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**«ФИЗИКА», «ХИМИЯ», «БИОЛОГИЯ» ЖӘНЕ «ИНФОРМАТИКА» ПӘНДЕРІ
МҰҒАЛІМДЕРІНЕ АРНАЛҒАН ГЛОССАРИЙ**

**ГЛОССАРИЙ ДЛЯ УЧИТЕЛЕЙ ПРЕДМЕТОВ
«ФИЗИКА», «ХИМИЯ», «БИОЛОГИЯ» И «ИНФОРМАТИКА»**

**GLOSSARY FOR TEACHERS OF SUBJECTS
“PHYSICS”, “CHEMISTRY”, “BIOLOGY” AND “COMPUTER SCIENCE”**



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Solids	Твердые вещества	Қатты заттар	24
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**I. BICS (Basic Interpersonal Communication Skills)/
 Основные навыки межличностного общения/
 Тұлғааралық қарым-қатынастың негізгі дағдылары**

Classroom Language Сабақтың тілі Язык урока

1.a. Starting the lesson Сабақтың басталуы Начало урока

English	Kazakh	Russian
Good morning, children!	Қайырлы таң, балалар!	Доброе утро, дети!
Good afternoon.	Қайырлы күн.	Добрый день.
Stand up, please.	Орнымыздан тұрамыз.	Встаньте, пожалуйста.
Sit down, please.	Отырыңдар.	Садитесь, пожалуйста.
Who is absent today?	Бүгін сабақта кім жоқ?	Кто сегодня отсутствует?
Let's start our lesson	Сабақты бастайық.	Начнем урок.
The objective(s) of the lesson is/are	Сабақтың мақсаты(тары)...	Цель(и) нашего урока....

1.b. During the lesson Сабақ барысында В течение урока

English	Kazakh	Russian
Take your books.	Кітаптарыңызды алыңыздар.	Возьмите ваши книги.
Go back to your place.	Өз орныңызға барыңыз.	Вернитесь на свое место.
Open your books at page (10)	Кітаптың 10-шы бетін ашыңдар.	Откройте ваши книги на странице (10)
Turn to page (10)	Келесі 10-шы бетті	Переходим к странице



	ашамыз.	(10).
Look at exercise (1) on page (10)	10-шы-беттегі 1-ші-жаттығуға қараймыз.	Посмотрите упражнение (1) на странице (10)
Look at line (1)/ picture (1).	1-ші- жолға қараймыз/ 1-ші -суретке қараймыз.	Посмотрите на строку (1)/ картинку (1).
Let's say it together.	Бәріміз бірге айтайық.	Давайте произнесем это вместе.
Show me your work.	Жасаған жұмысыңызды көрсетіңіз.	Покажите мне свою работу.
Say it again, (please).	Қайталаңыз	Повторите, пожалуйста.
Louder, please.	Қаттырақ айт.	Громче, пожалуйста.
Who knows the answer?	Жауабын кім біледі?	Кто знает ответ?
What is _____ in English?	Ағылшынша _____ қалай болады?	Как будет по-английски _____?
Read this/that, please.	Мынаны оқыңыз.	Прочтите это, пожалуйста.
Is that right?	Дұрыс па?	Правильно?

1.c.Keeping order

Тәртіпті қолдау

Поддержание порядка

English	Kazakh	Russian
Quiet, please.	Тынышталайық.	Успокойтесь, пожалуйста.
Stop talking.	Сөзді тоқтатайық.	Перестаньте разговаривать.
Don't do that, please.	Өтінемін, олай	Не делайте так,



	жасамаңдар.	пожалуйста.
Give ____ to me, please.	Өтінемін, маған _____ беріңізші.	Пожалуйста, дайте _____ мне _____.

1.d. Praise and encouragement Мақтау және көтермелеу Похвала и поощрение

English	Kazakh	Russian
Try again.	Тағы бір рет көрші.	Попробуйте еще раз
That's much better.	Осылай жақсырақ.	Так намного лучше.
It is all right – don't worry.	Бәрі жақсы, уайымдамаңыз.	Все хорошо – не переживай.
Good job!	Жақсы жұмыс!	Хорошая работа!
Well done!	Жақсы!	Хорошо!
Excellent!	Өте жақсы!	Отлично!

1.e. Ending the lesson Сабақтың аяқталуы Завершение урока

English	Kazakh	Russian
The lesson is over, thank you.	Сабақ аяқталды, барлықтарыңызға рахмет.	Урок закончен, всем спасибо.
You have worked well today.	Бүгін сіздер жұмысты жақсы жасадыңыздар.	Вы сегодня хорошо поработали.
Your marks are	Сіздердің бағаларыңыз...	Ваши оценки
Your home assignment is...	Үй жұмысының тапсырмасы	Ваше домашнее задание
Put your books into the bags.	Кітаптарыңызды сөмкелеріңізге	Положите ваши книги в



	салыңыздар.	портфели.
Goodbye!	Сау болыңыздар!	До свидания!

Functional Language Функционалдық тіл Функциональный язык

2.a Agreeing Келісім білдіру Выражение согласия

English	Kazakh	Russian
I agree.	Келісемін.	Я согласен.
You're right.	Сіздікі дұрыс.	Вы правы.
That's true/right.	Дұрыс.	Это правильно.
I also think that.....	Мен де деп ойлаймын.	Я тоже думаю, что.....
That's my experience too.	Бұл менің де тәжірибемде кездескен.	Это и мой опыт.

2.b Disagreeing Келіспеушілікті білдіру Выражение несогласия

English	Kazakh	Russian
That's a good point, but...	Бұл жақсы пікір, бірақ...	Это хорошее мнение, но.....
I don't think so.	Мен олай ойламаймын.	Я так не думаю.
I don't agree.	Келіспеймін.	Я не согласен.
That doesn't really make sense to me.	Шын мәнісінде мұның мен үшін мәні жоқ.	На самом деле это не имеет смысла для меня.
I agree up to a point, but...	Бұған дейінгі пунктерімен келісемін,	Я согласен до этого пункта, но...



	бірақ...	
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2. c. Apologizing	Кешірім білдіру	Извинения
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English	Kazakh	Russian
I'm sorry.	Кешіріңіз.	Извините.
I'm sorry but...	Кешіріңіз, бірақ...	Извините, но...
...is/was my fault	... менің кінәм.	... моя вина.
I regret...	Өкінемін.	Я сожалею.
Please excuse my behavior.	Тәртібім үшін кешірім сұраймын.	Пожалуйста, извините за мое поведение.

