14. Поставте дієслово в дужках у правильну форму (Див.: Граматичний довідник. §5):

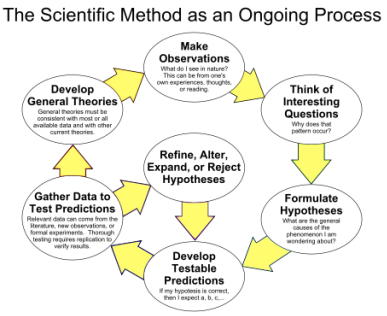
1. I (to catch) the train if I (to take) a taxi.
1. You (to miss) the train if you (not to hurry).
2. I (to ring) him when I (to get) tickets.
3. I (to go) skating if it (not to be) very cold.
4. They (to keep) my luggage till I (to give) my new address.

15. Перекладіть речення англійською мовою:

1. Коли ви почали вивчати англійську мову? – Ми почали вивчати англійську мову шість років тому.
2. Що ви робите на уроці англійської мови? – Ми читаємо та перекладаємо тексти, виконуємо вправи та складаємо діалоги.
3. Де ви були вчора? – Ми ходили в кіно.
   Вам сподобався фільм? – Так, нам дуже сподобався цей фільм.
4. Мій брат працює в лікарні. Він лікар.
5. Коли ти встав учора? – Я встав о дев'ятій учора. Я завжди встаю о дев'ятій у неділю.

Lesson 3

Science Method



The scientific method seeks to explain the events of nature in a reproducible way. An explanatory thought experiment or hypothesis is put forward. The explanation is used to make predictions that are testable by experiment or observation. The predictions are to be posted before a confirming experiment or observation is sought, as proof that no tampering has occurred.

Disproof of a prediction is evidence of progress. This is done partly through observation of natural phenomena, but also through experimentation, that tries to simulate natural events under controlled conditions, as appropriate to the discipline (in the observational sciences, such as astronomy or geology, a predicted observation might take the place of a controlled experiment). Experimentation is especially important in science to help establish causal relationships (to avoid the correlation fallacy).

When a hypothesis proves unsatisfactory, it is either modified or discarded. If the hypothesis survived testing, it may become adopted into the framework of a scientific theory. This is a logically reasoned, self-consistent model or framework for describing the behaviour of certain natural phenomena.

A theory typically describes the behaviour of much broader sets of phenomena than a hypothesis; commonly, a large number of hypotheses can be logically bound together by a single theory. Thus a theory is a hypothesis explaining various other hypotheses.

In that vein, theories are formulated according to most of the same scientific principles as hypotheses. In addition to testing hypotheses, scientists may also generate a model based on observed phenomena. This is an attempt to describe or depict the phenomenon in terms of a logical, physical or mathematical representation and to generate new hypotheses that can be tested.

1. Find the English equivalent in the text:

Відтворений спосіб, висувати гіпотезу, робити передбачення, підробка (фальсифікація), спростування передбачення, свідчення прогресу, імітувати (моделювати) природні явища, встановити причинно-наслідкові зв'язки, уникнути помилкової кореляції, змінити гіпотезу, відкинути гіпотезу, логічно вмотивований, послідовна модель, бути логічно пов’язаним, в тому ж напрямку.

2. Translate the following words and word-combinations:

The events of nature, to be testable by experiment, observation of natural phenomena, to simulate natural events, to establish causal relationships, a scientific theory, the behaviour of certain natural phenomena, scientific principle.

3. Answer the following questions:

1. What are predictions tested by?
2. What is the proof that no tampering has occurred?
3. What is the result of unsatisfactory hypothesis?
4. What is theory?
5. How are theories formulated?

4. Find the definitions of the notions:

Hypothesis	the action or process of observing something or someone carefully or in order to gain information
Theory	a supposition or a system of ideas intended to explain something, especially one based on general principles independent of the thing to be explained
Observation	a supposition or proposed explanation made on the basis of limited evidence as a starting point for further investigation
Experiment	a scientific procedure undertaken to make a discovery, test a hypothesis, or demonstrate a known fact

5. Read the text; put 3 questions to it; discuss it with a partner.

While performing experiments to test hypotheses, scientists may have a preference for one outcome over another, and so it is important to ensure that science as a whole can eliminate this bias. This can be achieved by careful experimental design, transparency, and a thorough peer review process of the experimental results as well as any conclusions.

After the results of an experiment are announced or published, it is normal practice for independent researchers to double-check how the research was

performed, and to follow up by performing similar experiments to determine how dependable the results might be. Taken in its entirety, the scientific method allows for highly creative problem solving while minimizing any effects of subjective bias on the part of its users (namely the confirmation bias).

6. Make an annotation of the article:

Do Great Minds Think Alike?

(From Wavelength Intermediate. By Kathy Burke and Ben Wordon)

What makes a person so brilliant that they change the course of history? Is there a recipe for genius – a list of ingredients that all geniuses share? Perhaps not, but geniuses really seem to have quite a lot in common.

For example, geniuses often come from an unhappy background and many are orphans. One study of important creators found that twenty per cent of them lost one or both parents in childhood. Tolstoy, Michelangelo, Bach, Raphael, Wagner and Charlie Chaplin all lost parents before they were ten years old. Seventy-five per cent of the geniuses in another study came from families affected by poverty, divorce, abuse, alcoholism and mental illness.

What is the connection? Perhaps stress made the children escape into their own private worlds – they felt different from other children and so decided to become even more different. Or were they working hard to please parents who were not there?

Geniuses are also incredibly productive. Picasso is responsible for 20,000 works. Thomas Edison, inventor of the light bulb, patented 1093 inventions. Freud produced 330 publications. Of course, high productivity will include failures, but what makes geniuses different is that they do not give up when they fail – they build on failure to create their biggest successes. Freud had his breakthrough about the importance of dreams after spending years on another project, which finally came to nothing. He was already over forty – but according to one study, most great works are done between the ages of thirty-five and forty-five. Whenever their great creations come, however, one thing seems to connect all geniuses (even young ones like Mozart) – a “ten-year rule”. Geniuses have always worked hard in their chosen areas for at least a decade before they create their first masterpieces.

Finally, could genius also be a question of simple childlike curiosity? Einstein often said that his greatest discoveries came from simply asking the same kinds of questions children ask – but unlike most adults, he never stopped asking them.

Project Summary

(from Cambridge English for Scientists by Tamzen Armer)

7. Read Eriko's completed project summary. Then say what you think the commercial applications of Eriko's research might be.

PROJECT SUMMARY

Provide a brief summary o f aims, significance and expected outcomes of the research plan

A 3 -D odour-compass for odour-detecting robots

Odour-sensing robots offer many benefits over the current use of animals in similar roles, including safety, efficiency and durability.

