ENGLISH

FOR MATHEMATICIANS AND PHYSICISTS

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Пікір жазғандар:
Әл-Фараби атындағы ҚазҰУ-нің шетел филологиясы және жалпы тіл білімі кафедрасының доценті м.а., ф.ғ.к. М.А. Жанабекова
ҚазМем КызПУ, практикалық шетел тілдері кафедрасының меңгерушісі п.ғ.к. Ұ.Р.Қансеитова

Ұсынылып отырған «Ағылшын тілі» оқу құралы ағылшын тілі пәнінен білім алып жатқан «5В050109-математика», «5В050110-физика» мамандығының 1-2 курс студенттеріне (В1,В2 деңгейлері бойынша) арналған. «Ағылшын тілі» оқу құралында кәсіби бағытта ұсынылған мәтіндер, өздік жұмыс тапсырмалары, жаттығулар және Елбасының: «Қазақстанға үштұғырлы тіл қажет, ол – еліміздің жарқын болашағының кепілі» - деген сөзін тірек ете отырып, кәсіби деңгейде сөздік қорын дамыту мақсатында үш тілде берілген терминологиялық сөздіктер тіл үйренушілер үшін білімдерін шыңдай түсуге септігін тигізеді деген ойдамыз.

Алғысөз

Ағылшын тілі – халықаралық тіл. Ағылшын тілі –БҰҰ-ның алты тілінің бірі болып саналады. Ағылшын тілі –дүние жүзіне ең кең таралған тіл.

«Қазақстан бүкіл әлемде үш тілді пайдаланып жоғары білімді ел ретінде танылуға тиіс. Бұлар қазақ тілі-мемлекеттік тіл, орыс тілі-ұлтаралық қатынас тілі және ағылшын тілі – жаһандық экономикаға ойдағыдай кірігу тілі»-деп Елбасымыз өз жолдауында айтып кеткен. Ағылшын тілі – қазіргі заманда жаһандық тіл. Мектеп табалдырығынан бастап жоғарғы оқу орындарында ағылшын тілін үйрету айрықша мәртебеге ие. Ағылшын тілінің Қазақстандағы рөлінің арта түсуі қазақ тілінің мемлекеттік мәртебесін іске асыру мәселесін маңызды ете түсуде.

Елбасымыздың міндет етіп қойған бәсекеге қабілетті мемелекет құруда жас ұрпақтың тигізер үлесі зор. Бүгінгі таңда жоғарғы оқу орындарында шет тілін кәсіби деңгейде оқыту басты орында тұр. Яғни әрбір студент өз мамандығына байланысты шет тілін жетік меңгеріп, одан әрі қарай дамыта алады.

Қазақстандық білім беру саласында қойылған басты талаптардың бірі- өмірден өз орнын таңдай алатын, өзара қарым-қатынаста өзін еркін ұстап, кез келген ортаға тез бейімделетін, белгілі бір ғылым саласынан білімі мен білігін көрсете алатын, өз ойы мен пікірін айта білетін мәдениетті жеке тұлға қалыптастырып, тәрбиелеу.

Осы мақсатта жоғары оқу орындарында кредиттік оқу жүйесі бойынша ағылшын тілі пәнінен білім алып жатқан 5В050109-«Математика», 5В050110 –«Физика» мамандығының 1-2 курс студенттеріне (В1,В2 деңгейлері) оқу құралын ұсынып отырмыз. «Ағылшын тілі» көмекші оқу құралында кәсіби бағытта ұсынылған мәтіндер, жаттығулар және үш тілде берілген терминологиялық сөздік тіл үйренушілер үшін білімдерін шыңдай түсуге септігін тигізері сөзсіз. Шет тілін оқытуда заманауи білім берудің өзекті бағыттарын дамыту және оқу үдерісіне үш тілде оқытудың инновациялық технологияларын

пайдалану бәсекеге қабілетті мамандар дайындауға бағытталған көп тілді білім беруді жүзеге асырудың тиімді кепілі болып табылады. Мәтін соңында өздік жұмыс тапсырмалары берілген. Өздік жұмыс студенттердің пәнді жүйелі түрде меңгеру, игерілген білім, білік, дағды, түсінік пен құзырлықтарды бекіту, дәріс және семинар сабақтарына жан-жақты дайындалуын қамтамасыз етіп, өздігімен тіл үйрену дағдыларын қалыптастырады. Өздік жұмыс студенттердің өз біліміне деген жауапкершілігін арттырып және қолданатын әдіс-тәсілдерді таңдауға баулиды. Бүгінгі күні мұндай біліктерді меңгеру білім алу үрдісінің басты мақсатына айналып отыр.

Ағылшын тілі пәнінен білім алып жатқан 5B050109-«Математика», 5B050110-«Физика» мамандығының 1-2 курс студенттеріне ұсынып отырған «Ағылшын тілі» оқу құралының қажеттілігі мен пайдасы мол екендігіне сенімдіміз.

PART 1   TEXTS

The place of Mathematics in the modern world

Mathematics is the oldest of all sciences. The story of mathematics goes back to the very dawn of human history. Mathematics is the product of many lands and it belongs to all mankind.

Imagine that at all times and practically in all places people thought constantly of supplies of food, clothing and of shelter. Sometimes there was not enough food or other things. So even the most primitive people were always forced to think of how many people they had, how much food and clothing they possessed and how long all these things would last. These questions could be answered only by counting and measuring. Now you understand how necessary it was for the early people to become familiar with mathematical ideas, processes and facts.

In the course of time counting led to arithmetic and measuring led to geometry. Arithmetic is the study of number, while geometry is the study of shape, size and position. These two subjects are regarded as the foundations of mathematics. Now mathematics is related to a very large number of important human activities.

Make a trip through any modern city. Look at the big houses, plants, laboratories, museums, libraries, hospitals and shops, at the system of transportation and communication.

You can see that there is practically nothing in our modern life which is not based on mathematical calculations. In co-operation with science mathematics made possible our big buildings, railroads, automobiles, airplanes, ships, subways, bridges.

There are very many things in our age which depend on mathematics and there will be even more in future. Mathematics will have a wider application than it has now. That is why we can say that mathematics is a truly universal servant of mankind.

Questions:

1. Why do we say that mathematics belongs to all mankind?
2. Why are arithmetic and geometry regarded as the foundations of mathematics?
3. Why can we say that mathematics is a truly universal servant of mankind?

Read the text and send its contents in the Kazakh (Russian) language:

About mathematics

Some people think of mathematics as a tiresome and endless series of sums which must be added or amounts which must be divided, and imagine that a mathematician is a kind of human computer. But a close look at mathematics, "the queen of sciences", shows that the mathematical world is full of beautiful and intriguing problems, many of which are very important.

The work of mathematicians may be divided into pure mathematics which is an investigation of mathematical theories and ideas, and applied mathematics which deals with the application of mathematical theories to problems in other branches of science. The development of the theory of equations by Galois is an example of pure mathematics. And the work in cybernetics is an outstanding example of applied mathematics.

All well-known mathematicians, ancient of modern, have contributed greatly to the development of mathematics.

Read the text and send its contents in the Kazakh (Russian) language:

Archimedes

Archimedes was the greatest mathematician of antiquity.

He was born in the Greek city of Syracuse on the island of Sicily about 287 B.C. Archimedes died in 212 B.C. Roman historians have related many stories about Archimedes.

There is a story which says that once when Archimedes was taking a bath, he discovered a phenomenon which later became known in the theory of hydrostatics as Archimedes' principle. He was asked to determine the composition of the golden crown of the King of Syracuse, who thought that the goldsmith had mixed base metal with the gold. The story goes that when the idea how to solve this problem came to his mind, he became so excited that he ran along the streets shouting Eureka, eureka (I have found it). Comparing the weight of pure gold with that of the crown when it was immersed in water and not immersed, he solved the problem.

When Syracuse was taken by the Romans, a soldier commanded Archimedes to go to the Roman general, who admired his genius. At that moment Archimedes was absorbed in the solution of the problem. He refused to fulfill the command and was killed by the soldier.

Archimedes made many discoveries. He added new theorems to the geometry of the sphere and the cylinder and stated the principle of the lever. He also discovered the law of buoyancy.

Read the text and send its contents in the Kazakh (Russian) language:

Euclid

Little is known to us about the life of Euclid. Very few of his works have survived. It is believed that Euclid lived in Egypt in approximately 330-275 B.C. When the famous Library of Alexandria was founded, he was invited to open the mathematical school. His most famous book on geometry which was called "Elements" was written by him between 330 and 320 B.C. This fundamental book written more than 2000 years ago, is still regarded as the best introduction to the mathematical sciences. The book has been translated into many languages. Euclid's "Elements" is still used in Britain as a textbook on geometry. It is said that when Euclid was asked if there was an easier way to master geometry than by studying "Elements", Euclid said, "There is no royal road to geometry".

