

МІНІСТЕРСТВО ОСВІТИ І НАУКИ УКРАЇНИ
ОДЕСЬКИЙ ДЕРЖАВНИЙ АГРАРНИЙ УНІВЕРСИТЕТ

Кафедра української та іноземних мов

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ІНОЗЕМНА МОВА (АНГЛІЙСЬКА)

Методичні рекомендації для виконання практичних занять та
самостійної роботи аспірантів денної та заочної форми навчання
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ВСТУП

Методичні вказівки призначені для аспірантів денної та заочної форм навчання аграрного навчального закладу, що продовжують вивчати англійську мову. Передбачено засвоєння професійної лексики, що передбачено навчальною програмою з іноземної мови у ВНЗ.

Методичні вказівки складаються з граматичних тем та професійно-орієнтованих текстів. Спочатку студенти ознайомлюються з правилами граматичних явищ в англійській мові, потім їм пропонуються вправи та тести для закріплення матеріалу. Така структура дає можливість підготувати студента до складання іспиту в кінці курсу вивчення наукової іноземної мови, збагачує словниковий запас професійно - орієнтованою лексикою.

Отже, через низку запропонованих вправ забезпечується розуміння, осмислення, запам'ятовування та застосування в мовленнєвій діяльності того чи іншого граматичного та лексичного явища. Читання та переклад професійно - орієнтованих текстів розвивають перекладацькі навички.

Ці методичні вказівки стануть у нагоді кожному аспіранту, який бажає поглибити та систематизувати свої знання з англійської мови. Вони допоможуть сформувати у майбутніх спеціалістів навички усного та писемного мовлення.

Theme № 1

Verb to be, its functions

The aim: to use this verb in different forms according to the time of speech, translate sentences with this verb correctly due to its functions.

List of main issues:

1. Positive, negative and affirmative forms.
2. The verb to be in Present, Past and Future tences.
3. The main functions of the verb.

The verb “to be”

Positive

<i>Present Indefinite</i>		<i>Past Indefinite</i>		<i>Future Indefinite</i>	
I	am	I	was	I	will be
She He It	is	She He It	was	She He It	will be
You We They	are	You We They	were	You We They	will be

Negative

<i>Present Indefinite</i>		<i>Past Indefinite</i>		<i>Future Indefinite</i>	
I	am not	I	was not	I	will not be
She He It	is not	She He It	was not	She He It	will not be
You We They	are not	You We They	were not	You We They	will not be

The verb “to be” – questions and short answers

He is in Prague. – Is he in Prague?	Yes, he is. No, he isn't.
They are in New York. – Are they in New York?	Yes, they are. No, they are not.
She was in London. – Was she in London?	Yes, she was. No, she was not.
We will be in Sydney. – Will we be in Sydney?	Yes, we will. No, we will not.

The functions of the verb “to be”

<u>Functions</u>	<u>Examples</u>
1) The National Verb	He is in Odessa now. I am in the classroom. They are at the library. She was at the lecture. You were in the park. We will be in Kyiv.
2) An Auxiliary Verb	I am going to the University. He was asked an interesting question on History. The room will be cleaned.
3) A Link-Verb	I am a student. She is a teacher. They are rich. It will be cold.
4) A Modal Verb (an equivalent for the verb “must”)	I am to study well. They are to arrive in time. The bus was to come at 4 o'clock.

Exercises:

1) Write full sentences. Use to be in Present form.

1. (my hands cold)
2. (the weather nice today)
3. (my brother a policeman)
4. (he very tall)
5. (I not tired now)
6. (the shops open today)
7. (these trees old)
8. (the rose beautiful)
9. (Odessa a nice city)
10. (she not at home at the moment)

2) Match the questions and the answers

- | | |
|----------------------------------|---------------------|
| 1. Is Jack in Prague? | a. Yes, it is. |
| 2. Is Jane in London? | b. No, they aren't. |
| 3. Are Amy and Ann in Paris? | c. No, it isn't. |
| 4. Is the Acropolis in Athens? | d. Yes, he is. |
| 5. Is Wembley Stadium in Berlin? | e. Yes, she is. |

3) Use to be in Past form (positive or negative)

1. They didn't like their hostel room. It ... very small and it ... very clean.
2. Nancy got married when she ... 20 years old.
3. I telephoned you yesterday morning but you ... at work. Where ... you?
4. Mike ... at University last few weeks because he ... ill. He's getting better now.

5. The newsagents ... open yesterday because it ... a public holiday.

6. "... you at supermarket at 8.00?" – "Yes, I ... there".

7) Translate from English into Ukrainian. State the functions of the verb "to be"

1. Last year she was in England.

2. You will be a doctor.

3. This knowledge is very useful for me.

4. Ann and I are very good friends.

5. You are to trust me.

6. The train was to come in time.

7. I am going to become a good specialist.

8. He will be 40 next year.

9. I am in a hurry.

10. Tomorrow he will be to present at the conference.

8) Translate from Ukrainian into English

1. Ми повинні вивчати цю проблему.

2. Він збирається стати лікарем.

3. Студенти були у бібліотеці.

4. Вона в університеті.

5. Вони повинні бути щасливими.

6. Це було в 1998.

7. Мені холодно.

8. Ви студенти університету.

Theme № 2

Modal Verbs

The aim: to use modal verbs or their equivalents in different forms according to the context, translate sentences with this verbs correctly.

List of main issues:

1. Modal verbs: can, may, must, should.

2. Equivalents: to be able to, to allow, to have to, to be to, ought to.

3. Present, Past and Future forms.

4. Test

До основних модальних дієслів належать can, must, may, should. Після цих дієслів вживаються смислові дієслова, як правило, без частки to.

Модальні дієслова:

1. Не змінюються за особами і числами (тобто не мають закінчення –(e)s у третій особі однини): He can dance.

2. Не мають безособових форм: інфінітива, герундія, дієприкметника.

3. Питальну та заперечну форми утворюють самостійно, без допоміжного дієслова: May I come in? He cannot.

4. Can і may мають форми теперішнього та минулого часу (could, might), а дієслово must вживається лише в теперішньому часі.

Повні та короткі заперечні форми:

Can – cannot, can not – can't

Could – could not – couldn't

May – may not – mayn't
 Might – might not – mightn't
 Must – must not – mustn't
 Shall – shall not – shan't
 Should – should not – shouldn't
 Will – will not, 'll not – won't
 Would – would not, 'll not – wouldn't
 Must – must not – mustn't

Can

Present	Past	Future	Is used for expressing
<i>can</i> (cannot, can't)	<i>could</i>	-	1. Physical or mental ability. 2. Permission. 3. Prohibition. 4. Doubt, astonishment in (?) and (-) sentences. 5. Could is used to express a polite request in (?) sentences.
Equivalent to be able to			
am is (not) able to are	was (not) able to were	shall (not) be able to will (not) be	

1. He **can** solve this problem.
2. You **can** sleep in the open, it's too hot today.
3. You **can't** go there late at night.
4. **Can** he speak English so fluently?

May

Present	Past	Future	Is used for expressing
<i>may</i>	<i>might</i>	-	1. Permission. Might – polite permission. 2. Polite request. 3. Possibility depending on circumstances. 4. Supposition implying uncertainty. 5. Reproach, disapproval (only might is used).
Equivalent to be allowed to			
am is (not) allowed to are	was (not) allowed to were	shall (not) be allowed to will (not) be	

1. You **may** use my pen.
2. **May** I enter the room?
3. She **may** come back.
4. He **may** be working in the field now.
5. You **might** be more attentive.

Must

Present	Past	Future	Is used for expressing
<i>must</i>	-	-	1. Obligation duty. 2. Prohibition in negative sentence. 3. Order or advice. 4. Supposition implying assurance. 5. Necessity.
Equivalent have to / be to			
Have to has	had to	shall have to will have	
am to is to are	was to were	-	1. Obligation resulting from a previous agreement, plan, schedule, time-table. 2. Order or instruction. 3. Possibility (mostly used with the Passive Infinitive).

1. I **must** help my mother about the house.
2. You **mustn't** talk aloud in the library.
3. Kate **must** be looking for her gloves. She is so absent-minded.
4. To catch the train I **must** get up at six.
5. We **are to** meet at the theatre.
6. The train **is to** start at 3p.m.
7. You **are to** air the classroom after each lesson.

Should and Ought to

<i>Should</i>	<i>Ought to</i>
1. Friendly advisability (дружня порада).	1. Official advisability (офіційна порада).
2. Moral obligation.	2. Moral obligation.
3. Supposition bordering on assurance.	3. Supposition bordering on assurance.
4 In rhetorical questions beginning with <i>why</i> to express astonishment or indignation.	

1. You **should** visit our friend in the hospital. You **ought to** speak to the Dean.
2. He **should/ought to** help his ill father.