[A] However, the robots which have been developed to date are limited by the fact that they can only accurately detect and navigate towards odour plumes if they are within direct 'sight' of the chemical source. Clearly, in real world situations, obstacles may well impede the robot's detection ability, and at present, odour-sensing robots are therefore only of limited use.

[B] The proposed research will concentrate on developing a robot which is able to gather readings in three dimensions and therefore overcome the limitations of current models in odour-detection.

[C] This technology will make robots a more effective substitute for animals.

[D] This research aims to develop existing robotic technology to create a threedimensional (3-D) odour compass to be used as a navigation tool in searching for an odour source.

[E] This will then be tested experimentally in simulated environments where wind direction is not stable or where obstacles interfere with odour distribution. A second stage in the research will be to develop the robot's environmental sensors, thus allowing it to safely negotiate the terrain to reach the source of the odour.

[F] This should produce a robot which is able to both detect and move to the source of an odour, even on difficult terrain.

8. Match each highlighted section in the summary (A-F) to the correct function (1 -6) from the list in Exercise 9 (Unit II).

9. Look at the highlighted sections A -F again. Underline the words that you could use in your own project summary. Makes notes like the following example.

<u>However</u>, <u>to date</u> and <u>limited</u> to define the problem (A).

10. Complete the project summary by another researcher below using the correct word or phrase from the box.

aims to *however* *the initial phase* *the proposed research* *the study* *will indicate*

Consumer interest in wines produced in organic vineyards has increased significantly in the last few years. (1)_____, to date it is unclear whether these production methods actually improve soil or grape quality. (2)_____will be the first phase of a long-term study on a New Zealand vineyard. These results (3)_____ whether methods of viticulture improve grape quality. The research (4) investigate the effects of organic agriculture on soil and grape quality. (5) will consist of two treatments, organic and conventional (the control), each replicated four times in a randomised, complete block design. All organic practices will follow the standards set out by the Food Standards Australia New Zealand (FSANZ). (6)_____ will assess soil quality using physical,

chemical and biological indicators over six years. The next phase will then assess the physiology of the vines.

11. Write a short project summary of about 150 words for the research you discussed in Exercise 9 (Unit II). Use the phrases you noted in Exercises 9 and 10.

Discussion point

Work

(from Headway Students' Book Upperintermediate by John and Liz Soars. Oxford English)

12. There are many proverbs to do with work. Match a line from column A with a line from column B to form an English proverb:

A	**B**
a. A bad workman	___ while the sun shines
b. If a job is worth doing	___ make light work
c. Make hay	___ what you can do today
d. Many hands	___ for idle hands
e. Too many cooks	___ makes you healthy, wealthy and wise
f. Early to bed and early to rise	___ blames his tools
g. Never put off till tomorrow	___ it's worth doing well
h. The devil makes work	___ catches the worm
i. All work and no play	___ spoil the broth
j. The early bird	___ makes Jack a dull boy

13. Try to answer the following questions:

1. What do the proverbs mean?
2. Do you agree?
3. Translate them into your native language or find an equivalent.
4. What proverbs about work do you have in your language?

Grammar

14. Відкрийте дужки і використайте необхідну форму дієслова: Present Simple or Present Continuous (Див.: Граматичний довідник. §3, §6):

1. He (to play) volleyball now. He (to play) volleyball or football every day.
2. My friends (to speak English) at the moment. They usually (to speak English) at the English lesson.
3. She (to drink) coffee three times a day. Now she (to drink) coffee too.
4. My group-mates (to take an exam) in room 16. We usually (to take exams) twice a year.
5. Where (to be) the students? – They (to be) in the yard. They (to plant) trees now. They (to plant) trees in autumn.

15. Відкрийте дужки і використайте необхідну форму дієслова: Past Simple or Past Continuous (Див.: Граматичний довідник. §4, §7):

1. I (to play) computer games yesterday.
2. When we (to come) into the kitchen, mother (to cook).
3. Why she (to sleep) at seven o'clock yesterday?
4. What you (to do) when I (to ring) you up?
5. While I (to play) the piano, my friend (to do) his homework.

16. Дайте відповіді на наступні запитання:

1. What were you doing when I rang you up?
2. What was Ann doing when you came to her place?
3. Was it raining the whole day yesterday?
4. Was it snowing when you got off the trolley-bus?
5. What was your friend writing when I entered the room?
6. What were you thinking about when you asked me this question?
7. What were you planning when you made no reply?
8. What was the man passing when the clock struck eleven?

17. Перетворіть речення, використовуючи час Future Continuous (Див.: Граматичний довідник. §8):

1. They were having dinner at three yesterday.
2. I am sending him an invitation to dinner now.
3. The children will ski in some days.
4. The girl was reciting a poem when the delegation entered the hall.
5. I shall wait for you at the metro station.
6. This team play hockey twice a day.
7. The students will discuss the article on Friday.

Lesson 4

MATHEMATICS AND FORMAL SCIENCES

Mathematics is essential to the sciences. One important function of mathematics in science is the role it plays in the expression of scientific models. Observing and collecting measurements, as well as hypothesizing and predicting, often require extensive use of mathematics.

Arithmetic, algebra, geometry, trigonometry and calculus, for example, are all essential to physics. Virtually every branch of mathematics has applications in science, including "pure" areas such as number theory and topology.

Statistical methods, which are mathematical techniques for summarizing and analyzing data, allow scientists to assess the level of reliability and the range of variation in experimental results. Statistical analysis plays a fundamental role in many areas of both the natural sciences and social sciences.

Computational science applies computing power to simulate real-world situations, enabling a better understanding of scientific problems than formal mathematics alone can achieve. According to the Society for Industrial and

Applied Mathematics, computation is now as important as theory and experiment in advancing scientific knowledge.

In general, mathematics is classified as formal science, while natural and social sciences are classified as empirical sciences.

1. Find the English equivalent in the text:

Мати велике значення (бути суттєвим), вираження наукових моделей, збір вимірів, вимагати широкого застосування, мати застосування, оцінити рівень надійності, відігравати основну роль, застосовувати обчислювальну потужність, моделювати реальну ситуацію.

2. Translate the following words and word-combinations:

Hypothesizing, predicting, arithmetic, algebra, geometry, trigonometry, calculus, natural sciences, social sciences, computational science, number theory, topology.

3. Answer the following questions:

1. What is essential to the sciences?
2. What sciences are essential to physics?
3. What is the role of statistical methods?
4. What is as important as theory and experiment in advancing scientific knowledge?
5. What science is classified as formal science?

4. Find the definitions of the notions:

Topology	the branch of mathematics that deals with the properties and relationships of numbers, especially the positive integers
Natural science	the scientific study of human society and social relationships
Social science	a branch of science that deals with the physical world, e.g., physics, chemistry, geology, and biology.
Number theory	the study of geometric properties and spatial relations unaffected by the continuous change of shape or size of figures

5. Read the text; put 4 questions to it; discuss it with a partner.

Science is a systematic way of acquiring knowledge about a particular field of study. According to Science Made Simple, a leading website in scientific education, science helps us to gain knowledge, through an organized system of observation and experimentation. This system is used to describe different natural phenomena. The aforementioned description is that of pure science, and biology, chemistry, physics and Earth science are the basic fields of pure science.