Besides "Elements" there is a collection of his geometrical theorems "The Data". The first printed edition of Euclid's books appeared in the 15th century.

Electricity

Electricity has been known since the days of the ancient Greeks. The world "electricity" comes from the Greek word for amber. The Greeks discovered that, if a piece of amber was rubbed with fur, it would pick up bits of straw or other light-weight materials. Later scientists discovered that other materials would act like amber. They could be given charges of electricity. Charges of this kind are called charges of frictional, or static, electricity. They are not very useful.

In 1800 an Italian scientist named Volta found a way of getting an electric current. He invented an electric cell. But electricity became truly useful after Michael Faraday invented a machine to push electrons on their way. A machine which furnishes a current of electricity is called a generator. Today we use both cells and generators.

A battery is made up of two or more electric cells joined together. We use batteries in such things as portable radios, flash-lights, electric games, and automobiles. The current which comes to our houses, stores and offices and lights our streets comes from generators.

In buying and using electrical appliances there are some terms everyone needs to know. "Volt" is one. "Ampere" is another. "Watt" is a third. The push that forces a current through a circuit is measured in volts. A volt is a measure of electrical force. Most household appliances are built for a voltage of either 127 or 220. An ampere is a measure of the strength of a current. Electric lamp bulbs are marked in watts. A watt is a measure of electrical power. A kilowatt is 1000 watts.

Questions:

1. Since when has electricity been known?

2.What did the Greeks discover?

3.What terms does everyone need to know in buying and using electrical appliances?

Atoms

All the millions of substances in the world are built of only about a hundred simple substances. We call these simple substances elements. The very smallest bit of iron is an atom. Iron, for instance, is one of the elements. The very smallest bit of iron is an atom of iron.

Atoms are so tiny that it is hard to imagine how tiny they are. In a thimbleful of air there are more atoms than you could count if you lived to be a million years old. Of course, atoms are too small to be seen even with powerful microscopes. We know about them only from the way they act.

There can be millions of different substances because atoms of different kinds can joint together in different ways. Atoms of oxygen and atoms of hydrogen, for instance, can join to form water. They can join in different proportions to form hydrogen peroxide.

Atoms are so small that it is almost unbelievable that anything could be smaller. But atoms are made up of even smaller particles. Every atom has a centre, or nucleus. The nucleus of an atom always has in it one or more particles called protons. In the case of every element except hydrogen it has particles called neutrons in it, too. Traveling around the nucleus there are one or more tiny particles called electrons.

The atoms of a few rare elements gradually break down by themselves. They shoot out some of the particles they are made of. As they do, they give off energy, mostly in the form of heat and light. These elements, we say, are radioactive. Radium is one of them. Uranium is another.

About 30 years ago scientists found a way of splitting atoms artificially and making them give off energy. They used machines called atom-smashers to hurl parts of atoms against the nucleus of an atom with so much force that it would split the nucleus. The splitting of atoms is called atomic fission.

After they found out how an atom can be split, scientists found out how to use the splitting of one atom to set off the splitting of other atoms. They discovered, in other words, how to bring about a chain reaction.

In atomic fission it is the nucleus that is split. For this reason, atomic energy is often called nuclear energy. Now scientists have found how to control the splitting of atoms. They have worked out ways of making atomic fission supply a steady amount of energy and serve mankind. Some power stations are already using atomic energy to generate electricity for peaceful aims.

Questions:

1. What is an atom?

2.Why isatomic energyoften called nuclear energy?

3. For what purposes is atomic energy used in the Kazakhstan?

Geometry

The word "geometry" comes from the Greek words goes and metron which mean respectively "earth" and "measure". Geometry probably appeared with the efforts to survey land. Geometry is the basis of many things that we use today. It is a study of the size, shape and position if figures in space.

Geometry has practical value. It is necessary for people in many occupations and it is also necessary in the study of physics, engineering, architecture and related subjects.

In geometry we use such terms as triangle, angle, bisector, perpendicular and circle. To develop facts about geometric concepts, we prove statements concerning them. The statements we accept

without proof are called postulates, or axioms, or assumptions. Statements that we can prove are called theorems or corollaries. The basic figures in geometry are points, lines and planes.

We represent a point on paper by a dot, though the dot is not a real geometric point. A geometric point is a mental concept, it has no length, breadth or thickness, that is, no size. But if we want to make a picture of a point, we can use a dot and place a capital letter near it. Thus,. A represents a point.

Like a point, a geometric line is a mental concept. To represent a straight line we draw a picture of a line along a ruler. A straight line is named by any two points on it or by a small letter near it.

In space there are sets of points which we call planes. Objects with flat surfaces, such as a table, or a mirror, are planes, but no matter how flat a surface is, it is not a geometric plane. A geometric plane cannot be seen – it can only be imagined. A plane is most often represented as a parallelogram.

Questions:

1. Why do we study geometry?

2. What does geometry deal with? (What does geometry study?)

3. What are the basic figures in geometry?

Read and translate the text into Kazakh (Russian)language:

Operations with fractions

In order to express in brief form the relations between numbers we use signs of operation. Signs of operation are marks that tell us how the numbers must be treated.

Let us consider how to perform operations with fractions, such as addition, subtraction, multiplication and division.

Addition is indicated by a plus sign (+). Thus, in arithmetic, to indicate that 4 is to be added to 7, we write 7+4.

Subtraction is indicated by a minus sign (-). Thus, in arithmetic, to indicate that 4 is to be subtracted to 7, we write 7-4.

Operations with fractions are performed in the same way as are operations with whole numbers.

If there are two fractions which have the same denominator, add or subtract them by adding or subtracting the numerators. For example:

If the denominators are not equal, find the lowest common multiple of the denominators and perform the operations as in the previous case.

Multiplication is indicated by a "times" sign (x) or by a dot placed between the numbers that are to be multiplied.

Division is indicated by using the division sign (:) or by writing the dividend above the divisor with a bar between them.

If you must multiply one fraction by another, multiply their numerators and denominators separately:

To divide one fraction by another, multiply the first by the reciprocal of the second. For example:$3/5 \div 1/2$

Dividing two fractions is the same as multiplying the first fraction by the reciprocal of the second fraction. The first step to dividing fractions is to find the reciprocal (reverse the numerator and denominator) of the second fraction.
Next, multiply the two numerators.
Then, multiply the two denominators.

Circles

The circle has many properties which no other plane figure possesses. For example, it is symmetric with respect to its centre and with respect to any of its diameters. Of all the plane geometric figures, the circle is the only one which can be rotated about a point without changing its position.

The circle very well harmonizes in composition with other geometric figures. The circle is a very useful figure. Without using the circle there would be no watches, clocks, bicycles, automobiles or ships.

A circle is a closed plane curve, all points of which are equidistant from a point within, called the centre. Congruent or equal circles are circles that can be made to coincide. If two circles coincide, their centers coincide.

A radius of a circle is a line segment connecting the centre with any point on the circle. A chord is a line segment connecting any two points on the circle.

A diameter is a chord passing through the centre of the circle. A secant is a line which is obtained by intersecting a circle in two points. A tangent is a line touching a circle at one point, and only one. This point is called the point of tangency or point of contact. The line of centers of two circles is the straight line determined by the centers of the circles.

An arc of a circle is the part of a circle included between two of its points. An arc is usually named by its end points or by a small letter near it.

From definitions and a study of the circle we can state the following assumptions relating to a circle:

Circles having equal radii are equal, and conversely.

A point is within, on, or outside a circle if its distance from the centre is less than, equal to, or greater than the radius; and conversely.

Two minor arcs, or two major arcs, coincide if their end points and centers coincide; and conversely.

Questions:

1. What are the properties of the circle?

2. When are circles called congruent?

3. What is an arc?

The development of algebra

This article describes in brief the development of algebra. We should remember that the beginning of algebraic thinking dates back to the days of ancient Babylonia and Egypt.

Algebra developed slowly in comparison with arithmetic and geometry. What is now known as elementary algebra is largely the work of mathematicians of the 16th and 17th centuries. Our present knowledge of Babylonian mathematics is possible thanks to the translation of mathematical records found on ancient tablets. These tablets are now preserved in the world's leading museums. The information obtained in this way proves that as early as 2000 B.C. the Babylonians had advanced very far in their study of mathematics. Using algebraic methods they were able to solve many problems.

Something must also be said about the mathematical knowledge of the early Egyptians. There are manuscripts, written on papyrus and dating from about 1850 B.C., which give us a clear picture of what they knew. Some of the problems they dealt with are of the kind we should now solve by using equations.