Grammar exercises:

I. Make up sentences with “can” according to the example:

To answer your question (he). – He can answer your question.

1. To write the sentence on the blackboard (she);
2. To be attentive (you);
3. To follow his advice (I);
4. To do the exercise himself (he);
5. To translate the sentences from English to Ukrainian (she);
6. To play the piano (they);
7. To see the mountains from the window (I);
8. To speak four languages (he).

I. Change the sentences according to the example:

I can say something about him. – Can you say anything about him? -
I can't say anything about him.

1. She can look after your children.
2. He can play the piano very well.
3. We can help her.
4. They can pay for your studies.
5. You can get a good education here.
6. I can discuss important questions with her.
7. You can trust him.
8. The money can be spent on books.
- 9.

III. Make up sentences with “must” according to the example:

To come at 9 o'clock (you). – You must come at 9 o'clock.

1. To write the correct date on the blackboard (she);
2. To follow the rule (we);
3. To do exercise in writing (they);
4. To get good marks (we);
5. To be patient (teacher);
6. To help your mother (you);
7. To hurry (you);

IV. Change the sentences according to the example:

You must be here at five o'clock. - Must I be here at five o'clock? No, you needn't.

1. You must do this work.
2. The sentence must be translated.

3. You must read this text.
4. We must do this exercise orally.
5. He must pay for it.
6. I must discuss this question with you.
7. He must come here at five o'clock.
8. She must follow the advice.

V. Answer the questions according to the example:

Must I say it? (yes, important) - Must I say it? – Yes, you must. It is important.

Must I do it in writing? (no, orally)- Must I do it in writing?- No, you needn't. Do it orally.

1. Must I answer this question? (No, not important)
2. Must she look after this child? (No, Granny takes care of him)
3. Must Tom be very attentive at the lesson? (Yes, wants to get a good mark)
4. Must she sign this document? (Yes, head of our department)
5. Must I invite him? (No, not your friend)
6. Must he do this exercise? (No, not his homework)
7. Must he come to college every day? (Yes, a first year student).

VI. Translate into Ukrainian:

1. You mustn't say that.
2. He mustn't take this money.
3. She mustn't follow this advice.
4. You mustn't get bad marks.
5. This money mustn't be spent.
6. These documents mustn't be signed.

VII. Change the sentences according to the example:

I can do this work – I am able to do this work.

He must learn this text by heart. – He has to learn this text by heart.

1. He can be very friendly.
2. They can put different types of questions to this sentence.
3. I must go.
4. She must do her homework.
5. I can do this work very quickly.
6. You must be more attentive at the English lessons.
7. I must learn a lot of English words every day.
8. We must do a lot of exercises in writing.

VIII. Answer the questions according to the example:

May I come in? – Yes, you may. - No, you, can't (mustn't)

(У заперечній формі використовуються дієслова *can (can't)* і *must (mustn't)*.)

May not звучить дуже категорично.)

1. May he use your computer?

2. May she spend this money on clothes?
3. May I smoke here?
4. May we ask you a question?
5. May they watch the film?
6. May I phone you tomorrow?
7. May my sister take your bag?
8. May I introduce you to each other?

IX. Put in *may* or *can*.

1. I ... help you.
2. He ... speak English very well.
3. You ... take this money. It's for you.
4. She ... pay for his studies. She has money for it.
5. He ... use my computer. I have nothing against it.
6. ... you translate this sentence?
7. She ... go by car. She has a car.
8. You ... go by car. I allow you to take mine.

X. Change the sentences according to the example:

I may take her text book. (she) – She allows me to take her text book.

1. He may smoke here. (we)
2. She may take this money. (her father)
3. They may have some coffee. (their boss)
4. We may go by his car. (he)
5. I may spend this money on shopping. (she)
6. She may go to the party. (her mother)
7. You may take your copy books.

XI. Translate into Ukrainian:

1. He should not park his car here.
2. This money shouldn't be spent on things like this.
3. They shouldn't disturb their neighbors.
4. I think, I should speak to him.
5. This question should be discussed with him.

Test (Modal Verbs)

I. Put the necessary modal verb or its equivalent

1. I ... play the piano. But you....
2. When he was a child, he ...run fast. But now he ...
3. ...you swim very well? – Yes, quite well.
4. Before she came to Britain, she ...speak English. But now she ...
5. I was tired last night but I ...sleep.
6. We ...come to the party yesterday. Sorry.
7. I think, they ...to take part in this festival next week.
8. What ...we do for you?
9. I ...go to the cinema this evening. (perhaps I will do it)
10. I ...play tennis tomorrow. I don't know.
11. Are you going out tonight?- I ..., not sure.
12. Sue ...not come to the party.
13. It's a mess. I ...clean my room.
14. There was no bus. We ...to walk home last night.
15. We hadn't enough money. So we ...to go to the bank yesterday.
16. They arrived home late. They ...to wait an hour for a taxi.
17. I ... hurry.
18. I ... not forget her phone.
19. You ... not drive on this road.
20. You ... be quiet at the lessons.
21. You...to get up early. It's Sunday today.
22. Heto work very hard. he's got an easy job.
23. ...you like to go to the cinema tonight?
24. I ...like to have dinner.
25. What ...you like to drink?
26. I think, we ...go home now.
27. I don't think , you ...work hard.
28. You ...always watch the ball, when you play tennis.
29. She ...watch TV so often.
30. Do you think, I ...buy this dress?

II. Write questions to the underline words

31. The boys can swim in the lake in summer.
32. We must buy a present for our mum.
33. Pam may listen to music in her room.
34. They could ski in the mountains in winter.
35. We should go shopping. We have nothing to eat.
36. We must go out for a picnic. The weather is so wonderful today.
37. You should speak to your parents about your problem.

III Translate into English

38. Він умів рахувати до двадцяти, коли йому було п'ять років.
39. Вона може перекласти цю статтю досить швидко.
40. Ми повинні вивчити це.
41. Було дуже темно, він не зміг вести машину.
42. Я повинен зробити це.

43. Я можу допомогти вам ?
44. Ви не повинні розповідати їм про це.
45. Мені купити морозиво?
46. Ваш друг може скористатись моїм компютером.
47. Яку картину ви хотіли б придбати?
48. Ти можеш допомогти мені з домашнім завданням?
49. Вам слід запитати вчителя про це.
50. Вони мають бути дома зараз.

Theme № 3

Countable and Uncountable Nouns

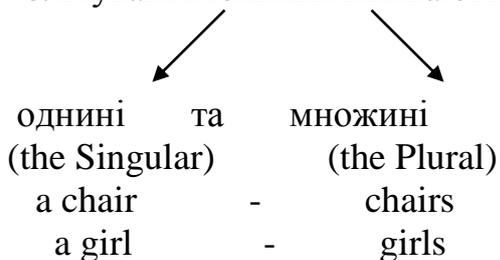
The aim: to use nouns in correct forms - plural or singular and to learn rules of formation plural form of nouns

List of main issues:

1. Plural form of nouns
2. Countable nouns
3. Uncountable nouns

Countable Nouns <i>Злічувані іменники</i> означають предмети, які можна порахувати	Uncountable Nouns <i>Незлічувані іменники</i> це назви речовин і багатьох абстрактних понять, які не можна перерахувати
a chair стілець a girl дівчинка a question запитання an engineer інженер a table стіл	water вода tea чай love кохання music музика information інформація
a man чоловік a textbook підручник a doctor лікар an apple яблуко	news новина, новини advice порада, поради knowledge знання education освіта

Злічувані іменники вживаються в



Незлічувані іменники

мають тільки одну форму –
 однини

Her hair is beautiful.
 Gold costs a lot.

Незлічувані іменники можуть бути злічуваними у словосполученнях:

Uncountable Nouns	Countable Nouns
<i>абстрактні поняття</i>	
news новина information повідомлення gossip плітка advice порада	a piece of news новина two items of information два повідомлення a bit of gossip плітка a few pieces of advice кілька порад
<i>речовинні іменники</i>	
bread хліб milk молоко water вода	a loaf of bread буханка хліба a bottle of milk пляшка молока some bottle of water декілька пляшок води

Іменники, які вживаються в
однині

n(-s) + verb(singular)

1) *subjects of study / branches:*

Economics

Physics

Maths

2) *activities:*

gymnastics

politics

3) *games:* cards, darts, draughts;

4) *illnesses:* mumps, measles, rickets.