2.d. Accepting apologies	Кешірімді қабылдау	Принятие извинений
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English	Kazakh	Russian
It's OK.	Бәрі жақсы.	Все хорошо.
No problem.	Оқасы жоқ.	Нет проблем.
Don't worry about that.	Алаңдамаңыз.	Не переживайте за это.
Never mind.	Уайымдамаңыз.	Не беспокойтесь.
I quite understand.	Бәрін түсінемін.	Я вполне понимаю.

2.e . Asking for opinions	Пікір туралы сұрау	Вопросы о мнении
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English	Kazakh	Russian
Do you think ... ?	Сіз ойлайсыз ба?	Вы думаете...?
What do you think about ... ?	Сізне ойлайсыз?	Что вы думаете.....?



What's your opinion on ... ?	Сіздіңтуралы пікіріңіз қандай?	Каково ваше мнение о...?
Do you believe that ... ?	Сіз сенесіз бе?	Вы верите, что....?
Do you share my view that ?	Сіз деген көзқарасыммен келісесіз бе?	Вы разделяете мою точку зрения, что...?

2.f. Giving opinions

Пікір білдіру

Выражение мнения

English	Kazakh	Russian
I really think that ...	Мен шынымен..... деп ойлаймын.	Я действительно думаю, что...
In my opinion ...	Менің көзқарасым бойынша...	С моей точки зрения....
I agree with ...	Менкелісемін	Я согласен с...
As far as I know ...	Менің білуімше...	Насколько я знаю....
It seems to me that ...	Менің ойымша, бұл...	Мне кажется, что...

2.g. Making Requests

Өтініштер

Просьбы

English	Kazakh	Russian
Can I...?	Маған ... бола ма?	Можно мне...?
Can you help?	Көмегім қажет пе?	Могу я вам помочь?
Can I request...?	Сұрауға бола ма?	Можно попросить...?
Would it be possible for you to...?мүмкіндігіңіз бар ма?	Будет ли возможно для вас...?
Would you mind?сіз қарсы емессіз бе?	Вы не возражаете.....?



2.h. Giving Advice	Кеңестер	Советы
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English	Kazakh	Russian
(I think/I really think) you need to/must/should ...	Мен...ойлаймын/мен шынымен солай ойлаймын/сізге қажет/ сіз міндеттісіз /сіз.....тиіссіз.	я думаю/я действительно думаю) вам нужно/ вы должны/ вам следует...
Why don't you ...?	Сізге неге....?	Почему бы вам...?
If I was/were you, I'd ...	Егер мен сіздің орныңызда болсам....	На вашем месте я бы...
You probably/definitely/really should ...	Сізге / нақты/ шынымен... керек болар.	Вам возможно /определенно/действительно следует...
You'd better ...	Сізге ... өте жақсы болар еді.	Вам бы лучше...

2.j. Offering	Ұсыныс	Предложения
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English	Kazakh	Russian
Can I help you (with...)?	Мен сізге көмектесе аламын ба?	Могу я вам помочь...?
Do you want me to... (for you)?	Менің ... қалайсыз ба?	Вы хотите, чтобы я...
I'd like to offer	Менің ұсынысым бар.	Я бы хотел предложить.
Do you need some help (with...)?	Сізге көмек қажет пе?	Вам нужна помощь?



II. CALP (Cognitive Academic Language Proficiency)/
 Когнитивное знание академического языка/
 Академиялық тілдің когнитивті білімі

Biology Биология Биология

Botany

Ботаника

Ботаника

English	Definition	Kazakh	Russian
annual	a plant completing its life cycle from seed to flower within one year	бір жылдық	однолетний
axis	the central stem of a plant or an <u>inflorescence</u> , or the elongated part of the <u>receptacle</u> on which floral organs are situated	дің, бағана	ствол
biennial	a <u>herb</u> completing the cycle from germination to fruiting in more than one, but less than two, years and then dying.	екі жылдық	двухлетний
cell	the basic unit of plant structure consisting, at least when young, of a protoplast surrounded by a wal	жасуша	клетка
cloning	vegetative reproduction using a single parent and thus offspring are genetically identical to this parent	вегетативті көбею	вегетативное размножение
family	a group of one or more genera believed to be related	тұқымдас	семейство
flora	the assemblage of plant taxa of	флора	флора



	an area		
habit	the general appearance of a plant, including size, shape and growth form	өсу сипаты	характер произрастания
habitat	the kind of place in which a plant grows	мекендейтін жері	среда обитания
seed	the reproductive body formed from a fertilized <u>ovule</u> , and comprising an <u>embryo</u> , with or without <u>endosperm</u> or <u>perisperm</u> , and a surrounding protective seed coat or <u>testa</u> .	тұқым	семя

Zoology

Зоология

Зоология

English	Definition.	Kazakh	Russian
amphibians	Animals that can survive and live on land as well as in water. Amphibians are vertebrates and cold-blooded	амфибии	амфибии
fauna	All the animal life that exists in a particular area during a specific period of time.	фауна	фауна
food chain	The food chain is the transfer of life giving energy from one organism to another, which is compatible to receive the same form of energy that was passed on, when the organism perished	қоректену тізбегі	пищевая цепочка
frugivorous	Fruit-eating. A frugivore is any organism whose preferred food	жеміспен	плодоядный



	type is fruits.	қоректенетін	
invertebrate	Pertaining to organisms without a backbone	омыртқасыздар	беспозвоночный
life cycle	Phases of life that animals go through starting from birth, to sexual maturity, till death	өмір сүру циклі	цикл жизни
mammal	a warm-blooded vertebrate animal of a class that is distinguished by the possession of hair or fur, the secretion of milk by females for the nourishment of the young, and (typically) the birth of live young.	сүтқоректілер	млекопитающее
reptilia	Reptiles or vertebrates, who possess a dry scaly skin and reproduce amniotic eggs. Snakes, lizards and alligators belong to this category	бауырымен жорғалаушылар	рептилия
vertebrate	an animal of a large group distinguished by the possession of a backbone or spinal column, including mammals, birds, reptiles, amphibians, and fishes	омыртқалы	позвоночный
taxonomy	The science of identification and classification into categories of varying rank, based on similarities and differences, and naming them	классификация	классификация



