>					
	1	The Scientific Method	Reading a report (filling in the gaps)	conclusion, control group, experiment, experimental group, hypothesis, independent variable, observation, problem, result, scientific method, testable	
	6	Soil	Reading a report (multiple choice questions)	clay, fertile, grain, horizon, humus, leaching, parent material, regolith, residual, soil, subsoil, top soil, transported	
	7	The Rock Cycle	Reading a poster (multiple choice questions)	aggregate, consolidation, crystallization, igneous rock, lithification, magma, melt, metamorphic rock, metamorphism, pressure, rock, rock cycle, sedimentary rock	
	8	Igneous Rock	Reading an encyclopedia article (true/false statements)	aphanitic, coarse, cool, extrusive, fine, intrusive, magnification, mineral grain, phaneritic, porphyritic, pyroclastic, texture	
	9	Sedimentary Rock	Reading a brochure (true/false statements)	chemical sediment, compaction, deposit, detrital sediment, gravel, limestone, pore space, sand, sandstone, sediment, silt, solid	
	10	Metamorphic Rock	Reading a textbook chapter (true/false statements)	aureole, contact metamorphism, continental crust, dynamic metamorphism, fluid activity, foliated, index mineral, intrusion, mylonite, nonfoliated, regional metamorphism, shield	

	11	Minerals	Reading a webpage (true/false statements)	calcite, carbonate, cleavage, color, composition, crystalline, hematite, inorganic, luster, magnetite, metallic, mineral, naturally occurring, quartz, range, silicate	
<b>Book 3</b>					
	1	Plate Tectonics 1	Reading a syllabus (true/false statements)	collide, continental, continental drift, convergent boundary, divergent boundary, fault, oceanic, plate, plate tectonics, ridge, separate, subduction, transform boundary, trench	
	2	Plate Tectonics 2	Reading a textbook chapter (multiple choice questions)	anticline, basin, dip, dip-slip fault, dome, fold, footwall block, hanging wall block, joint, monocline, oblique-slip fault, strike, strike-slip fault, syncline	
	3	Earthquakes	Reading a newspaper article (multiple choice questions)	aftershock, bedrock, consolidated, earthquake, epicenter, intensity, liquefaction, magnitude, Richter scale, seismology, tsunami, unreinforced, wave	
	4	Volcanism	Reading a report (multiple choice questions)	active, ash, ash fall, ash flow, caldera, crater, dormant, erupt, extinct, lava flow, pressure ridge, pyroclastic material, spatter cone, volcanic gas, volcano	
	8	Deserts	Reading an encyclopedia article (true/false statements)	abrasion, alluvial fan, bed load, butte, deflation, desert, desert pavement, mesa, playa, suspended load, wind, wind deposit	
	10	Deformation	Reading a textbook chapter (multiple choice questions)	brittle, compression, deformation, ductile, elastic, elastic limit, plastic strain, shear stress, strain, stress, subject to, tension	

	15	Careers	Reading a webpage (multiple choice questions)	bachelor's degree, city planning, education, engineer, environmental geologist, geophysicist, government, highway planning, major, master's degree, mining, oceanographer, paleontologist, PhD, seismologist	
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## Resource for distribution of the teaching/learning content – Cadaster and Drilling Technician, Grade 11

(using the description of the teaching/learning content you can indicate when during the school year you plan to use the relevant units and exercises for developing of language skills; under comments you can indicate whether Cadaster and Drilling Technician revision is needed and when)

**From Geology, Express Publishing, 2022**

	Unit	Topic	Reading	Listening	Speaking	Writing	Comments
<b>Book 2</b>							
	1	The Scientific Method	Reading a report (filling in the gaps)	Listening to a conversation between two analysts (true/false statements);  Completing a conversation	Acting out a dialogue between two analysts	Filling out a summary of an experiment	
	6	Soil	Reading a report (multiple choice questions)	Listening to a conversation between two geologists (true/false statements);  Completing a conversation	Acting out a dialogue between two geologists	Filling out an email	

	7	The Rock Cycle	Reading a poster (multiple choice questions)	Listening to a conversation between a student and a professor (true/false statements);  Completing a conversation	Acting out a dialogue between a student and a professor	Filling out a chart	
	8	Igneous Rock	Reading an encyclopedia article (true/false statements)	Listening to a conversation between a student and a professor (true/false statements);  Completing a conversation	Acting out a dialogue between a student and a professor	Filling out a worksheet	
	9	Sedimentary Rock	Reading a brochure (true/false statements)	Listening to a conversation between a tour guide and a tourist (multiple choice questions);  Completing a conversation	Acting out a dialogue between a tour guide and a tourist	Filling out a brochure	
	10	Metamorphic Rock	Reading a textbook chapter (true/false statements)	Listening to a conversation between an assistant and a geologist (multiple choice questions);  Completing a conversation	Acting out a dialogue between an assistant and a geologist	Filling out a worksheet	

	11	Minerals	Reading a webpage (true/false statements)	Listening to a conversation between a reporter and a geologist (multiple choice questions);  Completing a conversation	Acting out a dialogue between a reporter and a geologist	Filling out an interview	
<b>Book 3</b>							
	1	Plate Tectonics 1	Reading a syllabus (true/false statements)	Listening to a conversation between two students (multiple choice questions);  Completing a conversation	Acting out a dialogue between two students	Filling out a summary on plate tectonics	
	2	Plate Tectonics 2	Reading a textbook chapter (multiple choice questions)	Listening to a conversation between two students (true/false statements);  Completing a conversation	Acting out a dialogue between two students	Filling out an email from a professor to a student about land movement	
	3	Earthquakes	Reading a newspaper article (multiple choice questions)	Listening to a conversation between a reporter and a	Acting out a dialogue between a reporter and a geologist	Filling out an article about an earthquake	

				geologist (true/false statements);  Completing a conversation			
	4	Volcanism	Reading a report (multiple choice questions)	Listening to a conversation between an analyst and an intern (true/false statements);  Completing a conversation	Acting out a dialogue between an analyst and an intern	Filling out a report on a volcano	
	8	Deserts	Reading an encyclopedia article (true/false statements)	Listening to a conversation between a geologist and an assistant (multiple choice questions);  Completing a conversation	Acting out a dialogue between a geologist and an assistant	Filling out a report about a desert	
	10	Deformation	Reading a textbook chapter (multiple choice questions)	Listening to a conversation between two geologists (true/false statements);  Completing a conversation	Acting out a dialogue between two geologists	Filling out a summary of deformation	

	15	Careers	Reading a webpage (multiple choice questions)	Listening to a conversation between an advisor and a student (true/false statements);  Completing a conversation	Acting out a dialogue between an advisor and a student	Filling out an email from an advisor to a student	
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## Focus on developing communicative skills through interaction activities and strategies

Module 2 referred to in the Framework curriculum leading towards communicative competences in professional context and environment described by the following learning objectives:

- Can maintain effective communication within the team.
- Can lead effective business communication.
- Can use a foreign language in professional activities.
- Can communicate effectively with customers, both verbally and in writing.
- Can refer to various English resources in order to carry out the daily activities of the profession.
- Can use social networking and current communication applications effectively.

The learning/teaching process in all grades is closely linked to the internships/ practice of students in working contexts and the practical acquisition of vocational/professional skills in real-life work situations and in close familiarization of the routine and a range of standard work activities performed. The methodological message is that language learning should be directed towards enabling learners to act in real-life situations, expressing themselves and accomplishing tasks of different natures. Thus, the criterion suggested for assessment is communicative ability in real life, in relation to a continuum of ability (Levels A1-B1).

The basic approach in all grades is **the action-oriented approach**. At the classroom level, there are several implications of implementing the action-oriented approach. Seeing learners as social agents implies involving them in the learning process, possibly with descriptors as a means of communication. The foreign language packs for each grade contain description of language skills using descriptors in the form of “can-do” statements. The approach also implies recognising the social nature of language learning and language use, namely the interaction between the social and the individual in the process of learning. Seeing learners as language users implies extensive use of the target language in the classroom – learning to use the language rather than just learning about the language (as a subject)<sup>1</sup>. Recommendation: language learning in all grades should be based on the real work tasks that student perform in their practice/internships and should be discussed, if possible, with their mentors/ teachers.

The action-oriented approach implies purposeful, collaborative tasks in the classroom, the primary focus of which is not language. If the primary focus of a task is not language, then there must be some other product or outcome (such as making an appointment, communication with a customer, performing an action, creating a product, taking part in a process, offering advice or discussing prices). Descriptors can be used to help design such tasks and also to observe and, if desired, to (self-)assess the language use of learners during the task. Interaction leads to co-construction of meaning and this has to be central to the learning and teaching process. This has clear implications for the classroom. At times, this interaction will be between teacher and learner(s), but at times, it will be of a

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<sup>1</sup> CEFR, Chapter 2.2. Implementing the action-oriented approach.

collaborative nature, between learners themselves. The precise balance between teacher-centred instruction and such collaborative interaction between learners in small groups is likely to reflect the context, the pedagogic tradition in that context and the proficiency level of the learners concerned.

In any communicative situation, general competences (for example, knowledge of the local context, knowledge of the work process and standard activities) are always combined with communicative language competences (linguistic, sociolinguistic and pragmatic competences: CEFR 2001 Section 5.2) and strategies (some general, some communicative language strategies). These are competences the foreign language teachers has to rely on as they are not expected to be expert in the area of vocational education. Teachers are advised to exploit existing knowledge and competences of student already acquired in their vocational classes and in turn develop them further.

Tasks often require some collaboration with others – hence the need for language. The example chosen in CEFR 2001 Chapter 2 to introduce this idea – moving – is one in which the use of language is only contingent on the task. In moving a wardrobe, some communication, preferably through language, is clearly advisable, but language is not the focus of the task. Similarly, tasks demanding greater sophistication of communication, such as agreeing on the preferred solution to a problem in functioning of a device, or serving a customer, focus on the task outcomes rather than the language used to achieve them.

The overall approach of the CEFR is summarised in a single paragraph:

Language use, embracing language learning, comprises the actions performed by persons who as individuals and as social agents develop a range of **competences**, both **general** and in particular **communicative language competences**. They draw on the competences at their disposal in various contexts under various **conditions** and under various **constraints** to engage in **language activities** involving **language processes** to produce and/or receive **texts** in relation to **themes** in specific **domains**, activating those **strategies** which seem most appropriate for carrying out the **tasks** to be accomplished. The monitoring of these actions by the participants leads to the reinforcement or modification of their competences. (CEFR 2001 Section 2.1)

In performing tasks, competences and strategies are mobilised in the performance and in turn further developed through that experience. In an “action-oriented approach” some collaborative tasks in the language classroom are therefore essential. This is why the CEFR 2001 includes a chapter on tasks. Additionally, you have in your packs a guide for construction of tasks, which you might find useful. CEFR 2001 Chapter 7 discusses real-life tasks and pedagogic tasks, possibilities for compromise between the two, factors that make tasks simple or complex from a language point of view, conditions and constraints. The precise form that tasks in the classroom may take, and the dominance that they should have in the programme, is for individual teachers to decide. No matter what perspective is adopted, it is implicit that tasks in the language classroom should involve communicative language activities and strategies (CEFR 2001 Section 4.4) that also occur in the real world, like those students are asked to perform or observe in their practices/ internships.

## Methodological tip

It is important to apply a methodological approach which does not accept that students have already achieved high competence level (B1 or even A2) in listening, speaking and written interaction. It is significant to start by confirming the acquisition of competences relevant for lower levels (A1 and A1+) and gradually progress to competences relevant for higher levels. Learners are different and it is important to convey the message that acquisition of any level, even A1+ is positive. The focus should be on what students *can do*, which means they can act effectively and perform tasks in real-life situations. The focus at this stage should not be on what students know (linguistic knowledge) but on *what students at various levels can do*.

The current methodological pack includes overview of all skill-based and language competence definitions relevant for the developed Vocational Framework Curricula. The highest potentially achievable level appropriate for the number of teaching and learning hours included in the Framework Curricula is B1 (independent level) at which the learner is beginning to use the language more independently and creatively. B1 is a level for independent user. However, it can be expected that not all students will reach and confirm the acquisition of competences at B1 level. Achieving basic user level (A1+ and A2) should be considered as a major achievement as at this level most of the standard, routine work tasks can be effectively performed.



## Communication/ Interaction

Interaction, which involves two or more parties co-constructing discourse, is central to the learning/teaching process in all grades. Interpersonal interaction is considered to be the origin of language, with interpersonal, collaborative and transactional functions. Interaction is also fundamental in learning. The CEFR scales for interaction strategies reflect this with scales for turntaking, co-operating (= collaborative strategies) and asking for clarification. These basic interaction strategies are as important in collaborative learning as they are in real-world communication. The majority of the activities for interaction concern oral interaction. However, as pointed out in the Vocational Framework Curricula written interaction (= writing much as you would speak, in a slowed-down dialogue) has taken an increasingly significant role over the past 20 years. Therefore, the new category of online interaction has been developed and has to be specially focused upon.

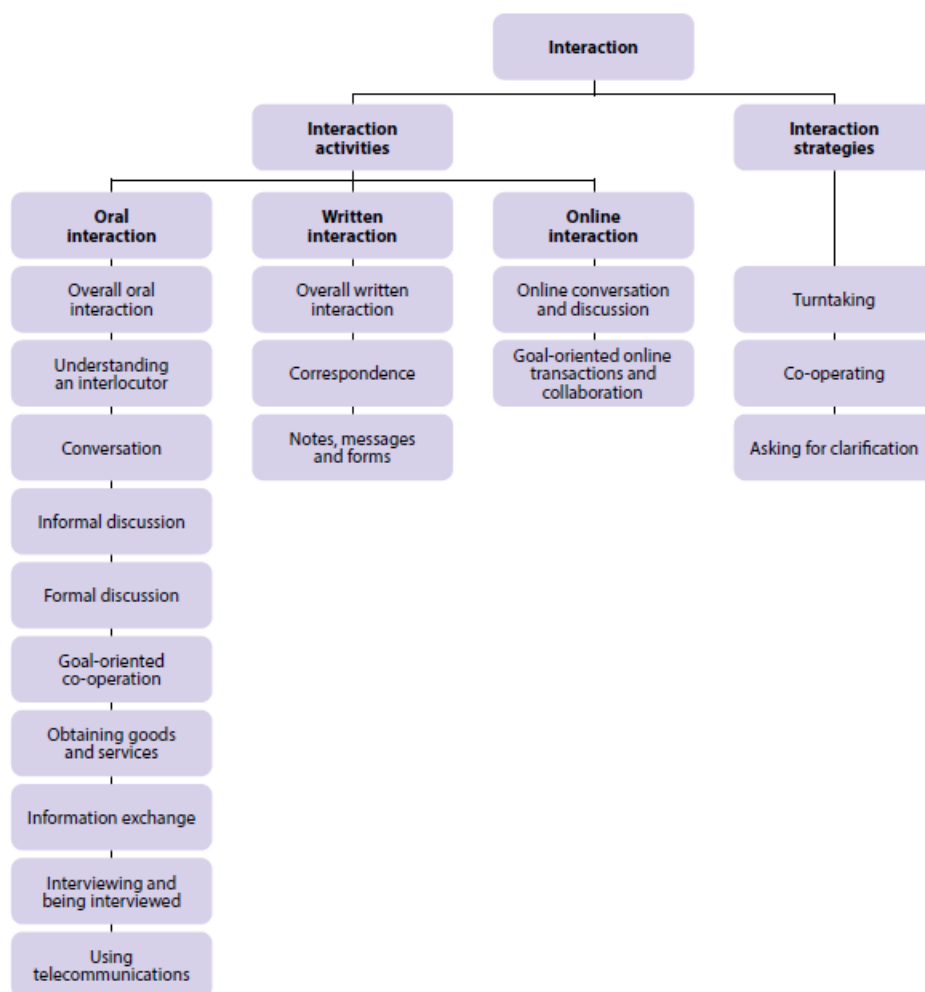


Fig. 1. Interactive activities and strategies (summary).

The activities (descriptors) begin with “Understanding an interlocutor”. “Interlocutor” is a somewhat technical term that means the person with whom one is conversing directly in a dialogue. Here are some explanations of the different categories or type of activities teachers should focus on.