Іменники, які вживаються
у множині

n (plural) + verb (plural)

1) *предмети, що складаються*

з двох частин: trousers

pyjamas

scissors

glasses

shorts

tights

2) деякі збірні поняття:

cattle

livestock

police

folk

data

weapons

clothes

customs

earnings

goods

Утворення множини іменників

1	N+-s	a book – books, a desk – desks, a room – rooms
2	N+es після -o, -sh, ch, -x, -s, -z	a bus – buses, a box – boxes, a church – churches, a hero – heroes

3	<p style="text-align: right;">+ies</p> <p>перед -у-</p> <p>приголосний N- (y)</p>	<p>a lady – ladies, a baby – babies, a party – parties,</p> <p>a boy – boys, a day – days, a monkey – monkeys</p>		
4	<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: auto;"> <p style="text-align: center;">+ -ves</p> <p style="text-align: center;">N- (f/fe)</p> </div>	<p>a wolf – wolves, a wife – wives, a knife – knives,</p> <p>a roof – roofs, a chief – chiefs, a safe – safes</p>		
5	<p>N. irregular:</p>	<p>Множина деяких іменників утворюється зміною кореневого голосного (без додавання закінчення):</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%; vertical-align: top;"> <p>a man [mæn] <i>чоловік</i></p> <p>a woman [ˈwʊmən] <i>жінка</i></p> <p>a foot [fʊt] <i>нога</i></p> <p>a tooth [tu:θ] <i>зуб</i></p> <p>a louse [laʊs] <i>воша</i></p> <p>a mouse [maʊs] <i>миша</i></p> <p>a goose [gu:s] <i>гуска</i></p> <p>a child [ˈtʃaɪld] <i>дитина</i></p> <p>an ox [ɒks] <i>бик</i></p> <p>a sheep [ˈʃi:p] <i>вівця</i></p> <p>a deer [ˈdiə] <i>олень</i></p> <p>a buffalo [ˈbʌfələʊ] <i>буйвол</i></p> <p>a swine [swaɪn] <i>свиня</i></p> <p>a fish [fɪʃ] <i>риба</i></p> <p>an aircraft [ˈeɪkrɑ:ft] <i>літак</i></p> <p>a spacecraft [ˈspeɪskɑ:ft] <i>космічний корабель</i></p> <p>a shassis [ˈʃæsi] <i>шасі</i></p> <p>a corps [kɔ:z] <i>корпус(військ.)</i></p> </td> <td style="width: 50%; vertical-align: top;"> <p>men [men]</p> <p>women [ˈwɪmɪn]</p> <p>feet [fi:t]</p> <p>teeth [ti:θ]</p> <p>lice [laɪs]</p> <p>mice [maɪs]</p> <p>geese [gi:s]</p> <p>children [ˈtʃɪldrən]</p> <p>oxen [ˈɒksn]</p> <p>sheep [ˈʃi:p]</p> <p>deer [ˈdiə]</p> <p>buffalo [ˈbʌfələʊ]</p> <p>swine [swaɪn]</p> <p>fish [fɪʃ]</p> <p>aircraft [ˈeɪkrɑ:ft]</p> <p>spacecraft [ˈspeɪskɑ:ft]</p> <p>shassis [ˈʃæsi]</p> <p>corps [kɔ:z]</p> </td> </tr> </table>	<p>a man [mæn] <i>чоловік</i></p> <p>a woman [ˈwʊmən] <i>жінка</i></p> <p>a foot [fʊt] <i>нога</i></p> <p>a tooth [tu:θ] <i>зуб</i></p> <p>a louse [laʊs] <i>воша</i></p> <p>a mouse [maʊs] <i>миша</i></p> <p>a goose [gu:s] <i>гуска</i></p> <p>a child [ˈtʃaɪld] <i>дитина</i></p> <p>an ox [ɒks] <i>бик</i></p> <p>a sheep [ˈʃi:p] <i>вівця</i></p> <p>a deer [ˈdiə] <i>олень</i></p> <p>a buffalo [ˈbʌfələʊ] <i>буйвол</i></p> <p>a swine [swaɪn] <i>свиня</i></p> <p>a fish [fɪʃ] <i>риба</i></p> <p>an aircraft [ˈeɪkrɑ:ft] <i>літак</i></p> <p>a spacecraft [ˈspeɪskɑ:ft] <i>космічний корабель</i></p> <p>a shassis [ˈʃæsi] <i>шасі</i></p> <p>a corps [kɔ:z] <i>корпус(військ.)</i></p>	<p>men [men]</p> <p>women [ˈwɪmɪn]</p> <p>feet [fi:t]</p> <p>teeth [ti:θ]</p> <p>lice [laɪs]</p> <p>mice [maɪs]</p> <p>geese [gi:s]</p> <p>children [ˈtʃɪldrən]</p> <p>oxen [ˈɒksn]</p> <p>sheep [ˈʃi:p]</p> <p>deer [ˈdiə]</p> <p>buffalo [ˈbʌfələʊ]</p> <p>swine [swaɪn]</p> <p>fish [fɪʃ]</p> <p>aircraft [ˈeɪkrɑ:ft]</p> <p>spacecraft [ˈspeɪskɑ:ft]</p> <p>shassis [ˈʃæsi]</p> <p>corps [kɔ:z]</p>
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		[s'pektɾə] <i>спектри</i>
an antenna [æ'n'tenə] <i>антена</i>		antennae [æ'n'teni:] <i>антени</i>
an addendum [ə'dendəm] <i>дотаток</i>		addenda <i>дотатки</i>
a formula ['fɔ:mjʊlə] <i>формула</i>		formulae ['fɔ:mjuli:] <i>формули</i>
a nucleus ['nju:kliəs] <i>ядро</i>		nuclei ['nju:kliai] <i>ядра</i>
a genius ['dʒi:njəs] <i>геній, дух</i>		genii ['dʒi:ni:ai] <i>генії, духи</i>
a radius ['reidi:əs] <i>радіус</i>		radii ['reidi:ai] <i>радіуси</i>
a basis ['beisis] <i>основа, підстава</i>		bases [beisi:z] <i>основи</i> <i>підстави</i>
a stimulus ['stimjʊləs] <i>стимул</i>		stimuli ['stimjulai] <i>стимули</i>
an ellipsis [i'lipsis] <i>еліпс</i>		ellipses [i'lipsi:z] <i>еліпси</i>
a crisis ['kraisis] <i>криза</i>		crises ['kraisi:z] <i>кризи</i>
an analysis [ə'næləsis] <i>аналіз</i>		analyses [ə'næləsiz] <i>аналізи</i>
a bacillus [bə'siləs] <i>бацила, паличка</i>		bacilli [bə'silai] <i>бацили</i>
a terminus ['tʒ:rminəs] <i>кінцева</i> <i>зупинка</i>		termini ['tʒ:rminai] <i>кінцеві</i> <i>зупинки</i>
a bacterium [bæk'tiəriəm] <i>бактерія</i>		bacteria [bæk'tiəriə] <i>бактерії</i>
a stratum [st'ratəm] <i>пласт</i>		strata [st'ratə] <i>пласти</i>
a parenthesis [st'renəisis] <i>вставне</i> <i>слово, речення; дужки</i>		parentheses [pə'renəisi:z] <i>вставні слова,</i> <i>речення</i>
a thesis ['θi:sis] <i>теза; дисертація</i>		theses ['θi:si:z] <i>тези; дисертації</i>

Примітка:

He saw some deer in the forest. Він побачив в лісі кілька оленів.

They caught a lot of fish. Вони зловили багато риби.

I caught two fish. Я зловив дві риби.

Але форма **fishes** може вживатися, коли йдеться про різні види риб.

In this lake there are fishes of many varieties. У цьому озері є риба різних видів.

Іменник **people** має два значення

- *люди* (множина) – a lot of people *багато людей*

People

- *народ* (однина) – all peoples of the world *всі народи світу*

Множина іменників латинського та грецького походження

a- ae an antenna- antennae

a fauna- faunae

a flora- florae

a formula- formulae

ex- ices an appendix- appendices

an index- indices

is- es an analysis- analyses

a basis- bases

a crisis- crises

a thesis- theses

a synopsis- synopses

on- a a criterion – criteria

a phenomenon- phenomena

um- a a bacterium- bacteria

a datum- data

an erratum- errata

a medium- media

us- i a cactus- cacti

a radius – radii

Щодо утворення множини у складених іменників (Compound Nouns)

1) У складених іменниках форму множини приймає головне слово:

a custom-house *митниця* **custom-houses**

a man of-war *військовий корабель* **men of-war**

a passer-by *перехожий* **passers-by**

a hotel-keeper *власник готелю* **hotel-keepers**

a daughter-in-law *невістка* **daughters-in-law**

a school-mate *шкільний товариш* **school-mates**

a schoolboy *школяр* **schoolboys**

a housewife *домогосподарка* **housewives**

2) Якщо першим словом складеного іменника є слово **man** або **woman**, то обидва слова приймають форму множини:

a man-servant *слуга* **men-servants**

a woman-doctor *жінка-лікар* **women-doctors**

3) Якщо складений іменник утворений з різних частин мови, то закінчення множини додається в кінці слова:

a forget-me-not *незабудка*
a merry-go-round *карусель*

forget-me-nots
merry-go-rounds

Exercise:

I. Choose the correct plural form

- 1) **child** (*childs, children*);
- 2) **delay** (*delais, delayes, delays*);
- 3) **watch** (*watch, watches, watches*);
- 4) **gas** (*gases, gas*);
- 5) **eagle** (*eagls, eagle, eagles*);
- 6) **holiday** (*holidays, holydayes, holidayis*);
- 7) **wife** (*wife, wives, wifes*);
- 8) **currency** (*currencys, currency, currencies*);
- 9) **chief** (*chieves, chiefs, chiefes*);
- 10) **kiss** (*kisses, kiss*);
- 11) **secretary-elect** (*secretarys-elect, secretaries-elect, secretaries-elects*);
- 12) **studio** (*studios, studioes*);
- 13) **basis** (*basis, bases, basises*);
- 14) **vice-president** (*vice-presidents, vices-presidents, vice-presidentes*);
- 15) **son-in-law** (*sons-in-low, son-in-laws, sons-in-laws*);
- 16) **toothbrush** (*teethbrushes, teethbrush, toothbrushes*);
- 17) **radio** (*radios, radio, radioes*);
- 18) **mainframe** (*mainsframe, mainframs, mainframes*).