	Anatomy	Анатомия	Анатомия
English	Definition.	Kazakh	Russian
abdomen	the belly, the part of the trunk between thorax and the perineum	құрсақ бөлігі	брюшная полость
axial part	includes the head, neck, and trunk.	осьтік бөлігі	аксиальная (осевая) часть
appendicular part	includes the limbs which are attached to the body's axis.	аппендикулярлы (жатыр) бөлігі	аппендикулярная (придаточная) часть
brain	the portion of the vertebrate central nervous system enclosed in the skull and continuous with the spinal cord through the foramen magnum that is composed of neurons and supporting and nutritive structures (as glia) and that integrates sensory information from inside and outside the body in controlling autonomic function (as heartbeat and respiration), in coordinating and directing correlated motor responses, and in the process of learning	ми	мозг
dorsal cavity	The smaller of the two main cavities is called the dorsal cavity. As its name implies, it contains organs lying more posterior in the body. The dorsal cavity, again, can be divided into two portions. The	арқатұс (арқа қуысы)	спинная (Тыльная) полость



	upper portion, or the cranial cavity, houses the brain, and the lower portion, or vertebral canal houses the spinal cord		
kidneys	one of a pair of vertebrate organs situated in the body cavity near the spinal column that excrete waste products of metabolism, in humans are bean-shaped organs about 4 ¹ / ₂ inches (11 ¹ / ₂ centimeters) long lying behind the peritoneum in a mass of fatty tissue, and consist chiefly of nephrons by which urine is secreted, collected, and discharged into a main cavity whence it is conveyed by the ureter to the bladder	бүйрек	почки
larynx	the modified upper part of the trachea of air-breathing vertebrates that in humans, most other mammals, and some amphibians and reptiles contains the vocal cords	көмекей	гортань
lungs	one of the usually paired compound saccular thoracic organs that constitute the basic respiratory organ of air-breathing vertebrates	өкпе	легкие



liver	a large very vascular glandular organ of vertebrates that secretes bile and causes important changes in many of the substances contained in the blood (as by converting sugars into glycogen which it stores up until required and by forming urea)	бауыр	печень
muscles	a body tissue consisting of long cells that contract when stimulated and produce motion	бұлшық ет	мышцы
organs	Organs are more complex units than tissues. An organ is an organization of several different kinds of tissues so arranged that together they can perform a special function. For example, the stomach is an organization of muscle, connective, epithelial, and nervous tissues. Muscle and connective tissues form its wall, epithelial and connective tissues form its lining, and nervous tissue extends throughout both its wall and its lining	ағзалар	органы
pancreas	a large lobulated gland of vertebrates that secretes digestive enzymes and the hormones insulin and	ұйқы безі	поджелудочная железа



	glucagon		
systems	<p>Systems are the most complex of the component units of the human body. A system is an organization of varying numbers and kinds of organs so arranged that together they can perform complex functions for the body. Ten major systems compose the human body:</p> <p>Skeletal Muscular Nervous Endocrine Cardiovascular Lymphatic Respiratory Digestive Urinary Reproductive</p>	жүйелер	системы
thoracic cavity	The upper ventral, thoracic, or chest cavity contains the heart, lungs, trachea, esophagus, large blood vessels, and nerves. The thoracic cavity is bound laterally by the ribs (covered by costal pleura) and the diaphragm caudally (covered by diaphragmatic pleura)	көкірек қуысы	грудная полость
tissues	Tissues are somewhat more complex units than cells. By definition, a tissue is an organization of a great many	ұлпа	ткани



	similar cells with varying amounts and kinds of nonliving, intercellular substance between them		
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General Biology	Жалпы биология	Общая биология
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English	Definition.	Kazakh	Russian
absorption	The movement of water and dissolved substances into a cell, tissue, or organism	абсорбция, сіңіру	абсорбция, поглощение
active transport	The movement of a substance across a biological membrane against its concentration or electrochemical gradient, with the help of energy input and specific transport proteins.	жылдам тасымалдау/ ауыстыру	активный транспорт/перемещение
biological species	A population or group of populations whose members have the potential to interbreed.	биологиялық түрлер	биологические виды
blood pressure	The hydrostatic force that blood exerts against the wall of a vessel.	қан қысымы	кровяное давление
deoxyribonucleic acid (DNA)	A double-stranded, helical nucleic acid molecule capable of replicating and determining the inherited structure of a cell's proteins.	ДНҚ (дезоксирибонуклеин қышқылы)	ДНК (дезоксирибонуклеиновая кислота)
diversifying	Natural selection that favors	әртараптандыр	диверсификацион



selection	extreme over intermediate phenotypes.	ылған іріктеу	ный отбор
G protein	A GTP-binding protein that relays signals from a plasma-membrane signal receptor, known as a G-protein linked receptor, to other signal-transduction proteins inside the cell. When such a receptor is activated, it in turn activates the G protein, causing it to bind a molecule of GTP in place of GDP. Hydrolysis of the bound GTP to GDP inactivates the G protein.	G - протеин	G - протеин
gene	A discrete unit of hereditary information consisting of a specific nucleotide sequence in DNA (or RNA, in some viruses).	ген	ген
genetic code	The system of nucleotide triplets in DNA and RNA that carries genetic information; referred to as a code because it determines the amino acid sequence in the enzymes and other protein molecules synthesized by the organism.	генетикалық код	генетический код
heterochrony	Evolutionary changes in the timing or rate of development	гетерохрония, гетероиерархия	гетерохрония, гетероиерархия
matrix	The nonliving component of connective tissue, consisting of a web of fibers embedded in homogeneous ground	матрица	матрица



	substance that may be liquid, jellylike, or solid.		
natural selection	Differential success in the reproduction of different phenotypes resulting from the interaction of organisms with their environment. Evolution occurs when natural selection causes changes in relative frequencies of alleles in the gene pool.	табиғи іріктеу	естественный отбор
ultimate causation	The hypothetical evolutionary explanation for the existence of a certain pattern of animal behavior.	себеп-салдар байланысы	причинно-следственная связь
zygote	The diploid product of the union of haploid gametes in conception; a fertilized egg.	зигота	зигота