<b>B1</b>	Can communicate with some confidence on familiar routine and non-routine matters related to their interests and professional field. Can exchange, check and confirm information, deal with less routine situations and explain why something is a problem. Can express thoughts on more abstract, cultural topics such as films, books, music, etc.
	Can exploit a wide range of simple language to deal with most situations likely to arise while travelling. Can enter unprepared into conversation on familiar topics, and express personal opinions and exchange information on topics that are familiar, of personal interest or pertinent to everyday life (e.g. family, hobbies, work, travel and current events).
<b>A2</b>	Can interact with reasonable ease in structured situations and short conversations, provided the other person helps if necessary. Can manage simple, routine exchanges without undue effort; can ask and answer questions and exchange ideas and information on familiar topics in predictable everyday situations.
	Can communicate in simple and routine tasks requiring a simple and direct exchange of information on familiar and routine matters to do with work and free time. Can handle very short social exchanges but is rarely able to understand enough to keep conversation going of their own accord.
<b>A1</b>	Can interact in a simple way but communication is totally dependent on repetition at a slower rate, rephrasing and repair. Can ask and answer simple questions, initiate and respond to simple statements in areas of immediate need or on very familiar topics.
<b>Pre-A1</b>	Can ask and answer questions about themselves and daily routines, using short, formulaic expressions and relying on gestures to reinforce the information.

*Understanding an interlocutor:*

- understanding a person with whom you are conversing directly in an interaction, with the possibility of negotiating meaning. The aspects referred to here are:
  - topic and setting: from personal details and everyday needs to complex and abstract topics of a specialist nature;
  - degree of accommodation by the interlocutor: from sympathetic repetition and taking the trouble to help to just confirming details if the accent is less familiar.

<b>B1</b>	Can follow clearly articulated speech/sign directed at them in everyday conversation, though will sometimes have to ask for repetition of particular words/signs and phrases.
<b>A2</b>	Can understand enough to manage simple, routine exchanges without undue effort. Can generally understand clear, standard speech/sign on familiar matters directed at them, provided they can ask for repetition or reformulation from time to time.
	Can understand what is said clearly, slowly and directly to them in simple everyday conversation; can be made to understand, if the interlocutor can take the trouble.
<b>A1</b>	Can understand everyday expressions aimed at the satisfaction of simple needs of a concrete type, delivered directly to them clearly and slowly, with repetition, by a sympathetic interlocutor. Can understand questions and instructions addressed carefully and slowly to them and follow short, simple directions.
<b>Pre-A1</b>	Can understand simple questions that directly concern them (e.g. name, age and address), if the person is asking slowly and clearly. Can understand simple personal information (e.g. name, age, place of residence, origin) when other people introduce themselves slowly and clearly, directly to them, and can understand questions on this theme addressed to them, though the questions may need to be repeated. Can understand a number of familiar words/signs and recognise key information (e.g. numbers, prices, dates and days of the week), provided the delivery is very slow, with repetition if necessary.

Conversation

- interaction with a primarily social function: the establishment and maintenance of personal relationships
  - setting: from short exchanges, through maintaining a conversation and sustaining relationships, to flexible use for social purposes;
  - topics: from personal news, through familiar topics of personal interest, to most general topics;
  - language functions: from greetings, etc., through offers, invitations and permission, to degrees of emotion and allusive, joking usage.

<b>B1</b>	<p>Can start up a conversation and help keep it going by asking people relatively spontaneous questions about a special experience or event, expressing reactions and opinions on familiar subjects.</p> <p>Can have relatively long conversations on subjects of common interest, provided the interlocutor makes an effort to support understanding.</p>
<b>B1</b>	<p>Can enter unprepared into conversations on familiar topics.</p> <p>Can follow clearly articulated language directed at them in everyday conversation, though will sometimes have to ask for repetition of particular words/signs.</p> <p>Can maintain a conversation or discussion but may sometimes be difficult to follow when trying to express exactly what they would like to.</p> <p>Can express and respond to feelings such as surprise, happiness, sadness, interest and indifference.</p>
<b>A2</b>	<p>Can establish social contact (e.g. greetings and farewells, introductions, giving thanks).</p> <p>Can generally understand clear, standard language on familiar matters directed at them, provided they can ask for repetition or reformulation from time to time.</p> <p>Can participate in short conversations in routine contexts on topics of interest.</p> <p>Can express how they feel in simple terms, and express thanks.</p> <p>Can ask for a favour (e.g. to borrow something), can offer a favour, and can respond if someone asks them to do a favour for them.</p>
<b>A2</b>	<p>Can handle very short social exchanges but is rarely able to understand enough to keep conversation going of their own accord, though they can be made to understand if the interlocutor will take the trouble.</p> <p>Can use simple, everyday, polite forms of greeting and address.</p> <p>Can converse in simple language with peers, colleagues or members of a host family, asking questions and understanding answers relating to most routine matters.</p> <p>Can make and respond to invitations, suggestions and apologies.</p> <p>Can express how they are feeling, using very basic stock expressions.</p> <p>Can state what they like and dislike.</p>
<b>A1</b>	<p>Can understand everyday expressions aimed at the satisfaction of simple needs of a concrete type, delivered directly to them in clear, slow and repeated language by a sympathetic interlocutor.</p> <p>Can take part in a simple conversation of a basic factual nature on a predictable topic (e.g. their home country, family, school).</p> <p>Can make an introduction and use basic greeting and leave-taking expressions.</p> <p>Can ask how people are and react to news.</p>
<b>Pre-A1</b>	<p>Can understand and use basic, formulaic expressions such as "Yes", "No", "Excuse me", "Please", "Thank you", "No thank you", "Sorry".</p> <p>Can recognise simple greetings.</p> <p>Can greet people, state their name and take leave in a simple way.</p>

*Informal discussion (with friends or members of the team)*

- includes aspects of both the interpersonal and evaluative use of language, since these tend to be interwoven in everyday interaction.
  - topics: from what to do and where to go, to abstract, complex and even unfamiliar topics and sensitive issues;
  - ability to follow the discussion: from identifying the topic, through following the main points, to keeping up with animated discussion and understanding colloquial references;
  - language functions: from discussing and (dis)agreeing in a limited way to expressing ideas with precision and dealing diplomatically with disagreement and criticism.

<b>B1</b>	<p>Can follow much of what is said around them on general topics, provided interlocutors avoid very idiomatic usage and articulate clearly.</p> <p>Can express their thoughts about abstract or cultural topics such as music or films.</p> <p>Can explain why something is a problem.</p> <p>Can give brief comments on the views of others.</p> <p>Can compare and contrast alternatives, discussing what to do, where to go, who or which to choose, etc.</p>
	<p>Can generally follow the main points in an informal discussion with friends provided they articulate clearly in standard language or a familiar variety.</p> <p>Can give or seek personal views and opinions in discussing topics of interest.</p> <p>Can make their opinions and reactions understood as regards solutions to problems or practical questions of where to go, what to do, or how to organise an event (e.g. an outing).</p> <p>Can express beliefs, opinions and agreement and disagreement politely.</p>
<b>A2</b>	<p>Can generally identify the topic of discussion around them when it is conducted slowly and clearly.</p> <p>Can exchange opinions and compare things and people using simple language.</p> <p>Can discuss what to do in the evening or at the weekend.</p> <p>Can make and respond to suggestions.</p> <p>Can agree and disagree with others.</p>
	<p>Can discuss everyday practical issues in a simple way when addressed clearly, slowly and directly.</p> <p>Can discuss what to do, where to go and make arrangements to meet.</p> <p>Can express opinions in a limited way.</p>
<b>A1</b>	<p>Can exchange likes and dislikes for sports, foods, etc., using a limited repertoire of expressions, when addressed clearly, slowly and directly.</p>
<b>Pre-A1</b>	<p><i>No descriptors available</i></p>

*Formal discussion (meetings, instructions, briefings)*

- more formal discussion, mainly in a professional context.
  - type of meeting and topics: from exchanges on practical problems to discussion of abstract, complex, unfamiliar issues;
  - ability to follow the discussion: from needing repetition and clarification to understanding points given prominence and keeping up with animated debate;
  - ability to contribute: from needing to rehearse and get help with formulation to probing, evaluating and challenging the contributions of others and arguing one's own position convincingly.

<b>B1</b>	Can follow much of what is said that is related to their field, provided interlocutors avoid very idiomatic usage and articulate clearly. Can put over a point of view clearly, but has difficulty engaging in debate.
	Can take part in routine formal discussion of familiar subjects which is clearly articulated in the standard form of the language or a familiar variety and which involves the exchange of factual information, receiving instructions or the discussion of solutions to practical problems. Can follow argumentation and discussion on a familiar or predictable topic, provided the points are made in relatively simple language and/or repeated, and opportunity is given for clarification.
<b>A2</b>	Can generally follow changes of topic in formal discussion related to their field which is conducted slowly and clearly. Can exchange relevant information and give their opinion on practical problems when asked directly, provided they receive some help with formulation and can ask for repetition of key points if necessary.
	Can express what they think about things when addressed directly in a formal meeting, provided they can ask for repetition of key points if necessary.
<b>A1</b>	<i>No descriptors available</i>
<b>Pre-A1</b>	<i>No descriptors available</i>

Goal-oriented co-operation

- collaborative, task-focused work, which is a daily occurrence in real life, especially in professional contexts.
  - following the discussion: from understanding simple instructions explained directly to them to understanding detailed instructions reliably;
  - active contribution to the work: from simply asking for things and giving things to speculating about causes and consequences and organising the entire task.

<b>B1</b>	<p>Can follow what is said, though they may occasionally have to ask for repetition or clarification if the discussion is rapid or extended.</p> <p>Can explain why something is a problem, discuss what to do next, and compare and contrast alternatives.</p> <p>Can give brief comments on the views of others.</p>
	<p>Can generally follow what is said and, when necessary, repeat back part of what someone has said to confirm mutual understanding.</p> <p>Can make their opinions and reactions understood as regards possible solutions or the question of what to do next, giving brief reasons and explanations.</p> <p>Can invite others to give their views on how to proceed.</p>
<b>A2</b>	<p>Can understand enough to manage simple, routine tasks without undue effort, asking very simply for repetition when they do not understand.</p> <p>Can discuss what to do next, making and responding to suggestions, and asking for and giving directions.</p>
	<p>Can indicate when they are following and can be made to understand what is necessary, if the interlocutor takes the trouble.</p> <p>Can communicate in simple and routine tasks using simple phrases to ask for and provide things, to get simple information and to discuss what to do next.</p>
<b>A1</b>	<p>Can understand questions and instructions addressed carefully and slowly to them and follow short, simple directions.</p> <p>Can act on basic instructions that involve times, locations, numbers, etc.</p> <p>Can ask people for things, and give people things.</p>



Obtaining goods and services

- service encounters in work contexts and in restaurants, shops, banks, etc.
  - types of situation: from simple everyday transactions to disputes about responsibility and sensitive transactions in public, professional or academic life;
  - getting service: from asking for food and drink to asking detailed questions about more complex services;
  - demanding satisfaction: from making a complaint (B1) to negotiating a solution to a dispute or a sensitive transaction.

<b>B1</b>	<p>Can deal with most transactions likely to arise while travelling, arranging travel or accommodation, or dealing with authorities during a foreign visit.</p> <p>Can ask in a shop for an explanation of the difference between two or more products serving the same purpose, in order to make a decision, posing follow-up questions as necessary.</p> <p>Can cope with less routine situations in shops, post offices, banks, e.g. returning an unsatisfactory purchase.</p> <p>Can make a complaint.</p> <p>Can deal with most situations likely to arise when making travel arrangements through an agent or when actually travelling, e.g. asking a passenger where to get off for an unfamiliar destination.</p>
<b>A2</b>	<p>Can deal with common aspects of everyday living such as travel, lodging, eating and shopping.</p> <p>Can interact in predictable everyday situations (e.g. post office, station, shop), using a wide range of simple expressions.</p> <p>Can get all the information needed from a tourist office, as long as it is of a straightforward, non-specialised nature.</p> <p>Can ask for and provide everyday goods and services.</p> <p>Can get simple information about travel, use public transport (e.g. buses, trains, taxis), ask and give directions, and buy tickets.</p> <p>Can ask about things and make simple transactions in shops, post offices or banks.</p> <p>Can give and receive information about quantities, numbers, prices, etc.</p> <p>Can make simple purchases by stating what is wanted and asking the price.</p> <p>Can order a meal.</p> <p>Can point out when something is wrong (e.g. "The food is cold" or "There is no light in my room").</p> <p>Can ask (face-to-face) for a medical appointment and understand the reply. Can indicate the nature of a problem to a health professional, perhaps using gestures and body language.</p>
<b>A1</b>	<p>Can ask people for things and give people things.</p> <p>Can ask for food and drink using basic expressions.</p> <p>Can handle numbers, quantities, cost and time.</p>
<b>Pre-A1</b>	<p>Can make simple purchases and/or order food or drink when pointing or other gesture can support the verbal reference.</p>



Information exchange

- exchanging factual information
  - type of transaction: from simple questions, instructions and directions, through simple, routine exchanges, to exchanging information with other specialists;
  - type of information: from personal details, dates, prices, etc., through habits, routines, pastimes and straightforward factual information, to detailed and complex information or advice.

<b>B1</b>	Can exchange, check and confirm accumulated factual information on familiar routine and non-routine matters within their field with some confidence.
	Can summarise and give their opinion about a short story, article, talk, discussion, interview or documentary and answer further questions of detail.
<b>B1</b>	Can find out and pass on straightforward factual information.
	Can ask for and follow detailed directions.
	Can obtain more detailed information.
	Can offer advice on simple matters within their field of experience.
<b>A2</b>	Can understand enough to manage simple, routine exchanges without undue effort.
	Can deal with practical everyday demands: finding out and passing on straightforward factual information.
	Can ask and answer questions about habits and routines.
	Can ask and answer questions about pastimes and past activities.
	Can ask and answer questions about plans and intentions.
	Can give and follow simple directions and instructions, e.g. explain how to get somewhere.
	Can communicate in simple and routine tasks requiring a simple and direct exchange of information.
	Can exchange limited information on familiar and routine operational matters.
	Can ask and answer questions about what they do at work and in their free time.
	Can ask for and give directions referring to a map or plan.
Can ask for and provide personal information.	
<b>A1</b>	Can ask and answer simple questions about an event (e.g. ask where and when it took place, who was there and what it was like).
	Can understand questions and instructions addressed carefully and slowly to them and follow short, simple directions.
	Can ask and answer simple questions, initiate and respond to simple statements in areas of immediate need or on very familiar topics.
	Can ask and answer questions about themselves and other people, where they live, people they know, things they have.
	Can indicate time by lexicalised phrases like “next week”, “last Friday”, “in November”, “3 o’clock”.
<b>Pre-A1</b>	Can express numbers, quantities and cost in a limited way.
	Can name the colour of clothes or other familiar objects and can ask the colour of such objects.
	Can tell people their name and ask other people their names.
	Can use and understand simple numbers in everyday conversations.
	Can ask and tell what day, time of day and date it is.
<b>Pre-A1</b>	Can ask for and give a date of birth.
	Can ask for and give a phone number.
	Can tell people their age and ask people about their age.
	Can ask very simple questions for information, such as “What is this?” and understand one- or two-word/ sign answers.

*Interviewing and being interviewed*

- the specialised roles associated with appointments and job applications as well as other forms of examination, general performance, etc.
  - independence from the interlocutor: from requiring direct, slow, clear standard language to acting without any support, at no disadvantage to the other person(s);
  - taking the initiative: from bringing up new subjects (B1) to participating fully, developing a point fluently and handling interjections well;
  - conducting the actual interview: from using a prepared questionnaire (B1), through departing spontaneously from prepared questions and following up and probing interesting replies, to structuring the discourse and interacting authoritatively.