Technology can be defined as the products, tools and processes used to accomplish tasks in daily life. According to Use of Technology, technology is the application of science to solve a problem. Technology involves the application of engineering and applied sciences to solve the practical problems of human lives.

Technology is basically human knowledge that is used to create products and artifacts with the help of innovative tools, systems and materials. Technology is used for communication, manufacturing, learning, securing data and transportation; it is often a consequence of science and engineering, but technology as a human activity precedes the other two fields.

6. Make an annotation of the article:

Stephen Hawking

There is a man driving around in a motorized wheelchair in Cambridge, England. He can only move his eyes and two fingers on his left hand. He communicates through a computer. He types words on the computer and the computer speaks for him. This man is Stephen Hawking. People know him for his courage and his sense of humour. He is also the greatest physicist since Albert Einstein.

Stephen Hawking was born in 1942 in Oxford, England. His father was a specialist in tropical diseases. Stephen wanted to be a scientist too. He went to the University of Oxford and received a degree in physics. He then went to the University of Cambridge to study for a Ph.D. During this time doctors discovered that he had ALS, which is sometimes called Lou Gehrig's disease. This fatal disease weakens all body's muscles. Most people with ALS live for five years. The doctors thought Hawking would live for only two and a half more years. When Hawking heard this, he became very depressed.

At about this time he met Jane Wilde, a language student at Cambridge. They fell in love and got married in 1965. Hawking has often said that his wife gave him courage to continue to study and work. Although Hawking had become more severely paralyzed, he became a Professor at Cambridge. Luckily, the work of a physicist only requires one thing: the mind. Hawking had a son and then a daughter. He had another son 12 years later when his disease had gotten much worse. His youngest son never heard his father's real voice. He has only heard the voice from the computer.

Hawking does research about how the universe began. He sees connections and works out explanations that other people cannot. His research has influenced many other scientists. Some of his ideas are so advanced that other scientist cannot prove them yet. His most famous ideas are about black holes. Black holes are not really holes. They are so dense that even light cannot pass through. That is why they are called black holes.

As his disease got worse, money became a problem for Stephen Hawking. He had a lot of medical expenses. He needed special wheelchair, nurses 24 hours a day, and machines to help him read and speak. To earn extra money, Hawking gave speeches and published articles. Then someone told him to write a book that explained the universe to ordinary people. Hawking agreed and wrote *A Brief History of Time*. The book sold over 8 million copies worldwide, and Hawking became a millionaire. Even though most people could not understand Hawking's ideas, he amazed them. Hawking became world famous. He met the Queen of England, he was on the covers of magazines, and he appeared on television shows.

In 1990 Hawking ended his 25-year marriage. This was shocking to many of his friends because his wife, Jane, was very devoted to him. She took care of all his needs. She fed him, bathed him, dressed him, and raised their children by herself. Hawking left her for a younger woman – his nurse! They were married in 1995.

Hawking's strong personality and spirit have helped him to live with ALS for over 30 years. He has helped to make people aware of ALS and other disabilities. Hawking teaches us that even though a person is physically disabled, the mind has no limits.

(*From: What a life! By Milada Broukal*)

Writing a resume or CV

(from Cambridge English for Scientists by Tamzen Armer)

7. **In pairs, discuss the following questions.**

1. Have you ever applied for a job in science? If not, what kind of job would you like to apply for in the future?
2. Which of the following documents are job applicants usually asked for in your country?
   - application form
   - biodata
   - cover letter (covering letter)
   - resume or CV (curriculum vitae)
3. Have you ever written one of these documents in English?
4. Do you think that the information you include and the way you organise a resume or CV in English will be the same as a resume or CV in your own language?

8. Section 1 of the SARF application form asks applicants to include a copy of their CV. In pairs, look at the list of possible headings for a CV (a -l) and then answer the following questions.

1. Would you use all the headings **(a-l)** on your CV? Why / why not?
2. How would you organise the information in your CV? Put the list of headings **(a-l)** in the best order.
3. What kind of information would you include under each heading? Make suggestions for each heading.

a □ computer skills
b □ dissertations
c □ education
d □ grants and awards
e □ personal information
f □ presentations
g □ publications
h □ research experience
i □ study abroad
j □ teaching experience
k □ technical skills
1 □ travel

9. Eriko is getting advice from Susana about writing her CV. Use the list in Exercise 8 to complete the headings Eriko will use.

- Personal Information
- (1) _____
- Research Experience
- Technical Skills
- **(**2**) _____**
- Publications
- (3)_____ and (4) _____
- Presentations

Eriko: *So, if I use the research experience heading, do I include presentations, publications, grants, awards, skills and everything ail in there? I mean, won't the section be too long?*
Susana: *You're absolutely right... it would be too long. I think this is one of the big differences between a CV in English and the resumes most of us learned to write. In a CV you can use a lot of different headings for the various sections. So you can have a research experience heading where you list your research positions, but then separate headings for the other details, the publications and so on.*
Eriko: *OK, so let me just check I've got this right. I should start with a personal information heading, and then next is education. Could I just ask one thing about that?*
Susana: *Sure.*
Eriko: *In the education section, how far back should I start? I mean, which school should be first? Not elementary school, I assume.*
Susana: *Ah, well, another thing here. In CVs, they always write the most recent thing first. So in education, your PhD comes first, just after the title.*
Eriko: *So ... w h a t... in publications, the paper I published last is written first, right?*
Susana: *Right.*
Eriko: *Hmm, OK ...*
Susana: *... and as to which education to mention, I'd start with high school at the earliest, nothing before that.*
Eriko: *OK, so start with Osaka University.*
Susana: *Exactly.*
Eriko: *And after the education section, research experience and then technical skills, followed by publications ...*
Susana: *No, no, no - put your teaching experience next, after technical skills, because you'll hopefully be doing some teaching.*
Eriko: *OK, so research experience, technical skills, teaching experience, publications, OK fine, and then grants and awards and finally presentations. Is that the lot?*
Susana: *Yeah, that should be good. So you'll be OK now?*

10. Your CV should always include any publications you have worked on in their correct citation form. In pairs, answer the following questions.