Chemistry Химия Химия

General terminology Жалпы терминдер Общие термины

English	Definition.	Kazakh	Russian
chemistry	The study of matter and its transformation	химия	химия
experiment	An experiment is direct observation under controlled conditions. Most experiments involve carefully changing one variable and observing the effect on another variable (for example, changing temperature	тәжірибе	эксперимент



	of a water sample and recording the change volume that results)		
hypothesis	A hypothesis is a conjecture designed to guide experimentation. Hypotheses are extremely useful in problem solving, and are essential in developing new theories	гипотеза	гипотеза
Inorganic chemistry	The study of <u>inorganic compounds</u> ⁺ , specifically their structure, reactions, catalysis, and mechanism of action	бейорганикалы қ химия	неорганическая химия
organic chemistry	The study of compounds that contain carbon chemically bound to hydrogen, including synthesis, identification, modeling, and reactions of those compounds	органикалық химия	органическая химия

Measurement

Өлшем

Измерение

English	Definition./Law Content.	Kazakh	Russian
base unit	Base units are <u>units</u> ⁺ that are fundamental building blocks in a system of measurement. There are <u>seven base units</u> in the <u>SI</u> ⁺ system	базалық /негізгі бірлік	базовая/основная единица
conversion factor	A conversion factor is a fraction that relates one unit to another. Multiplying a measurement by a conversion factor changes the units of the	конверсиялық фактор	фактор конверсии



	<p>measurement. For example, since 1 in = 2.54 cm, to convert 10 inches to centimeters,</p> $(10 \text{ in}) = 25.4 \text{ cm}$ $\frac{2.54 \text{ cm}}{1 \text{ in}}$		
density	<p>Mass of a substance per unit volume. Saying "the density of mercury is 13.55 g/cm³" is the same as saying "the mass of exactly 1 cm³ of mercury is 13.55 g".</p>	тығыздық	плотность
mass	<p>Mass is a measure of the tendency of an object to resist acceleration. It's harder to roll a tractor trailer than a roller skate; the tractor trailer has a far greater mass</p>	салмақ	масса
relative error	<p>relative uncertainty. Compare with <u>absolute error</u>[±].</p> <p>The uncertainty in a measurement compared to the size of the measurement. For example, if three replicate weights for an object are 2.00 g, 2.05 g, and 1.95 g, the absolute error can be expressed as ± 0.05 g and the relative error is ± 0.05 g / 2.00 g = 0.025 = 2.5%.</p>	салыстырмалы қате	относительная погрешность
random error	<p>indeterminate error. Compare with <u>systematic error</u>[±], <u>gross</u></p>	кездейсоқ қате	случайная погрешность



	<p><u>error</u>⁺ and <u>mistake</u>⁺.</p> <p>Random errors are errors that affect the precision of a set of measurements. Random error scatters measurements above and below the mean, with small random errors being more likely than large ones.</p>		
weight	<p>Weight is the force exerted by an object in a gravitational field. The weight of an object (W) arises from its <u>mass</u>⁺ (m):</p> $W = mg$ <p>where g is the acceleration due to gravity (about 9.8 m/s² on Earth).</p>	салмақ	вес

Atoms, elements, and ions Атомдар, элементтер, қосылыстар			
Атомы, элементы, соединения			
English	Definition./Law Content.	Kazakh	Russian
anode	The electrode at which <u>oxidation</u> ⁺ occurs in a cell	анод	анод
atomic mass unit	A unit of mass equal to 1/12 the mass of a carbon-12 nucleus, which is 1.660 538 73 × 10 ⁻²⁷ kg ± 0.000 000 13 × 10 ⁻²⁷ kg [1998 CODATA values]. Abbreviated as <i>amu</i> or <i>u</i> . Sometimes called the <i>dalton</i> , after <u>John Dalton</u> , architect of the <u>first modern atomic theory</u> .	атом салмағының бірлігі	единица массы атома



cation	A cation is a positively charged ion.	катион	катион
electron	A fundamental constituent of matter, having a negative charge of $1.602\,176\,462 \times 10^{-19}$ coulombs ⁺ $\pm 0.000\,000\,063 \times 10^{-19}$ coulombs and a mass of $9.109\,381\,88 \times 10^{-31}$ kg $\pm 0.000\,000\,72 \times 10^{-31}$ kg [1998 CODATA values].	электрон	электрон
ion	An atom or molecule that has acquired a charge by either gaining or losing electrons. An atom or molecule with missing electrons has a net positive charge and is called a <u>cation</u> ⁺ ; one with extra electrons has a net negative charge and is called an <u>anion</u> ⁺	ион	ион
isotope	Atoms or ions of an element with different numbers of <u>neutrons</u> ⁺ in their <u>atomic nucleus</u> ⁺ . Isotopes have the same <u>atomic number</u> ⁺ but different <u>mass number</u> ⁺ . Isotopes have very similar chemical properties but sometimes differ greatly in nuclear stability	изотоп	изотоп
mass number	The total number of <u>protons</u> ⁺ and <u>neutrons</u> ⁺ in an atom or ion. In <u>nuclide symbols</u> ⁺ the mass number is given as a leading superscript.	массалық саны	число массы



	In <u>isotope</u> ⁺ names (e. g. carbon-14, sodium-23) the mass number is the number following the element name		
metal	A metal is a substance that conducts heat and electricity, is shiny and reflects many colors of light, and can be hammered into sheets or drawn into wire. Metals lose electrons easily to form <u>cations</u> ⁺ . About 80% of the known chemical elements are metals	металл	металл
neutron	An elementary particle found the <u>atomic nucleus</u> ⁺ of all stable atoms except the hydrogen-1 atom. Neutrons have no charge and have a mass of 1.008665 <u>daltons</u> ⁺ .	нейтрон	нейтрон
nonmetal	A nonmetal is a substance that conducts heat and electricity poorly, is brittle or waxy or gaseous, and cannot be hammered into sheets or drawn into wire. Nonmetals gain electrons easily to form <u>anions</u> ⁺ . About 20% of the known chemical elements are nonmetals.	бейметалл	неметалл