<b>B1</b>	Can provide concrete information required in an interview/consultation (e.g. describe symptoms to a doctor), but with limited precision.
	Can carry out a prepared interview, checking and confirming information, though they may occasionally have to ask for repetition if the other person's response is rapid or extended.
<b>B1</b>	Can take some initiative in an interview/consultation (e.g. to bring up a new subject) but is very dependent on the interviewer in the interaction.
	Can describe symptoms in a simple way and ask for advice when using health services, and can understand the answer, provided this is given clearly in everyday language.
	Can use a prepared questionnaire to carry out a structured interview, with some spontaneous follow-up questions.
<b>A2</b>	Can make themselves understood in an interview and communicate ideas and information on familiar topics, provided they can ask for clarification occasionally, and are given some help to express what they want to.
	Can describe to a doctor very basic symptoms and ailments such as a cold or the flu.
	Can answer simple questions and respond to simple statements in an interview.
<b>A1</b>	Can indicate in simple language the nature of a problem to a health professional, perhaps using gestures and body language.
	Can reply in an interview to simple direct questions, put very slowly and clearly in direct, non-idiomatic language, about personal details.
<b>A1</b>	Can state in simple language the nature of a problem to a health professional and answer simple questions such as "Does that hurt?" even though they have to rely on gestures and body language to reinforce the message.

Using telecommunications

- use of the phone and internet-based apps for remote communication
  - range of information and transactions involved: from simple messages and conversations on predictable topics like arrival times, routine messages and basic services to use for a variety of personal and professional purposes;
  - interlocutor: from a known person to unknown persons with less familiar accents;
  - length of exchange: from short, simple exchanges to extended casual conversation.

<b>B1</b>	Can use telecommunications for everyday personal or professional purposes, provided they can ask for clarification from time to time. Can give important details over the (video)phone concerning an unexpected incident (e.g. a problem in a hotel, with travel arrangements, with a hire car).
	Can use telecommunications to have relatively simple but extended conversations with people they know personally. Can use telecommunications for routine messages (e.g. arrangements for a meeting) and to obtain basic services (e.g. book a hotel room or make a medical appointment).
<b>A2</b>	Can use telecommunications with their friends to exchange simple news, make plans and arrange to meet.
	Can, given repetition and clarifications, participate in a short, simple phone conversation with a known person on a predictable topic, e.g. arrival times, arrangements to meet. Can understand a simple message (e.g. "My flight is late. I will arrive at 10 o'clock."), confirm details of the message and pass it on by phone to other people concerned.

## Written interaction

Written interaction concerns interactive communication through the medium of script. The number of formal and informal video-recorded chats and message exchanges has been rising rapidly, most notably through WhatsApp. In some countries, signers can now send enquiries, comments and complaints to certain service providers through a dedicated web portal. Most interactive situations are tolerant of some error and confusion and have some contextual support. There is usually an opportunity to use interaction strategies like asking for clarification or asking for help with formulation and to repair misunderstandings. The requirement to produce carefully structured, accurate text is less of a priority.

<b>B1</b>	Can convey information and ideas on abstract as well as concrete topics, check information, and ask about or explain problems with reasonable precision.
	Can compose personal letters and notes asking for or conveying simple information of immediate relevance, getting across the point they feel to be important.
<b>A2</b>	Can compose short, simple formulaic notes relating to matters in areas of immediate need.
<b>A1</b>	Can ask for or pass on personal details.
<b>Pre-A1</b>	Can convey basic information (e.g. name, address, family) in short phrases on a form or in a note, with the use of a dictionary.

## Correspondence

personal and formal correspondence, since this is an activity that some user/learners need to carry out.

- type of message: from simple, personal messages, to in-depth, personal and professional correspondence;
- type of language: from formulaic expressions to emotional, allusive and joking usage and writing with good expression in an appropriate tone and style.

<b>B1</b>	<p>Can compose personal letters giving news and expressing thoughts about abstract or cultural topics such as music or film.</p> <p>Can compose letters expressing different opinions and giving detailed accounts of personal feelings and experiences.</p> <p>Can reply to an advertisement in writing and ask for further information on items that interest them.</p> <p>Can compose basic formal e-mails/letters (e.g. to make a complaint and request action).</p>
	<p>Can compose personal letters describing experiences, feelings and events in some detail.</p> <p>Can compose basic e-mails/letters of a factual nature (e.g. to request information or to ask for and give confirmation).</p> <p>Can compose a basic letter of application with limited supporting details.</p>
<b>A2</b>	<p>Can exchange information by text message, by e-mail or in short letters, responding to questions from the other person (e.g. about a new product or activity).</p>
	<p>Can convey personal information of a routine nature, for example in a short e-mail or letter introducing themselves.</p> <p>Can compose very simple personal letters expressing thanks and apology.</p> <p>Can compose short, simple notes, e-mails and text messages (e.g. to send or reply to an invitation, to confirm or change an arrangement).</p> <p>Can compose a short text in a greetings card (e.g. for someone's birthday or to wish them a Happy New Year).</p>
	<p>Can compose messages and online postings as a series of very short sentences about hobbies and likes/dislikes, using simple words and formulaic expressions, with reference to a dictionary.</p>
<b>A1</b>	<p>Can compose a short, simple postcard.</p> <p>Can compose a short, very simple message (e.g. a text message) to friends to give them a piece of information or to ask them a question.</p>
<b>Pre-A1</b>	<p>Can convey basic personal information in short phrases and sentences, with reference to a dictionary.</p>

*Notes, messages and forms*

This encompasses a range of transactional interactive writing. At the A levels it includes filling in forms with personal details. From A2 the focus is on taking or leaving messages and writing/signing short notes.

- filling in forms with personal details (Pre-A1 to A2);
- leaving and taking messages, from simple messages about time, through messages containing several points, to complex personal or professional messages;
- formulating notes: from short and simple to more developed notes to friends, service people, teachers, etc.

<b>B1</b>	Can take routine messages that are likely to occur in a personal, professional or academic context. Can take messages communicating enquiries and explaining problems.
	Can formulate notes conveying simple information of immediate relevance to friends, service people, teachers and others who feature in their everyday life, getting across comprehensibly the points they feel are important. Can take messages over the phone containing several points, provided the caller dictates these clearly and sympathetically.
<b>A2</b>	Can take a short, simple message provided they can ask for repetition and reformulation.
	Can formulate short, simple notes and messages relating to matters in areas of immediate need. Can fill in personal and other details on most everyday forms (e.g. to open a bank account, or to send a letter by recorded delivery).
<b>A1</b>	Can fill in numbers and dates, own name, nationality, address, age, date of birth or arrival in the country, etc., e.g. on a hotel registration form.
	Can leave a simple message giving information regarding for instance where they have gone, or what time they will be back (e.g. "Shopping: back at 5 p.m.").
<b>Pre-A1</b>	Can fill in very simple registration forms with basic personal details: name, address, nationality, marital status.

### *Online interaction*

Online communication is always mediated through a machine, which implies that it is unlikely ever to be exactly the same as face-to-face interaction. There are emergent properties of group interaction online that are almost impossible to capture in traditional competence scales focusing on the individual's behaviour in speech, signing or in writing. For instance, there is an availability of resources shared in real time. On the other hand, there may be misunderstandings that are not spotted (and corrected) immediately, as is often easier with face-to-face communication.

Some requirements for successful communication are:

- the need for more redundancy in messages;
- the need to check that the message has been correctly understood;
- ability to reformulate in order to help comprehension and deal with misunderstandings;
- ability to handle emotional reactions.



Online conversation and discussion

- conversation and discussion online as a multimodal phenomenon, with an emphasis on how interlocutors communicate online to handle both serious issues and social exchanges in an open-ended way.
  - instances of simultaneous (real-time) and consecutive interaction, the latter allowing time to prepare a draft and/or consult aids;
  - participation in sustained interaction with one or more interlocutors;
  - composing posts and contributions for others to respond to;
  - comments (for example, evaluative) on the posts, comments and contributions of others;
  - reactions to embedded media;
  - the ability to include symbols, images and other codes to make the message convey tone, stress and prosody, but also the affective/emotional side, irony, etc.

<b>B1</b>	Can engage in real-time online exchanges with more than one participant, recognising the communicative intentions of each contributor, but may not understand details or implications without further explanation.
	Can post online accounts of social events, experiences and activities referring to embedded links and media and sharing personal feelings.
<b>A2+</b>	Can post a comprehensible contribution in an online discussion on a familiar topic of interest, provided they can prepare the text beforehand and use online tools to fill gaps in language and check accuracy.
	Can make personal online postings about experiences, feelings and events and respond individually to the comments of others in some detail, though lexical limitations sometimes cause repetition and inappropriate formulation.
<b>A2</b>	Can introduce themselves and manage simple exchanges online, asking and answering questions and exchanging ideas on predictable everyday topics, provided enough time is allowed to formulate responses, and that they interact with one interlocutor at a time.
	Can make short descriptive online postings about everyday matters, social activities and feelings, with simple key details.
<b>A1</b>	Can comment on other people's online postings, provided they are written/signed in simple language, reacting to embedded media by expressing feelings of surprise, interest and indifference in a simple way.
	Can engage in basic social communication online (e.g. a simple message on a virtual card for special occasions, sharing news and making/confirming arrangements to meet).
<b>Pre-A1</b>	Can make brief positive or negative comments online about embedded links and media using a repertoire of basic language, though they will generally have to refer to an online translation tool and other resources.
	Can formulate very simple messages and personal online postings as a series of very short sentences about hobbies, likes/dislikes, etc., relying on the aid of a translation tool.
<b>A1</b>	Can use formulaic expressions and combinations of simple words/signs to post short positive and negative reactions to simple online postings and their embedded links and media, and can respond to further comments with standard expressions of thanks and apology.
	Can post simple online greetings, using basic formulaic expressions and emoticons.
<b>Pre-A1</b>	Can post online short simple statements about themselves (e.g. relationship status, nationality, occupation), provided they can select them from a menu and/or refer to an online translation tool.

A user/learner will struggle to interact successfully in an online meeting until they reach the B levels, will be able to interact in a virtual “classroom” at A2 only if carefully guided, and maybe can communicate only very superficially at A1 when posting and chatting in the “cafe”.



*Goal-oriented online transactions and collaborations*

- potentially collaborative nature of online interaction and transactions that have specific goals, as a regular feature of contemporary life.

<b>B1</b>	<p>Can engage in online transactions that require an extended exchange of information, provided the interlocutor(s) avoid complex language and are willing to repeat and reformulate when necessary.</p> <p>Can interact online with a group that is working on a project, following straightforward instructions, seeking clarification and helping to accomplish the shared tasks.</p>
	<p>Can engage in online collaborative or transactional exchanges that require simple clarification or explanation of relevant details, such as registering for a course, tour or event, or applying for membership.</p> <p>Can interact online with a partner or small group working on a project, provided there are visual aids such as images, statistics and graphs to clarify more complex concepts.</p> <p>Can respond to instructions and ask questions or request clarifications in order to accomplish a shared task online.</p>
<b>A2</b>	<p>Can use formulaic language to respond to routine problems arising in online transactions (e.g. concerning availability of models and special offers, delivery dates, addresses).</p> <p>Can interact online with a supportive partner in a simple collaborative task, responding to basic instructions and seeking clarification, provided there are visual aids such as images, statistics or graphs to clarify the concepts involved.</p>
	<p>Can make simple online transactions (e.g. ordering goods or enrolling in a course) by filling in an online form or questionnaire, providing personal details and confirming acceptance of terms and conditions, declining extra services, etc.</p> <p>Can ask basic questions about the availability of a product or feature.</p> <p>Can respond to simple instructions and ask simple questions in order to accomplish a shared task online with the help of a supportive interlocutor.</p>
<b>A1</b>	<p>Can complete a very simple online purchase or application, providing basic personal information (e.g. name, e-mail or telephone number).</p>
<b>Pre-A1</b>	<p>Can make selections (e.g. choosing a product, size, colour) in a simple online purchase or application form, provided there is visual support.</p>

The move towards higher levels expands from basic transactions and information exchange at the A levels towards more sophisticated collaborative project work that is goal-oriented. This can be seen as a progression from filling in predictable online forms at Pre-A1, to solving various problems in order for the transaction to take place at the B levels. Simple collaborative tasks appear at A2+, with a co-operative interlocutor, or with small group project work from B1.

## Interaction strategies

Interaction strategies are linked to developing pragmatic competences. They include: “Taking the floor” (“Turntaking”), “Co-operating” and “Asking for clarification”.

They are also introduced at higher levels than A1.

### *Asking for clarification (can be first introduced)*

#### A1

- Can indicate with simple words/signs, intonation and gestures that they do not understand.
- Can express in a simple way that they do not understand.

#### A2

- Can ask very simply for repetition when they do not understand.
- Can ask for clarification about key words/signs or phrases not understood, using stock phrases.
- Can indicate that they did not follow.
- Can signal non-understanding and ask for a word/sign to be spelt out.

#### B1

- Can ask for further details and clarifications from other group members in order to move a discussion forward.
- Can ask someone to clarify or elaborate what they have just said.

### *Taking the floor*

#### A2

- Can use simple techniques to start, maintain or end a short conversation.
- Can initiate, maintain and close simple, face-to-face conversation.
- Can ask for attention.

#### B1

- Can intervene in a discussion on a familiar topic, using a suitable phrase to get the floor.
- Can initiate, maintain and close simple, face-to-face conversation on topics that are familiar or of personal interest.

### *Co-operating*

#### A2

- Can indicate when they are following.

#### B1

- Can repeat back part of what someone has said to confirm mutual understanding and help keep the development of ideas on course.
- Can invite others into the discussion.

## Additional suggestions:

### Application of the VAK model

Activities can be a major contribution to the success of a class. In addition to reinforcing and consolidating grammar rules and vocabulary, and encouraging learners to speak freely, activities can be a tool for reaching different learner types. When we create activities, we need to keep in mind the diversity of our classrooms.

Real learning occurs when we address our learners' needs and preferences, helping to create the motivation for them to participate in the activities which we offer them. They need to develop a sense of personal accountability making them responsible for their own learning. In order to do this, they need to become involved in the learning process as well as the material to be learned. By recognising our learners as individuals and helping them to reach their objectives in learning a foreign language, we provide them with the basics of a learning atmosphere which puts them into a learning state. Students who are confronted with new material as well as adults who have been working hard outside the classroom are grateful for activities which are varied, interesting and fun.

The VAK model uses materials which allow different types of learners (visual, auditory, and kinaesthetic motoric and kinaesthetic emotional learners) to perceive, process and recall information through one of these sensory channels. By creating

- activities which include pictures, words, and movement;
- activities which can be done in group work by communicating with others, or alone by thinking and reflecting;
- activities which are to be approached systematically or in a more random style,

the chances of reaching learners of all types are greatly increased. The activities also help us to create both a supportive and energetic atmosphere in the classroom.

These visual, auditory and kinaesthetic channels are often seen as filters which help us to perceive the world around us. They refer to the way we take in, store and recall information.

Here is how the benefit for the different types of learners is explained in the introduction of *Communicative Business English Activities*, by Marjorie Rosenberg, Express Publishing, 2018. The book applies this method and provides a number of appropriate relevant activities to perform in class in all grades.

*Visual learners* like to see things written down. They enjoy activities with pictures or words they can see and enjoy putting things into categories. They may remember where they have seen something so activities which make use of putting things in a different order can help them to remember better later.

*Auditory learners* need to listen or speak. They enjoy activities where they can exchange information orally with a partner or in a group. As they tend to learn sequentially, it is helpful for them to change the order of what they have learned, an element built into these activities.

*Kinaesthetic motoric learners* need to try things out for themselves. They learn by doing and through real-life experiences. They also enjoy activities using flashcards, role plays and board games. They often learn by moving about so having activities which combine movement and words can help them to recall the material later when they need it.

*Kinaesthetic emotional learners* rely on their feelings and need to connect what they learn with both positive and personal experiences. They like to be creative and imaginative, important aspects of these flexible activities. As they may need to separate themselves from their emotions, taking on a new role and observing themselves from outside the situation can be helpful for them in the learning process.

Teacher's Guides to the Express Publishing Textbooks include specially designed activities for communication and interaction under the rubric Ending the class/Rounding up. For example: Activities with a focus on vocabulary involving communicative activities among students (moving, talking, collaborating, word hunt, guessing, etc.)