Our present symbols of operations are of comparatively modern origin. For example, the sign of equality (=) was invented by the English scholar Robert Recode and appeared in 1557. The origin of the use of letters in algebra to represent known or unknown quantities is also of great interest. Among the mathematicians who invented algebraic notation, we must mention the names of Viet a, Harriet, Descartes, Newton and Leibniz.

The term "algebra" was taken from the long title of one of the works of an Arabian mathematician who lived in Bagdad in the 9th century. The long title was shortened to al-jab and began gradually to take the form algebra. At one time there was much debate among scientists concerning the exact meaning of this title, but it may now be regarded as settled that the world al-jab really means the "science of equations".

Questions:

1. What can you say about the development of algebraic thinking in Babylonia and Egypt?

2. What can you say about the later development of algebra?

Read the text and send its contents in the Kazakh (Russian) language:

Physics

Sugar, rubber, glass, silver, milk, wood and modeling clay are all common substances. They are easy to tell apart and each one is useful in its own way. No one would think of trying to make an ink-pot out of milk, or a candle out of sugar. No one would make a bracelet of modeling clay, a dinner plate of silk. No one would try to drink wood or build a fire with water, no one would make a baseball bat of glass, or a baseball of silver. Every substance has, what scientists call, properties of its own. Yet all substances are alike in one way. They all weigh something, and they all take up room.

When scientists want to lump all substances together and talk about them, they use the word "matter". Every substance is a kind of matter. The science of physics is partly a study of matter. It explains how water can evaporate and become a gas as well as how it can freeze and become a solid. It explains why some substances are solids, some liquids, and some gases. It explains why butter melts more easily than iron and where a lump of sugar goes when it is put into hot coffee. It explains why a tire is more likely to blow out on a hot day than on a cold one. It explains many of the changes that go on around us.

But physics is also a study of energy – of light, heat, sound, electricity, magnetism, of the energy of moving bodies, and of atomic energy. One of the commonest of all questions is, "How does it work?" Many, many times we must go to the science of physics to get the answer. And most of the answers have something to do with energy. How does television work? How fast does sound travel? How can a camera take a picture? What are cosmic rays? What are the

problems in traveling through outer space? How does an airplane fly? These are a few questions that the science of physics answers.

Heat

In ancient times people thought that heat was a material just as air is. They called it caloric. When something got warm, they said, caloric flowed into it. When something cooled off, caloric flowed out of it. It did not bother them that they could not see caloric. They could not see air either.

Now we know that heat is not a material. It does not take up any space. It does nit weigh anything. It is a form of energy. Saying that heat is a form of energy means that it can be used to do work. When we see an automobile speeding down a road, we can be sure that it is being driven by the heat of burning gasoline.

There are many ways of producing heat. Fire, friction, and electricity are three of them. All of our ways of producing heat, however, would not keep the Earth warm enough for us to live on it if it were not for the Sun. In the Sun changes are going on that keep it so hot that we can hardly imagine how very hot it is. It has given the Earth heat for millions of years. It will keep on giving the Earth heat for millions of years to come.

Heat travels much better through some materials than through others. It travels easily through metals. We say that they are good conductors of heat. Wool, asbestos, and still air are three of the many poor conductors of heat. We use poor conductors to shut heat in or to shut it out. Heat can also travel without the use of any material conductor. The Sun's heat reaches us across almost empty space in the form of rays which the Sun sends out.

Most substances expand, or get bigger, when they are heated. Engineers must allow room for expansion when they build concrete roads and steel bridges. Heat brings about many other changes in materials. Heating some solid substances makes them melt. Heating liquids makes them change to a vapor, or gas. In many foods heat brings about changes which make the foods pleasanter to eat.

Cold means absence of heat. We can cool something only by making heat travel out of it. In a refrigerator we do not put cold into the food. we take hit out. Knowing how heat can be produced, how it travels, and what kinds of changes it brings about is important to all of us.

Very long ago people came to the idea of heating their homes. The idea of heating with fire is not new. Thousands of years ago the cave-men were using fire for heating. The Romans worked out a way of heating all the rooms in their houses with one fire. The fire was built in a room called the atrium. "Atrium" means "black room". It got its name from the soot that coated its walls. From this room hot air was carried through pipes to the rest of the house. Heating all the rooms of a building from one source of heat is called central heating. After the days of the Romans, the idea of central heating was given up for 1500 years. People went back to the idea of a fire in each room. And only much later central heating became popular again.

Questions:

1. What did ancient call heat?

2. What ways of producing heat do you know?

3. What is central heating?

Motion

A force is a push or a pull which affects the motion of matter. Like energy, force cannot be weight and does not take up space. However, force acts on matter to produce or prevent motion in a given direction. Although we cannot actually see force, we know it is present by the way it affects the movement of matter.

Does force always produce motion? In trying to lift a heavy object, it is possible to exert a great deal of force without moving the object. Thus all motion is caused by force, but not all forces produce motion.

When you pick up a book or throw a ball, you are using force to put the objects in motion. You may be already know that energy is needed to produce motion in matter. Therefore, the force you exert in moving

an object is actually produced by your muscles. When you ride an automobile, you know that is needed to move the car.

Force is also needed to slow down or stop the motion of an object. When you catch a ball, you use force to stop the motion of the ball. When you use the brake on a bicycle, you are using force to slow it down. To affect motion, force always requires some form of energy, such as mechanical, heat, electrical, chemical or nuclear.

We know that gravity attracts all matter toward the centre of the Earth. Since a falling object is in motion, the attraction of gravity is a force that produces this motion in matter. We also know that the pull of gravity, commonly measured as the weight of an object, is greater on objects having more mass than on less massive objects. Does this difference in the pull of gravity affect the rate of speed with which an object falls?

A careful experiment have shown that the speed with which an object falls from given height is the same regardless of mass. That is, a heavy object falls at the same rate of speed as a light object. Of course, if you drop a feather and a coin from the same height, the coin strikes the ground first. The feather falls slower only because it has a larger surface area. It is held back by the amount of air that must be pushed aside to let it fall. This air friction opposes the motion of the feather. If a feather and a coin are placed in a tube and all the air is pumped out, you would discover, that both objects falls at the same rate of speed.

There are forces which can overcome the force of gravity. An air plane rises above the ground because the forces acting on its wings lift it off the ground. A helicopter can come to a stop in the air because it is supported by the forces acting on its rotating wing. Rockets and spaceships can escape the Earth's gravitational pull when upward forces are produced that overcome their heights.

Scientists know that gravity it responsible for the holding together of our solar system and the entire Universe. Isaac Newton realized that every object on Earth and a space exerts a force of attraction on every other object, regardless of mass. This force of attraction is known as the law of universal gravitation.

Questions:

1. Does force always produce motion?

2. Who discovered the law of universal gravitation?

Read and translate the text into Kazakh (Russian)language:

Fermat

Pierre de Fermat was an outstanding French mathematician of the 17th century. He was born near Toulouse about 1601.He was the son of a leather merchant and received his early education at home. At the age of 30 he was given the post of councilor to the local parliament of Toulouse. While working as a lawyer he devoted a lot of his time to the study of mathematics. Though he made a lot of discoveries, he published   very little during his lifetime. He was in scientific correspondence with many leading mathematicians of his time and in this way influenced their ideas. He made important contributions to many brunches of mathematics.

  One of Fermat's outstanding contributions to mathematics is the founding of the modern theory of numbers. Fermat possessed extraordinary ability. It was Fermat's custom when reading to record the results of his meditations in brief marginal notes in his book. Many of Fermat's contributions to the field are given as marginal statements made in Diophantus' "The Arithmetica". He died in 1665. Five years after his death, in 1670, these notes appeared in a new edition of "Arithmetica". Many of Fermat's improved theorems have later been found to be correct.

Read and translate the text into Kazakh (Russian)language:

Plastics

Plastics are synthetic or natural materials which contain as an essential ingredient an organic substance of high molecular weight. They are solid in their finished state and, at some stage during manufacture or processing into finished articles can be molded or shaped by flow. Organic substances of high molecular weight are synthesized from relatively   simple   chemical   compounds   by   condensation   and

polymerization reactions yielding products called synthetic resins. They are also produced by modification by chemical treatment of naturally occurring substances of high molecular weight, such as natural resins, proteins, and cellulose.

The modern plastics industry deals chiefly with mould able materials manufactured from organic compounds.

A convenient classification of plastics can be made on the basis of their behavior toward heat.

Plastics are usually modified by addition of plasticizers, fillers, and pigments to give those properties desired for specific commercial uses and for processing. Plastics are sometimes used without the addiction of plasticizers of fillers for the fabrication of commercial products.