II. Test (Nouns)

1. The ... is on the table.

- a) book
- b) books
- c) bookes
- d) a book

2. Brian brought a new...

- a) umbrella
- b) umbrellas
- c) umbrellaes
- d) an umbrella

3. A car is a ...of transport.

- a) mean
- b) means
- c) meanes
- d) mine

4. Tony can't see without his ...

- a) glass
- b) glasses
- c) a glass

d) a glasses

5. His advice ... valuable.

a) was

b) were

c) has

d) will

6. How many ...do you smoke a day?

a) cigarettes

b) cigarette

c) a cigarette

d) cigaretteses

7. How much ...do you drink a week?

a) wines

b) wine

c) a wine

d) the wines

8. A butter shop sells ...

a) meat

b) meats

c) a meat

d) the meat

9. A few ...are available as “open source”.

a) software

b) programs

c) information

d) data

10. I get several ... every day.

a) letters

b) mail

c) post

d) message

11. She has to wash her ...tonight.

a) hair

b) hairs

c) a hair

d) the hairs

12. Where are ... magazines?

a) woman

b) women's

c) women

d) womans's

13. The teacher gave me ...

a) many good advice

b) many good advices

c) many pieces of good advice

d) many good pieces of advice

14. The mushrooms is a type of ...

- a) fungus
- b) fungi
- c) funguses
- d) fungux

15. The plural form of the noun index is ...

- a) index
- b) indexes
- c) indices
- d) indeses

16. Unusual facts, marvels are called

- a) phenomenon
- b) phenomenons
- c) phenomen
- d) phenomena

17. A lot of ...grew in that place.

- a) cactus
- b) cactuses
- c) cacti
- d) cactis

18. Did he give you all necessary ...?

- a) datum
- b) datas
- c) data
- d) datums

19. Mark didn't remember this simple mathematical ...

- a) formula
- b) formulae
- c) formulum
- d) formulas

20. We bought ...at the market.

- a) fishe
- b) fish
- c) fishes
- d) a fishes

Theme № 4

Present, Past, Future Simple

The aim: to use verbs in Present, Past, Future Tenses correctly, to make positive, negative and affirmative sentences in different tenses.

List of main issues:

1. Present Simple
2. Past Simple
3. Future Simple.
4. Test

Unit 6. Часи групи Indefinite

	<i>Стверджувальна форма (+)</i>		<i>Заперечна форма (-)</i>	<i>Питальна форма (?)</i>	<i>Обставини часу</i>
PRESENT	<p>I You +V We They</p> <p>She He +Vs /es It</p>	<p>I <u>live</u> in Ukraine</p> <p>We <u>live</u> in Ukraine</p> <p>She <u>lives</u> in Ukraine</p> <p>He <u>lives</u> in Ukraine</p>	<p>do not (don't) I <u>do not live</u> in England.</p> <p>does not (doesn't) She <u>does not live</u> in England.</p>	<p>Do you live in Ukraine? Where do you live? Who lives in Ukraine?</p> <p>Does she live in Ukraine? Where does she live? Who lives in Ukraine?</p>	<p>· often always every day every week every month every year</p>
PAST	<p>V+ed or (II форма дієслова)</p>	<p>We <u>lived</u> in a hotel</p> <p>·</p> <p>He <u>came</u> last week.</p>	<p>did not (didn't) We <u>didn't live</u> in a hotel</p> <p>He <u>didn't</u> come.</p>	<p>Did he live in a hostel? Where did he live? Who lived there?</p> <p>Did he come? When did he come? Who came last week?</p>	<p>yesterday last week last month last year a week ago a month ago a year ago in 1996</p>

FUTURE	will + V (shall)	<p>She <u>will go</u> to the theatre .</p> <p>We <u>shall live</u> in Kyiv.</p>	<p>will not (won't) She <u>will not go</u> to the theatre .</p> <p>shall not (shan't) We <u>shall not live</u> in Kyiv.</p>	<p>Will she go to the theatre? Where will she go? Who will go?</p> <p>Shall we live in Kyiv? Where shall we live? Who shall live in Kyiv?</p>	<p>tomorrow next week next month next year in a week the day after tomorrow in 2014</p>
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Grammar exercises:

I. Put the verbs in brackets into *Present Simple, Past Simple, Future Simple*

1. My uncle ... newspapers in the evening (to read).
2. I ... my parents on week-end (to visit).
3. Our family ... out of town on Sundays (to go).

II. Insert *do* or *does*:

- 1.... you like English grammar?
- 2.... your friend like it?
- 3.... they come in time?
- 4.... she find good excuses when she is late?
- 5...they do all their best to study well?
7. ...you descend from a lawyer's family?
- 8.... Oleg speak English?

III. Make the following sentences negative:

Example: His father works at the factory.— His father *doesn't work* at the factory.

1. You know the answer.
2. Andrew lives in Odessa.
3. He descends from an engineer's family.
4. His mother cooks very well.
5. I like my parents' profession.

IV. Put the verbs in brackets into Present, Past, Future Simple:

1. My parents... full of energy (to be). 2. Oleg... from the town of Poltava (to come). 3. We ... successfully our entrance examinations (to pass). 4. The students... to pass well their first examination session (to try). 5. Our relatives ... me last month (to visit). 6. We ... good specialists as we... hard (to become, to work). 7. His brother... from the Odessa State Agrarian University last year (to graduate). 8. We usually... TV in the evening (to watch). 9. They... next Sunday with their friends (to spend). 10. She ... her place early yesterday (not to leave).

Theme № 5

Present, Past, Future Continuous

The aim: to use verbs in Present, Past, Future Continuous Tenses correctly, to make positive, negative and affirmative sentences in different tenses.

List of main issues:

1. Present Continuous
2. Past Continuous
3. Future Continuous

Часи групи Continuous.

	Стверджувальна форма (+)		Заперечна форма (-)	Питальна форма (?)	Обставини часу
<u>PRESENT</u>	am is + Ving are	I <i>am</i> reading. He <i>is</i> reading. They <i>are</i> reading.	I <i>am not</i> reading. He <i>is not</i> reading. They <i>are not</i> reading.	Are you reading? Is he reading? Are they reading?	Дія відбувається в момент мовлення: now, at the present moment. Тривала дія в теперішньому часі: still, from ... till ..., when he comes, while he's reading.

<u>PAST</u>	was + <i>Ving</i> were	<i>I was</i> reading. <i>He was</i> reading. <i>They were</i> reading.	<i>I was not</i> reading. <i>He was not</i> reading. <i>They were not</i> reading.	<i>Were you</i> reading? <i>Was he</i> reading? <i>Were they</i> reading?	Дія відбувається в конкретний момент чи одночасно з іншою дією в минулому: at 7 o'clock yesterday, while he was reading.
<u>FUTURE</u>	Shall be + <i>Ving</i> will be	<i>I shall be</i> reading. <i>He will be</i> reading. <i>They will be</i> reading.	<i>I shall not be</i> reading. <i>He will not be</i> reading. <i>They will not be</i> reading.	<i>Will you be</i> reading? <i>Will he be</i> reading? <i>Will they be</i> reading?	Дія відбувається в конкретний момент: at 3 o'clock tomorrow, when he comes, або період часу: from ...till..., у майбутньому чи одночасно з іншою майбутньою дією: while I'll be explaining...

Примітка. Present Continuous також вживається для вираження: запланованої майбутньої дії особливо з дієсловами, що означають рух:

We are flying to Kyiv in the morning.

When are you coming back?

Is she coming tonight?

Дієслово **to go** – в Present Continuous + Infinitive

to be going to ...