### Review the unit vocabulary

- **Ask a volunteer to come up to the board** and write a word/phrase from the unit and its definition. The rest of the class decides if it is correct before the next student comes to the board and does the same. Continue until all of the unit vocabulary has been reviewed. (example of the activity: Geology, Express Publishing, **Book 1 Unit 7 Rounding up after Exercise 9 Writing**)
- **Split the class into teams.** With books closed, have students take turns to say as many vocabulary items as they can remember from the unit and give their definitions. Each correct word gets a point and the team with the most points when you have reviewed all of the vocabulary wins. (example of the activity: Geology, Express Publishing, **Book 1 Unit 8 Rounding up after Exercise 9 Writing**)
- **Split the class into two teams.** Have one person from each team sit with their back facing the board. Write a vocabulary word on the board. Both teams must describe the word without using gestures to their teammate (at the same time). The first person with their back facing the board to guess the correct answer gets one point for their team. Switch the students who are guessing. Continue until you have reviewed all of the vocabulary. (example of the activity: Geology, Express Publishing, **Book 1 Unit 1 Rounding up after Exercise 9 Writing**)
- **With books closed,** ask a volunteer student to come up to the board and write a word/phrase from the unit. The rest of the class decide if it is spelled correctly. Then ask for a volunteer to say the definition of the word/phrase. The rest of the class decides if the definition is correct. Once the correct spelling and definition have been established ask for another volunteer to come to the board and write a different word/phrase from the unit. Continue in the same manner until all of the vocabulary has been reviewed. (example of the activity: Geology, Express Publishing, **Book 1 Unit 3 Rounding up after Exercise 9 Writing**)
- **Split the class into two teams.** Have one person from each team approach the board. Whisper a vocabulary word to them. Both team members must draw a picture that depicts the word for their teammates to guess (at the same time). The first correct answer wins one point for their team. Switch the students who are drawing. Continue until you have reviewed all of the vocabulary. (example of the activity: Geology, Express Publishing, **Book 1 Unit 4 Rounding up after Exercise 9 Writing**)

- **Split the students into groups of three or four.** Invite one member from each group to the board. Tell them a word/phrase from the unit and instruct them to each write a sentence using it on the board. Remind students that the sentence must show that they understand the meaning of the word. When the students have finished, they must sit down. Then their teammates have the chance to correct the sentence or approve it. After one of the teams approves the sentence, all of the teams must stop working. As a class, check each of the teams' sentences. Each correct sentence gets a point. Repeat with different students at the board. Continue until all of the vocabulary has been reviewed. The team with the most points wins. (example of the activity: Geology, Express Publishing, **Book 1 Unit 6 Rounding up after Exercise 9 Writing**)
- **Write down the vocabulary on separate pieces of paper** and keep them in a pile. Write the definitions on other pieces of paper and keep them in another pile. Give each student one of the words/phrases from the unit and one of the definitions. Make sure they don't match. Tell students to ask each other for the definitions for their words/phrases but not to read their definitions to other students. Do not allow students to show each other their slips of paper. If a student has the definition that another student asks for, he/she should give it to him/her. When all the students have the definitions for their words/phrases, have each of them read them out and check if they are correct. Then invite volunteers to make sentences with the words/phrases they have. Continue until all the vocabulary has been reviewed. (example of the activity: Geology, Express Publishing, **Book 1 Unit 6 Rounding up after Exercise 9 Writing**)
- **Draw a pyramid on the board.** Make sure that the pyramid has the same number of squares as there are vocabulary words in the unit. Number the squares on the pyramid on the board. Split students into pairs. Tell both students to copy down the pyramid. Have Student A write down one word in each square. Instruct Student A not to show Student B his/her pyramid. Student A should describe each of the words without saying the word. Student B should write down the word he/she thinks Student A is describing in the corresponding square. Tell students that they have two minutes to write down as many of the words as possible. When students have finished, have them compare the pyramids. Then have students switch roles and repeat. When all of the pairs have finished, invite volunteers to share their pyramids with the class. (example of the activity: Geology, Express Publishing, **Book 2 Unit 4 Rounding up after Exercise 9 Writing**)
- **Divide the students into two teams.** Have one student from each team come to the front of the room. Call out one of the words or phrases from the unit. The first student who slaps the desk gets the opportunity to say the definition of the word. If the student gets the definition correct, his/her team gets a point. If he/she gets the definition incorrect, his/her team loses a point and the other team gets the chance to define the word a steal the point. The player that defines the word gets the opportunity to get a bonus point using the word in a sentence correctly. Switch players that are at the front of the room after each turn. Repeat until all of the vocabulary words have been reviewed. The team with the most points wins. (example of the activity: Geology, Express Publishing, **Book 2 Unit 5 Rounding up after Exercise 9 Writing**)

- **Split the class into small teams.** Tell each team that they have three minutes to write down as much vocabulary from the unit as they can. When the three minutes are up, check the vocabulary. Give each team one point for each of the unit's words that they listed and spelled correctly. Then have each team write sentences using each of the words. Remind students that their sentences must show that they understand the meaning. You may choose a time limit that is appropriate for your students. Check the sentences as a class. For each word that the team uses in a sentence correctly, give one point. For each word that the team uses incorrectly, take away a point. The team with the most point wins. (example of the activity: Geology, Express Publishing, **Book 2 Unit 6 Rounding up after Exercise 9 Writing**)
- **Have students stand in a circle.** Play music and have the students throw a paper ball around the circle. Pause the music and call out a word/phrase from the unit. The student that is holding the ball must define it. If he/she defines the word correctly, he/she should continue standing in the circle. If he/she defines the word incorrectly, he/she must sit down. Continue until all the vocabulary has been defined correctly. Alternatively, you may have students use the words in sentences instead of defining them. (example of the activity: Geology, Express Publishing, **Book 3 Unit 4 Rounding up after Exercise 9 Writing**)
- **Write the definitions of the vocabulary words on separate pieces of paper.** Make sure that they are numbered. Hang the definitions around the classroom. Split students into pairs. Have each pair number a piece of paper. Have them walk around the room together and write down the vocabulary word for each of the numbered definitions. Encourage students to work with their partners. When all of the pairs have finished, check the answers as a class. (example of the activity: Geology, Express Publishing, **Book 3 Unit 6 Rounding up after Exercise 9 Writing**)
- **Split the class into two teams.** Invite one player from each team to the front of the room. Secretly show the two players a word. Tell players that they must silently draw an image to represent the word. Their teammates must guess what the word is. The team that guesses the work correctly gets a point. The player on the team that guessed the correct word must choose a team mate to spell the word. If his/her teammate spells the word correctly, then his/her team gets another point. If his/her teammate spells the word incorrectly, then the other team gets the opportunity to spell the word and steal the point. The player who spells the word correctly must then choose someone else on his/her team to say the definition of the word. If his/her teammate gets the definition correct, then his/her team gets a point. If his/her teammate gets the definition incorrect, then the other team gets the opportunity to say the definition of the word and steal the point. The player who defines the word correctly must then choose another teammate to use the word in a sentence. If his/her teammate uses the word in a sentence correctly, then his/her team gets a point. If his/her teammate does not use the word in a sentence correctly, then the other team gets the opportunity to use the word in a sentence and steal the point. Repeat from the beginning using different words. Continue until all the vocabulary has been reviewed. The team with the most point wins. (example of the activity: Geology, Express Publishing, **Book 3 Unit 15 Rounding up after Exercise 9 Writing**)

*For more examples for Review of unit vocabulary activities consult the relevant Teacher's Guide.*



## GLOSSARY

### Geology, Express Publishing, 2022

#### Book 1

- **absolute dating**

[N-UNCOUNT-U7] **Absolute dating** is the process of determining the age of something, often by measuring how a particular substance within it has changed or decayed.

- **acre**

[N-COUNT-U9] An **acre** is an imperial unit of area equal to 43,560 square feet, or about 0.40 hectares.

- **add**

[V-T-U11] To **add** a quantity to another quantity is to increase it by that amount.

- **age**

[N-COUNT-U6] An **age** is the number of years that something has existed.

- **ago**

[ADV-U6] If something happened an amount of time **ago**, it happened that long before the present.

- **amount**

[N-COUNT-U10] An **amount** is a physical quantity of a substance.

- **analytical**

[ADJ-U2] If someone is **analytical**, he or she examines things very carefully in order to get more information about them or solve a problem.

- **ancient**

[ADJ-U6] If something is **ancient**, it occurred or existed many years before the present.

- **area**

[N-COUNT-U9] An **area** is a measurement of the amount of space covering a surface.

- **astronomy**

[N-UNCOUNT-U1] **Astronomy** is the study of planets, stars, and other bodies in the universe.

- **atmosphere**

[N-COUNT-U4] The **atmosphere** is the thin layer of air around the Earth.

- **bar graph**

[N-COUNT-U14] A **bar graph** is a graph that displays data in a series of sections, the lengths of which correspond to their values.

- **base unit**

[N-COUNT-U10] A **base unit** is one of seven standard SI units that is the foundation of other SI units.

- **biology**

[N-UNCOUNT-U1] **Biology** is the study of life forms.

- **biosphere**

[N-COUNT-U4] The **biosphere** is all of the living organisms on the Earth.

- **broad**

[ADJ-U2] If something is **broad**, it includes many factors or ideas.

- **BYA**

[N-ABBREV-U6] **BYA** (billion years ago) is a unit that measures the amount of time before the present that something occurred, and is expressed in terms of billions of years.

- **canyon**

[N-COUNT-U5] A **canyon** is a very deep valley that often has a river or stream running along the bottom.

- **carbon-14 dating**

[N-UNCOUNT-U7] **Carbon-14 dating** is an absolute dating method that measures the decay of carbon isotopes in a fossil.

- **celestial body**

[N-COUNT-U3] A **celestial body** is a large object, such as a star or planet, that exists in astronomical space.

- **Celsius**

[ADJ-U9] If a measurement is **Celsius**, it uses the temperature scale in which water boils at 100 degrees and freezes at 0 degrees.

- **centimeter**

[N-COUNT-U8] A **centimeter** is a metric unit of length equal to 1/100 of a meter or about 0.39 inches.

- **chemistry**

[N-UNCOUNT-U1] **Chemistry** is the study of how different substances change and interact with each other.

- **climb**

[V-I-U15] To **climb** is to increase at a steady rate.

- **collision**

[N-COUNT-U3] A **collision** is an event in which two things traveling in different directions or at different speeds strike each other.



- **column**  
[N-COUNT-U14] A **column** is a group of boxes that extends from the top to the bottom of a table or chart.
- **convert**  
[V-T-U8] To **convert** something is to change it into a different form or system.
- **core**  
[N-COUNT-U4] The **core** is the center part of the Earth that is very hot.
- **correlation**  
[N-UNCOUNT-U7] **Correlation** is the process of comparing samples from different areas to confirm the period of time that they represent.
- **creative**  
[ADJ-U2] If someone is **creative**, he or she is able to think of new or unusual ideas and solutions.
- **critical thinker**  
[N-COUNT-U2] A **critical thinker** is someone who can analyze something in a logical manner and draw reasonable, complex conclusions as a result.
- **crust**  
[N-COUNT-U4] The **crust** is the surface of the Earth, made up of rock and soil.
- **cubed**  
[ADJ-U12] If a quantity is **cubed**, it is multiplied by itself two times, or raised to the power of three.
- **decay**  
[V-I-U7] To **decay** is to break apart and eventually no longer be part of something, and is the process that living things undergo after they die.
- **decimal number**  
[N-COUNT-U13] A **decimal number** is an expression in a numbering system based on the number 10, with digits on both sides of the decimal point.
- **decline**  
[N-COUNT-U15] A **decline** is the process of becoming worse or smaller in amount.
- **decrease**  
[V-I-U15] To **decrease** is to become smaller in number or value.
- **dedicated**  
[ADJ-U2] If someone is **dedicated**, he or she places great importance on something, and usually works very hard for it.

- **degree**  
[N-COUNT-U9] A **degree** is a unit of temperature, and may refer to different quantities depending on the temperature scale being used.
- **derived unit**  
[N-COUNT-U10] A **derived unit** is a unit that is derived from a base unit.
- **divide by**  
[PHRASE-U11] To **divide** a quantity (A) **by** another quantity (B) is to split quantity A evenly into B number of parts.
- **Earth science**  
[N-COUNT-U2] An **Earth science** is an area of study that focuses on the properties of the Earth, and often focuses on the processes of nonliving things.
- **educational**  
[ADJ-U1] If something is **educational**, it is related to the act of teaching or learning.
- **environmental**  
[ADJ-U1] If something is **environmental**, it is related to the conditions in a particular place, especially involving the surroundings of people or other living things.
- **eon**  
[N-COUNT-U6] An **eon** is the longest segment of geologic time. The current Phanerozoic eon began about 570 million years ago, when the earliest shelled animals inhabited the Earth.
- **epoch**  
[N-COUNT-U6] An **epoch** is the smallest segment of geologic time. The current Holocene epoch began about ten thousand years ago, when the last ice age ended.
- **equal**  
[V-T-U11] To **equal** something is to be precisely the same number or amount as something.
- **era**  
[N-COUNT-U6] An **era** is a segment of geologic time that is shorter than an eon and longer than a period. The current Cenozoic era began about 66 million years ago, when the dinosaurs died off.
- **escarpment**  
[N-COUNT-U5] An **escarpment** is a place where a high area of land abruptly meets a lower area, so that the land is very steep.

- **evolution**  
[N-UNCOUNT-U3] **Evolution** is the process of changing slowly over time.
- **expand**  
[V-I-U15] To **expand** is to grow larger.
- **expertise**  
[N-UNCOUNT-U2] **Expertise** is the state of having extensive knowledge of something.
- **exponent**  
[N-COUNT-U12] An **exponent** is a number that indicates how many times a quantity is multiplied by itself, and usually appears to the upper right of the quantity.
- **Fahrenheit**  
[ADJ-U9] If a measurement is **Fahrenheit**, it uses the temperature scale in which water boils at 212 degrees and freezes at 32 degrees.
- **fluctuate**  
[V-I-U15] To **fluctuate** is to change regularly.
- **focus**  
[V-I-U2] To **focus** is to give one's attention to one particular thing.
- **foot**  
[N-COUNT-U8] A **foot** is an imperial unit of length equal to 12 inches or about 0.30 meters.
- **force**  
[N-UNCOUNT-U10] **Force** is the ability of something to cause physical change.
- **fossil**  
[N-COUNT-U7] A **fossil** is a geologic record of an ancient living thing, such as its bones or the imprint of it in a rock.
- **fraction**  
[N-COUNT-U13] A **fraction** is a quantity that is expressed as a certain number of parts of a whole, such as 1/4, or one fourth.
- **gallon**  
[N-COUNT-U9] A **gallon** is an imperial unit of volume equal to about 3.79 liters.
- **geologic time scale**  
[N-COUNT-U6] The **geologic time scale** is a system that divides the history of the Earth into different segments of time, generally defined by the occurrences of major geological and biological events.
- **geology**  
[N-UNCOUNT-U1] **Geology** is the study of the physical processes of the Earth.

- **geosphere**  
[N-COUNT-U4] The **geosphere** is the solid part of the Earth, including the crust and everything beneath it.
- **half-life**  
[N-COUNT-U7] A **half-life** is the amount of time required for half of a substance to decay and change into a different substance.
- **hectare**  
[N-COUNT-U9] A **hectare** is a metric unit of area equal to 10,000 square meters or about 2.47 acres.
- **hiatus**  
[N-COUNT-U7] A **hiatus** is a period of time that is not represented in a geologic record.
- **hill**  
[N-COUNT-U5] A **hill** is an area of land that is moderately higher than other land around it.
- **historical geology**  
[N-UNCOUNT-U1] **Historical geology** is the study of the origins of the Earth, including how landforms, oceans, and other features have changed over time.
- **history**  
[N-UNCOUNT-U1] **History** is the study of events that happened in the past.
- **-hundred**  
[N-COUNT-U11] **-Hundred** is a way of expressing quantities in the thousands by counting how many times 100 goes into the quantity. For example, the quantity 1,400 could be expressed as "fourteen hundred."
- **hydrosphere**  
[V-COUNT-U4] The **hydrosphere** is all of the Earth's water.
- **imperial**  
[ADJ-U8] If a measurement is **imperial**, it uses the system that is based on the foot and the pound.
- **improper fraction**  
[N-COUNT-U13] An **improper fraction** is a quantity that is greater than one and is expressed strictly as a fraction.
- **inch**  
[N-COUNT-U8] An **inch** is an imperial unit of length equal to 1/12 of a foot or about 2.54 centimeters.
- **increase**  
[V-I-U15] To **increase** is to become larger or greater in number or value.