1. What is the correct order of information in a citation? Number the items in the box below in order from 1 to 6.

_____ page numbers _____ journal volume and/or issue number
_____ title of article _____ year _____ journal name _____ author's name

2. If the paper has not yet been published, what do you write instead of the *volume* and *page*?

3. If the paper has been submitted (given) to a journal but not yet accepted, what do you write instead of the *jo u rn a l name, volume* and *p a g e l*

11. Write out the information for three different publications Carlos has worked on (1 -3) in the correct citation form.

1. *Submitted manuscript. /* (2011) / Hernandez Sanchez, R. and Alvarez, C.M. / 'Salinity and intra-annual variability of perilagoonal vegetation'

2. Environmental Management Review / (2011) / 'Declining peri-dunal variability in Dohana' / *In press.* / Hernandez Sanchez, R., Gomez Herrera, S.A. / and Alvarez, C.M.

3. pp 167-184 / 'Hydroperiod effects on peri-dunal vegetation' / Vol 2. / Spanish Hydrology Journal / (2010) / Hernandez Sanchez, R. and Alvarez, C.M.

Discussion point

Travel and Transport

(from Headway Students' Book Upperintermediate by John and Liz Soars. Oxford English)

12. Divide the following means of transport into three groups: transport by air, water or on land.

a submarine	a tram	a van
a moped	a helicopter	a rocket
an airship	a jet	a liner
a canoe	a double-decker bus	a jeep
a rowing boat	a yacht	an estate car
a barge	a glider	a hot-air ballon

13. Choose one of the groups. Which of the means of transport is

- the fastest?
- for commercial purposes?
- for pleasure?
- the most dangerous?
- old-fashioned?
- romantic?
- for military purposes?

What associations do you have for each one?

Grammar

14. Перекладіть наступні речення:

1. Вони слухали новини по радіо, коли задзвонив телефон.

2. Я робив ранкову гімнастику, коли прийшов мій друг.
3. Він вивчав фізику в школі.
4. Вона почала писати вірші, коли їй було 5 років.
5. Вони поїдуть в Англію через два тижні.
6. Я читав цікаву книгу весь вечір вчора.
7. Вони завжди грають у шахи ввечері.
8. Він здаватиме іспит з англійської мови в цей час завтра.
9. Вони закінчили школу два роки тому.
10. Як правило, вони зустрічаються після уроків.

15. Дайте відповіді на запитання, використовуючи Present Perfect (Див.: Граматичний довідник. §9)**::**

Зразок: *Are* ***the students*** *writing* ***a dictation? – No, they*** *have* ***already*** *written* ***it.***

1. Is your friend helping you to solve a difficult problem?
2. Is she learning a poem by heart?
3. Is Kate sweeping the floor?
4. Is the waiter putting a bottle of lemonade in front of him?
5. Is he bringing them some meat and vegetables?
6. Are they having tea?
7. Is she taking the dirty plates from the table?
8. Are you putting the dishes on the table?
9. Are you looking for more CDs with good music?
10. Are you recording your favourite film on his video recorder?

16. Використайте дієслово в дужках у Present Continuous or Present Perfect (Див.: Граматичний довідник. §6, §9)**:**

1. Who (to write) this article already?
2. They (to learn) a lot of English words.
3. What she (to teach) them now?
4. What you (to look) for?
5. You (to find) the book already?
6. What you (to talk) about?
7. They (to ask) me several questions.
8. I (to answer) the telephone right now.
9. You just (to hear) tomorrow's weather forecast?
10. He (to fix) his car and now he (not to have) any trouble with the brakes anymore.

17. Використайте дієслово в дужках у Past Indefinite or Present Perfect (Див.: Граматичний довідник. §4, §9)**::**

1. The rain (to stop) half an hour ago.
2. The rain (to stop) and the sun is shining in the sky again.
3. The wind (to blow) off the man's hat and he cannot catch it.
4. The weather (to change) and we can go for a walk.

5. The wind (to change) in the morning.
6. Yesterday they (to decide) to help him with his research.
7. The man already (to decide) what to do with the information.
8. I (not yet to eat) today.
9. You (to play) the piano yesterday?
10. When the lecture (to begin)?

Unit II Scientific Papers

Lesson 1

A Guide to Writing Scientific Papers

Scientific experiments are demanding, exciting endeavors, but to have an impact, results must be communicated to others.

A research paper is a method of communication, an attempt to tell others about some specific data that you have gathered and what you think those data mean in the context of your research.

The "rules" of writing a scientific paper are rigid and are different from those that apply when you write an English theme or a library research paper. For clear communication, the paper obviously requires proper usage of the English language and this will be considered in evaluating your reports. Scientific papers must be written clearly and concisely so that readers with backgrounds similar to yours can understand easily what you have done and how you have done it should they want to repeat or extend your work. When writing papers for the biology department, you can assume that your audience will be readers like yourselves with similar knowledge.

Although scientific journals differ somewhat in their specific requirements, a general format that would be acceptable for most biological journals is:

- Title
- Abstract
- Introduction
- Materials and Methods
- Results
- Discussion
- Conclusions
- Acknowledgments
- Literature Cited

1. Find the English equivalents in the text:

Захоплюючі зусилля, доводити до відома інших, зібрати конкретні дані, означати, в контексті дослідження, жорсткі правила, вимагати правильного використання, оцінити звіт, писати чітко і лаконічно, вважати (визначати), анотація, висловлення вдячності.

2. Translate the following words and word-combinations:

To have an impact, a research paper, method of communication, a scientific paper, to require proper usage, background, to repeat or extend a work, specific requirements, acceptable general format.

3. Answer the following questions:

1. What is a research paper?
2. Are the "rules" of writing a scientific paper different?
3. How must scientific papers be written?
4. What is general format that would be acceptable for most biological journals?

4. Read the text; put 3 questions to it; discuss it with a partner.

The section headings (Abstract, Introduction, etc.) should be **centered** and the body of each section should follow immediately below the heading. Do not begin each section on a new page. If one section ends part of the way down the page, the next section heading follows immediately on the same page.

One important general rule to keep in mind is that a scientific paper is a report about something that has been done in the past. Most of the paper should be written in the **Past Tense** (was, were). The present tense (is, are) is used when stating generalizations or conclusions. The present tense is most often used in the Introduction, Discussion and Conclusion sections of papers. The paper should read as a narrative in which the author describes what was done and what results were obtained from that work.

Preparing for an interview

(from Cambridge English for Scientists by Tamzen Armer)

5. Read the extract of an email to Eriko from Dr Caroline Hansford of SARF and then answer the following questions.

1. How will Eriko be interviewed?
2. What does she have to do before the interview?
3. Why might this interview be particularly difficult?

… and we plan to hold interviews in the final week of July. Your interview has been scheduled for Thursday 28 July at 0900GMT. As you are currently based in the UK, we will be interviewing you by conference call. Please write back to us to confirm your availability for this date and time We will be asking all interviewees to deliver a short presentation of their research proposal at interview. In your case, we would like to ask you to upload a video of yourself giving such a presentation no later than Wednesday 20 July.