Read the text and send its contents in the Kazakh (Russian) language:

Fractions

There are 360 degrees in a revolution. If we divide a revolution into two equal parts, each part will contain 180 degrees. As we know, 180 degrees is regarded as one-half or of a revolution. Then if we divide a revolution into four equal parts, each part will have 90 degrees, which is called one-quarter or of a revolution. We can continue this process dividing a revolution into five equal parts, and each part will contain 72 degrees, which is a fifth or of a revolution. These parts, such as are called fractions**.** The top figure of the fraction is called the numerator and the bottom one – the denominator**.**

A fraction in which the numerator and the denominator are the same, is equal to 1. A proper fraction is a fraction whose numerator is less than its denominator, i.e. a fraction less than 1. For example, and are proper fractions. An improper fraction is a fraction whose numerator is greater than its denominator, i.e. a fraction greater than 1. For example, and are improper fractions. Since is also written as, we say that this fraction has a whole number and a proper fraction. A fraction of this kind is called a mixed number**.**

Primitive counting

The concept of number and the process of counting developed so long before the time of recorded history that the way of this development is unknown to us. Try to imagine how it probably took place.

People even in most primitive times had some number sense, they could distinguish between "more" and "less" when some objects were added to or taken from a small group of objects. With the gradual evolution of society simple counting became especially necessary. A tribe had to know how many members it had or how many enemies it had to fight. A man had to know how many sheep he had in his flock. Probably the earliest way of counting was by some simple method, using the principle of one-to-one correspondence. While counting sheep, for example, one finger per sheep was probably turned under. People could also count with the help of pebbles or sticks, scratches on a stone or knots in a string.

Then perhaps later, vocal sounds were developed the number of objects in a small group. And still later, with the development of writing, some symbols appeared to stand for these numbers.

This imagined development is supported by the descriptions of anthropologists in their studies of primitive peoples. In the earlier stages of the vocal period of counting different sounds were used, for example for "two men", "two sheep". Don't forget that the number "two", independent of any concrete association, appeared much later. Our present number words probably referred to sets of certain concrete objects, but these connections, except for that relating "five" and "hand", are now forgotten and lost to us.

Questions:

1. When did simple counting become necessary?

2. What does the principle of one-to-one correspondence mean?

3. What do our present number words probably refer to?

Read and translate the text into Kazakh (Russian) language:

Nuclear Physics

As its name suggests, nuclear physics is the study of the central cores(nuclei) of atoms. An atomic nucleus is a tightly knit group of particles called protons and neutrons. Since protons are positively charged and neutrons are uncharged, the nucleus as a whole carries a positive charge. Virtually the whole weight of an atom is concentrated in its nucleus. Any atom of any one chemical element contains the same number of protons. This is its atomic number. But atoms of the same element may contain different numbers of neutrons. An element may therefore have more than one atomic weight. Hydrogen has just one proton in its nucleus (and so it is element number 1 in the periodic table). But deuterium, or heavy hydrogen, has a neutron as well as a proton in its nucleus. Its atomic weight is therefore 1+1=2. Elements like hydrogen and deuterium, that have the same atomic number but different atomic weights, are called isotopes. Nearly all the elements occurring in nature are stable but many isotopes are radioactive, i.e. their nuclei break up, throwing out rays and particles. The nuclear physicist can make radioactive isotopes by bombarding elements with atomic particles in an atom-smasher, or particle-accelerator. This may be one of several types, such as cyclotrons, synchrotrons or linear accelerators. But the most fruitful source of radioactive isotopes for use as "tracers" in a wide variety of applications is the nuclear reactor. A reactor is used for controlling the type of nuclear disintegration called a chain reaction, when the products are able to trigger off the break-up of further atoms.

The General Theory of Relativity

In 1916, Albert Einstein published his General Theory of Relativity; this was to do for 20th century what Newton's work had done for the 17th. In 1907, at the age of twenty-eight, Einstein began digging at the roots of Newtonian mechanics. This re-examination of the fundamental premises of classical physics was prompted by Einstein's earlier work. Nearly two years before, while a clerk in a Swiss patent office, he had established an international reputation with the publication of a brief Special Theory of Relativity. This revolutionary theory, which was to lead ultimately to the liberation of atomic

energy, introduced several profound ideas which differed greatly from those proposed by Newton. Einstein showed that the Newtonian view was only an approximation of reality. But as it turns out, it proves to be a remarkably close approximation and so continues to be of fundamental importance to the world of science. In the service of scientists, Newton's mechanics still explains the motion of planets, the Moon, artificial satellites, interplanetary space vehicles, tides, airplanes, automobiles – in fact for any kind of motion in which the relativistic increases in mass do not become important. They become important, as Einstein showed in his Special Theory of Relativity, when the speed of light is approached. And even when the speed of light is approached, suitable corrections can easily be made in Newton's laws to compensate for relativity effects. As for the applications of Einstein's theory, it provides us with guidance in the field of cosmology, which deals with the large-scale features of the Universe and with its history. Bur perhaps most important of all, general relativity has added to our understanding and our appreciation of the Universe.

Questions:

1. When did Albert Einstein first publish a brief Special Theory of Relativity?

2. Does Einstein's theory show that Newton's mechanics had become antiquated?

3. What field of science is Einstein's theory of fundamental importance to?

Mars, the red planet

Of all the planets in the solar system the planet Mars is probably the one which stimulates the greatest interest and which poses some interesting problems to the observers. In one curious way this planet differs from all the others. Each and every one of these planets presents itself in a suitable position for study every year, or at intervals of approximately every 12 months.

This is not the case with planet Mars, for this planet presents itself for study at intervals of about 2 years and months (780 days). "Day" on Mars is about 24 ½Hours. The Martian year is 687 days: it takes 687 of our days for Mars to complete one revolution about the Sun. However, because Mars travels more slowly than the Earth, it takes 780 days before the two bodies come into line. When the Earth and the planet Mars are in a line with the Sun, and on the same side of it, then Mars is in opposition and so at its best position for study. Mars is a little over half the size of the Earth and it has a diameter of about 4,200 miles. As this planet is rather small, it can be observed easily only around the times of opposition, when it is near the Earth. These oppositions occur about every 2 years and 3 months. Mars has a very elliptical orbit and opposition distances can vary from 62 million to 35 million miles. A favorable opposition, when Mars is as close to the Earth as it can be, takes place every 15 or 17 years. Man's knowledge of Mars comes not only from the use of powerful telescopes but also from the use of unmanned spacecraft. Since 1962 space crafts have been travelling great distances in space to photograph and collect data about Mars and other planets. The picture and the information are then sent back to Earth by means of radio and TV signals.

Questions:

1. In what way does the planet Mars differ from all other?

2. How long is the Martian year?

3. When is the planet Mars in its position for study?

Isaac Newton

Isaac Newton, one of the greatest mathematicians of all times, was born in 1642 in the village of Wools Thorpe. His father, who died before Isaac was born, was a farmer. The farm was situated in a lonely place where there were no schools, and Newton got his education in a school in the neighboring village. At the age of twelve he was sent to the Grammar school. Soon he became the best pupil in his school. Newton did not take part in games like his schoolmates; he spent a lot of time constructing models. He made a model of a windmill, a wooden clock that was driven by water and other things. The mother

wanted her son to become a farmer, so where was fourteen, he began working on the farm. But soon his mother realized that it was no use teaching him farm work, because he was always busy reading books, constructing models or observing various phenomena in nature. At the age of eighteen he was sent to Cambridge University to study mathematics. Soon he became one of the best students there.

Once, when young Newton was sitting in the garden of his home, a ripe apple fell on his head. Newton took the apple and thought," Why does the apple fall down? Why doesn't it fall up instead?" So he came to the conclusion that the apple and the Earth were pulling each other and began to think that same laws of gravity extended far beyond the Earth. Gravity had been known long before Newton's time. Newton extended the law of gravity to the whole Universe. He realized that it was gravity which bound the Moon to the Earth, and the Earth and other planets to the Sun. Newton deduced and calculated the force of gravity acting between the Sun and the planets, thus establishing the law of gravitation in its most general form. But light was Newton's favorite study. Having made a number of experiments with lenses, he proved that white light consisted of rays of different colors, and that white light is a mixture of all these colored rays. These results laid the foundation of modern spectrograph and greatly enriched the field of optics. Newton developed a mathematical method indispensable in all questions concerning motion. This method is known by the name of differential and integral calculus. He discovered laws of motion which are still considered to be the basis of all calculations concerning motion. Newton died in 1727 at the age of eighty-four. He was buried in Westminster Abbey.

Questions:

1. Where was Newton sent to study mathematics?

2. What contribution did Newton make to the law or gravity?

3. What method did Newton develop in mathematics?

Read the text and send its contents in the Kazakh (Russian) language:

Beginning of modern science

About 300 years ago, modern science began. This science was a wonderful new way of finding out how and why things happen. It was based upon observation, upon experiment, and upon measurement. It was also based upon beliefs. Some of these beliefs have not yet been proved. Perhaps they never will be. Nevertheless, these beliefs are the foundation of modern scientific work.