- означає намір виконати дію в найближчому майбутньому:

He is going to be an engineer.

I am going to be a good specialist.

- або надає відтінок обов'язковості, неминучості виконання дії, позначеної інфінітивом:

It is going to rain.

Remember!
Do not use these verbs in the present continuous.

to want	to like	to love	to hate	to need	to prefer
to depend	to know	to mean	to understand	to believe	
to remember	to forget				

I am tired. I *want* to go home.
“Do you *know* this man?”
“Sorry, I *forget* your address”.
“Do you *understand* me?”

Grammar exercises

1. a) What’s happening at the moment? Write true sentences. Pattern: (it/ rain) - It is raining.

- 1.(I/ read/ an English/ newspaper) - ...
- 2.(You/ go/ home) - ...
- 3.(He/ sit/ on the chair) - ...
- 4.(She/ write/ a letter) - ...
- 5.(We/ learn/ English) -...
- 6.(The professor/ deliver/ a lecture) - ...
- 7.(They/ write/ their term papers) - ...
- 8.(We/ listen/ to our teacher) - ...

b) Ask the questions:

Pattern: (what/ you/ do?) - What are you doing?

- 1.(what/ your partner/ read?) -...
- 2.(you/ watch/ TV?) - ...
- 3.(she/ write/ a test paper?) - ...
- 4.(why/ you/ answer/ the teacher’s question?) - ...
- 5.(we/ study/ today?) - ...
- 6.(it/ rain?) - ...
- 7.(that clock/ work?) - ...
- 8.(the student/ make up/ questions?) - ...

2. Replace the Infinitives in the brackets by the Past Continuous Tense:

1. He (to drive) a car all day long yesterday.
2. They (to stay) at the hotel the whole week.
3. We (to wait) for a trolley-bus during some minutes.
4. It (to rain) the whole evening yesterday and we had to stay home.
5. Alex (to speak) to his friend when I saw him.

3. Answer the following questions using the words in the brackets:

1. When was she speaking to a girl? (when you met her in the street)
2. When were you hurrying to the theatre? (when they met you yesterday)
3. When was the bus waiting for a group of tourists? (at 6 o'clock a.m. yesterday)
4. When were you planning to make a voyage up the Dnieper? (when I came home)
5. When was he reading the book? (when they knocked at the door).

4. Make up the following sentences complete using Past Continuous in the second part of each sentence.

- While I was speaking to the dean my friend ... 2. When I called on him he ... 3. When my daughter came into the kitchen I ... 4. What was Oleg doing while Tom ... 5. While I was writing on the blackboard Olga ... 6. When I rang him up in the evening he ...

5. Put the verbs in the brackets into Future Continuous.

1. My cousin (to stay) at my place for a few days.
2. We (to approach) Kyiv tomorrow morning.
3. Our children (to sleep) when we return home.
4. What (to do) you at 5 o'clock?
5. I (to play) the piano at this time tomorrow.
6. He (to have) a dancing class at 3 p.m. tomorrow.
7. They (to work) in the garden on Saturday from 6 till 8 o'clock.
8. You (to send) a telegram at 9 o'clock in the morning.

6. Put the verbs in Simple or Continuous tense-forms; explain their use.

1. Excuse me, you (speak) English?
2. Helen (to have) a shower at the moment.
3. What time he (finish) work every day?
4. She's tired. She (want) to go home.
5. Jane wasn't at home when I (go) to see her. She (work).
6. I (get) up early yesterday. I (wash), (dress), and then I (have) breakfast.
7. They were late but their friends (wait) for them when they (arrive).
8. According to the weather forecast it (rain) tomorrow.
9. They (play) volley-ball yesterday, but they (not/win).
10. Excuse me, but you (sit) in my place.
11. How often you (read) newspaper?
12. He (go) to the cinema last week, but he (not/ enjoy) the film.
13. Where you (live) in 2009?
14. I (work) at the reading room of our library from 2 o'clock until 5 o'clock tomorrow.

7. Translate into English.

- Що ви робите зараз?

- Я читаю книгу.
- Ви любите читати книги?
- Так, особливо вечорами.
- Що Анна робить зараз?
- Вона поливає квіти.
- Як часто вона це робить?
- Кожного дня.

- Хто зараз готує обід?
- Дружина мого брата.
- А хто зазвичай готує у вашій сім'ї?
- Бабуся.

- Що ти робиш зараз?
- Я пакую речі.
- Для чого?
- Я завтра від'їжджаю до Києва. Я збираюсь обговорити там декілька важливих питань.

8. Test

Open the brackets using Present Continuous Tense:

1. Be quiet. I (to try) to work.
2. Listen. Somebody (to cry).
3. Look. Liz and Jane (to sit) on the carpet and (eat) crisps.
4. Where are my daughters? They (to play) in the garden.
5. He (to help) his father now.
6. What you (to read) now?
7. What your sister (to do) now?
8. Take your raincoat. It (to rain) now.
9. Look at the window. It (to snow).
10. He (to study) French now.
11. She (to play) the piano now.
12. Where they (to go) now?
13. At this very moment we (to fly) over the Red Sea.
14. Have some hot coffee. It (to get) chill.
15. James (still/to work) in the garden.
16. Run upstairs. Your friend (to wait) for you.
17. Look. My friends (to play) football.
18. Who (to speak) there?
19. What your son (do) now? He (to study) computer science.
20. Where is your sister? She (to brush) her teeth now.

Open the brackets using Present Indefinite or Present Continuous Tenses:

21. We often (to go) to the restaurant.

- A. will be meeting B. will meet
- 59.... Helen (to have) her German lesson from 10 to 12? — Yes.
A. will... have B. will ... be having
- 60.... George still (to have) his French lesson if I come at 7 p.m.?
A. will... have B. will... be having
61. What... my brother (to do) when I come home?
A. will... be doing B. will... do
62. My brother (to read) his favourite magazine "Men's health".
A. will read B. will be reading
63. My father (to meet) the delegation tomorrow.
A. will meet B. will be meeting
64. My father (to meet) the delegation tomorrow morning.
A. will be meeting B. will meet
65. ... they (to sleep) if I come tomorrow early in the morning?
A. will... be sleeping B. will... sleep
66. They (to go) to the country tomorrow if the weather is fine.
A. will be going B. will go
- 67.1 (to finish) my work at 6 o'clock tomorrow.
A. will be finishing B. will finish
68. I (to finish) my work tomorrow.
A. will be finishing B. will finish
69. He (to write) his new play during the summer.
A. will write B. will be writing
70. While he is having his breakfast 1 (to read) a newspaper.
A. will be reading B. will read
71. They (to do) homework from morning till night on holidays.
A. will be doing B. will do
72. She (to go shopping) from 10 to 12 next Tuesday.
A. she will go shopping B. she will be going shopping
73. My mother (to do) housework at this time tomorrow.
A. will be doing B. will do
74. My mother (to do) housework tomorrow.
A. will be doing B. will do
75. Tomorrow at this time we (to listen) to pop music.
A. will be listening B. will listen

Texts for individual reading

The aim: to read and translate scientific texts, to extend your own vocabulary

Sheep and Goats

SHEEP AND GOATS have contributed greatly to food and fiber production worldwide for centuries and continue to do so. They are raised to produce meat, milk, and/or fiber (wool, mohair, and cashmere). Production systems include those involving large flocks and herds on the extensive range areas of the western and southwestern United States and in many regions throughout the world. Small flocks and herds are also used widely for intensive grazing of improved pastures. Some owners keep sheep or goats to utilize areas that are not suitable for cropping and to control unwanted vegetation.

In this chapter, we examine nutritional requirements and the feed resources appropriate to meet these requirements for the various physiological states and functions. Overviews of sheep and goat nutritional management are available (Dove, 2002, 2004; Freer, 2002, Sahlou and Goetsch, 2004, AFRC, 1998). Several features of pastures, mainly quantity and quality (including stage of maturity of the forage), influence intake. Management of sheep and goats emphasizes management of the amount and quality of forage resources. These resources are influenced by climate, seasonal weather patterns, and by the plant species adapted to the local conditions. Intake can be increased by ensuring that animals have access to large amounts of forage of high digestibility. Pasture management should not be focused on measuring intake of individual animals but on optimizing animal production per unit land area. In any pasture system, internal parasite control is required because infestation leads to dramatically reduced productivity and profit

GENERAL NUTRIENTS REQUIRED BY SHEEP AND GOATS

Nutrient requirements have been summarized for sheep (National Research Council, 1985; Agricultural Research Council, 1980; Bocquier and Theriez, 1989; Sheep Council of Australia, 1990) and for goats (National Research Council, 1981; Morand-Fehr and Sauviant, 1989; Sheep Council of Australia, 1990). These publications serve as guidelines for formulating diets to meet the nutrient requirements of sheep and goats. The general nutrients and feedstuffs needed to meet the requirements of sheep and goats are discussed in the following sections.