6. Eriko has decided to write her presentation and then to memorise it. In pairs, make a note of the advantages and disadvantages of:

- reading your presentation from a script
- memorising the script of your presentation

- not using a script (using notes only)

7. Eriko has asked Carlos to comment on her presentation. Listen to Eriko's first two attempts and answer the following questions.

1. How do you think Eriko feels?
2. What comment does Carlos make on her firs t attempt?

Eriko: *OK. Are you ready?*
Carlos: *Yes, yes. I am ready.*
Eriko: *You sure? OK? Just stop me if there's a problem.*
Carlos: *I will, don't worry! OK, good, go, go!*
Eriko: *OK then ... here it is ... Hello. My name is Eriko Oshima and I'm currently a PhD candidate at Imperial College London. My research—*
Carlos: *Oh! Eriko ... too fast, I think, slow down a little.*
Eriko: *OK, yes ... Hello. My name is Eriko Oshima and I'm currently a PhD candidate at Imperial College London. My research focuses on developing odour-sensing robots. This is useful because humans have a poor sense of smell, and so we have to rely on other methods to ...*

8. What advice do you think Carlos might give to Eriko on her second attempt? Listen to Carlos's feedback.

Eriko: *So how was it, Carlos?*
Carlos: *Well, you remembered everything, and you spoke more clearly, and not too fast, but ...*
Eriko: *But what?*
Carlos: *Well, one thing is you sound very bored. Your voice is always at the same level.*
Eriko: *So ... ?*
Carlos: *Well, if you listen to English speaking people, they stress the important words. They make them louder and stronger.*
Eriko: *And their voice goes up and down more?*
Carlos: *Right. So try to work out which your important words are and stress them. And another thing connected to this is that you don't pause enough.*
Eriko: I *don't?*
Carlos: *Well, sometimes you do, but not always at the right time.*
Eriko: *So I guess I should plan when to pause too.*
Carlos: *That's a good idea. And there were some words you had problems with.*
Eriko: *Yes, it's really hard for me to say 'detect pa rt-' ... 'detect particular' ...argh!*
Carlos: *So* ***I*** *guess you just need to practise those problem words or groups again and again.*
Eriko: *Argh! it's so hard!*
Carlos: *Why don't you ask an English speaker to record it for you? Then you can listen and try to copy them.*
Eriko: *That's a good idea - maybe I can ask Doug ...*

9. Complete the notes below.

Good'
Remembered everything
Spoke more (1) _____ _ _
Speed OK
Practise more:
Make important words (2) _____ and (3) _____
Plan when to (4) _____
Practise (5) _____ words many times
Ask an (6) (7) _____ to record your presentation so you can copy tbeme.

10. Listen to Eriko practising the introduction to her presentation again.

1. Has she followed all of Carlos's advice?
2. Does the presentation sound better now?

Eriko: *Hello. My name is Eriko Oshima and I'm currently a PhD candidate at Imperial College London. My research focuses on developing odour-sensing robots. This is useful because humans have a poor sense of smell, and so we have to rely on other methods to detect particular odours. For example, we use trained sniffer dogs to locate people trapped in buildings, chemical leaks or illegal drugs. However, there are a number of problems with using dogs. First they cannot communicate exactly what they have detected. But a robot could. Secondly, it is difficult to tell if an animal's sense of smell is in some way impaired. But a malfunctioning robot would be easily spotted. Third, animals require extensive training with ...*

11. Complete the phrases with information that is true for you.

1. Hello. My name is ... and I'm currently ...
2. My research focuses on ...
3. This is useful because ...
4. For example, ...
5. However, there are a number of problems with ...

12. Phone and video conferencing are both common for interviews and meetings nowadays. Complete the advice for interviews by conference call using the words and phrases in the box below.

application form comfortable position facing late
phone number questions see shuffle thank tone of voice

CONFERENCE CALL INTERVIEWS

Before your interview

Find out exactly who you will be talking to
Check whether they will be able to (1) _____you or just hear you

Check the date, time, the (2) _____to dial in on, and the right code to access the conference call
Read your CV and (3)_____again
Practise answering questions you might be asked
Prepare (4)_____ to ask the interviewer

During your interview

• Don't be (5)_____ !
• Use your (6)_____ to sound confident and enthusiastic
Do not (7)_____ papers (this will make a noise)
Sit in a (8)_____ do not move about too much
Speak very clearly, (9) _____ the microphone
When the interview is over, (10) _____ th e interviewer(s) and end positively

13. Look a t the completed advice in Exercise 12. Which do you think are the three best pieces of advice? Why?

Discussion point

How do you feel today?

(from Headway Students' Book Upperintermediate by John and Liz Soars. Oxford English)

14. Answer the following questions:

1. What dishes is your country famous for?
2. What kind of food is eaten a lot?
3. What is a balanced diet?
4. How does diet affect your health?
5. Have you changed your diet recently?

15. Read and discuss:

1. If fat total is less than fibre total, well done.
2. If fat total is about the same as fibre total, try to cut down on fat.
3. If fat total is greater than fibre total, you need to make changes in your diet.

Grammar

16. Перетворіть активний стан на пасивний (Див.: Граматичний довідник. §12, 13, 14)**:**

1. They sent for a doctor.
2. They looked for the book everywhere.
3. They listened to the lecture with great interest.
4. They always look at this picture.
5. They will look through these letters tomorrow.
6. They often laughed at him.

17. Перетворіть речення на пасивний стан, не вказуючи суб'єкта дії (Див.: Граматичний довідник. §12, 13, 14)**:**

1. The girls water the flowers every day.

2. They publish this magazine in Paris.
3. We do not discuss such questions at our meeting.
4. Somebody built this castle in the 16th century.
5. They did not show this film last week.
6. They will not finish this work tomorrow.
7. We shall invite him to take part in the concert.
8. The workers repaired this road last year.
9. They write compositions regularly.
10. The travellers made camp not far from the village.

18. Перетворіть речення на пасивний стан, вказуючи суб'єкта дії (Див.: Граматичний довідник. §12, 13, 14)**:**

1. My sister teaches me English.
2. Peter drives the car.
3. The fascists killed her father.
4. His assistant will meet the delegation.
5. Alan opened the door.
6. He put the letter in the envelope.
7. The hunter killed the bear.
8. The guide showed us the monuments of Lviv.
9. The waitress offered me a cup of tea.
10. He showed me the way to the railway station.

19. Оберіть правильну форму дієслова (Див.: Граматичний довідник. §12, 13, 14)**:**

1. This house (to build) by my great-grandfather in 1790.
2. As a result of an earthquake the house (to burn down) there.
3. The door of this house (to close) for you tomorrow.
4. He (to recognize) by the policeman two days ago.
5. The Paris newspapers declared that the child (to call) Juliet.
6. That building (to paint) yellow some years ago.