- **industrial**

[ADJ-U1] If something is **industrial**, it is related to the process of building or manufacturing something.

- **integer**

[N-COUNT-U12] An **integer** is a number that represents a positive or negative whole unit, or zero.

- **interdisciplinary**

[ADJ-U2] If something is **interdisciplinary**, it includes ideas or subjects from multiple areas of study.

- **island**

[N-COUNT-U5] An **island** is an area of land that has a body of water around all sides of it.

- **joule**

[N-COUNT-U10] A **joule** is a derived unit that measures work or energy, and is equal to the energy required to apply one newton of force through the distance of one meter.

- **kelvin**

[N-COUNT-U9] A **kelvin** is a unit of temperature that is part of the Kelvin scale, in which 0 degrees is absolute zero and water freezes at 273.15 degrees.

- **kilogram**

[N-COUNT-U8] A **kilogram** is a metric unit of weight equal to 1000 grams or about 2.20 pounds.

- **kilometer**

[N-COUNT-U8] A **kilometer** is a metric unit of length or distance equal to 1,000 meters or about 0.62 miles.

- **lake**

[N-COUNT-U5] A **lake** is a large, standing body of water.

- **leading zero**

[N-COUNT-U12] A **leading zero** is a zero that occupies an unused digit place at the beginning of a sequence of digits and serves as a placeholder rather than an actual value.

- **legend**

[N-COUNT-U14] A **legend** is a section on a graph or chart that provides information about its features and symbols.

- **length**

[N-COUNT-U8] A **length** is a measurement of the distance along the edge of something.

- **less**

[PREP-U11] If a quantity is **less** another quantity, the second quantity is subtracted or taken away from the first quantity.

- **life science**

[N-COUNT-U2] A **life science** is an area of study that focuses on the processes of living things.

- **line graph**

[N-COUNT-U14] A **line graph** is a graph that displays data as a series of points connected by lines.

- **liter**

[N-COUNT-U9] A **liter** is a metric unit of volume equal to 1,000 milliliters or about 0.26 gallons.

- **lithosphere**

[N-COUNT-U4] The **lithosphere** is the crust, or surface of the Earth, and mantle, or layer below the surface.

- **logical**

[ADJ-U2] If someone is **logical**, he or she makes decisions or conclusions based on facts and reasoning.

- **mantle**

[N-COUNT-U4] The **mantle** is the rocky layer between the Earth's crust and core.

- **meter**

[N-COUNT-U8] A **meter** is a metric unit of length or distance equal to 100 centimeters or about 3.28 feet.

- **metric**

[ADJ-U8] If a measurement is **metric**, it uses the system that is based on the gram and the liter.

- **mile**

[N-COUNT-U8] A **mile** is an imperial unit of length or distance equal to 5,280 feet or about 1.6 kilometers.

- **minus**

[PREP-U11] If a quantity is **minus** another quantity, the second quantity is subtracted or taken away from the first quantity.

- **mixed number**

[N-COUNT-U13] A **mixed number** is a quantity that is shown as a whole number and a fraction, with the fraction representing a value less than one.

- **molar mass**  
[N-COUNT-U10] A **molar mass** is physical property that is determined by the relationship between something's mass and its amount of substance.
- **mole**  
[N-COUNT-U10] A **mole** is a unit that describes large amounts of very small things and is equal to the number of atoms in 12 grams of carbon-12.
- **mountain**  
[N-COUNT-U5] A **mountain** is an area of land that is much higher than other land around it.
- **multiply by**  
[PHRASE-U11] To **multiply** a quantity (A) **by** another quantity (B) is to add quantity A to itself B number of times.
- **MYA**  
[N-ABBREV-U6] **MYA** (million years ago) is a unit that measures the amount of time before the present that something occurred, and is expressed in terms of millions of years.
- **newton**  
[N-COUNT-U10] A **newton** is a derived unit that measures force, and is equal to the amount of force required to accelerate one kilogram of matter at one meter per second squared.
- **-out of-**  
[PHRASE-U13] If a quantity is x **out of** y, it has x number of parts per every y number of parts possible.
- **over**  
[PREP-U11] If a quantity is **over** another quantity, it is divided by that quantity.
- **particle**  
[N-COUNT-U3] A **particle** is a small unit of material.
- **pascal**  
[N-COUNT-U10] A **pascal** is a derived unit that measures pressure, and is equal to one newton per square meter.
- **peninsula**  
[N-COUNT-U5] A **peninsula** is an area of land has a body of water around most of it, but has a small area that is connected to a larger land mass.
- **percent**  
[N-COUNT-U13] A **percent** is a part of one hundred that is represented by the “%” symbol.

- **period**  
[N-COUNT-U6] A **period** is a segment of geologic time that is shorter than an era and longer than an epoch. The current Quaternary period began about 1.6 million years ago, when the earliest humans inhabited the Earth.
- **physical geology**  
[N-UNCOUNT-U1] **Physical geology** is the study of the properties of the Earth, including the substances above and below its surface.
- **physics**  
[N-UNCOUNT-U1] **Physics** is the study of matter and how it moves and behaves.
- **pie chart**  
[N-COUNT-U14] A **pie chart** is a visual way to represent fractions and percentages in which a circle is divided into proportional parts, similar to slices in a pie.
- **place**  
[N-COUNT-U12] A **place** is the position of a particular digit within a quantity, indicating which power of 10 it is magnified by.
- **plain**  
[N-COUNT-U5] A **plain** is a flat area of land that does not have any large trees.
- **planet**  
[N-COUNT-U3] A **planet** is a large astronomical body that revolves around a sun. The Earth is a planet.
- **planetesimal**  
[N-COUNT-U3] A **planetesimal** is a mass of material that is created as particles collide, but is not developed enough to be called a planet.
- **plateau**  
[N-COUNT-U5] A **plateau** is a flat area of land that is higher than other land around it.
- **plummet**  
[V-I-U15] To **plummet** is to fall very low very quickly.
- **plus**  
[PREP-U11] If a quantity is **plus** another quantity, the two quantities are added together.
- **point**  
[N-COUNT-U13] A **point** is a dot placed between whole units and partial units in a decimal number.

- **pound**  
[N-COUNT-U8] A **pound** is an imperial unit of weight equal to 16 ounces or about 0.45 kilograms.
- **present**  
[N-UNCOUNT-U6] The **present** is the time happening now.
- **pressure**  
[N-UNCOUNT-U10] **Pressure** is the amount of physical force imposed on an object by something that the object is in contact with.
- **quantity**  
[N-COUNT-U13] A **quantity** is an amount or numerical value.
- **radiometric dating**  
[N-UNCOUNT-U7] **Radiometric dating** is an absolute dating method that measures the decay of radioactive material, such as potassium or uranium, in a fossil.
- **reduce**  
[V-T-U13] To **reduce** or simplify a fraction is to change it to the form with the lowest possible whole numbers.
- **relative dating**  
[N-UNCOUNT-U7] **Relative dating** is the process of determining the order in which geologic events occurred.
- **rise**  
[N-COUNT-U15] A **rise** is the process of increasing in a quality or amount.
- **river**  
[N-COUNT-U5] A **river** is a large, flowing body of water.
- **rounding error**  
[N-COUNT-U12] A **rounding error** is an inaccuracy that results from reducing the length of a decimal number, usually because of convenience or available space.
- **row**  
[N-COUNT-U14] A **row** is a horizontal section of data in a table.
- **scale**  
[N-COUNT-U9] A **scale** is a system in which measurements of something are based on a particular value.
- **scatter plot**  
[N-COUNT-U14] A **scatter plot** is a chart that shows data points on an x and y-axis, not connected by any lines.

- **scientific notation**  
[N-UNCOUNT-U12] **Scientific notation** is a way of expressing very large or very small quantities, which always shows a number multiplied by the number ten with an exponent. For example, 3,000,000 in scientific notation is  $3 \cdot 10^6$ .
- **shrink**  
[V-I-U15] To **shrink** is to get smaller.
- **SI**  
[N-ABBREV-U10] The **SI** (International System of Units) is a widely used system of measurement that uses the same prefixes as the metric system.
- **significant figure**  
[N-COUNT-U12] A **significant figure** is a digit that determines the level of precision of a quantity, and includes all digits except for leading zeros, some trailing zeros, and digits exceeding those of the original quantity.
- **solar nebula**  
[N-COUNT-U3] A **solar nebula** is a cloud of material revolving around a sun that is not in the form of distinct planets or other large bodies.
- **solar system**  
[N-COUNT-U3] A **solar system** is a network of planets revolving around a sun.
- **squared**  
[ADJ-U12] If a quantity is **squared**, it is multiplied by itself once, or raised to the power of two.
- **stabilize**  
[V-I-U15] To **stabilize** is to reach a state in which changes are infrequent.
- **stratosphere**  
[N-COUNT-U4] The **stratosphere** is an outer layer of the atmosphere, farther from the Earth than the troposphere, that filters out harmful rays from the sun.
- **subtract**  
[V-T-U11] To **subtract** one quantity from another quantity is to reduce it by that amount.
- **sun**  
[N-COUNT-U3] A **sun** is a star, or massive ball of fire and gas, at the center of a solar system with planets revolving around it.

- **table**  
[N-COUNT-U14] A **table** is a visual representation of data that is made up of rows and columns.
- **temperature**  
[N-UNCOUNT-U9] **Temperature** is a measure of how hot or cold something is.
- **terrestrial**  
[ADJ-U3] If a planet is **terrestrial**, it has a hard, rocky surface, like Earth.
- **thorough**  
[ADJ-U2] If someone is **thorough**, he or she completes tasks completely, without missing details.
- **times**  
[PREP-U11] If a quantity is **times** another quantity, it is multiplied by that quantity.
- **to the nth power**  
[PHRASE-U12] If a number is raised **to the nth power**, it has an exponent of “n,” or is multiplied by itself “n” number of times. For example, 2 raised to the 5th power is expressed as 25.
- **ton**  
[N-COUNT-U8] A **ton** is an imperial unit of weight equal to 2,000 pounds, or about 0.91 tonnes. It is important to note that ton and tonne are pronounced the same way, but they represent different values.
- **tonne**  
[N-COUNT-U8] A **tonne** is a metric unit of weight equal to 1,000 kilograms, or about 1.10 tons. It is important to note that tonne and ton are pronounced the same way, but they represent different values.
- **trailing zero**  
[N-COUNT-U12] A **trailing zero** is a zero that is used to occupy a unused place after a decimal point and serves as a placeholder rather than an actual value. It is sometimes insignificant and can be omitted, while in other cases it is included to indicate the number of significant places in a quantity.
- **tree-ring dating**  
[N-UNCOUNT-U7] **Tree-ring dating** is an absolute dating method that compares the circles around the insides of trees to establish a sequence of events.
- **tributary**  
[N-COUNT-U5] A **tributary** is a small stream of water that flows into a larger stream of water.

- **troposphere**  
[N-COUNT-U4] The **troposphere** is the inner layer of the atmosphere, closer to the Earth than the stratosphere, that contains most of the planet's air.
- **unconformity**  
[N-COUNT-U7] An **unconformity** is a part of a geologic record that skips over a large segment of time, usually because erosion or another force removed or shifted layers of material before new layers formed.
- **valley**  
[N-COUNT-U5] A **valley** is an area of land that is lower than other land around it.
- **volume**  
[N-COUNT-U9] A **volume** is a measure of how much three-dimensional space something occupies.
- **weight**  
[N-UNCOUNT-U8] **Weight** is a measurement of how heavy something is.
- **whole number**  
[N-COUNT-U13] A **whole number** is a quantity that does not include partial units, and may be a positive integer or zero.
- **x-axis**  
[N-COUNT-U14] The **x-axis**, or horizontal axis, is the line that extends from the left to the right on a graph.
- **y-axis**  
[N-COUNT-U14] The **y-axis**, or vertical axis, is the line that extends from the top to the bottom on a graph.

#### Book 2

- **act on**  
[V-T-U3] To **act on** something is to be a force that affects or changes something.
- **advection**  
[N-COUNT-U12] **Advection** is water's movement throughout the atmosphere and around the Earth.
- **aggregate**  
[N-COUNT-U7] An **aggregate** is a combination of parts or units which are associated with a whole.
- **aphanitic**  
[ADJ-U8] If an igneous rock is **aphanitic**, its texture is so fine that its grains cannot be detected without magnification.



- **aquiclude**  
[N-COUNT-U13] An **aquiclude** is a type of rock or material that is usually impermeable and prevents the flow of groundwater.
- **aquifer**  
[N-COUNT-U13] An **aquifer** is a layer of earth, typically rock or sand, that transports groundwater due to its high permeability.
- **artesian**  
[ADJ-U13] If a well is **artesian**, it releases water naturally and is not human-made.
- **atom**  
[N-COUNT-U2] An **atom** is the smallest piece of matter that can exist alone.
- **aureole**  
[N-COUNT-U10] An **aureole** is the area surrounding an intrusion within a rock where temperature changes and chemical reactions occur.
- **basal slip**  
[N-UNCOUNT-U15] **Basal slip** is a type of glacial movement caused by melted water and decreased frictional resistance.
- **bonding**  
[N-UNCOUNT-U5] **Bonding** is the process by which substances are chemically attracted to each other in order to form other substances.
- **calcite**  
[N-UNCOUNT-U11] **Calcite** is a type of carbonate mineral and is commonly found in limestone.
- **calving**  
[N-UNCOUNT-U15] **Calving** is a process by which pieces of glaciers, called icebergs, break off from the whole and flow out to the sea.
- **capillary fringe**  
[N-COUNT-U13] The **capillary fringe** is a layer of earth below the surface where groundwater travels up from the water table to fill empty pores.
- **carbon**  
[N-UNCOUNT-U5] **Carbon** is a very common element that is found in both living and nonliving things on Earth.
- **carbonate**  
[N-COUNT-U11] A **carbonate** is a type of mineral that contains a negatively charged carbon ion.

- **channel**  
[N-COUNT-U14] A **channel** is a depression or confined area that a stream of water flows through.
- **channel flow**  
[N-UNCOUNT-U14] **Channel flow** is a process in which water travels through a long, distinct depression in the ground, forming a body of water such as a stream, river, or creek.
- **channel roughness**  
[N-UNCOUNT-U14] **Channel roughness**, or hydraulic roughness, is the measure of frictional resistance water experiences in a channel.
- **chemical alteration**  
[N-COUNT-U5] A **chemical alteration** is a geologic process in which the composition of minerals or rock materials are chemically changed into another formation.
- **chemical energy**  
[N-UNCOUNT-U3] **Chemical energy** is the energy that is released by the interaction of chemical substances.
- **chemical sediment**  
[N-UNCOUNT-U9] **Chemical sediment** is a material that forms as a result of chemical reactions.
- **clay**  
[N-UNCOUNT-U6] **Clay** is a soil material that is elastic when wet and hard when dried, and is good for retaining water.
- **cleavage**  
[N-UNCOUNT-U11] **Cleavage** is a quality of a mineral wherein a distinct separation or split occurs along a weak or smooth plane in the mineral.
- **cloud formation**  
[N-UNCOUNT-U12] **Cloud formation** is a process in which evaporated water condenses into thick areas of vapor before precipitation.
- **coarse**  
[ADJ-U8] If a texture is **coarse**, it has a rough surface and is usually made up of larger parts.
- **color**  
[N-COUNT-U11] A **color** is an apparent quality, such as red or blue, that the eye perceives when seeing objects. In minerals, the color varies based on impurities, but is typically the easiest way to identify different minerals.