Solids

Катты заттар

Твердые вещества

English	Definition./Law Content	Kazakh	Russian
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allomer	Substances with different chemical composition but the same crystalline form	алломер	алломер
amorphous	A solid that does not have a repeating, regular three-dimensional arrangement of atoms, molecules, or ions.	амморфты, пішінсіз	амморфный, бесформенный
enthalpy of sublimation	The change in <u>enthalpy</u> [‡] when one mole of solid vaporizes to form one mole of gas. Enthalpies of sublimation are always positive because vaporization involves overcoming most of the intermolecular attractions in the sublimation	сублимация энтальпиясы (жылу сақтау)	энтальпия (теплосодержание) сублимации
lattice	A regular array of ions or atoms	кеңістік тор	пространственная решетка
solid	A solid is a relatively dense, rigid state of matter, with a definite volume and shape. Molecules in solids are often packed close together in regularly repeating patterns, and vibrate around fixed position	қатты зат	твердое вещество
unit cell	The simplest arrangement of atoms or molecules that regularly repeats in a crystal structure	ұяшық	ячейка
x-ray crystallograph	Determination of three dimensional arrangement of atoms in a crystal by analysis	Х-Рентген кристаллографи	Рентгено кристаллография



y	of <u>x-ray diffraction patterns</u> [±] .	ясы	
Liquids		Сұйықтықтар	
		Жидкости	

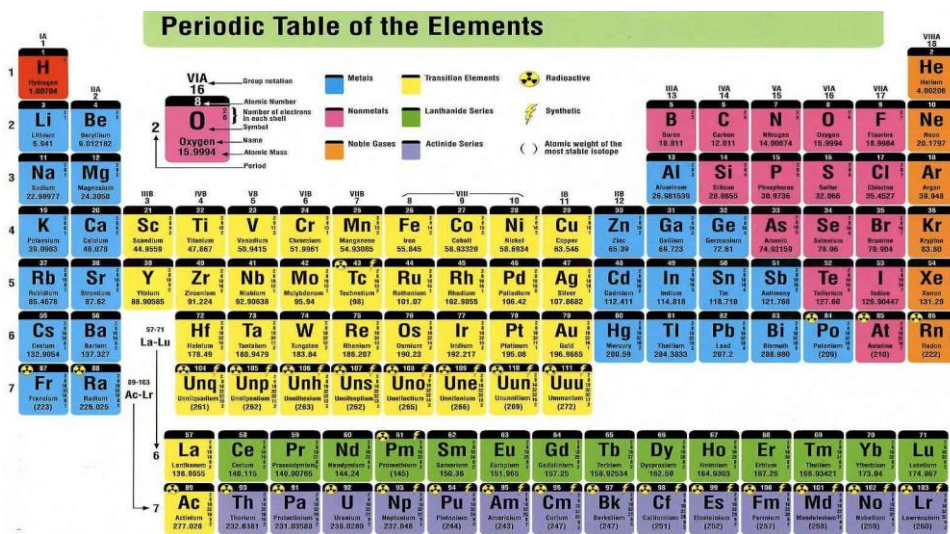
English	Definition./Law Content.	Kazakh	Russian
Antoine equation	<p>A simple 3-parameter fit to experimental vapor pressures measured over a restricted temperature range:</p> $\log P = A - \frac{B}{T + C}$ <p>where A, B, and C are "Antoine coefficients" that vary from substance to substance. Sublimations and vaporizations of the same substance have separate sets of Antoine coefficients, as do components in mixtures. The Antoine equation is accurate to a few percent for most volatile substances (with vapor pressures over 10 Torr).</p>	Антуан теңдеуі	уравнение Антуана
Clausius-Clapeyron equation	<p>The Clausius-Clapeyron equation predicts the temperature dependence of vapor pressures of pure liquids or solids:</p> $\ln (P/P^\circ) = \frac{\Delta H}{R} \left(\frac{1}{T^\circ} - \frac{1}{T} \right)$ <p>where P is the vapor pressure,</p>	Клайперон-Клаузиус теңдеуі	уравнение Клапейрона-Клаузиуса



	<p>P° is a vapor pressure at a known temperature T°, ΔH is an enthalpy of vaporization if the substance is a liquid or an enthalpy of sublimation if it's a solid, R is the <u>ideal gas law constant</u>⁺, and T is the temperature (in kelvins).</p>		
enthalpy of fusion	<p>The change in <u>enthalpy</u>⁺ when one mole of solid melts to form one mole of liquid. Enthalpies of fusion are always positive because melting involves overcoming some of the intermolecular attractions in the solid</p>	балқыту энтальпиясы	энтальпия плавления
immiscible	<p>Two liquids are considered "immiscible" or unmixable if shaking equal volumes of the liquids together results in a <u>meniscus</u>⁺ visible between two layers of liquid. If the liquids are completely immiscible, the volumes of the liquid layers are the same as the volumes of liquids originally added to the mixture</p>	араласпайтын	несмешиваемые
liquid	<p>A state of matter that has a high density and is incompressible compared to a gas. Liquids take the shape of their container but do not expand to fill the container as gases do. Liquids <u>diffuse</u>⁺ much more slowly</p>	сұйықтық	жидкость

	wlythangases		
viscosity	The resistance a liquid exhibits to flow. Experimentally, the frictional force between two liquid layers moving past each other is proportional to area of the layers and the difference in flow speed between them. The constant of proportionality is called "viscosity" or "coefficient of viscosity", and is given the symbol η . The time required for a liquid to drain out of a capillary tube is directly proportional to its viscosity. The <u>poise</u> ⁺ is a non-SI ⁺ unit frequently used to express viscosities.	тұтқырлық	вязкость

Элементтердің периодтық жүйесі
 Периодическая система элементов
 Periodic table of elements