Lesson 2

TITLE

Every scientific paper must have a self-explanatory title. By reading the title, the work being reported should be clear to the reader without having to read the paper itself. The title, "A Biology Lab Report", tells the reader nothing. An example of a good, self-explanatory title would be: "The Effects of Light and Temperature on the Growth of Populations of the Bacterium, *Escherichia coli* ". This title reports exactly what the researcher has done by stating three things:

1. The environmental factors that were manipulated (light, temperature).
2. The parameter that was measured (growth).

3. The specific organism that was studied (the bacterium, *Escherichia coli*).

If the title had been only "Effects of Light and Temperature on *Escherichia coli* ", the reader would have to guess which parameters were measured. (That is, were the effects on reproduction, survival, dry weight or something else?) If the title had been "Effect of Environmental Factors on Growth of *Escherichia coli* ", the reader would not know which environmental factors were manipulated. If the title had been "Effects of Light and Temperature on the Growth of an Organism", then the reader would not know which organism was studied. In any of the above cases, the reader would be forced to read more of the paper to understand what the researcher had done.

Exceptions do occur: If several factors were manipulated, all of them do not have to be listed. Instead, "Effects of Several Environmental Factors on Growth of Populations of *Escherichia coli* " (if more than two or three factors were manipulated) would be appropriate. The same applies if more than two or three organisms were studied. For example, "Effects of Light and Temperature on the Growth of Four Species of Bacteria" would be correct. The researcher would then include the names of the bacteria in the Materials and Methods section of the paper.

1. Find the English equivalents:

Бути зрозумілим, вплив світла, ріст популяції, точно повідомляти, екологічні фактори, вимірювати параметри, в будь-якому випадку, бути доцільним, бути правильним, розділ статті.

2. Translate the following words and word-combinations:

A scientific paper, a self-explanatory title, an example, to guess, effects on reproduction, an exception, to be listed, instead, to apply, to be studied.

3. Agree or disagree with the statements:

1. The title of the paper should be laconic.
2. If a paper has not a self-explanatory title the reader would be forced to read more of the paper to understand what the researcher had done.
3. The title reports exactly what the researcher has done.

Communicating with scientific communities

(from Cambridge English for Scientists by Tamzen Armer)

4. Why is it important for scientists to keep in touch with:

a) other people in their field (e.g. biology)?
b) people in their specialism (e.g. molecular biology)?
c) people in other fields of science?

5. In pairs, read the following statements and say which form(s) of communication (1-6) the speakers (a-c) should use to find the

information they want.

1) an academic journal
2) a conference
3) an online forum or science blog
4) a popular science magazine
5) a popular science book
6) a newspaper

a) I'm tryin g to learn more about the Hadron collider because it's big news, but it's not even close to my area so I'm finding the papers on it heavy-going.

b) At my university, I don't meet enough people in my fie ld - I really need to network and build some connections with people working around the world .

c) I'm having a problem with one of my protocols. I've tried a few different things, but with no luck - I could do with some suggestions from other people of what to try next.

6. Read the following five extracts and then say which form (or forms) of communication from Exercise 5 each one comes from. Which form(s) of communication are *not* included in these extracts?

A ... more people were pain-free when using the handheld device than those who had used an identical dummy device. Although the study by Lipton *et al.* (2010) has reliable results, there are some points to consider when putting these findings into context. Importantly, the results will need to be verified in larger trials that directly compare ...

B Tea and coffee drinkers have a lower risk of developing type 2 diabetes, a large body of evidence shows. And the protection may not be down to caffeine since decaf coffee has the greatest effect, say researchers in *Archives o f Internal Medicine.* They looked at ...

C ... can be rapidly generated by lentivirus-mediated transgenesis. RNAi also holds great promise as a novel therapeutic approach. This report provides an insight into the current gene silencing techniques in mammalian systems.

D Hi! Has anyone had any experiences with nanoparticles sticking to glassware :- (? If so, does anyone know if there’s a suitable silylation protocol to pre-treat the glassware to do something about this annoying non-specific adsorption? Thanks!

E Animal and *in vitro* studies suggest th a t aspirin may inhibit breast cancer metastasis. We studied whether aspirin use among women with breast cancer decreased their risk of death from breast cancer. This was a prospective observational study based on ...

7. How easy was it to decide where extracts came from? How did you decide on the right answer?

8. The language we use changes according to why we are writing (the purpose) and who we are writing for (the reader). It is important to notice the different styles of language used in English. Complete the second column of the table below, carefully reading the appropriate extract (A-E).

Feature	Examples	Extract
1. Asks the reader questions	Has anyone had ... ?	D D
2. Uses multi-word verbs (a verb with an adverb or a preposition)	do something about	B D
3. Uses exclamation marks and emoticons	Hi!	D D
4. Uses non-specific references to the work of other researchers		B
5. Uses specific references to the work of other researchers		A
6. Uses impersonal phrases to avoid saying 'You' or 'We'	there are some points to consider	A E
7. Uses passive verbs to avoid saying who carries out a process	can be rapidly generated	A C
8. Uses Latin language expressions	et *al.*	A E

9. Which of the features in the table (1-8) are appropriate for formal for scientific research papers? Which are appropriate for personal communication (such as email)?

10. In pairs, discuss the following questions.

1. When you have a problem at work, who do you usually ask for help?
2. Have you ever asked a question on a science internet forum? If so, was your question answered?

11. Read three recent posts from an online forum (A-C) below. Imagine you belong to the forum where these questions are asked. Which questions could you answer? Which answers could you guess?

A

Subject: Filovirus Host Range?

(1) Does anybody know what the host range is for filoviruses (i.e. Ebola and Marburg)?

(2) I know that they can infect most (all?) types of mammals and several species of birds, but I can't find the actual host range anywhere.

(3) Any help here would be appreciated.

B

Subject: materials which x-rays can't pass through?

(1) I've been looking for a while now, but I can't find anything telling me what the radiopaque materials are.

(2) In other words, which materials can't x-rays pass through?

(3) Thanks in advance.

C

Subject: Quality of scientific writing considered in peer review?

(1) I was wondering how important the quality of the writing of a submitted paper is in the peer review process.

(2) I don't mean the quality of the data, but the actual writing.

(3) In other words, will a nicely written paper with the same data be more likely to be accepted?

12. Read the posts again. For each post, say which sentence or sentences (1 - 3) in each one the writer uses to:

a) ask the question

b) say what the problem is

c) thank the reader

13. How are the questions in the Subject field of each post different from normal questions?

14. Think of a question related to your own research. Then write a three-sentence post for an online forum in an appropriate style using the phrases in the box to help you.

- Does anybody know w h a t... is ... ?
- I know t h a t ... , but I can't find / don't know ...
- I was wondering how / what / why ...
- I don't mean ... , but ...
- In other words, ...
- Any help here would be appreciated.
- Thanks in advance

15. In pairs, discuss the following questions.

1. What kinds of text do you need to write in English for your work o r studies?
2. Why is it important to write your texts in an appropriate style?
3. What can you do to take note of the different styles of language used in English texts?