- **compaction**  
[N-UNCOUNT-U9] **Compaction** is the process by which sedimentary rock loses its porosity due to the effects of loading.
- **composition**  
[N-UNCOUNT-U11] **Composition** is the chemical arrangement of a mineral, including the compounds that make up the mineral.
- **compound**  
[N-COUNT-U2] A **compound** is combination of two or more elements.
- **conclusion**  
[N-COUNT-U1] A **conclusion** is a decision or determination that is made after an experiment.
- **condensation**  
[N-UNCOUNT-U12] **Condensation** is the process of changing from a vapor into a liquid.
- **conservation**  
[N-UNCOUNT-U4] **Conservation** is a principle that prevents the total value of a quantity in a system from changing.
- **conserve**  
[V-T-U3] To **conserve** something is to use little or none of it so that it will available at a later time.
- **consolidation**  
[N-UNCOUNT-U7] **Consolidation** is the process of uniting two or more elements.
- **constant**  
[N-COUNT-U4] A **constant** is a quantity that always remains the same.
- **contact metamorphism**  
[N-UNCOUNT-U10] **Contact metamorphism** is a process in which magma changes the surrounding rock by raising temperatures and aiding in the formation of new minerals.
- **continental crust**  
[N-COUNT-U10] The **continental crust** is a multi-layered part of the Earth's outer lithosphere that covers landmasses.
- **continental glacier**  
[N-COUNT-U15] A **continental glacier**, or ice sheet, is an unconfined type of glacier that can flow in any direction.
- **control group**  
[N-COUNT-U1] A **control group** is a part an experiment that does not receive the action or treatment that is being tested.

- **cool**  
[V-I-U8] To **cool** is to lose heat and become lower in temperature.
- **crystalline**  
[ADJ-U11] If something is **crystalline**, it is composed of uniform parts that all have the same physical structure.
- **crystallization**  
[N-UNCOUNT-U7] **Crystallization** is a process in which a substance becomes a solid that is made up of many smaller structures.
- **deposit**  
[N-COUNT-U9] A **deposit** is a natural accumulation of particles, such as minerals.
- **detrital sediment**  
[N-UNCOUNT-U9] **Detrital sediment** is a material that forms as grains erode from rocks and are deposited in low-lying areas, such as lakes, valleys, and basins.
- **discharge**  
[N-UNCOUNT-U14] **Discharge** is the amount of water that passes through a region in a particular amount of time.
- **dynamic**  
[ADJ-U15] If something is **dynamic**, it is constantly active and changing.
- **dynamic metamorphism**  
[N-UNCOUNT-10] **Dynamic metamorphism** is a process in which rock forms at a fault zone because of high variances in temperature caused by plate movement.
- **electromagnetic radiation**  
[N-UNCOUNT-U3] **Electromagnetic radiation** is a type of kinetic energy that travels in waves and often produces light.
- **electron**  
[N-COUNT-U2] An **electron** is a subatomic particle with a negative electrical charge.
- **element**  
[N-COUNT-U2] An **element** is a basic substance that is made up of one particular type of atom.
- **energy**  
[N-UNCOUNT-U3] **Energy** is the ability of something to change or act.
- **equilibrium**  
[N-UNCOUNT-U4] **Equilibrium** is a state in which forces acting on an object balance each other by having equally strong yet opposite effects.



- **evaporation**  
[N-UNCOUNT-U12] **Evaporation** is the process of changing from a liquid into a gas.
- **experiment**  
[N-COUNT-U1] An **experiment** is a scientific process that is designed to reveal the effect of something.
- **experimental group**  
[N-COUNT-U1] An **experimental group** is a part of an experiment that receives the action or treatment that is being tested.
- **extrusive**  
[ADJ-U8] If igneous rock is **extrusive**, or volcanic, it is formed on the Earth's surface and is the result of the partial melting of rocks within the Earth's mantle and crust.
- **fertile**  
[ADJ-U6] If soil is **fertile**, vegetation can grow from it.
- **fine**  
[ADJ-U8] If a texture is **fine**, it is smooth or made up of very small parts.
- **firn**  
[N-COUNT-U15] A **firn** is a granular type of ice created when snow thaws and refreezes before it can fully melt.
- **fjord**  
[N-COUNT-U15] A **fjord** is a long, narrow section of a body of water found between steep landscape features, such as hills, cliffs, or mountains.
- **flow**  
[V-I-U14] To **flow** is to move through or pass over something smoothly without interruption.
- **fluid activity**  
[N-UNCOUNT-U10] **Fluid activity** is a process in which a fluid, such as magma, interacts with existing rock and changes its mineral composition.
- **foliated**  
[ADJ-U10] If a metamorphic rock is **foliated**, its mineral grains are positioned side by side, along parallel lines, giving the rock a striped texture and appearance.
- **frictional resistance**  
[N-UNCOUNT-U14] **Frictional resistance** is a force that water encounters when passing over land or through channels, causing it to move more slowly.

- **gas**  
[N-COUNT-U2] A **gas** is a material in a form that is not rigid and spreads or expands throughout its environment.
- **glacial erratic**  
[N-UNCOUNT-U15] A **glacial erratic** is a piece of rock carried by a glacier and then deposited in another location.
- **glacial ice**  
[N-UNCOUNT-U15] **Glacial ice** is deeply buried firn that is further compacted before it can melt, and consists mostly of solid material.
- **glacial polish**  
[N-UNCOUNT-U15] **Glacial polish** is a smooth quality common in bedrock that is caused by glacial ice repeatedly passing over the rock surface.
- **glacier**  
[N-COUNT-U15] A **glacier** is a large mass of ice and snow that flows slowly on land.
- **gradient**  
[N-COUNT-U14] A **gradient** is an uphill or downhill slope over which water flows.
- **grain**  
[N-COUNT-U6] A **grain** is an individual piece of sediment, often consisting of numerous crystals, ranging in size from fine sand to boulders.
- **gravel**  
[N-UNCOUNT-U9] **Gravel** is a coarse material composed of loose, broken rocks.
- **gravity**  
[N-UNCOUNT-U4] **Gravity** is a natural attractive force that makes particles come together, and is stronger among larger particles.
- **groundwater**  
[N-UNCOUNT-U13] **Groundwater** is a water resource found underground or in open spaces, and is naturally occurring.
- **heat**  
[N-UNCOUNT-U3] **Heat** is a form of energy that produces high temperatures and includes the kinetic energy of atoms and ions within an object.
- **hematite**  
[N-UNCOUNT-U11] **Hematite** is a type of iron oxide with a six-sided crystalline structure that is present in many rocks.

- **horizon**  
[N-COUNT-U6] A **horizon** is a layer of soil with particular physical characteristics and fossil content based on its relation to other layers.
- **humus**  
[N-UNCOUNT-U6] **Humus** is black or brown organic material resulting from partial decomposition of plant and animal matter, which affects soil texture, nutrient retention, and moisture.
- **hydrogen**  
[N-UNCOUNT-U5] **Hydrogen** is the lightest and most common element on Earth, and along with oxygen, it is part of the compound that makes up water.
- **hydrologic cycle**  
[N-COUNT-U12] The **hydrologic cycle**, also called the water cycle, is a process in which water is purified and redistributed naturally around the Earth.
- **hydrolysis**  
[N-UNCOUNT-U5] **Hydrolysis** is a type of chemical reaction involving hydrogen, hydroxyl, and mineral ions.
- **hydrostatic pressure**  
[N-UNCOUNT-U13] **Hydrostatic pressure** is a force that is built up over time due to confined water.
- **hypothesis**  
[N-COUNT-U1] A **hypothesis** is an idea, statement, or prediction that explains something, but which is not tested or proven correct.
- **iceberg**  
[N-COUNT-U15] An **iceberg** is a piece of a glacier that breaks off during calving and floats into the sea, where it usually melts.
- **igneous rock**  
[N-COUNT-U7] An **igneous rock** is a type of rock that forms when magma rises from below the Earth's upper crust and hardens.
- **independent variable**  
[N-COUNT-U1] An **independent variable** is the factor in an experiment that changes from one group to another.
- **index mineral**  
[N-COUNT-U10] An **index mineral** is a mineral that forms only within specific pressure and temperature ranges, and may be used by geologists to identify metamorphic zones.

- **infiltration**  
[N-UNCOUNT-U12] **Infiltration** is water's process of passing into the soil from the surface of the ground.
- **inorganic**  
[ADJ-U11] If something is **inorganic**, it is not a living thing.
- **intrusion**  
[N-COUNT-U10] An **intrusion** is the movement or upwelling of magma into a body of rock.
- **intrusive**  
[ADJ-U8] If igneous rock is **intrusive**, or plutonic, it is the result of magma which cools and solidifies beneath the Earth's surface.
- **ion**  
[N-COUNT-U2] An **ion** is an atom or combination of atoms that has a positive or negative electrical charge.
- **isotope**  
[N-COUNT-U2] An **isotope** is a variation of an element that has a different number of neutrons than other atoms of the same element.
- **kinetic energy**  
[N-UNCOUNT-U3] **Kinetic energy** is energy that is active or moving.
- **laminar**  
[ADJ-U14] If a flow of water is **laminar**, it is parallel with no intermixing of streams.
- **law**  
[N-COUNT-U4] A **law** is an explanation of a natural process that is always true.
- **leaching**  
[N-UNCOUNT-U6] **Leaching** is the loss of plant nutrients from soil due to rain and irrigation.
- **limestone**  
[N-UNCOUNT-U9] **Limestone** is a type of sedimentary rock that is often composed of the remains of marine organisms, such as corals.
- **liquid**  
[N-COUNT-U2] A **liquid** is a material, such as water, in a form that is able to flow freely and fill the shape of its container.
- **lithification**  
[N-UNCOUNT-U7] **Lithification** is a process in which sediment is pressed into a hard, rocky form due to the infiltration of water and the deposition of dissolved minerals.

- **luster**  
[N-COUNT-11] A **luster** is an apparent quality of a mineral that is determined by how it reflects light off of its surface.
- **magma**  
[N-UNCOUNT-U7] **Magma** is a very hot liquid beneath the Earth's crust that becomes rock when it cools.
- **magnetism**  
[N-UNCOUNT-U4] **Magnetism** is a quality produced by electrical charges that causes objects to be attracted to or repelled from each other.
- **magnetite**  
[N-UNCOUNT-U11] **Magnetite** is a type of iron oxide that is highly magnetic, forms in the shape of a cube, and is present in many rocks.
- **magnification**  
[N-UNCOUNT-U8] **Magnification** is the process of enlarging the appearance of something.
- **matter**  
[N-UNCOUNT-U2] **Matter** is anything that contains physical material and occupies space.
- **melt**  
[V-I-U7] To **melt** is to become a liquid after being a solid, usually in response to heat.
- **metallic**  
[ADJ-U11] If a mineral's luster is **metallic**, it is shiny and resembles metal.
- **metamorphic rock**  
[N-COUNT-U7] A **metamorphic rock** is a type of rock that is formed when an existing rock is exposed to high heat and pressure, altering its internal structure and producing new physical properties and appearance.
- **metamorphism**  
[N-UNCOUNT-U7] **Metamorphism** is the change in the composition of minerals in existing rocks due to heat, pressure, and the introduction of chemically-active fluids.
- **mineral**  
[N-COUNT-U11] A **mineral** is a stable substance that naturally occurs underground.
- **mineral grain**  
[N-COUNT-U8] A **mineral grain**, or crystallite, is a microscopic crystal that is held to others within a boundary, and is one of many grains in a solid mineral.

- **molecule**  
[N-COUNT-U2] A **molecule** is the smallest piece of a substance that contains all the elements of the substance.
- **momentum**  
[N-UNCOUNT-U4] **Momentum** is a measurement of the force required to make an object stop moving.
- **motion**  
[N-UNCOUNT-U4] **Motion** is the action of moving.
- **mylonite**  
[N-COUNT-U10] A **mylonite** is a hard, dense metamorphic rock resulting from dynamic metamorphism, and is found in fault zones.
- **naturally occurring**  
[ADJ-U11] If something is **naturally occurring**, it comes from the Earth's natural processes and is not artificially created by people.
- **neutron**  
[N-COUNT-U2] A **neutron** is a subatomic particle with no electrical charge.
- **nitrogen**  
[N-UNCOUNT-U5] **Nitrogen** is an element that makes up a large part of the Earth's atmosphere.
- **nonfoliated**  
[ADJ-U10] If a metamorphic rock is **nonfoliated**, its mineral grains are arranged in sections of roughly same-sized pieces of different minerals.
- **observation**  
[N-COUNT-U1] An **observation** is a fact that is discovered by watching something closely.
- **oxidation**  
[N-UNCOUNT-U5] **Oxidation** is a type of chemical reaction in which oxygen combines with another substances to form oxides.
- **oxygen**  
[N-UNCOUNT-U5] **Oxygen** is an element that humans and other living things must breathe in order to live, and along with hydrogen, it is part of the compound that makes up water.
- **parent material**  
[N-COUNT-U6] A **parent material** is underlying geologic material, such as bedrock, from which soil horizons develop.
- **permeability**  
[N-UNCOUNT-U13] **Permeability** is a quality of a mineral that relates to its ability to allow liquids and gases to pass through it.

- **phaneritic**  
[ADJ-U8] If an igneous rock is **phaneritic**, its grains are large enough to be detected without magnification.
- **plastic flow**  
[N-UNCOUNT-U15] **Plastic flow** is a type of glacial movement caused by pressure, and results in permanent deformation.
- **plucking**  
[N-UNCOUNT-U15] **Plucking**, or quarrying, is a process in which glacial ice melts, flows into the cracks of a rock, and freezes again, splitting apart the rock.
- **pore space**  
[N-COUNT-U9] A **pore space** is an opening or gap within a rock or a soil, which is directly influenced by the way sand grains are packed together.
- **porosity**  
[N-UNCOUNT-U13] **Porosity** is the volume of a material, calculated in percentages, that consists of pores, or spaces between solid parts.
- **porphyritic**  
[ADJ-U8] If an igneous rock is **porphyritic**, one group of crystals on the rock face is different in size from those of another group.
- **potential energy**  
[N-UNCOUNT-U3] **Potential energy** is energy that is not active or moving, and is stored for possible future use.
- **precipitation**  
[N-UNCOUNT-U12] **Precipitation** is water that falls from clouds to the Earth, usually in the form of rain or snow.
- **pressure**  
[N-UNCOUNT-U7] **Pressure** is the amount of physical force imposed on an object by something else that the object is in contact with.
- **problem**  
[N-COUNT-U1] A **problem** is a question or situation that needs to be answered or resolved.
- **proton**  
[N-COUNT-U2] A **proton** is a subatomic particle with a positive electrical charge.
- **pyroclastic**  
[ADJ-U8] If something **pyroclastic**, it was created during sudden, explosive volcanic activity.

- **quartz**  
[N-COUNT-U11] A **quartz** is a common silicate that does not contain iron or magnesium and is often in the form of a hard crystal.
- **range**  
[N-COUNT-U11] A **range** is a set or series of different types of things that have some similarities.
- **reaction**  
[N-COUNT-U5] A **reaction** is a process or change in which multiple substances combine with each other and form another substance.
- **regional metamorphism**  
[N-UNCOUNT-10] **Regional metamorphism** is the most common form of metamorphism and occurs over a large area as a result of extreme temperatures, pressures, and deformation within the deeper layers of the Earth's crust.
- **regolith**  
[N-UNCOUNT-U6] **Regolith** is a substance that consists of loose, transported materials, including dust, soil, and broken rock, which cover solid rock on the Earth and other planets, moons, and some asteroids.
- **release**  
[V-T-U3] To **release** something is to push or let it out of something else.
- **residence time**  
[N-COUNT-U12] A **residence time** is the period that water spends in a particular place, such as the atmosphere, a lake, or an aquifer.
- **residual**  
[ADJ-U6] If something is **residual**, it is left over or remains after an event or process.
- **result**  
[N-COUNT-U1] A **result** is something that occurs because of something else.
- **rock**  
[N-COUNT-U7] A **rock** is a hard piece of mineral, or a combination of minerals, which is part of the Earth's crust.
- **rock cycle**  
[N-COUNT-U7] The **rock cycle** is a long process in which rocks change from one type to another through physical and chemical reactions.
- **runoff**  
[N-UNCOUNT-U12] **Runoff** is a process in which water travels along the surface of the Earth into a body of water.