Energy

Generally, the most limiting nutrient in ewe and doe nutrition is energy. The major sources of energy are from pasture (forage, range, and browse), hays, silage, byproduct feeds, and grains. Energy deficiencies result in reduced growth or weight loss, reduced reproductive efficiency, reduced milk or fiber production, and increased death loss. Good quality pasture, hay, silage, or byproducts can usually meet the energy requirements most economically. The high-moisture content of some silages or pastures (lush spring growth) may limit the animals' intake and thereby necessitate supplemental energy feeding in the form of grains. Meeting the high-energy demands of rapid growth, rapid fetal development, or lactation may also require supplementation with grain. In most cases, pasture, hay, silage, or byproduct feeds should be the major feedstuffs used to meet the energy requirements of sheep and goats.

Protein

As ruminants, sheep and goats rely on the micro-bial population in their rumens to manufacture many of the amino acids and vitamins required for desired production. Therefore, the quantity of protein in the diet is more important than the quality of the protein. However, young animals (milk fed) do not have a developed rumen or an active mi-crobial population and require high-quality protein in their diet

Rumen microbes utilize nitrogen from proteins of feed origin and nitrogen from nonprotein nitrogen (NPN) sources to manufacture amino acids. Feeds high in protein are usually the most expen-

sive, and therefore diets often contain urea, a cheap NPN source of nitrogen. Guidelines for using urea (Sheep Industry Development, 1992) in sheep diets are as follows:

- 1 . Urea can be used up to 1% of total diet or 3% of the concentrate portion, but should not exceed one-third of the total N in the diet
2. Urea should not be used in diets of young lambs or in creep feeder diets.
3. Urea should be introduced into the diet gradually to allow for adaptation by rumen microbes (full adaptation takes two to three weeks).
3. Urea should be thoroughly mixed into the diet to prevent high levels of intake.

Pastures that are in vegetative growth or regrowth and most browse generally meet the protein requirements of sheep and goats. Some hays and silages and many byproduct feeds are low in protein and must be supplemented with protein to achieve the desired performance. The oilseed meals (soybean meal, cottonseed meal, peanut meal, linseed meal, etc.) though expensive, are the most common protein sources used to supplement sheep and goats.

Protein blocks (20-200 kg) that contain natural and NPN sources of nitrogen are often provided to animals on pasture and range for protein supplementation and, by changing block location, as a tool to more effectively manage the forage resource.

Minerals

Mineral requirements are affected by several factors, including breed, age, sex, growth rate, physiological state, level and chemical form of ingested minerals, and interaction with other minerals^ the diet (Sheep Industry Development, 1992). The mineral requirements and toxicities are fairly well established for sheep (National Research 1985) but have not been definitively for goats (National Research Council, macromineral requirements of sheep are for Na and Cl, K, Ca, P, S, and Mg- cromineral requirements for sheep and elude I, Cu, Co, Fe, Mn, Mo, Se, and Zn.

GENERAL NUTRIENTS REQUIRED BY SHEEP AND GOATS

expensive and highly palatable and is usually provided free choice to sheep and goats. Providing it in loose form is preferred over blocks because sheep and goats tend to bite the block (wearing or damaging teeth) rather than licking the block. Potassium is generally high in most forages and is seldom deficient in the diet. Supplementation may be needed when animals are on high-grain diets or are grazing mature or drought-stressed pastures. Increased levels (up to 2% K) may also be appropriate when sheep and goats are stressed by transport and placed on new concentrate-based diets.

Calcium and P are closely related and important in the normal development of

teeth and bone. Deficiency in either, or a Ca:P ratio of less than 1.2:1 cause reduced growth and other possible metabolic problems. Lactating animals have a higher requirement for Ca and P than non lactative animals, and milk production becomes limited if Ca or P is deficient. Sheep and goats reuse P by recycling P through the saliva. In some cases, sheep recycle more P per day through the parotid salivary gland than is required in the diet (National Research Council, 1985). Calcium and P utilization are influenced by hormones and vitamin D.

Sheep are more sensitive than goats to high levels of Cu. Copper is relatively cheap and is added at fairly high levels to beef, dairy, horse, and swine feeds. Feeding sheep these feeds over time can result in Cu toxicity and death; therefore, feeds and minerals formulated for any of these species should be checked for Cu level (needs to be <25 ppm) before they are fed to sheep.

There is also a relationship between Cu and Mo. In sheep or goats, if a feed has a normal or low level of Cu with a high level of Mo, then a Cu deficiency may occur. Adding Mo to the diet of sheep also can be effective in reducing the toxicity of Cu.

Selenium is regulated by the Food and Drug Administration because of its potential toxicity. Deficiency in Se results in white muscle disease (stiff lamb disease) in sheep or goats and can also reduce reproductive efficiency. States in the northwestern, northeastern, and southeastern United States can be Se deficient. To meet requirements, Se can be purchased as part of the mineral mix or as part of complete feeds. Selenium toxicity can occur if plants high in Se are consumed over a prolonged period. Selenium-accumulating plants are a problem in some range areas. Iron, a major component of hemoglobin, is generally adequate in most feeds, and deficiency symptoms are rare in healthy animals; however, blood loss caused by internal parasites can cause anemia. Anemia can also develop in young lambs and kids because of low body stores of Fe and low Fe content of milk. Iron can be given intramuscularly to improve Fe status, but management or regular treatment to reduce internal parasites will reduce the chances of iron deficiencies developing in sheep and goats.

Iodine is generally adequate in most feeds except when grown in some areas of the northeastern, Great Lakes, and Rocky Mountain regions of the United States. Deficiency is generally exhibited in newborns by an enlarged thyroid gland clearly visible on the neck (goiter). Some severely deficient lambs are stillborn without any wool. Iodized salt is the most common supplement.

Zinc is not widely stored in the body, so the diet should have a continuous supply. Deficiencies are rare but can result in reduced fertility, stiffness of joints, reduced weight gain.

Manganese is required by both sheep and goats, but precise levels have not been established. Most forages have >50 ppm Mn and most grains have from 15 to 40 ppm Mn, so deficiencies are rare. Deficiency signs include difficulty in walking, skeletal abnormalities, and reduced reproductive efficiency.

Cobalt is needed by the microbes in the rumen to synthesize vitamin B₁₂ but is usually adequate in most feedstuffs.

Vitamins

Sheep and goats require dietary sources of fat-soluble vitamins (A, D, E, and K), but adequate quantities of water-soluble vitamins are usually produced by the rumen

microbes. Grazing animals generally obtain sufficient vitamin or vitamin precursor to meet requirements, but confinement-fed or high-producing dairy animals may have to be supplemented.

Vitamin A does not occur in forages, but ample amounts of carotene are contained in green vegetation. Carotene is converted to vitamin A. Approximately 1 mg of carotene is equivalent to 400IU of vitamin A in sheep and goats. Vitamin A and carotene are stored in the body to meet requirements for three to six months after removal from pasture. Vitamin A deficiency is rare, but symptoms include night blindness, poor reproductive performance, ceratinization of epithelial tissues, and lower resistance to infections. Vitamin A can be supplemented to the diet or injected, or feeds high in natural sources can be fed (i.e., green grass or legume hay).

Vitamin D is contained in green forages and sun-cured hays. Animals exposed to sunlight should obtain sufficient vitamin D to meet requirements. However, animals in confinement, animals with heavy fleeces, or dark-pigmented animals may need supplementation. Deficiency symptoms include development of rickets or osteomalacia. Vitamin D can be fed or injected to prevent deficiencies.

Vitamin E is a biological antioxidant. It is important in its role with Se in preventing white muscle disease (stiff lamb disease), and it aids in increasing the shelflife of milk. It is not stored in the body in large quantities and is often included in the supplement for fast-growing lambs and kids and for dairy sheep and goats.

Vitamin K is contained in green leafy forages and can also be synthesized by the rumen microbes. Deficiency is not generally seen.

The water-soluble vitamins (vitamin B complex) are not stored in the body for very long but are synthesized by the rumen microbes.

Vitamin C is synthesized by the animals' tissues in sufficient quantities to meet requirements. Polioencephalo-malacia (PEM) is a disorder in sheep in which thiamin (a B vitamin) is destroyed. Treatment with injections of thiamin reverses the symptoms. Under normal conditions, there is not a dietary requirement for water-soluble vitamins. Young milk-fed animals receive sufficient vitamins from the milk.

Water

In addition to drinking water, sheep and goats obtain water from their feed, snow, and dew. The total water required varies by size and physiological state of the animal, the environmental temperature, and the animal's level of intake. Table 24.1 presents ranges in water intake requirements for sheep and goats in various physiological states and at different temperatures. Water intake is expressed as kg of water needed per kg of dry matter intake.