Scientists believe, for example, that things happen with us a regular and orderly way everywhere in the Universe. This means that everything in our physical world can be predicated. If you cut your finger, it will bleed. If you throw something up into the air, it will fall to the ground. A scientist describes these regular and orderly ways as scientific principles. Scientists believe that everything in the physical world can be explained by these scientific principles. Scientists find the world as a fascinating place. They want to know more and more about why things happen as they do. Some scientists are especially interested in making new materials; they work in chemistry. Others are interested in heat, light, or electricity; they work in physics. Others want to know what happens inside the cells of plants or the human body; they work in the field of biology.

There are two kinds of work that scientists do. Some of them do basic research, called pure science. They study to find out the basic principles that govern our physical world. Other scientists work in applied science. In applied science, basic ideas are used for the solution of practical problems.

Geometry in the Arts

Geometry is the basis of many things that we use and enjoy today. We know that nature uses geometric forms in the construction of crystals and in the sphere of plant and animal life. Very often the beauty found in nature is due to some geometric pattern or to these of numbers which are associated with geometry.

Man has discovered many other applications of geometry to the arts are easily seen, but others are latent and can't be seen at once.

Geometry is applied in painting, sculpture and architecture. Artists, sculptors and architects often use geometric forms and proportions. In painting the geometric figures are usually latent and they must be discovered. Some of the early painters whose works were based on geometric principles were Raphael, Michelangelo and Leonardo Da Vinci.

The geometry in architecture is both latent and visible. Almost every building is a harmonious arrangement of geometric forms. One of the most famous buildings of all times is the Parthenon, the largest of the group of buildings on the Acropolis in Athens. It was built in the years 497-488 B.C. and is famous for its perfection of form.

The plane figures which are most often used in architecture are the circle, rectangle, square and equilateral triangle. The Romans used these figures in determining the proportions of triumphal arches and the Italians in constructing Gothic cathedrals.

Sculpture maces even greater use of geometry than painting, especially when it is combined with architecture. Great art critics say that the beautiful lines of a statue show the action of the most exact mathematics.

Questions:

1. How is geometry used in nature?

2. Where are geometric forms and proportions used?

3. Why is geometry important for architecture?

Read and translate the text into Kazakh (Russian) language:

Deuterium and heavy water

Deuterium is sometimes called heavy hydrogen. It is an isotope of hydrogen and makes up about one part in two hundred of that element. Normally found as a gas, deuterium has chemical properties very similar to those of hydrogen. Because the nucleus of a deuterium atom

is roughly twice as heavy as the nucleus of a hydrogen atom, these gases have different physical properties through which they can be separated.

Heavy water is composed of deuterium and oxygen (rather than hydrogen and oxygen as in ordinary water). It is present in ordinary water in very minute quantities. It resembles ordinary water in appearance but it is rather denser. It has a higher boiling-point and a higher freezing-point than ordinary water.

Heavy water is used as a moderator in the production of atomic energy. It produces a slowing-down of the neutrons emitted as the result of nuclear fission in an atomic pile.

Why formulas are important

There are at present millions of different homes all over the world, naturally, the problem of housing concerns every person.

Perhaps you have never thought of the amount of planning that even a small house requires before its construction begins. Many questions have to be solved before the architect designs such a house-questions of dimensions, of materials and of probable costs. After the blueprints have been completed, a lot of computing and figuring must be done. The same problems arise in manufacturing automobiles, airplanes and machinery. The computational work which is necessary in solving these problems is simplified by using formulas. They have been discovered and developed by the combined effort of mathematicians, scientists and engineers. That is why the formula has been called a key to knowledge. It contains the results of investigations that may have extended over many years. A mathematical formula arises when a mathematical rule or relation is written in the shorthand of algebra. Therefore it is very important to be able to discover the rule or relation which underlies such a formula. We can also obtain formulas from tables. There are many situations in which it is necessary to have tables showing related sets of numbers.

For instance there is a table used in a gasoline station for the purpose of determining the cost of the number of gallons bought by a motorist. If you look at this table, you will see that there is a uniform relation

between the number or gallons bought and the price. This relation can be expressed by the making a formula.

It is the same with a scientist or an engineer who has been experimenting for some time to obtain new information. He usually records his results in the form of a table. Then he expresses by means of a formula the relationship given in his table. In this way formulas can be obtained from tables.

Questions:

1. What is called a key to knowledge and why?

2. When does a mathematical formula arise?

3. In what way can formulas be obtained?

PART 2   Exercises

I. **Give the noun form of these verbs and translate into Kazakh (Russian).**

To play, to speak, to dance, to begin, to prolong, to pick, to describe, to develop, to pay, to inform, to keep, to agree, to attend, to depend, to generate ,to mump, to improve, to govern,to manage, to elect, to discuss.

2. Find the subject and predicate.

1. In ancient times people thought that heat was a material.

2. Ancient people called heat caloric.

3. Heat does not take up any space.

4. Heat does not weight anything.

5. Heat is a form of energy.

6. Heat can also travel without the use of any material conductor.

7. The Sun's heat reaches us across almost empty space in the form of rays.

3.Make a noun from theword inbrackets.

1. The water-filled car was his greatest…. (achieve).

2. The final… took 8 hours to reach (agree).

3. The… on their faces was worthy of a photograph (amaze).

4. The first… of problems in the design started in November of this year (appear). 5. Thanks to mobile phones…much faster these days (assist).

6. My first … for a holiday would be Okinawa (choose).

7…. is now at more than 20% in Spain, which is catastrophic (employ).

8. Helpingcompanies to create jobs is the best way to stimulate… in an economy (grow).

9. Electric cars have been showing remarkable… in recent years (improve).

4. Make a noun from the word in brackets.

1. The managing… of the pharmaceutical company was sent to prison for bribing medical staff (direct).

2.People need to increase their… nutrition, especially about the dangers of sugar, red meat and refined flour (know).

3. For the first time, there is … that using baby formula has f negative effect on babies' health (prove).

4.The World Health Organization… is for babies to be exclusively breastfed for the first six month(recommend).

5.The … of Toyota Priors has been very encouraging for people who want a better planet (succeed).

6.The … to the energy crisis is not nuclear, because of enormous hidden costs   the toxic waste and simply because it is not renewable (solve).

7. Thanks to all the great improvement … now fill the streets of Valencia (tour).

8. There is a huge… of rice dishes in Valencia, apart from paella (vary).

5. **Translate these word-combinations**.

Correspondence, rectangular, scientific, universal, dependent, variation, useful, distributive, correction, cubic, fractional, elementary, measurement, electrify, equalize, harden, longitude.

6. **Translate the sentences and determine what part of speech words are in bold.**

1. There are some **changes** in our project.

   The weather in England **changes** very often.

2. This **question** is of great scientific importance.

The enemies continued to **question** the brave partisan, but he didn't say a word.

3. The **play** is very interesting.

   These are the actors who **play** the leading roles in this film.

4. The sailors saw the **land** in the distance.

   The plane could not **land** because of the storm.

5. The **result** of the work was good.

    It is difficult to say how the experiment will **result.**

6. There are many new **houses** in this street.

   This museum **houses** many wonderful pictures.

7.Translate the sentences and determine what part of speech words are inbold.

1. A force is a **push** or **pull** which affects the motion of matter.

   When you **push** or **pool** something, you produce motion.

2. **Force** acts on matter to produce or prevent motion.

   He will **force** me to come.

3. In trying to **lift** a heavy object, it is possible to exert a great deal of force.

   In big houses we generally use the **lift** to go to the upper floors.

4. It is **cool** today.

   You must **cool** the liquid before you begin the experiment.

5. This chemical substance must not be kept in the **light**.

    It is very **light** in this room.

6. They live in a wonderful **place** not far from Astana.

   The workers will **place** this machine in their workshop.

8. Complete the sentences with the suitable words.

vast, small, beautiful, dominion, domain, ties, parallel, in parallel, neighbor,

border, relation, people, relationship, inhabitant, residents.

A land of _____distance and rich natural resources, Canada became a self ____governing_____in 1867. While retaining _____to the British crown. Economically and technologically the nation has developed_____ with the USA, its_____to the south across an unfortified_____. ItsParamount political problem continues to be the_____of the province of Quebec, with its French speaking_____and unique culture, to the remainder of the country.

9. Translate the sentences and determine what part of speech words are in bold.

1. We use atomic energy to **generate** electricity for peaceful aims.

   Electrical **generators** are operated by powerful turbines.

2. The **splitting** of atoms is called atomic fission.

   Scientists found   out how an atom can be **split**.

3. When a substance is **heated**, the speed with which the molecules move is increased.

   Radiant energy may be produced by **heated** objects.

4. The amount of**light** an object reflects depends on the   object's material.

   The current which comes to our houses and   **lights** our streets comes from generators.