	Physics	Физика	Физика
English	Definition/Law Content	Kazakh	Russian
absolute humidity	The ratio of water vapor in a sample of air to the volume of the sample	абсолюттік ылғалдық	абсолютная влажность
acceleration	The rate of change of velocity with respect to time	үдеу	ускорение
achromatic	capable of transmitting light without decomposing it into its constituent colors.	ахроматтық, түссіз	ахроматический, бесцветный
alpha particle	The nucleus of a helium atom (two protons and two neutrons) emitted as radiation from a decaying heavy nucleus.	альфа бөлшек	альфа частица
ampere	S.I. Unit of electric current, one ampere is the flow of one coulomb of charge per second.	ампер	ампер
amplitude	The maximum absolute value attained by the disturbance of a wave or by any quantity that varies periodically	ауытқу шегі	амплитуда
bar	A unit of pressure, equal to 10 ⁵ Pascals	бар	бар
Bernoulli's theorem	The total energy per unit volume of a non-viscous, incompressible fluid in a streamline flow remains constant	Бернулли теоремасы	теорема Бернулли
beta particle	An electron emitted from a	бета бөлшек	бета частица



	nucleus in radioactive decay		
Boyle's law	For a given mass of a gas at constant temperature, the volume of the gas is inversely proportional to the pressure.	Бойль заңы	Закон Бойля
Brewster's law	States that the refractive index of a material is equal to the tangent of the polarizing angle for the material.	Брюстер заңы	Закон Брюстера
Brownian motion	The continuous random motion of solid microscopic particles when suspended in a fluid medium due to the consequence of ongoing bombardment by atoms and molecules.	Броундық қозғалысы	Броуновское движение
buoyant force	upward force on an object immersed in fluid.	итеріп шығарушы күш ығыстырушы	сила сопротивления выталкивающая сила
capacitor	Electrical device used to store charge and energy in the electrical field.	электр жинақтаушы аспап	конденсатор
Carnot's theorem	No engine operating between two temperatures can be more efficient than a reversible engine working between the same two temperatures.	Карно теоремасы	теорема Карно
centrifugal force	An outward pseudo force acting on a body in circular motion	орта тепкіш күш	центробежная сила



centripetal force	The radial force required to keep an object moving in a circular path; it is equal to mv^2/r .	ортаға тартушы күш	центростремительная сила
Charles' law	For a given mass of a gas at constant pressure, the volume is directly proportional to the temperature.	Чарльз заңы	закон Чарльза
Clausius' statement of second law of Thermodynamics	It is not possible that at the end of a cycle of changes heat has been transferred from a colder body to a hotter body without producing some other effect.	Термодинамиканың екінші заңының Клаузиус тұжырымдамасы	утверждение Клаузиуса второго закона термодинамики
conduction	The transfer of heat from a region of higher temperature to a region of lower temperature by increased kinetic energy moving from molecule to molecule.	өткізгіштік, электрондардың қозғалысы	проводимость, передвижение электронов
convection	The transfer of heat by the actual transfer of matter.	конвекция	конвекция
Coulomb's law	The force between any two charges is directly proportional to the product of charges and inversely proportional to the square of the distance between the charges.	Кулон заңы	закон Кулона
decibel	Unit of sound level, if P1 & P2 are two amounts of power, the first is said to be n decibels greater, where $n = 10 \log_{10}$	децибел	децибел



	(P1/P2)		
diffraction	The bending of light around the corners of an object	дифракция, сәулелердің сынуы	дифракция, лучепреломление
diopetre	Unit of power of a lens.	диоптрия	диоптрия
Doppler effect	The apparent change in the frequency of a wave due to relative motion between the source and the observer.	Допплер әсері	эффект Допплера
electric potential energy	The energy due to the position of a charge near other charges.	электр энергиясы әлеуеті	электрический потенциал энергии
electrical conductors	The materials that have free electrons and allow current to flow through them.	электр өткізгіштері	электрические проводники
electrical insulators	The materials which do not allow current to flow through them.	электр оқшаулағыштары	электрические изоляторы
electrical resistance	The property to oppose the flow of current.	электр кедергісі	электрическое сопротивление
electromagnetic induction	he process in which current is induced in a coil whenever there is a change in the magnetic flux linked with the coil.	электромагниттік индукция	электромагнитная индукция
Faraday	The electric charge required to liberate gram equivalent of a substance. 1 Faraday = 96485 coulomb/mole.	Фарадей	Фарадей



Fermat's principle	An electromagnetic wave takes a path that involves the least time when propagating between two points	Ферма заңы	закон Ферма
fluids	Matter that has the ability to flow	флюидтер	флюиды
free fall	The motion of a body under the effect of gravity alone.	еркін құлау	свободное падение
gamma ray	A highenergyphoton.	гамма сәулесі	гамма - луч
Graham's law of diffusion	The rate of diffusion of a gas is inversely proportional to the square root of its density.	диффузияны ң Грэм заңы	закон диффузии Грэма
gravitation alconstant (G):	The constant of proportionality in Newton's law of gravitation, $G = 6.67 \times 10^{-11} \text{ Nm}^2/\text{kg}^2$	гравитациял ық тұрақтылық	гравитационная константа
gravity	The gravitational attraction at the surface of a planet or other celestial body.	гравитация, тартылыс	гравитация, притяжение
Heisenberg uncertainty principle	It is impossible to have a particle that has an arbitrarily well-defined position and momentum at the same time.	Гейзенбергті ң белгісіздік заңы	закон неопределенност и Гейзенберга
hertz:	The unit of frequency, also known as cycles per second.	герц	герц
Hooke's law	Within elastic limit, stress is directly proportional to strain.	Хук заңы	закон Хука
Huygen's principle	ach point on a light wavefront can be regarded as a source of secondary waves, the envelope	Гюйгенс заңы	закон Гюйгенса



	of these secondary waves determining the position of the wavefront at a later time		
impulse	The product of force and time for which force acts, also equal to the change in momentum.	импульс	импульс
Internal energy	Sum of the kinetic energy and potential energy of all molecules of an object.	ішкі энерия	внутренняя энергия
Isothermal process	In which temperature remains constant.	изотермиялы қ үдеріс	изотермический процесс
isotope	atoms of the same element with same atomic no (no of protons) but different mass no (no of neutrons)	изотоп	изотоп
joule	The unit of work and energy, 1J = 1N-m.	джоуль	джоуль
Joule's law of heating	The heat produced when a current 'I' flows through a resistor 'R' for a given time't' is given by $Q = I^2Rt$.	Джоуль заңы	закон Джоуля
Kelvin's statement of second law of thermodynamics	It is impossible that, at the end of a cycle of changes, heat has been extracted from a reservoir and an equal amount of work has been produced without producing some other effect.	Термодинамиканың екінші заңының Кельвин тұжырымдамасы	утверждение Келвина второго закона термодинамики
Kinetic energy	The energy possessed by a body due to its motion, it is equal to $\frac{1}{2} mv^2$, where m is the	кинетикалық энергия	кинетическая энергия