FEED STUFFS USED FOR FEEDING SHEEP AND GOATS

A variety of feeds are appropriate for feeding to sheep and goats. As ruminants, they consume forage, including hays, silage, and range. They utilize agroindustrial byproducts and feeds not appropriate for monogastrics. Chapter 19 covers many of the potential feeds used for sheep and goats, and Appendix Table 1 (National Research Council, 1985) lists the energy and protein composition of some of the common roughage and forage feeds for sheep and goats.

Feeding the Ewe

Flushing. Flushing is the practice of improving the nutrient intake or nutrient

utilization to increase body weight and/or condition before breeding, thereby improving the ovulation rate. This can be done by moving ewes to a better pasture, treating with an anthelmintic to reduce internal parasite burden, or feeding supplements. The period of flushing usually starts 3 to 4 weeks before breeding and continues 1 week into the breeding season. Results of flushing are greatest when breeding occurs outside of the normal peak in breeding season (when ovulation rates are already at a high). The key to flushing is to have the ewes gaining weight and/or condition score. Ewes beginning flushing with condition scores of 2.5 or less will have the largest response and generally exhibit increased conception rate, ovulation rate, and therefore higher lambing percentages.

Gestation. The gestation length of a ewe is approximately 5 months (147-150 days). The National Research Council (NRC) (1985; Tables 21.3 and 21.4) lists requirements for the first 15 weeks of gestation and then higher requirements for the last 4 weeks. Separate requirements are listed for ewe lambs that are bred to lamb at approximately 1 year of age. Their requirements are higher because not only are they providing nutrients for fetal development and lactation but they are also still growing. From breeding through embryo implantation (approximately 40 days after fertilization), the embryo must survive in the uterine fluids. Nutrient needs to ensure survival of the embryo through implantation are higher than those of midgestation and are probably closer to the requirements that are listed for flushing (Table 24.2). From implantation until the last 4 to 6 weeks of gestation the ewe is essentially fed for requirements that are only slightly above maintenance. It is important to make sure the ewe does not become fat because excess weight can result in further complications at lambing.

Two-thirds of the fetal growth occurs during the last 6 weeks of gestation. The requirements in Table 24.2 are different for ewes expecting a 130 to 150% lambing rate as compared to a 180 to 225% lambing rate. These requirements are to provide for fetal growth and to provide for increasing the ewes condition so that future milk production needs can be met. Inadequate nutrition during this most critical stage of gestation can result in keto-sis (threatening the lives of the lambs and ewes; see Avoiding Nutritional and Metabolic Diseases later in this chapter), low birth weights, low survival rates, low milk production, and low growth rates of the lambs. Adequate nutrient intake is essential during this period. It is interesting that the fetal growth that occurs during the last 4^w gestation effectively reduces the capacity of the gastrointestinal tract right at the time of high nutrient demand.

Milk Production. Milk production from the ewe is directly related to the genetic potential, nutrition, and number of lambs suckling. The genetic potential for milk production varies between and within breeds. Some breeds have been selected for milk production for human use or for use in making cheese (an example is Roquefort cheese from France). A ewe suckling twins produces 25 to 50% more milk than if she were suckling a single.

Therefore, requirements (Table 24.2) are separated for ewes raising singles compared to twins and for the first 6 to 8 weeks of lactation compared to the last 4 to 6 weeks of lactation. Requirements for lactation are the highest of all production states. The best quality pasture/hay should be saved for feeding during early lactation. The lactation curve of sheep is such that peak milk yield is at about 3 to 4 weeks, and

70% of milk production will occur in 8 weeks of lactation.

To provide adequate desired nutrients, it is best to feed ewes with twins separately from ewes with singles. Condition and weight loss of ewes during lactation is normal and expected. In systems of once a year lambing, the ewe has time to regain weight after weaning and before rebreeding (see Fig. 24.1). In accelerated lambing production systems, it is desirable to produce a lamb every 6 to 9 months (Hogue, 1987) and level of nutrition is critical to maintaining higher production.

Feeding Lambs

Suckling Lambs. The most critical need for the newborn lamb is to receive colostrums (the ewe's first milk). Colostrum is high in protein, fat, minerals, vitamins, and immunoglobulins (important for disease resistance). Lambs should consume at least 50 to 100 ml of colostrum. Fresh colostrum can be provided from another ewe, or colostrum from ewes can be frozen for later thawing.

Milk Replacers. Feeding orphaned or excess lambs can be accomplished with milk replacers. The decision to remove the lamb from the ewe should be made early (24-18 h after birth), and the lamb should be placed in an area away from the sounds and smells of the ewe. Many commercial milk replacers are available that contain 25 to 30% fat, 20 to 25% milk protein (casein), and 30 to 35% milk sugar (Lactose). Initially, warm milk replacer can be given by bottle or from multiple nipple pails, but eventually lambs can be self-fed cold milk. Lambs should have access to fresh dry feed so that consumption is encouraged. Since milk replacers are expensive, lambs may be weaned from milk replacer and consume dry feed at 3 weeks of age.

Creep Feeds. To supplement the ewes' milk and to shift the diet of lambs to dry feed, a creep feeder is often set up. A creep feeder is an area where lambs have access to feed without competition from the ewes. Creep feeders are usually set up for lambs at about 2 weeks of age, and expected consumption should average 200 to 250 g/day from age 20 days through weaning. Creep rations need to be palatable, should contain at least 15% crude protein, and may contain antibiotics. Feeds that are palatable to lambs include cracked shelled corn, oats (better if rolled), bran, molasses, soybean meal, and high-quality legume hays (especially alfalfa). Suggested lamb creep diets are shown in Table 24.5.

Growing Lambs. Requirements are different for replacement ewe and ram lambs as compared to finishing lambs. Replacement lambs are intended for breeding, and, therefore, maximum weight gain and finish is of secondary importance. Finishing lambs are expected to gain weight rapidly and attain the desired finish. In addition, requirements are separate for lambs with moderate as compared to rapid growth potential. Higher requirements for faster growing animals and for animals of higher mature body weight will aid in meeting optimum growth rates.

Lambs can be grown and finished on high-quality pasture, on pasture plus supplementation, or in dry lot feeding systems. The type of system used will depend on desired marketing time (faster gains can be made in a dry lot), type of lamb to be sold (lean versus more fat cover), available feed resources, and economics.

Pastures of cool season annuals (oats, wheat, barley, rye, ryegrass), legumes (alfalfa, clover), or cool season perennials mixed with a legume (i.e., fescue or bluegrass with clover) can provide nutrients for excellent growth. If lambs are used to graze lower quality pastures or to clean up unwanted vegetation, then additional

energy supplementation may be warranted. Whole or ground gains can be used.

Lambs usually are placed on grain diets in dry lot for the last 30 to 40 days before marketing. Desire for leaner lamb carcasses may reduce the need for dry lot grain feeding in the future. Dry lot feeding systems are designed for rapid lamb growth and usually involve two to three diet changes through the finishing period. They are usually adjusted from pasture-based feeding to concentrates by feeding ground hay (30 to 50%) mixed with grains (corn, oats, barley, 50 to 60%), molasses (10%; to improve palatability and reduce dust), and possibly an antibiotic premix (1%).

Once adjusted to higher grain diets, the lambs will be fed diets that utilize available feed resources. The most common diets are based on corn and soybean meal, with molasses added to increase palatability and decrease dust and mineral mix and ammonium sulfate added to reduce problems associated with urinary calculi. Some producers will choose one diet and keep feeding it throughout the feeding period until the lamb is marketed. This reduces problems associated with changing diets but will underfeed lambs when they are light and overfeed lambs when they are heavy. The low cost of grain relative to hay has encouraged high-grain feeding of lambs. With high-grain feeding, all lambs should be vaccinated to prevent enterotoxemia (overeating disease) (see Avoiding Nutritional and Metabolic Diseases later in this chapter).

Replacement Ewes. Most producers strive to have replacement ewes lamb at 1 year of age. To accomplish this requires that the ewe be bred at 7 months of age. Replacement ewes are usually identified at 3 to 4 months of age and removed from the market lambs that are being finished for market. Replacement ewe lambs should not get fat because this can reduce milk production potential.

Replacement Rams. Rams should be grown on pasture and supplemented as necessary to obtain at least 150 to 200 g/day growth. Once mature, pasture alone will usually meet maintenance requirements. There are over 400 million goats in the world that produce meat, milk, fiber (cashmere and mohair), and skins. Unfortunately much less is known about goats than about sheep or cattle. Much of the nutrition information is derived from sheep and cattle.

TABLE. Examples of diets for growing lambs.