10.   Find subject and predicate in the following sentences.

1. About 30 years ago scientists found a way of splitting atoms artificially.

2. Now scientists have found how to control the splitting of atoms.

3.They discovered how to bring about a chain reaction.

4. Atoms are so small that it is almost unbelievable that anything could be smaller. 5. Scientists found out how an atom can be split.

11. **Write the sentences in the interrogative form.**

1.Sound waves occur in the air, or other material.

2. They both travel at the same speed and go out in all directions.

3. Scientists learn about them only by using sensitive instruments.

4. Radio waves have all the properties of other waves of radiant energy.

5. This study led to the discovery of radio waves.

6. For many years, men used light and heat energy from the Sun and from fires.

7. They did not understand the nature of light and heat.

12. **Write and find the subject, predicate and direct object.**

1. To Galileo we owe the idea of a harmony between experiment and theory.

2.With his telescope he observed sun-spots, the mountains on the Moon, the phases of Venus, Saturn's rings, and the four bright satellites of Jupiter.

3.These discoveries roused the opposition of the Church.

4.He was the first to realize the parabolic nature of the path of a projectile in vacuum and speculated on laws involving momentum.

13. Find the subject and predicate and translate them.

1. Vast collections of stars, known as galaxies, stretch out into space far beyond the visibility of the most powerful telescopes.

2. The origin of the Universe and its galaxies us not known.

3. A feature of many of the asteroids is that their orbits are elongated ellipses.

4.The distance from the Sun of such an asteroid varies greatly as it moves in its path around the Sun.

14. Write sentences in the interrogative form, using the words in brackets.

1. Galaxies exist un various shapes and sizes (how)

2. Our own Sun is not in the centre of the Milky Way, but near the edge (where)

3. Galaxies may be classed according to their shape as spiral, elliptical or irregular galaxies (how)

4. Some astronomers believe that matter is being continually created (who)

5. The origin of the Universe and its galaxies is not known (why)

15. Translate the sentences, find the subject and predicate.

1. In one curious way this planet differs from all the others.

2.Thus oppositions of Mars come every 2 years and 50 days.

3. This planet presents itself for study at intervals of about 2 years and 2 months.

4. It takes 780 days before the bodies come into line.

5. Mars has a very elliptical orbit.

16. Write sentences in the interrogative form, using the words in brackets.

1. The gin recoils in the opposite direction (how)

2. A rocket rises because of the thrust produced by the gases rushing out from its tailpipe (why)

3. The speed of a rocket depends on the velocity of the escaping gases (what)

4. A rocket can travel in space where there is no air (where)

5. As long as the expanding gases provide thrust, the rocket will move forward (how long)

17. Write the sentences in the interrogative form.

1. Mathematics is the oldest of all sciences.

2. Mathematics belongs to all mankind.

3. Arithmetic is the study of number.

4. Mathematics will have a wider application.

5. These subjects are the foundations of mathematics.

6. We use mathematics in everyday life.

18.Write sentences in the interrogative form, using the words in brackets.

1. He is a student of the mathematics department (who).

2. She studies by correspondence (who).

3. We solved all the equations yesterday (what).

4. They will write a test tomorrow (when).

5. He works at the laboratory of the institute (where).

6. He is an experienced engineer (what).

19.Find the subject and predicate in the following sentences.

1. Gravity had been known long before Newton's time.

2. Light was Newton's favorite study.

3. This method is known by the name of differential and integral calculus.

4. At the age of twelve he was sent to the Grammar school.

5. The mother wanted her son to become a farmer, so when he was fourteen, he began working on the farm.

20. Write the sentences in interrogative form.

1.She is an extra-mural student of the mathematics faculty. (Who?)

2. A solid has length, breadth and thickness. (What?)

3. We (to obtain) these data in our next experiments.

4. Heat always (to come) from motion.

5. Myfriend (to enter) the university with good knowledge of mathematics and physics.

6. These problems (to solve) by the students tomorrow.

21. Translate the sentences into Kazakh (Russian).

1. My friend call me last night but I didn't answer the phone.

2. Oleg   reads novels, but   Tina reads comics.

3. We can go to the cinema or we can watch a video at home.

4.I went shopping, and my wife went to her classes.

5. We were exhausted, but we arrived in time for my father's birthday party.

6.I wanted to come, but it was late. I have been in the meadows all day, and I have gathered there these beautiful flowers.

22. Complete the sentences using must/mustn't/have to/don't have to /should/shouldn't.

1. You … pay to use the library. It's free.

2. You …be 18 to see that film.

3. You look tired. I think you … go to bed early tonight.

4. Children, you … cross if the lights are red!

5. You … sit so near the TV. It's bad for your eyes.

6. You really … go to the Louvre when you're in Paris. It's wonderful.

7. In volleyball you … touch the ball with your feet.

8.You. … come to the party if you don't want to.

Complete the sentences with the correct forms of the verbs in brackets.

1. We'll let you know as soon as the Personnel Manage <u>has taken</u> (take) her final decision.

2.If he … (speak) Chinese, he could have negotiated a better contract with the Hong Kong company.

3. Don't bother calling me on Saturday-1… (lie) on the beach and …(listen) to Greek folk music.

4. He's a good player, so I'm sure he … (win) a few tournaments by the time he's twenty-one.

5. They… (not feel) offended if you had accepted their invitation.

6. If your immune system … (not work) properly, your life can be threatened by a common infectious disease.

7. Dad, if you really cared about money, you … (choose) to study business rather than philosophy when you were young.

8. When the guests … (arrive), ask them to wait in the lounge.

9. If we all … (live) on the moon, it … (be) terribly crowded.

10…. (you go) to the post office this afternoon? Could you buy me some stamps?

24. Which of the following sentences is a compound sentence.

1. Lincoln and Washington were both fine American presidents.

2. Red and black are my favorite colors.

3.There were so many people at the concert that they had to turn away a lot of them.

4. We turned off the main road when we got to the town.

5. Space stations and orbiting platforms are our first step away from earth.

6. Minerals and other raw materials would be shipped to colonies in space.

7. We already design and plan model cities.

8.They could create and manage a colony on the moon.

9. The students walked to the beach, but they took the bus home.

10. I couldn't hear the music, so I turned up the volume.

25. Translate the sentences into Kazakh (Russian) paying attention to the complex subject.

1. Electric current is known to flow in metal parts.

2. The scientist noticed the temperature to be falling very quickly.

3. Radio enables the human voice to be transmitted around the globe.

4. The engineer wants the new devices to be tested in the laboratory.

5. I have never seen him make this experiment.

6. The speed of a rocket is known to depend on the velocity of the escaping gases. 7. Modern rocket engines are known to operate   by means of jet propulsion.

26. Complete the sentences with the correct form of the verb in brackets and a correct modalverb.

1. John bought the tickets in advance but he ___ (spend) so much money as the concert was horrible.

2. If Julia gad gone to stuffy in France, she ___ (speak) French now.

3. At this tome newt week they ___ (climb) up Kilimanjaro.

4. I've only got a few paragraphs to add, I ___ (finish) this essay by lunchtime.

5. I suppose the man___ (drive) at over 120 km/h when he crashed into that tree.

27. Match the two parts of the sentences.

- She goes to great lengths to look nice

- He took his disappointment in his stride.

- She took it for granted.

- We brought to light.

- He wasn't made up his mind.

  - And started again

  - Some faults in the design

  - Because he hasn't had enough time to decide.

  - And takes a lot of trouble. Over the clothes.

  - That her business would succeed eventually.

28. Put the verbs in brackets into the passive.

1.Jeremy _____ (invite) to the conference ages ago.

2.The fault in the editing program _____ just _____ (discover).

3.He complained because he ___(treat) badly by an immigration officer.

4.If nothing unusual happens, this film ____ (award) a few Oscars this year.

5.Roast Lamb ____ usually ____ (serve) with mint sauce.

6.Our film ____ still ___ (develop) when we went to collect it.

7.Jack____ never___ (tell) that he _____ (adopt)

29. Complete the sentences. Use the present perfect active or passive.

1**.**Many films (make) ___ about Friday 13th.

2.Statistics show that more accidents (happen) ___ on Friday 13th**.**

3.Mexicans (always/ believe) ___ that the number 13 is lucky.

4.Lots of books (write) ___ about superstitions.

5.People (fascinate) ___ by the supernatural for centuries.

6.Horoscopes (read) ____ by people all over the world for a long time.

7.In some countries people (decide) ___ not to travel on Friday 13th.

8.A lot of my friends (frighten) by horror films.