SPEAKING

(from Headway Students' Book Upperintermediate by John and Liz Soars. Oxford English)

“Orange is the happiest colour” (Frank Sinatra)

16. Answer the following questions:

- What is your favorite colour?
- What colour do you like wearing most of all? Why?
- Do you agree that black is the queen of all colours?

17. Psychologists say that our personality depends on our eye colour. Look at the information psychologists say about people with different eye colours and give your opinion whether you think they are right or wrong.

- Brown Eyes: Cares deeply for family, affectionate with a serious nature.
- Blue Eyes: Peaceful with low physical endurance.
- Hazel Eyes: Easily bored and mentally agile.
- Green Eyes: Curious, intelligent, jealous.
- Blue/grey Eyes: Humanitarian with an altruistic nature.
- Grey Eyes : Analytical, clear thinking, philosophical.

18. There are a lot of proverbs about color/colors. Read some of them and try to explain the meaning of the one you like most of all.

1. Blind men can judge no colors. (English proverb)
2. A man will show his true colors in adversity. (African Proverb)
3. Even the colors of a chameleon are for survival not beauty. (African Proverb)
4. Milk and honey have different colors, but they share the same house peacefully. (African Proverb)
5. Birds of a color fly to the same place. (Welsh proverb)
6. Truth has but one color, a lie has many. (Sanskrit proverb)
7. All colors will agree in the dark. (Francis Bacon)5

19. Match the following colors with their shades. Give examples of things that have this or another colour shade.

1. White	A) Emerald, olive, pear, shamrock, spring bud.
2. Green	B) French rose, fuchsia, cherry blossom, ruby, tea rose.
3. Orange	C) Beige, cream, eggshell, pearl, vanilla.
4. Pink	D) Lime, mustard, school bus, sunglow, gold.
5. Blue	E) Apricot, coral, peach, flame, pumpkin.
6. Yellow	F) Sapphire, denim, iceberg, indigo, iris.

Grammar

20. Заповніть пропуски необхідною формою дієслова (Див.: Граматичний довідник. §15, 16)**:**

1. A huge housing program … (to carry out) now.
2. Something important … (to announce) over the radio now.

3. Don't enter the room. It is … (to clean) now.
4. What question … (to discuss) when you came to the meeting.
5. Your papers … (to type) from 5 till 6 yesterday.
6. He … (to wait for) downstairs.

21. Перекладіть речення англійською мовою, вживаючи пасивний стан (Див.: Граматичний довідник. §17, 18)**:**

1. Переклад вже закінчено.
2. Лист щойно відправлено.
3. За останні роки в нашому місті побудовано багато нових будинків.
4. Стаття ще не опублікована.
5. Це запитання вже обговорено?
6. Мене тільки що запитали про це.
7. Делегацію вже зустріли?
8. Вчора до цього часу робота вже була завершена.
9. Ми зрозуміли, що наш лист ще не отримали.
10. До того часу, коли вони приїхали, питання було вже вирішено.

Lesson 3

ABSTRACT

The abstract section in a scientific paper is a concise digest of the content of the paper. An abstract is more than a summary. A summary is a brief restatement of preceding text that is intended to orient a reader who has studied the preceding text. An abstract is intended to be self-explanatory without reference to the paper, but is not a substitute for the paper.

The abstract should present, in about 250 words, the purpose of the paper, general materials and methods (including, if any, the scientific and common names of organisms), summarized results, and the major conclusions. Do not include any information that is not contained in the body of the paper. Exclude detailed descriptions of organisms, materials and methods. Tables or figures, references to tables or figures, or references to literature cited usually are not included in this section. The abstract is usually written last. An easy way to write the abstract is to extract the most important points from each section of the paper and then use those points to construct a brief description of your study.

1. **Find the English equivalents:**

Анотація, стислий виклад, зміст статті, резюме, коротке пере формулювання, попередній текст, бути призначеним, бути зрозумілим, без посилання, заміна, міститися в тексті статті.

2. **Translate the following words and word-combinations:**

The purpose of the paper, summarized results, major conclusions, to include information, to exclude detailed description, figures, references to tables, references to literature cited, to extract points, to construct a brief description.

3. Answer the following questions:

1. What is a summary?
2. What is an abstract?
3. What should an abstract present?
4. What should not be included in the abstract?
5. What is excluded?
6. What is an easy way to write the abstract?

Writing a critical review

(from Cambridge English for Scientists by Tamzen Armer)

4. Read the headlines and beginnings of two news articles reporting a recent scientific development. Then answer the questions below.

The 'Chocolate Cure' For Emotional Stress

There may well b e another important reason for giving your sweetheart sweets for Valentine's Day…

New Evidence That Dark Chocolate Helps Ease Emotional Stress

The 'chocolate cure' for emotional stress is getting new support from a clinical trial published...

1. Do you think the claims made in the headlines seem likely or unlikely? Why?
2. In general, how can the science reported in the media differ from the actual science? Why do you think there is a difference?
3. If you wanted to learn more about the research you see reported in the newspaper, where could you look for more information?

5. Martina, a junior researcher, is supervising Ryuchi, an MSc Physiology student. Martina has asked Ryuchi to investigate the claims in the headlines and then to write a critical review of the research. Complete the sentences below in your own words. Then in pairs, discuss your answers.

a) If you read research *critically,* it means th a t you ...
b) You should always read research critically because ...

6. Ryuchi has some questions about writing a critical review. In pairs, discuss questions 1 -5 . Then listen and make notes on how Martina answers the questions.

1. How long should my review be?

2. Can I write a critical review if I've only read the abstract?
3. How should I approach the reading? What should I read first?
4. Is it a good idea to think of questions I want answered?
5. Do I need to take notes or can I just highlight the relevant bits of the text?