DIETS

LAMB WEIGHT

TO 30 KG

30 TO 40 KG

40 KG TO MARKET

Diet 1

Cracked corn	48.0	58.0	68.0
Chopped hay	33.0	23.0	13.0
Soybean meal, 44% CP	11.5	11.5	11.5
Liquid molasses	5.0	5.0	5.0
Dicalcium phosphate	1.0	1.0	1.0
Trace mineral salt and Se	1.0	1.0	1.0

Ammonium sulfate	0.5	0.5	0.5
<i>Diet 2</i>			
Ground ear corn	60.0	30.0	—
Cracked corn	—	30.0	60.0
Chopped alfalfa hay	27.5	27.5	27.5
Soybean meal, 44% CP	6.0	6.0	6.0
Liquid molasses	5.0	5.0	5.0
Trace mineral salt and Se	1.0	1.0	1.0
Ammonium sulfate	0.5	0.5	0.5

Information on the nutrition and feeding of sheep is still a valuable guide for the proper feeding of goats.

The feeding behavior of goats is much different from that of other ruminants. Goats have very mobile prehensile lips and an agile tongue that allows them to select specific plants and specific plant parts. Goats utilize a bipedal stance to obtain desired feed and even climb into shrubs and trees to obtain feed.

Goats are very effective at selecting diets that ; are higher in quality than the average of what is on offer and generally better than that selected *I* by sheep and cattle. Goats will select from trees, shrubs, forbs, and grasses. Often a single plant species will be preferentially removed, or specific plant parts will be removed (usually tender, palatable, highly nutritious growth). Goats also perform well when fed supplementary feed grains. Three 3S of goats have been developed to meet the needs; these are the meat goat, angora goat reduction of mohair), and dairy goat.

Goats include a variety of breeds.

Most goats are traditionally raised on pasture or range, they receive little routine supplementation or creep diet. Protein is usually the limiting nutrient of range goats, and supplementation of 300 to 400 g of a soybean meal or cottonseed meal improves production.

Replacement does, does in late gestation may require up to 500 g/day of a 25% protein supplement Small herds are often supplemented with commercial goat feed that also provides needed minerals and vitamins. Horse sweet feed is often substituted as a goat feed for lactating does and growing kids.

Fiber-Producing Goats

Meat goats produce two types of fiber: a coarse guard hair of little marketable value, and a very fine hair, cashmere, that has high market value. There is some interest in selecting high cashmere-producing goats, but little is known about the nutrient requirements for cashmere growth. Angora goats have been extensively selected for mohair production. The goats are smaller than most meat goats but give birth to similar size kids, which grow at 50 to 100 g/day. Because of a fairly low reproductive rate and the high value of mohair, angora goats are seldom slaughtered for meat The does are kept as replacements and males not used for breeding are castrated and kept solely to produce mohair.

Angora goats are very sensitive to climatic changes, especially after removal of

fleece. In addition, they are sensitive to diet changes, and diet should be maintained from day 80 to 120 of gestation. The last 3 to 4 weeks of gestation may require additional supplementation if the pasture or range is in poor condition or limited growth is available. Corn (150-300 g/day) or cottonseed cake (100-200 g/day) is often used as a supplement

Pietrain Swine: a breed with deep roots

The history and geography of Walloon Brabant have blended to create a product that guarantees the future. Thus it was that the Pietrain breed of pig, which takes its name from the small village in Walloon Brabant located 40 km from Brussels, came into being. It is at Pietrain that a particular type of black-and-white pig has been bred since 1920. The Pietrain breed began attracting interest after a deep depression in the pork market. It gained official accreditation in 1956. Since then, the Pietrain pig's special genetic characteristics have been farmed constantly, and Pietrain Pork has continued to develop.

In Wallonia, the words "sanitary status" are not taken lightly: all of the Pietrain-reared pork undergoes strict sanitary testing to ensure it contains no diseases, such as swine fever, Aujeszky's disease, brucellosis, swine vesicular disease and PRRS.

Also, in addition to the fact that the Regional Association for the Promotion of Pietrain Pork only works with the leading breeders and meat selectors, each Pietrain piglet is tattooed with a unique number before it is a month old. This number follows the animal throughout its life.

Once they are weaned, the piglets are identified by the SANITEL tagging system, which has been used for all animals reared in Belgium since 1990 to ensure their identification and traceability. This means that Pietrain pigs are closely monitored from the pigsty to the consumer's plate. Every detail of each Pietrain pig is kept on record by the Walloon Breeders' Association (AWEP): tattoo number, origin, fertility, productiveness, genetic testing results and any abnormalities.

At the selection breeding farms, the breeding boars are monitored for their daily growth, consumption index and the quality of their carcass. All of this data is used to calculate an "index" or assessment of the genetic value of the pigs so that they can be compared quickly and efficiently.

Averages achieved in 2003 at farms belonging to the Regional Association for the Promotion of Pietrain Pork :

Piglets born per sow per year	23.66 units	
Piglets weaned per sow per year units		19.79 units
Birth index	2.18 units	
Weight at birth	1.592kg	
Weight at weaning (28 days)	7.695 kg	
Average Daily Gain	0.719kg	
Average Daily Gain (30 to 100 kg)	0.853 kg	
Consumption index	2.65 kg	
% meat in the carcass	69%	

Pedigree Pietrain pigs deliver exceptional results in terms of conformation and carcass productivity.

At the leading breeding farms, which are members of the Regional Association for the Promotion of Pietrain Pork, the results achieved with pedigree pigs are often even higher and the mortality rate is only about 5%.

Pietrain pigs are the only breed that produces meat that has no fat. In fact, the carcass of the Pietrain pig has the highest muscle/weight ratio of all known breeds. Pietrain pigs are noted for the outstanding muscularity of their shoulders, a particularly muscular back (loin 27%) and exceptional hams (27%). When slaughtered, they produce 83% of carcass and 69% lean meat. These qualities give the Pietrain breeding boar a potential for improvement that is unique from other breeds.

Regardless of the breed of the mother, cross-breeding with a Pietrain boar is likely to bring a substantial improvement to the quality of the carcass, a better proportion of prime cuts, enhanced commercial classification and a high percentage of meat (69%). As an indication, the percentage of intramuscular fat is 1.5% with the Pietrain TTC Positif. This improvement in the physical composition has clear-cut repercussions on the commercial classification of carcasses.

Pietrain Pork : *Exceptional carcass classifications.*

Pietrain boars used in terminal cross-breeding with sows of all breeds produce a very high percentage (over 60%) of A1 and + category carcasses, i.e., better classes of conformation.

Pietrain Swine -a breed exported all over the world.

Long since exported to most European countries, Pietrain Swine has left its home village for far-off horizons: China, Vietnam, Malaysia, Thailand, Chile, Peru, Brazil, South Africa.

Pietrain Pork : *Negative Stress.*

The development of the new "negative stress" line began during the 1980s. There were two essential motivating factors behind this product's creation: to meet consumer demand and avoid the use of tranquillizers while pigs were being transported; and to comply with the requirements of meat manufacturers and major retailers in terms of the quality of the meat (66% meat with 1.7% intramuscular fat). "Negative Stress" Pietrain swine is the new name given to the heterozygous pigs produced recently at the University of Liege and at the breeding farms belonging to the Regional Association for the Promotion of Retrain Pork. Since then, Pietrain pigs that are totally stress-free - and hence heterozygous -have been created at the University of Liege.

There are numerous advantages of "Negative Stress" Pietrain swine. In addition to the excellence of the result achieved with cross-breeding, there is the adaptability of this extremely well-muscled pig, regardless of the climate or type of rearing. Better still, in a blind tasting test, 38 consumers out of 40 immediately recognized the quality of "Negative Stress" Pietrain pork.

Pietrain Swine-and molecular genetics.

The genetic differences between animals are due to differences between breeds and differences between animals within those breeds. Out of the list of more than 400 breeds of pig, taken worldwide, ten breeds have played - and continue to play - a predominant role. Of these, there is one Belgian breed : the Pietrain pig used in terminal cross-breeding and for rustic breeds. The principal major genes identified in

the Pietrain pig are Hal and IGF2.

The Hal gene was discovered in Belgium during the 1970s. Explaining the relationship between Halothane and stress in pigs, this discovery made it possible to distinguish resistant homozygotes from resistant heterozygotes as opposed to homozygotes that are sensitive to stress.

In 1999, following the discovery of a new major gene called IGF2, the Pietrain pig revealed part of its secrets. This new gene explains the average 25% difference between the Pietrain and the Large White in terms of the main features of their conformation [musculature (+) and amount of fat (-)].

What sets this gene apart is that it only occurs when inherited from the father. As the allele promoting pronounced muscular development is present very frequently in the Pietrain breed, the use of a purebred Pietrain breeding boar for industrial cross-breeding is better than using a Pietrain-cross boar.

The two major genes mentioned that play a part in the quality of the meat in pigs are the subject of on-going study. The table below illustrates their effects on meat quality.

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