- **sand**  
[N-UNCOUNT-U9] **Sand** is a material composed of mineral, rock, and soil particles which come from the disintegration of rocks, and are finer than gravel particles but coarser than silt.
- **sandstone**  
[N-UNCOUNT-U9] **Sandstone** is a type of sedimentary rock that is composed of sand and rock grains.
- **scientific method**  
[N-COUNT-U1] The **scientific method** is a system of observation, measurement, and experimentation used to form and test hypotheses.
- **sediment**  
[N-UNCOUNT-U9] **Sediment** is material, usually in the form of small particles, that is carried and deposited by water or wind.
- **sedimentary rock**  
[N-COUNT-U7] A **sedimentary rock** is a type of rock that is formed when existing rock breaks down into small particles and then accumulates over time, becoming pressed together under its own weight.
- **sheet flow**  
[N-UNCOUNT-U14] **Sheet flow** is a process in which a continuous film of water, or sheet, accelerates as it flows downhill.
- **shield**  
[N-COUNT-U10] A **shield** is a combination of igneous and metamorphic rock in the continental crust that has remained stable for hundreds of millions of years.
- **silicate**  
[N-COUNT-U11] A **silicate** is a mineral that contains silicon and oxygen.
- **silicon**  
[N-UNCOUNT-U5] **Silicon** is an element that is common in the Earth's crust.
- **silt**  
[N-UNCOUNT-U9] **Silt** is a very fine material composed of loose sedimentary particles which are carried by currents and settle in still water.
- **soil**  
[N-UNCOUNT-U6] **Soil** is the top layer of earth, composed of broken rock particles, from which vegetation grows.

- **solid**  
[N-COUNT-U2] A **solid** is a material that is in a fixed or rigid shape, and does not flow freely.
- **solid**  
[ADJ-U9] If something is **solid**, it does not flow freely under moderate stress and can resist forces.
- **soluble**  
[ADJ-U5] If a substance is **soluble**, it is capable of dissolving in a liquid.
- **solution**  
[N-UNCOUNT-U5] **Solution** is the process during which a solid substance dissolves after its ions separate from each other while in a liquid substance.
- **spring**  
[N-COUNT-U13] A **spring** is a place where groundwater is released onto the surface.
- **stream**  
[N-COUNT-U14] A **stream** is a type of runoff of water that is confined to a channel.
- **subatomic particle**  
[N-COUNT-U2] A **subatomic particle** is a piece of an atom, and is too small to exist alone.
- **sublimation**  
[N-UNCOUNT-U12] **Sublimation** is the process of changing from a solid into a vapor.
- **subsidence**  
[N-UNCOUNT-U13] **Subsidence** is the result of the removal of large amounts of groundwater, causing underground materials to fall or sink and move the ground to a lower level.
- **subsoil**  
[N-UNCOUNT-U6] **Subsoil** is the layer of soil under topsoil, composed of sand, clay, and other weathered material.
- **testable**  
[ADJ-U1] If something is **testable**, it can be proven or disproven by performing an experiment.
- **texture**  
[N-COUNT-U8] A **texture** is the visual or tactile composition and appearance of something.
- **thermal energy**  
[N-UNCOUNT-U3] **Thermal energy** is energy that is released by the movement or vibration of a material's atoms or molecules.

- **thermodynamics**  
[N-UNCOUNT-U4] **Thermodynamics** is a branch of science that studies the relationships between heat and other forms of energy.
- **topsoil**  
[N-UNCOUNT-U6] **Topsoil** is the upper, outermost layer of soil, which has the most organic matter and microorganisms, and where most vegetation grows.
- **transfer**  
[V-T-U3] To **transfer** something is to change the location of something.
- **transpiration**  
[N-UNCOUNT-U12] **Transpiration** is a plant's release of water vapor into the air.
- **transported**  
[ADJ-U6] If something is **transported**, it is carried from one place to another.
- **turbulent**  
[ADJ-U14] If a flow of water is **turbulent**, it is not parallel and consists of many mixed streams and fluids.
- **valley glacier**  
[N-COUNT-U15] A **valley glacier** is a confined type of glacier found only in mountain valleys and flows only downhill within the valley.
- **vapor**  
[N-COUNT-U12] **Vapor** is a substance, such as water, in the form of a gas, or small particles in the air.
- **velocity**  
[N-COUNT-U14] A **velocity** is a measurement of how fast something moves.
- **water table**  
[N-COUNT-U13] A **water table** is the highest layer of earth, between the zone of aeration and the zone of saturation, where the rocks and soil of the layer are completely covered in water.
- **wave**  
[N-COUNT-U4] A **wave** is a disturbance that moves through a substance without permanently changing the substance.
- **well**  
[N-COUNT-U13] A **well** is a hole in the ground made by digging or drilling that is used to remove groundwater.
- **work**  
[N-UNCOUNT-U3] **Work** is action or movement that is driven by kinetic energy.

- **zone of aeration**  
[N-COUNT-U13] The **zone of aeration** is an area where some water is suspended because it attaches to the material in the zone rather than passing through freely.
- **zone of saturation**  
[N-COUNT-U13] The **zone of saturation** is an area below the ground's surface where all pores are filled by water.

### Book 3

- **abrasion**  
[N-UNCOUNT-U8] **Abrasion** is the process of wearing away at something by rubbing, scraping, or grinding it.
- **abyssal plain**  
[N-COUNT-U5] An **abyssal plain** is a vast, flat underwater feature of an ocean basin covering a majority of the deep-sea floor.
- **active**  
[ADJ-U4] If a volcano is **active**, it is likely to erupt or capable of erupting.
- **aftershock**  
[N-COUNT-U3] An **aftershock** is an earthquake that follows another, larger earthquake.
- **agriculture**  
[N-UNCOUNT-U14] **Agriculture** is the industry of growing plants that are used in other industries, such as food production and manufacturing.
- **alluvial fan**  
[N-COUNT-U8] An **alluvial fan** is a desert feature formed by the early sediment deposits of saltwater onto the flat desert floor.
- **angle of repose**  
[N-COUNT-U12] The **angle of repose** is the steepest angle a slope can maintain in which shear strength and gravity are balanced, and materials will not slide down the slope.
- **anticline**  
[N-COUNT-U2] An **anticline** is a fold in a previously horizontal, uniform rock layer that resembles an upward arch.
- **aseismic ridge**  
[N-COUNT-U6] An **aseismic ridge** is a underwater mountain range in an ocean basin that lacks seismic activity.



- **ash**  
[N-UNCOUNT-U4] **Ash** is a type of pyroclastic material expelled from an erupting volcano that consists of the burned remains of other substances, typically in the form of tiny gray particles.
- **ash fall**  
[N-UNCOUNT-U4] **Ash fall** is the discharge of ash into the atmosphere before it settles to the surface, often over a large area.
- **ash flow**  
[N-COUNT-U4] An **ash flow** is the discharge of ash as a cloud of gas that flows along the Earth's surface.
- **bachelor's degree**  
[N-COUNT-U15] A **bachelor's degree** is a degree indicating that someone has completed a college-level educational program, usually after four years of study.
- **basin**  
[N-COUNT-U2] A **basin** is the circular or oval form of a syncline fold in a rock layer.
- **beach**  
[N-COUNT-U7] A **beach** is a stretch of land made of deposited rock and sand that is separated from a body of water by the shoreline.
- **bed load**  
[N-UNCOUNT-U8] **Bed load** is heavy, dense sediment, typically composed of sand and other large particles, that is transported along the ground by water.
- **bedrock**  
[N-UNCOUNT-U3] **Bedrock** is solid, consolidated rock found beneath the Earth's surface.
- **berm**  
[N-COUNT-U7] A **berm** is a flat strip of sand along a beach, and is usually one of several horizontal platforms that rise as the beach extends away from the shoreline.
- **block-faulting**  
[N-UNCOUNT-U9] **Block-faulting** is a method of mountain formation during which blocks moving along normal faults are raised above other formations in the region.
- **break**  
[N-COUNT-U5] A **break** is a place where one geologic feature ends and another begins, such as the boundary between the continental shelf and continental slope.

- **brittle**  
[ADJ-U10] If something is **brittle**, it will likely break rather than bend when it is under stress.
- **butte**  
[N-COUNT-U8] A **butte** is the formation of isolated pillars resulting from continued erosion and weathering on a mesa.
- **caldera**  
[N-COUNT-U4] A **caldera** is a circular depression that is larger in size than a crater with steep sides and formed by the land that collapses after an eruption.
- **cave**  
[N-COUNT-U9] A **cave** is a large opening in a land formation that was created by geologic processes.
- **chemical weathering**  
[N-UNCOUNT-U11] **Chemical weathering** is a type of weathering during which rocks and other materials chemically change composition or undergo chemical reactions.
- **city planning**  
[N-UNCOUNT-U15] **City planning** is the process of determining where buildings, roads, and other structural features in a city will be built.
- **coal**  
[N-UNCOUNT-U13] **Coal** is a substance made up of sedimentary rock and remains of once-living things, and is a natural resource used in the production of fuels.
- **collide**  
[V-I-U1] To **collide** is to hit or smash into something with force.
- **compression**  
[N-UNCOUNT-U10] **Compression** is a type of stress characterized by the bending or squeezing of a rock that results in a smaller rock.
- **consolidated**  
[ADJ-U3] If a material is **consolidated**, it is tightly bound or pressed together.
- **construction**  
[N-UNCOUNT-U14] **Construction** is the industry of creating buildings, roads, and other structures.
- **continental**  
[ADJ-U1] If something is **continental**, it exists or occurs on land.

- **continental drift**  
[N-UNCOUNT-U1] **Continental drift** is the very slow movement of land over time that causes continents to join, separate, or change form.
- **continental margin**  
[N-COUNT-U5] The **continental margin** is the area of the ocean floor between the continental coast and the deep-sea floor.
- **continental rise**  
[N-COUNT-U5] The **continental rise** is the deepest part of the continental margin, well below sea level, located at the bottom of the continental slope and bordering the abyssal plain.
- **continental shelf**  
[N-COUNT-U5] The **continental shelf** is the extended edge of a continent and the first underwater portion of the continental margin, at sea level, located between the coastline and the continental slope.
- **continental slope**  
[N-COUNT-U5] The **continental slope** is the sloping portion of the continental margin, below sea level, located between the continental shelf and continental rise.
- **convergent boundary**  
[N-COUNT-U1] A **convergent boundary** is an area where two tectonic plates move towards each other and one plate is forced under the other plate.
- **copper**  
[N-UNCOUNT-U13] **Copper** is a reddish-brown metal that is often used in electrical systems.
- **crater**  
[N-COUNT-U4] A **crater** is a circular depression at the top of a volcano that is formed by expelled volcanic gases and lava.
- **decompose**  
[V-I-U11] To **decompose** is to gradually break down an organism into a less complex organism or piece of matter.
- **deep-ocean basin**  
[N-COUNT-U5] The **deep-ocean basin** is the geologic region in the deepest parts of the ocean.
- **deep-sea sediment**  
[N-UNCOUNT-U6] **Deep-sea sediment** is the material found at the bottom of the sea, consisting of deposits of ash, clay, particles of organisms, and other materials.

- **deflation**  
[N-UNCOUNT-U8] **Deflation** is a process in which the wind gradually wears away something by removing loose surface sediment.
- **deformation**  
[N-UNCOUNT-U10] **Deformation** is a process by which a substance's original or natural state is altered.
- **desert**  
[N-COUNT-U8] A **desert** is a region of land that is very dry and hot, and often covered in sand.
- **desert pavement**  
[N-UNCOUNT-U8] **Desert pavement** is the hard, stable layer of rock that forms by deflation, gravity, and occasional floodwater in a generally dry region.
- **differential weathering**  
[N-UNCOUNT-U11] **Differential weathering** is a type of weathering in which rocks in the same environment and subject to the same weathering break down at different rates.
- **dip**  
[N-UNCOUNT-U2] **Dip** is the positioning of a geologic feature, and is a measure of the feature's greatest slope or angle of inclination.
- **dip-slip fault**  
[N-COUNT-U2] A **dip-slip fault** is a type of fault that exhibits parallel movement between the dip and the fault plane.
- **displaced**  
[ADJ-U6] If something is **displaced**, it is removed or forced out of its natural position.
- **dissolve**  
[V-I-U9] To **dissolve** is to disappear into or become part of something else.
- **divergent boundary**  
[N-COUNT-U1] A **divergent boundary** is an area where two tectonic plates move away from each other and cause seafloor spreading.
- **dome**  
[N-COUNT-U2] A **dome** is the circular or oval form of an anticline fold in a rock layer.
- **dormant**  
[ADJ-U4] If a volcano is **dormant**, it is not active but it is capable of becoming active.
- **dripstone**  
[N-COUNT-U9] A **dripstone** is a type of mineral formation resulting from deposits of carbon dioxide and precipitated calcite.



- **ductile**  
[ADJ-U10] If something is **ductile**, it will likely bend significantly before it breaks when it is under stress.
- **dune**  
[N-COUNT-U7] A **dune** is a formation of sand that is created by wind and resembles a hill.
- **earthquake**  
[N-COUNT-U3] An **earthquake** is the temporary movement or shaking of the Earth's surface due to seismic activity.
- **economy**  
[N-COUNT-U14] An **economy** is the system of buying and selling products or services for money.
- **education**  
[N-UNCOUNT-U15] **Education** is the process of teaching and learning.
- **elastic**  
[ADJ-U10] If something is **elastic**, it is capable of returning to its original or natural state after experiencing deformation.
- **elastic limit**  
[N-UNCOUNT-U10] An **elastic limit** is a point at which a rock is no longer able to return to its natural state after deformation.
- **engineer**  
[N-COUNT-U15] An **engineer** is a professional who plans the construction of something.
- **environmental geologist**  
[N-COUNT-U15] An **environment geologist** is a professional who assesses toxic chemicals in soil and water and works towards preventing pollution.
- **epicenter**  
[N-COUNT-U3] The **epicenter** of an earthquake is a location on the surface directly above the place the earthquake began.
- **erosion**  
[N-UNCOUNT-U11] **Erosion** is the process by which weathered materials are removed or worn away by forces such as water or wind.
- **erupt**  
[V-I-U4] To **erupt** is to suddenly and violently explode and expel materials such as rocks, ash, and lava.
- **extinct**  
[ADJ-U4] If a volcano is **extinct**, it is not active and it is incapable of becoming active.

- **fault**  
[N-COUNT-U1] A **fault** is a crack in the Earth's crust.
- **fertilizer**  
[N-COUNT-U14] **Fertilizer** is a material that is added to soil to improve plant growth.
- **filter**  
[V-T-U14] To **filter** something is to place it through a device or material in order to remove unwanted parts of the substance.
- **flow**  
[N-UNCOUNT-U12] **Flow** is the mass movement of soil or other material that moves smoothly, without interruption, like a fluid.
- **fold**  
[N-COUNT-U2] A **fold** is a geologic feature caused by the permanent bending or compression of the rock layers within the Earth's crust.
- **footwall block**  
[N-COUNT-U2] A **footwall block** is a section of rock that is underneath a fault line and is only visible on a horizontal fault.
- **fracture**  
[N-COUNT-U6] A **fracture** is a crack or break in something due to stress or pressure.
- **frost wedging**  
[N-UNCOUNT-U11] **Frost wedging**, or frost weathering, is a type of physical weathering during which ice forms in the cracks of a rock and causes disintegration.
- **fuel**  
[N-COUNT-U14] A **fuel** is a substance that is used to generate power or drive a process.
- **gemstone**  
[N-COUNT-U14] A **gemstone** is a rock or mineral that is cut and treated in a particular way to achieve a particular appearance, and is often used to make jewelry.
- **geophysicist**  
[N-COUNT-U15] A **geophysicist** is a professional who studies the physical features and movements of the Earth.
- **gold**  
[N-UNCOUNT-U13] **Gold** is a soft, yellow metal that is considered very valuable and is often used for making jewelry.

- **government**

[N-COUNT-U15] A **government** is an organization that is responsible for the laws and operation of a particular region, such as a city or country.

- **guyot**

[N-COUNT-U6] A **guyot** is a geologic feature that rises from the sea floor, and is usually formed from extinct volcanoes, but is different from a seamount because it has a flat top that does not extend above the surface of the water.

- **hanging valley**

[N-COUNT-U9] A **hanging valley** is an elevated tributary valley that is the mouth of a waterfall and is commonly formed by glacial erosion.

- **hanging wall block**

[N-COUNT-U2] A **hanging wall block** is a section of rock that covers a fault line and is only visible on a horizontal fault.