Ryuchi: *Martina? Before I start the review I just want to check a couple of things.*
Martina: *Uh-huh ...*
Ryuchi: *So first, how long should my review be?*
Martina: *So, for this one, you should be able to do it in a couple of paragraphs. In the first one, start with a brief summary of the research and then go on to a second one which gives your opinion.*
Ryuchi: *And usually I just read the abstract, to find out about the research ... so, can I write a critical review if I've only read the abstract?*
Martina: *Hm, not really. I mean, in terms of the summary, you could get pretty much everything from the abstract, but it really won't help you to do a good critical review. You need to have read and understood the whole paper properly before you can judge how good it is.*
Ryuchi: *Hmm ... I guess that's true. So in that case, how should I approach the reading? What should I read first?*
Martina: *Well, of course you should read the abstract first to get a very general idea ... then focus on highlighting the key information in the Introduction, Methods, Results, and Discussion. I'd draw up a table to fill in the key points.*
Ryuchi: *Something like this?*
Martina: *Yeah, that looks great.*
Ryuchi: *Is it a good idea to think of questions I want answered? Like I've done here?*
Martina: *Yes, it's really good to have those key questions written down.They'll help to keep you focused while you're reading and note-taking.*
Ryuchi: *Yeah, someone else suggested I do that. And you mentioned note-taking. Do I need to take notes or can I just highlight the relevant bits of the text?*
Martina: *Well, you could simply highlight, but it's really important when you write the summary that it's in your own words. So if you make notes in your own words, that will help you later.*
Ryuchi: *Good point. And I've added this column to make notes on what I think is good and bad as I go along. To do the critique later.*
Martina: *Excellent idea. So why don't we ..*

7. **Before reading, Ryuchi writes seven questions to help him. Match the questions (1 - 7) to the section of the research paper below where you would expect to find the answer.**

1. What variables were investigated?
2. How did the authors interpret the results?
3. What were the main findings?
4. Why is this research relevant?
5. Who/What was studied?

6. What procedure was used?
7. What was the hypothesis?

Introduction: _____ _____
*Method:*_____ _____ _____
Results: _____
Discussion: _____

8. From the information in Ryuchi's notes, discuss in pairs whether you think
the research is:

- credible?
- significant?
- original?
- valid?
- reliable?

Note: *credible, original, reliable, significant* and *valid*
If research is *credible* we can believe the results.
If it is *original*, the research has not been done before.
If it is *reliable*, the research could be repeated and the same results would be found.
Significant research produces findings which are important.
If research is *valid*, it tests what it claims to test.
A good piece of research should be all of these things.

READING

(from Headway Students' Book Upperintermediate by John and Liz Soars. Oxford English)

WHY IS THE OCEAN BLUE

9. Look at the definitions of the following words and try to guess what they mean.

a) Wavelength – the distance between one peak of a wave of light, heat, or other energy, and the next corresponding peak.
b) Absorb – retain wholly, without reflection or transmission.
c) Observer – the one who watches attentively.
d) Particle – a very small piece or part.

e) Matter – something that has mass and exists as a solid, liquid, or gas
e) Light – electromagnetic radiation of any wavelength.

10. Read the text and answer these questions.

1. What colour of the ocean is not mentioned in the text?
A) Milky brown B) Green C) Purple
2. Some parts of the ocean look milky brown

A) When it snows a lot. B) After a storm. C) When the sun shines brightly.
3. The ocean reflects the sun
A) When the water is smooth. B) When there is no fog. C) When the sun shines at right angle.

11. Now scan this text to find answers to these questions.

1. What are the three theories explaining why the ocean seems blue? Which one do you think is true? Why?
2. What do the colours of the ocean we see depend on?
3. How can you explain the fact that sometimes the ocean looks green?
4. Wavelengths of what color are absorbed quickly?
5. Why are blue wavelengths reflected to our eyes?

WHY IS THE OCEAN BLUE?

Why is the ocean blue? There are several theories:

- Blue wavelengths are absorbed the least by the deep ocean water and are scattered and reflected back to the observer's eye.
- Particles in the water may help to reflect blue light
- The ocean reflects the blue sky.

Most of the time the ocean appears to be blue because this is the colour our eyes see. But the ocean can be many other colours depending upon particles in the water, the depth of the water, and the amount of skylight.

The colours we see depend upon the reflection of the visible wavelengths of light to our eyes. Wavelengths of light pass through matter differently depending on the material's composition. Blue wavelengths are transmitted to greater depths of the ocean, while red wavelengths are absorbed quickly. Water molecules scatter blue wavelengths by absorbing the light waves, and then rapidly reemitting the light waves in different directions. That is why there are mostly blue wavelengths that are reflected back to our eyes.

Sometimes oceans look green. This may be because there is an abundance of plant life or sediment from rivers that flow into the ocean. The blue light is absorbed more and the yellow pigments from plants mix with the blue light waves to produce the colour green.

Sometimes parts of the oceans will look milky brown after a storm passes. This is because winds and currents associated with the storm churn up sand and sediment from the rivers that lead into the oceans.

The ocean may also reflect the blue sky. However this is prominent only at relatively low angles and when the water is smooth.

Grammar

12. Transform the sentences using the Infinitive instead of Subordinate Clauses:

1. He was sorry *when he heard of your disappointment*. 2. Do you understand *what you have to do?* 3. He hopes *that he will get the information*

tomorrow. 4. We should be sorry *if we heard bad reports of him.* 5. The candidate did not expect *that he would pass the interview.* 6. Do not promise *that you will do it,* if you are not sure of success. 7. He was annoyed *when he heard* that the Conservative party got in again. 8. She was sorry *that she had missed the beginning of the lecture.* We must wait *till we hear* the examination results before we make any plans. 10. She is happy *that she has found such a simple solution to this difficult problem.*

13. Find the Objective Infinitive Construction and translate into Ukrainian:

1. I consider them to be good specialists. 2. He heard them discuss their plan. 3. I heard him mention my name. 4. We expect writers to deal with the issues of the modern world. 5. They believed him to be honoured by the invitation to the international congress. 6. We assume these truths to be self-evident. 7. They find the experience of this conference to have been a remarkable one.

14. Translate the sentences paying attention to the Objective Infinitive Construction:

1. We know industrial electronic equipment to play a very significant role in the modern world. 2. We often watched the operator adjust the apparatus. 3. They wanted this device to be installed immediately. 4. Faraday expected electrochemistry to be widely used for peaceful construction. 5. We know electrochemistry to owe its birth to the discoveries of Volta.

15. Transform the sentences using the Objective Infinitive Construction:

1. I’ve never heard how he spoke about his life in India. 2. The two sides expect that negotiations will be long and difficult. 3. We expect that a scientist or a scholar will keep an open mind. 4 One can hardly expect that a true scientist will keep within the limits of one’s narrow field. 5. They thought that he was an eminent scholar. 6. We expected that the partners would agree on a number of issues. 7. We assume that these errors are of no importance. 8. We suppose that his discovery is accidental. 9. We consider that he is a real genius. 10. They estimate that the number of casualties will be much higher.

16. Translate the sentences paying attention to the Objective Infinitive Construction:

1. Вона часто спостерігала, як він годинами працював над цим експериментом. 2. Члени наукового товариства вимагають, щоб цей пристрій було спочатку протестовано. 3. Дослідники вважатимуть цей регіон єдиним джерелом мінеральних ресурсів та енергії. 4. Він знав, що ці дані використовуються в їх дослідженнях. 5. Автор змусив їх переписати два розділи. 6. Ми б хотіли, щоб ви мали свою власну думку щодо цього експерименту. 7. Вчений вважає, що це явище досить рідкісне. 8. Вони очікували, що ця спроба виявиться вдалою.