	mass and v is the speed of the body		
Kepler's first law of planetary motion	Each planet moves in an elliptical orbit, with the sun located at one of the foci.	планеталар қозғалысының бірінші Кеплер заңы	первый закон движения планет Кеплера
Kepler's second law of planetary motion	The radius vector joining the planet to the sun covers equal areas in equal intervals of time.	Планеталар қозғалысы Кеплердің екінші заңы Кеплердің планеталар қозғалысының екінші заңы	второй закон движения планет Кеплера
Kepler's third law of planetary motion	The square of the period of a planet is directly proportional to the cube of the radius of the semi major axis of the orbit.	Планеталар қозғалысы Кеплердің үшінші заңы	третий закон движения планет Кеплера
laser	A device that produces coherent light by stimulated emission of radiation.	лазер	лазер
law of conservation of energy	Energy can neither be created nor destroyed, but can be transformed from one form to another.	энергияның сақталу заңы	закон сохранения энергии
law of conservation of mass	Mass can neither be created nor destroyed in a chemical reaction.	массаның сақталу заңы	закон сохранения массы
Lenz's law	The induced current always flows in such a direction that it	Ленца заңы	закон Ленца



	opposes the cause producing it.		
light-year	The distance traveled by light through empty space in one year, it is equal to 9.46×10^{12} km.	жарық жылы	световой год
luminosity	The total amount of energy radiated each second from the surface of a source.	жарықтың жарықтылығы	яркость света
magnetic field	The region around a magnet where its magnetic force is experienced by other magnetic objects	магнит өрісі	магнитное поле
magnetic wave	The spread of magnetization from a small portion of a substance where an abrupt change in the magnetic field has taken place.	магнит толқыны	магнитная волна
Malus law	The intensity of the light transmitted from the analyzer varies directly as the square of the cosine of the angle between the plane of transmission of analyzer and polarizer.	Малус заңы	закон Малуса
mechanical energy	The sum of energy possessed by a body due to its position, configuration and motion.	механикалық энергия	механическая энергия
mole	The amount of a substance that contains Avogadro's number of atoms, ions, molecules, or any other chemical unit; a mole is 6.02×10^{23} atoms, ions, or	моль	моль



	other chemical units.		
newton	he unit of force, equal to the force that will produce an acceleration of 1m/s ² in a body of mass1 kg.	НЬЮТОН	НЬЮТОН
Newton's first law of motion	A body continues in a state of rest or of uniform motion in a straight line unless it is acted upon by an external (unbalanced) force.	Ньютонның бірінші заңы	первый закон движения Ньютона
Newton's law of gravitation:	The gravitational force of attraction acting between any two particles is directly proportional to the product of their masses, and inversely proportional to the square of the distance between them. The force of attraction acts along the line joining the two particles.	Ньютонның гравитация заңы	закон гравитации Ньютона
Newton's second law of motion	The rate of change of momentum is directly proportional to the force applied.	Ньютонның екінші қозғалыс заңы	второй закон движения Ньютона
Newton's third law of motion	to every action there is an equal and opposite reaction.	Ньютонның үшінші қозғалыс заңы	третий закон движения Ньютона
ohm	Unit of resistance; 1 ohm = 1volt/ampere.	ОМ	ОМ
Ohm's law	The current flowing through a conductor is directly proportional to the potential	Ом заңы	закон Ома



	difference across the ends of the conductor.		
pascal	A unit of pressure, equal to the pressure resulting from a force of 1 Newton acting uniformly over an area of 1m ² .	Паскаль	Паскаль
Pascal'slaw	The pressure exerted on a liquid is transmitted equally in all directions.	Паскаль заңы	закон Паскаля
Pauli Exclusion Principle	No two electrons in an atom can have the same four quantum numbers; thus, a maximum of two electrons can occupy a given orbital.	Паулидің шығару принципі	принцип исключения Паули
Peltier effect	The evolution or absorption of heat at the junction of two dissimilar metals carrying current.	Пельтье эффектiсі	эффект Пельтье
photons	A quanta of energy in light wave; the particle associated with light.	протон	протон
Planck's constant	The ratio of energy to frequency, equal to 6.63 x 10 ⁻³⁴ joule-sec.	Планк тұрақтылығы	константа Планка
plasma	A highly ionized gas composed entirely of equal number of positive ions and electrons.	плазма	плазма
positron	An elementary particle having same mass as that of an electron but equal and positive charge.	позитрон	позитрон



power	The rate of doing work.	күш	сила
pressure	The force per unit area.	қысым	давление
quantum mechanics	Model of the atom based on the wave nature of subatomic particles, the mechanics of electron waves; also called wave mechanics.	квант механикасы	квантовая механика
radiation	The emission and propagation of waves transmitting energy through space or through some medium.	радиация	радиация
resonance	When the frequency of an external force matches the natural frequency of the body then the body oscillates with large amplitude	резонанс	резонанс
Scalar Quantity	A physical quantity, which is described completely by its magnitude.	скалярлық шама	скалярная величина
Snell's law	The ratio of $\sin i$ to $\sin r$ is a constant and is equal to the refractive index of the second medium with respect to the first	Шелл заңы	закон Шелла
speed	The distance traveled by a body per unit of time.	жылдамдық	скорость
Stefan-Boltzmannlaw	The amount of energy radiated per second per unit area of a perfectly black body is directly proportional to the fourth power of the absolute temperature of the surface of	Стефан Больцман заңы	закон Стефана-Больцмана



	the body.		
Thermal capacity	The quantity of heat required to raise the temperature of the whole body by 1 .	жылусыйымдылық	теплоемкость
Transverse wave	A wave in which the particles of the medium oscillate in a direction perpendicular of the direction of propagation of wave.	көлденең толқын	поперечная волна
Ultrasonic sound	Sound waves of frequencies above 20,000Hz.	ультрадыбыстық	ультразвуковой звук
Vander Wall's force	General term for weak attractive intermolecular forces	Ван-дер-Вальс күші	сила Ван-дер-Вальса
velocity	Distance traveled by a body in a particular direction per unit time or the displacement of the body per unit time. It is a vector quantity.	жылдамдық	скорость
volt	Unit of potential difference, equivalent to joule/coulomb.	вольт	вольт
watt	S.I. unit for power; equivalent to joule/sec.	Ватт (өлш.бірл.)	Ватт (ед.изм.)
Young's modulus of elasticity	The ratio of normal stress to the longitudinal strain produced in a body.	Юнг серпімділік модулі	модуль упругости Юнга
Zeeman Effect	The splitting of the spectral	Зееман	Эффект зеемана



	lines in a spectrum when the source is exposed to a magnetic field.	эффeктісі	
Zero thlaw o fthermodynami cs	If body A is in thermal equilibrium with body B, and B is also in thermal equilibrium with C, then A is necessarily in thermal equilibrium with C.	термодинамиканың нөлдік заңы	нулевой закон термодинамики