- **headlands**

[N-COUNT-U7] **Headlands** are an area of the shoreline that stretches out into the water and are worn down as a result of wave refraction.

- **highway planning**

[N-UNCOUNT-U15] **Highway planning** is the process of determining where and how major roads will be built.

- **hydrocarbon**

[N-COUNT-U13] A **hydrocarbon** is a substance made up of hydrogen and carbon that forms from the remains of once-living things, often preserved under layers of water and sediment.

- **industry**

[N-COUNT-U14] An **industry** is an area of business that produces a particular type of product.

- **infrastructure**

[N-UNCOUNT-U12] **Infrastructure** is the network of systems and structures necessary for the proper functioning of a city or region.

- **intensity**

[N-UNCOUNT-U3] **Intensity** is a measurement of the effects of an earthquake, and is based largely on observations of the Earth's movement and the extent of the damage to people and infrastructures.

- **iron**

[N-UNCOUNT-U13] **Iron** is a heavy, dark metal that is used to make strong materials like steel.

- **jewelry**

[N-UNCOUNT-U14] **Jewelry** is an object, like a necklace or bracelet, that is worn on the body for decoration.

- **joint**

[N-COUNT-U2] A **joint** is a fracture or break in a rock surface where the rock surface does not move or the movement is perpendicular rather than parallel.

- **landslide**

[N-UNCOUNT-U12] A **landslide**, or mass wasting, is the sudden and rapid mass movement of rocks and other materials downhill due to gravity, caused by either natural processes or human activity.

- **lava flow**

[N-COUNT-U4] A **lava flow** is slow-moving molten rock expelled from an erupting volcano.

- **liquefaction**

[N-UNCOUNT-U3] **Liquefaction** is a process in which fill or other water-logged sediment acts like a fluid.

- **longshore current**

[N-COUNT-U7] A **longshore current** is a section of water between the wave break zone and the beach that flows in the same direction as approaching waves.

- **longshore drift**

[N-UNCOUNT-U7] **Longshore drift** is the transference of sand along a shoreline by longshore currents.

- **magnitude**

[N-COUNT-U3] A **magnitude** is the measurement or calculation of the comparative energy release of earthquakes, usually displayed as a number on the Richter scale.

- **major**

[N-COUNT-U15] A **major** is a particular area of study that someone pursues in college.

- **manufacturing**

[N-UNCOUNT-U14] **Manufacturing** is the industry of making products, often in factories.

- **mass wasting**  
[N-UNCOUNT-U12] **Mass wasting**, or a landslide, is the sudden and rapid movement of rocks and other materials downhill due to gravity, caused by either natural processes or human activity.
- **master's degree**  
[N-COUNT-U15] A **master's degree** is a degree indicating that someone has completed an educational program beyond the level of bachelor's degree.
- **mechanical weathering**  
[N-UNCOUNT-U11] **Mechanical weathering**, or physical weathering, is a type of weathering during which rocks and other materials break down due to the direct impact of heat, water, ice, or pressure.
- **mesa**  
[N-COUNT-U8] A **mesa** is a residual eroded feature with a flat top and steep sides that resembles a table or hill.
- **metal**  
[N-COUNT-U13] A **metal** is an element that usually features a hard, shiny surface, and may be considered a natural resource.
- **mining**  
[N-UNCOUNT-U15] **Mining** is the process of removing a natural resource, such as coal or metal, from the Earth.
- **monocline**  
[N-COUNT-U2] A **monocline** is a fold in previously horizontal or uniform rock layers that resembles a step.
- **mountain range**  
[N-COUNT-U9] A **mountain range** is a linear grouping of mountains in the same region that share age and formation characteristics.
- **mountain system**  
[N-COUNT-U9] A **mountain system** is a collection of mountain ranges and other geologic formations grouped in the same region.
- **natural gas**  
[N-UNCOUNT-U13] **Natural gas** is a vaporous substance that is a type of hydrocarbon, and is a natural resource used in the production of fuels.

- **natural resource**  
[N-COUNT-U13] A **natural resource** is a substance or process that occurs naturally on the Earth and is used by humans to serve some purpose.
- **nuclear reactor**  
[N-COUNT-U14] A **nuclear reactor** is a device or facility that generates power by releasing energy through the division or combination of atoms.
- **oblique-slip fault**  
[N-COUNT-U2] An **oblique-slip fault** is a type of fault that exhibits measurable and significant features of both dip-slip and strike-slip faults.
- **oceanic**  
[ADJ-U1] If something is **oceanic**, it exists or occurs in the ocean rather than on land.
- **oceanic crust**  
[N-UNCOUNT-U5] **Oceanic crust** is a multi-layered part of the Earth's outer lithosphere found in the sea floor.
- **oceanic ridge**  
[N-COUNT-U6] An **oceanic ridge** is an underwater mountain range with valleys, formed by plate tectonics.
- **oceanic trench**  
[N-COUNT-U6] An **oceanic trench** is the deepest part of the ocean floor, typically appearing as a long, narrow depression, formed by convergent plate boundaries.
- **oceanographer**  
[N-COUNT-U15] An **oceanographer** is a professional who studies physical properties and life in the oceans.
- **ooze**  
[N-UNCOUNT-U6] **Ooze** is a pelagic sediment made mostly of shells or debris from organisms.
- **ore**  
[N-COUNT-U13] An **ore** is a rock or piece of earth that contains valuable materials, such as minerals or metals.
- **organism**  
[N-COUNT-U11] An **organism** is any living thing or living system.
- **orogenesis**  
[N-UNCOUNT-U9] **Orogenesis** is a geologic process in which mountains form as a result of the movement of tectonic plates.

- **overlap**  
[V-T-U5] To **overlap** something is to cover a part of it, usually the edge.
- **overloading**  
[N-UNCOUNT-U12] **Overloading** is the process of dumping, filling, or burdening something beyond its normal capacity.
- **paleontologist**  
[N-COUNT-U15] A **paleontologist** is a professional who studies history through natural records in fossils and rocks.
- **pelagic clay**  
[N-UNCOUNT-U6] **Pelagic clay** is a sea sediment that is accumulated by the settling of particles from the continents and oceanic islands.
- **petroleum**  
[N-UNCOUNT-U13] **Petroleum** is an oily substance that is a type of hydrocarbon, and is a natural resource used in the production of fuels.
- **PhD**  
[N-ABBREV-U15] A **PhD** is a postgraduate doctoral or research degree that is generally considered a very high level of education in a given field.
- **plastic strain**  
[N-UNCOUNT-U10] **Plastic strain** is a type of strain in which a deformed rock is stretched beyond its elastic limit and cannot return to its original state.
- **plate**  
[N-COUNT-U1] A **plate** is a large piece of the Earth's surface.
- **plate tectonics**  
[N-UNCOUNT-U1] **Plate tectonics** is the science of the movement of the Earth's surface.
- **playa**  
[N-COUNT-U8] A **playa** is a dry lake bed or salt pan that consists of mudcracks and salt crystals, and is formed after a lake evaporates.
- **pluton**  
[N-UNCOUNT-U9] A **pluton** is a type of igneous rock that invades other formations and is crystallized from cooled magma.
- **preservative**  
[N-COUNT-U14] A **preservative** is a substance that is added to food so that the food remains fresh for a longer time.
- **pressure ridge**  
[N-COUNT-U4] A **pressure ridge** is a feature of a lava flow that looks like a buckle or raised area and is caused by pressure on the crust of the lava flow.
- **pyroclastic material**  
[N-COUNT-U4] A **pyroclastic material** is a substance that is expelled from an erupting volcano.
- **reef**  
[N-COUNT-U6] A **reef** is a grouping of rocks, coral, or sand found near the surface of the water in the ocean, typically as a long, narrow formation.
- **Richter scale**  
[N-COUNT-U3] The **Richter scale** is the system used to measure the magnitude of earthquakes, beginning with the value "1".
- **ridge**  
[N-COUNT-U1] A **ridge** is an underwater mountain range with rifts and valleys formed by plate tectonics.
- **rockfall**  
[N-UNCOUNT-U12] **Rockfall** is a type of mass movement during which rocks break loose and fall through the air due to natural processes or human activity, such as overloading.
- **salt crystal**  
[N-COUNT-U11] A **salt crystal** is a type of mineral made of sodium chloride that can grow in or near rocks and alter their composition.
- **sea arch**  
[N-COUNT-U7] A **sea arch** is a geologic feature that in which a sea cave extends all the way from one side of a headland to the other, with openings at both ends.
- **sea cave**  
[N-COUNT-U7] A **sea cave** is a geologic feature that forms along the sides of a headland due to water erosion, and is a hollow area or opening in the rock.
- **sea stack**  
[N-COUNT-U7] A **sea stack** is an isolated sea arch that has been completely separated from a headland due to continual erosion.

- **seafloor spreading**  
[N-UNCOUNT-U6] **Seafloor spreading** is the formation of new oceanic crust at mid-ocean ridges due to volcanic activity as tectonic plates move farther apart.
- **seamount**  
[N-COUNT-U6] A **seamount** is a geologic feature that rises from the sea floor, and is usually formed from extinct volcanoes.
- **seismologist**  
[N-COUNT-U15] A **seismologist** is a professional who studies earthquakes.
- **seismology**  
[N-UNCOUNT-U3] **Seismology** is a branch of science focused on the study of earthquakes and related events.
- **separate**  
[V-I-U1] To **separate** is to disconnect two things from each other, or disconnect a part of something from other parts.
- **series**  
[N-COUNT-U9] A **series** is a collection or set of things that share similar characteristics or properties.
- **shear strength**  
[N-UNCOUNT-U12] **Shear strength** is a slope's ability to withstand the forces of gravity, and is determined by material strength, cohesion, internal friction, and external support of the slope.
- **shear stress**  
[N-UNCOUNT-U10] **Shear stress** is a type of stress characterized by parallel but opposing forces acting against a rock, and resulting in displaced rock layers.
- **shoreline**  
[N-COUNT-U7] A **shoreline** is a stretch of land that borders the edge of a body of water.
- **silver**  
[N-UNCOUNT-U13] **Silver** is a soft, gray metal that is considered very valuable and is used for making many products, including jewelry, kitchen utensils, and coins.
- **slide**  
[N-UNCOUNT-U12] A **slide** is the mass movement of a material along a surface due to the fracture or failure of the surface.
- **slope gradient**  
[N-COUNT-U12] A **slope gradient** is a measure of the angle of a slope based on its steepness and material stability.

- **slump**  
[N-UNCOUNT-U12] **Slump** is the mass movement of rock along a slide or slope that has curved inward.
- **spatter cone**  
[N-COUNT-U4] A **spatter cone** is a feature of a lava flow that looks like a small, steep cone and is caused by volcanic gases throwing lava into the air, which then settles back to the surface in bunches.
- **spheroidal weathering**  
[N-UNCOUNT-U11] **Spheroidal weathering** is a type of chemical weathering during which a rock is weathered from several directions so that a rounded form results.
- **spit**  
[N-COUNT-U7] A **spit** is a depositional feature of a shoreline that extends a beach into a body of water like a bay.
- **steel**  
[N-UNCOUNT-U14] **Steel** is a very strong, hard material that is used for a variety of purposes in construction and manufacturing, and is made with iron and carbon.
- **steep**  
[ADJ-U12] If something is **steep**, its slope or gradient is at a great or sharp angle in relation to the ground surface.
- **strain**  
[N-UNCOUNT-U10] **Strain** is the result of intense stress outweighing internal strength.
- **stress**  
[N-UNCOUNT-U10] **Stress** is the exertion of force or pressure on something.
- **strike**  
[N-UNCOUNT-U2] **Strike** is a measure of the line formed where a horizontal plane meets an inclined plane.
- **strike-slip fault**  
[N-COUNT-U2] A **strike-slip fault** is a type of fault that exhibits horizontal or lateral movement in the direction of the fault's strike.
- **subduction**  
[N-COUNT-U1] **Subduction** is the process in which two plates collide with each other and one slides under the other.
- **subject to**  
[V-T-U10] To be **subject to** something is to be capable of being affected by it.

- **submarine canyon**  
[N-COUNT-U5] A **submarine canyon** is a valley-like feature of a continental slope.
- **submarine fan**  
[N-COUNT-U5] A **submarine fan**, or abyssal fan, is an underwater geologic feature formed by the sediment deposits of turbidity currents.
- **suspended load**  
[N-COUNT-U8] A **suspended load** is small, light sediment, typically composed of clay and silt, that is transported through the air by wind.
- **syncline**  
[N-COUNT-U2] A **syncline** is a fold in a previously horizontal or uniform rock layer that resembles a downward arch.
- **tension**  
[N-UNCOUNT-U10] **Tension** is a type of stress characterized by the stretching of a rock in opposite directions, resulting in a thinner and longer rock with joints or faults.
- **thermal expansion and contraction**  
[N-UNCOUNT-U11] **Thermal expansion and contraction** is a process in which solid materials increase in size when heated (expansion) and shrink when cooled (contraction).
- **tide**  
[N-COUNT-U7] The **tide** is the regularly occurring movement of waves caused by the gravitational pulls of the Sun and Moon, as well as Earth's rotation.
- **transform boundary**  
[N-COUNT-U1] A **transform boundary** is an area where two tectonic plates grind against or slide past each other along a fault.
- **transport**  
[V-T-U11] To **transport** something is to move or carry it from one location to another.
- **trench**  
[N-COUNT-U1] A **trench** is a very deep part of the ocean floor, typically appearing as a long, narrow depression.
- **tsunami**  
[N-COUNT-U3] A **tsunami** is a large sea wave caused by an earthquake or other seismic activity along the sea floor.

- **turbidity current**  
[N-COUNT-U5] A **turbidity current** is the dense, rapid movement of sediment-heavy water that flows down a slope through another body of water.
- **unreinforced**  
[ADJ-U3] If a building is **unreinforced**, it is not built with enough strength to withstand particular events, such as earthquakes, and is likely to collapse under stress.
- **uplift**  
[N-UNCOUNT-U9] **Uplift** is a method of mountain formation during which tectonic plates and rocks are displaced and raised above surrounding land.
- **uranium**  
[N-UNCOUNT-U13] **Uranium** is a substance that is derived from minerals in sedimentary rocks, and is a natural resource used in the production of nuclear power.
- **valuable**  
[ADJ-U14] If something is **valuable**, people desire it or consider it to be important.
- **vegetation**  
[N-UNCOUNT-U12] **Vegetation** is the plant life on the ground in a particular region.
- **volcanic gas**  
[N-COUNT-U4] **Volcanic gas** is a substance or collection of substances given off by a volcano as a result of pressure in the Earth's mantle, crust, or atmosphere.
- **volcanic mountain**  
[N-COUNT-U9] A **volcanic mountain** is a mountain formed over an area of upwelling magma.
- **volcano**  
[N-COUNT-U4] A **volcano** is a mountain that has to ability to suddenly erupt, expelling materials such as rock, ash, and lava.
- **waterfall**  
[N-COUNT-U9] A **waterfall** is a body of running water that empties into another body of water at a much lower elevation, forming a long, vertical stream of water along an escarpment.
- **wave**  
[N-COUNT-U3] A **wave** is ground movement on the Earth's surface that is caused by seismic activity below the surface.



- **wave**

[N-COUNT-U7] A **wave** is a section of moving water, generated by the wind, that rises above the still surface of the water.

- **wave refraction**

[N-UNCOUNT-U7] **Wave refraction** is a process in which breaking waves compress or slow down in order to move parallel to the shoreline.

- **weathering**

[N-UNCOUNT-U11] **Weathering** is the process by which rocks and other minerals are physically or chemically broken down and altered permanently.

- **wind**

[N-UNCOUNT-U8] **Wind** is the natural movement of air within the atmosphere.

- **wind deposit**

[N-COUNT-U8] A **wind deposit** is a collection of sediment that is transported by the wind from its source to another location to form a new geologic feature.

- **zinc**

[N-UNCOUNT-U13] **Zinc** is a bluish-white metal that is often used as a protective coating for other metal products

## Audio Files for Occupation Cadaster and Drilling Technician

All audio files accompanying the resources proposed for application for teaching foreign language for the occupation “Cadaster and Drilling Technician” are freely available at the Resource centres equipped under the *Curriculum Development in Vocational Education and Training Schools* Project.