30. Put the verbs in brackets in the correct form.

1. If it (not/be) cold, they (not/lit) the fire.

2. If she (study) more, she (be) a better student.

3. They (see) a lot of museums, when they (visit) London.

4. I (learn) French as soon as I (go) to France.

5. We (have) a party if Marat (pass) his driving test.

6. Those plants (not/grow) if you (not/water) them.

7. I (buy) this bag, if you (lend) me some money.

8. If he (break) the window, he (pay) for a new one.

9. If you (eat) another cake, you (be) sick.

10. You (not/pass) exam if you (not/study) hard.

11. I (do) my homework as soon as this programme (finish).

12. Who(he/stay) when he (go) to New York?

31. Translate into Kazakh (Russian).

atomic fission; a power station; a chain reaction; a powerful microscope; atomic energy; to generate electricity; peaceful aims; the nature of light; quite recently; the discovery of radio waves; in this direction; low-frequency waves; radio broadcasting station.

32. Complete the sentences.

1. If there are tickets to the theatre…

2…. after you return from London.

3…. As soon asthe festival begins.

4. He'll stay for another week if….

5. I'll bring you the book when….

6.They'll go on a trip if….

33. Put the verbs in brackets into the correct tense.

1. If the dogs (keep) barking, the neighbors (complain).

2.The boss (be) angry, if you(arrive) late for a work   again.

3. If you (eat) too much, you (be)sick.

4. If the weather (be) bad on Saturday we (stay) at home.

5. You should go to the doctor if you (not feel) well.

6. If you (study) hard, you (pass) the exam.

7. They (go) for a walk before they (go) to bed.

8. (you/wait) until he (come) back?

34. Combine the sentences using the words in brackets.

1. I'll wait here. You'll get back. (until)

2. Give me a ring. You'll hear some news. (when)

3. The TV programme will end. I'll do my homework. (after)

4. I'll go to work. I'll have a bath. (before)

5. She'll be in Astana. She'll visit a friends. (while)

6. The lesson will end. I'll go home. (as soon as)

7. I won't leave the house. The postman will come. (until)

8. I'll tell you about the holidays. I'll get back. (when)

9. I'll study English. I'll speak it perfectly. (until)

10. I'll find the book. I'll let you know. (if)

35. Put the verbs in brackets into the correct tense.

1. If you (go) _____ out with your friends tonight, I (watch) _____ the football watch on TV.

2. I (earn) _____ a lot of money if I (get) _____ that job.

3. If she (hurry/ not) ___ we (miss) ___ the bus.

4. If he (try) _____ harder, he (reach)___ his goals.

5. I (buy) ___ these shoes if they (fit) _____

6. If (surprise) not _____ me if he (know/not) ___ the answer.

7. If we (listen) ___ to the radio, we (hear) _____ the news.

8. If you (switch) _____ on the lights, you (fall/not) ___ over the chair.

9. She (come) ___ to our party if she (be/not) ___ on holiday.

10. If I _____ stronger, I'd help you carry the piano.

36. **Write the sentences and determine the type of conditional sentences (offer).**

1. If this new method were applied, we should obtain good results.

2. They would have finished their work earlier if somebody had helped them.

3. If trigonometric equations involve a sine, cosine and tangent, they can be solved by reducing them to a single function.

4. If you work hard, you will be able to solve such a problems.

5. If you had used the computer, you would have finished your calculations long ago.

6. If I were free, I should help you in your research.

37. Translate the sentences into Kazakh (Russian).

1. If the multiplier contains more than one figure, the multiplicand is multiplied by each of these figures in turn, beginning, by the right.

2. If this scientist had lived in our time, he would have received all the equipment for his experimental work that he required.

3. If he were here, we should demonstrate all the diagrams to him.

4. If it were not so late, we should continue our experiments.

5. If you had studied this material well, you would never have made such mistakes in your calculations.

38. Complete the Conditional Sentences (type I) by putting the verbs into the correct form.

1.If you (send) letter now, she (receive) it tomorrow.

2. If I (do) this test, I (improve) my English.

3. If I find your ring, I (give) it back to you.

4. Laura (go) shopping if she (have) time in the afternoon.

5. Sanzhar (go) to London next week if he (get) a cheap flight.

6. If her boyfriend (phone/not) today, she (leave) him.

7. If they (study/not) harder, they (pass/not) the exams.

8. If it (rain) tomorrow, I (have/not) water the plants.

9. You (be able/not) to sleep if you (watch) this scary film.

10. Dina (can/move/not) into the new house if it(be/not) ready on time

39. Put the verbs in brackets in the correct tenses: Present or Past Continuous.

1. Electronics (to become) very important in all branches of production now.

2. Different kinds of batteries (to use) wildly in modern radio engineering.

3. During the experiment the scientist observed that a small electrical current (to flow).

4. He concluded that some electrons (to move) through a vacuum.

5. In the future designing (to make) various improvements in the construction of spaceships.

40. Translate the sentences paying attention to the modal verbs.

1. Our laboratory should be provided with all the necessary instruments.

2. We can divide a piece of material into small parts.

3. Electrons can be evaporated off metals, like steam from water.

4.The results of the experiment may be obtainable tomorrow.

5. You ought to be more careful with electrical appliances.

6. They were told they were told to continue their research work.

7.The designing engineers had to solve many problems in the process of constructing this machine.

41. Put the verbs in brackets in the correct tenses: Present or Past Continuous.

1. Scientists (to study) the properties of radioactive substances.

2. Great progress (to make) in the study of outer space now.

3.We were informed that many scientists (to work) on the problem of radioactivity.

4.The scientists (to solve) new important problems in mathematics, physics, chemistry and biology.

5. Many new instruments (to use) in different branches of science and technology.

42. Put the verbs in brackets in the correct form.

Example: We (to translate) a technical article now. We are translating a technical article now. (Present Continuous, Active Voice).

1. They (to work) at the mechanical laboratory at this time yesterday.

2. The engine (not to function). It must be (to repair).

3. The device (to examine) by the members of the technical council now.

4. They (to report) on the results of their observations at 10 o'clock tomorrow.

5. Arrangements (to make) for the opening of the exhibition.

6. Many sputniks (to send) scientific information about our space.

7.The information which (to obtain) from the sputniks (to study) very carefully. 8.This area (to explore) by the scientists for several months last year.

43. Translate the sentences using the modal words.

1. Numbers can be multiplied in any order.

2.Fractions cannot be added if they have no common denominator.

3. You will have to report the experiment. 4. May I use these diagrams?

5. Will you be able to solve this problem?

6. Every motion must be considered as a relative motion.

7. You should consult a specialist before you take a decision.

8. Could you use this method in your research?

44. Translate the sentences using the modal words.

1. It is known that an atom can be split.

2. The electrons outside the nucleus can only move in orbits.

3. He may work at the laboratory of our institute, if he wishes to do so.

4. Atoms combine into molecules and molecules may contain one, two, three or more atoms.

5. You must prepare a report our conference.

6. Atoms of different kinds can join together in different ways.

7. You should carry out the experiment by yourself; you are quite able to do so.

8. It is the cyclotron that can be used to produce high speed positively charged particles of enormous energy.

45. Write the sentences in interrogative and negative forms.

 Example: They can do this work?

Can they do this work?

They cannot do this work.

1. We can use the laboratory equipment.

2. He could explain this phenomenon to any student who asked him.

3. They may use the dictionaries.

4. You must put the engine in motion.

5. You will have to work hard to finish the work in time.

6. He was allowed to use the diagrams for his report.

7. He will be able to go to the exhibition tomorrow.

8. You can choose a problem for your research work.

46. Write the sentences in interrogative form.

1. The Milky Way is also known to astronomers as the Galaxy.

2. The Universe contains many millions of stars in space.

3. Galaxies exist in various shapes and sizes.

4. The Milky Way, the galaxy in which our own solar system occurs, is of the spiral type.

5. The origin of the Universe and its galaxies is not known.

6. The distance from the Sun of an asteroid varies greatly as it moves its path around the Sun.

7. Both theories are difficult to prove.

47. Put the verbs in brackets in the correct tense: Past Simple, Past Continuous or Past Perfect.

Example: I (to see) my friend this week.

I have seen my friend this week. (Present Perfect, Active Voice)

1. She (to get) a letter from her friend lately.

2. The students (to read) the materials about differential calculus by next week.

3. I (to finish) my geometry test before the bell rang.

4. He (to pass) his examination in mathematical analysis today.

5. He (to translate) the article from the technical magazine by this time.

6. We (to complete) our experiments by next week.

7. We (to read) many books on the problem this year.

8. We (to finish) our experimental work when you return from the conference.

9. The work (to complete) by the end of the term.

10. Many engineers from textile factories (to send) to Karaganda this week.

11. All the books (to read) by the students before the teacher asked them back.

12. The equipment (to bring) to the laboratory today.

48. **Put the verbs in brackets in the correct form of Perfect tense.**

Example: He (to finish) this work today.

 He has finished this work today.