Computer Science Информатика Информатика

English	Definition	Kazakh	Russian
anti-virus software	a <u>program</u> that finds and removes <u>viruses</u> from a computer	антивирустық программа лық қамтым	антивирусное программное обеспечение
app	a self-contained <u>program</u> or piece of software; an application, especially when downloadable to a mobile device	қосымша	приложение
backup	a copy of files from a computer's <u>hard disk</u> , usually made on some external medium such as <u>CD-ROM</u> or <u>flash drive</u> . A backup is made in case the hard disk file(s) are erased or damaged	резервті көшірме	резервное копирование
bit, bytes	a bit is the smallest piece of information that computers use. For simplicity, a PC uses bits in groups of 8 called bytes (8 bits = 1 byte).	бит, байт	бит, байт



Bluetooth	a way of communicating wirelessly over short distances between electronic devices (for example computer and mobile telephone)	Bluetooth	Bluetooth
bug	a (small) defect or fault in a <u>program</u>	қателік	ошибка
cache	a kind of <u>memory</u> used to make a computer work faster	аса жедел жад	сверхоперативная память
CPU	Central Processing Unit. This is a PC's heart or "brains".	орталық процессорлы құрылғы	центральное процессорное устройство
data	means the information (text, pictures, audio etc) that you create or share on a computer, as opposed to the <u>programs</u> that manipulate the data.	мәліметтер қоры (базасы)	база данных
DOS	Disk Operating System. The original system used for PCs, where you typed in commands instead of pointing and clicking.	амалдық жүйе дискі	диск операционной системы
driver	A program that controls the operation of a device such as a printer or scanner.	драйвер	драйвер,
Electronic mail	messages sent from one computer to another. You can see email on the screen or print it out.	электронды пошта	электронная почта
file	a specific computer record. It could contain <u>data</u> such as text (eg essay.doc), or	файл	файл



	a <u>program</u> such as paint.exe.		
folder	a sub-division of a computer's <u>hard disk</u> into which you put files	бума	папка
font	a particular sort of lettering (on the screen or on paper). Arial is a font. Times New Roman is another	компьютерлі к қаріп	компьютерный шрифт
Hard disk	the main disk inside a computer used for storing <u>programs</u> and information. It is hard because it is metal.	қатты диск	жесткий диск
icon	a small image or picture on a computer screen that is a symbol for <u>folders</u> , <u>disks</u> , <u>peripherals</u> , <u>programs</u> etc	бейне	образ
Kb, Mb, Gb	kilobytes, megabytes, gigabytes. Used to measure computer <u>memory</u> and storage.	килобайт, мегабайт, гигабайт	килобайт, мегабайт, гигабайт
memory	Memory is for the temporary storing of information while a computer is being used	жад	память
MHz - Megahertz	This describes the speed of computer equipment. The higher the MHz the better the performance.	мегагерц	мегагерц
modem	equipment connected to a computer for sending/receiving digital information by telephone line.	модем	модем
operating	the basic software that	оперативті	оперативная



system (OS)	manages a computer (for example, Windows 10, OS X, Unix, iOS).	жүйе	система
OCR	Optical Character Recognition. OCR lets a PC read a fax or scanned image and convert it to actual lettering	символдарды оптикалық тану	оптическое распознавание символов
parallelport	a socket at the back of a computer for connecting external equipment or <u>peripherals</u> , especially printers	параллельді порт	параллельный порт
peripheral	any equipment that is connected externally to a computer. For example, printers, <u>scanners</u> and <u>modems</u> are peripherals.	қосымша (құрылғы)	периферийный
pixel	the image that you see on the screen is made of thousands of tiny dots, points or pixels	Пиксель	Пиксель
program software	operates a PC and does various things, such as writing text (word-processing program), keeping accounts (accounts program) and drawing pictures (graphics program)	бағдарламалық жабдықтама	программное обеспечение
resolution	the number of dots or <u>pixels</u> per inch (sometimes per centimetre) used to create the screen image	кеңейтілулер	разрешение
scanner	equipment for converting paper documents to electronic documents that can be used by	сканнер	сканнер



	a computer		
information retrieval system	a set of tools designed for the rapid search and dissemination of information based on computer technology.	ақпаратты іздеуші жүйе	информационная поисковая система
wide-format addressing	implementation of a reference to a device or data element at its address	кеңпішімді адресітеу	широкоформатная адресация
call forwarding code	a code to redirect a call to another subscriber	қайта адресітеу коды	код переадресации
dialog button	small icons that open an appropriate dialog or task pane	диалог терезесін ашу батырмасы	кнопка вызова диалогового окна
database integrity	the maintenance of, and the assurance of the accuracy and consistency of, data over its entire life-cycle	деректер базасының тұтастығы	целостность базы данных
interface line	a signal transmission line for the corresponding physical environment between the subscribers of the interface, the functioning of which is performed in accordance with the specified protocol of exchange.	интерфейс желісі	линия интерфейса
installing remote access	the act of connecting to a data-processing system from a remote location	шалғайдан қолжетім орнату	установка удаленного доступа
memory cell	a building block of computer	жад ұяшығы	ячейка памяти



	data storage		
data router	a networking device that forwards data packets between computer networks	деректер бағдарлаушы	маршрутизатор данных
USB	abbreviation of "universal serial bus"; a standardized connection for attaching devices to computers etc	USB	USB
USB flashdrive	a small, external device for storing data; it connects through the USB socket	USB	USB
virus	a small, unauthorized <u>program</u> that can damage a computer	вирус	вирус
Wi-Fi	a system for communicating without wires over a computer network	Wi-Fi	Wi-Fi
Windows	anoperatingsystem	Windows	Windows
WWW	WWW are initials that stand for World Wide Web. The Web is one of the services available on the <u>Internet</u>	WWW	WWW

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