1. We (to study) ratio problems this week.

2. We (to learn) how to measure lines and angles by the last year.

3. He (to solve) all these equations before the bell rings.

4. Adding and subtracting radical expressions (to practice) by them before they proceeded to the new material.

5.Who (to switch off) the engine?

6. He (to read) all these mathematical magazines by the next Saturday.

7. All these problems (to solve) with help of computing machines before we obtained the final results.

49. **Put the verbs in brackets in the correct form of Perfect tense.**

1. This month he (to read) many articles on the development of engineering in our country.

2. They (to work) very hard before they learned how to deal with such problem.

3. They (to finish) testing the device by the end of next week.

4. The computational part of the experiment (to complete) before we began our work.

5. The device (to bring) to the laboratory before we started our work.

6. We (to look through) all the diagrams this week.

7. They (to design) this building by the appointed time.

8. The whole material (to revise) by the end of the term.

9. We (to inform) him of the results of our work before he rang us up.

50. Write the sentences in the interrogative form using words in brackets.

1. The farm was situated in a lonely place where there was no school (what, where).

2. At the age of twelve he was sent to the Grammar school (when, where).

3. When he was fourteen, he began working on the farm (when, where).

4. At the age of eighteen he was sent to Cambridge University to study mathematics. (when, where).

5. Newton developed mathematical method indispensable in all questions concerning motion (who, what).

6. Newton died in 1727 at the age of eighty-four (who, when).

51. Fill in each blank by putting the verb in brackets in to the correct past tense.

1. I.... (see) my first baseball game when I...(live) in New York.

2. How many pints of beer (he/drink) before he... (leave) the pub?

3. It... (rain) so we... (decide) to stay at home all afternoon.

4. By the time I... (leave) university I...(be) to France fifteen times.

5. What... (you/do) at the time the murder was committed?

6. When we... (get) home we saw that someone...(break) into the steal the DVD recorder.

7. He... (send) to prison four times before he...(decide) that it would be better to go to straight.

8. I didn't realize... I (lose) my credit card until I... (try) to pay for dinner at the restaurant.

9. I... (write) an email to my sister   when she...(ring) me.

10. She was so upset by the news that she... (drop) her tea and.. (start) crying.

52.Put the verbs in brackets in the correct form.

Example: This problem (to discuss) tomorrow.

This problem will be discussed tomorrow. (Future Simple, Passive

Voice)

1. The arithmetic symbols which (to use) today (to derive) from the Arabs and the Hindus.

2. These formulas (to use) for the first time in the 17th century.

3. We (to obtain) these data in our next experiments.

4. Heatalways (to come) from motion.

5. My friend (to enter) the university with good knowledge of mathematics and physics.

6.These problems (to solve) by the students tomorrow.

53.Translate these word- combinations.

Newtonian mechanics; classical physics; an international reputation; the liberation of atomic energy; fundamental importance; the world of science; suitable correction; artificial satellites.

54. Translate the sentences paying attention to the Indefinite pronouns

1. Some years ago scientists found a way of splitting atoms artificially.

2. I knew nothing about your research work in chemistry.

3. Every atom has a centre, or nucleus.

4. Do you have any new magazines on cybernetics?-Yes, I have some, (No, I haven't any).

5. Some power stations are already using atomic energy to generate electricity for peaceful aims.

6. I have no paper to write on. Have you got any?

7. Everything will be ready for our experiment in some days, six at the most.

8. Atoms are so small that it is almost unbelievable that anything could be smaller.

55. Translate the sentences using the modal words.

1. It is known that an atom can be split.

2. The electrons outside the nucleus can only move in orbits.

3. He may work at the laboratory of our institute, if he wishes to do so.

4. Atoms combine into molecules and molecules may contain one, two, three or more atoms.

5. You must prepare a report our conference.

6. Atoms of different kinds can join together in different ways.

7. You should carry out the experiment by yourself; you are quite able to do so.

8. It is the cyclotron that can be used to produce high speed positively charged particles of enormous energy.

56. Translate the sentences paying attention to the Indefinite pronouns.

1. He told us about some new methods used for the solution of such problems.

2. The material is so easy that any student can understand it.

3. The engineer touched upon some important problems at the scientific conference.

4. There isn't any oil in this tank.

5. There is some liquid in the vessel.

6. Can you give any additional proof?

7. The pit doesn't work; there is no coal in it now.

8. There is no other way to prove this theorem.

57. Translate the sentences into paying attention to the Indefinite pronouns.

1. Somebody else must take part in this research.

2. Nobody could solve this difficult problem.

3. Can anybody explain this phenomenon?

4. The metric system is so simple that anyone can learn how to use it.

5. Is there anything new in this theory?

6. Can you get the new algebra textbook anywhere?

7. You can read everywhere about the results of this scientific expedition.

8. Everything is ready for the experiment.

58. Put the verbs in brackets in the correct form.

Example: We (to solve) algebra equations now.

We are solving algebra equation now. (Present Continuous, Active Voice)

1. They (to work) at the physics laboratory at this time yesterday.

2.Technical problems (to solve) by our scientists and engineers.

3.In a proportion the product of the extremes (to be equal) to the product of the means.

4.Most logarithms (to regard)as rearing decimals.

5. Many complicated problem (to solve) with the help of computers now.

6.The teacher (to prove) yesterday that such equations had no solution.

7.They (to test) the new device at this time tomorrow.

8. The device which (to test) now is very important for the development of our industry.

59. Translate the sentences paying attention to the sequence of tenses.

1. The teacher was sure that all his students would be ready for the test.

2.The newspapers reported that a new sputnik had been launched.

3.The engineer said that they were looking for the data that were necessary for their research.

4.The teacher explained to his students that all the atoms of any chemical element have the same properties.

5.Mendeleev predicted that new unknown elements would appear in the periodic system.

6.The lecturer said that mathematics and science had supplied the principal tools for discovering, testing and stating the laws of nature.

7.The teacher told his students that at the next lesson they would proceed to trigonometric functions.

8.He said that equations had been used by many scientists in carrying out their research work.

9.The engineer promised that the device would be repaired by the end of the month.

10.She said that she was preparing for her exam in mathematical analysis.

60. Translate the sentences paying attention to the sequence of tenses.

1. The lecture said that many scientists had used equations in carrying out research work.

2.The teacher said he would be demonstrating the use of letters in algebra at the next lesson.

3. The student promised that he would make the diagrams by next Saturday.

4. Fifty years ago people did not believe that the atom could be split and its energy could be released.

5. The teacher told us that the Hindus and Arabs had also contributed to trigonometry.

6.When I rang up my friend, he told me that he was learning Newton's laws at that time.

PART 3

abbreviate	қысқарту	сокращать
abbreviation	қысқарту	сокращение
absolute	абсолюттік	абсолютный
absolute constant	абсолюттік тұрақты	абсолютная постоянная
absolute convergence	абсолюттік жинақтылық	абсолютная сходимость
absoluteinequa lity	абсолюттік теңсіздік	абсолютное неравенство
absolutevalue	абсолюттік мәні	абсолютное значение
accuracy	дұрыстық,дәлдік	правильность,точность
accuracy of measurement	өлшеу дәлдігі	точность измерения
accurate	дәл, дұрыс	правильный, точный
accelerate	тездету, жылдамдату	ускорять
accelerator	үдеткіш	ускоритель
acute angle	сүйір бұрыш	острый угол
acute triangle	сүйір бұрышты үшбұрыш	остроугольный треугольник
add	қосу	прибавлять
addend	қосылғыш	слагаемое

addition	қосу амалы	сложение
addition of integers	бүтін санның қосындысы	сумма целых чисел
addition of matrices	матрицаларды қосу	сложение матриц
affect	әсер ету, ықпал ету	воздействовать
adjacent angles	сыбайлас бұрыштар	смежные углы
adjacent complementary angles	сыбайлас толықтауыш бұрыштар	смежные дополнительные углы
adjacent supplementary angles	сыбайлас жазық бұрыштар	смежные развернутые плоские углы
adjacent side	сыбайлас қабырға	смежная сторона
advance	даму, жетістікке жету	развиваться, делать успехи
algebra	алгебра	алгебра
algebraic	алгебралық	алгебраический
algebraic expression	алгебралық өрнек	алгебраическое выражение
algebraic function	алгебралық функция	алгебраическая функция
altitude	биіктік	высота
amber	кәріптас	янтарь
amount	мөлшер	количество

ancient	ежелгі	древний
analysis	анализ	анализ
analyticfunction	аналитикалық функция	аналитическая функция
analyticgeometry	аналитикалық геометрия	аналитическая геометрия
analyticplane	аналитикалық кесте	аналитическая таблица
angle	бұрыш	угол
angle bisector	биссектриса	биссектриса
angle pairs	түсу бұрышы	угловые пары
angular	бұрыштық қосақ	угловой
applicable	қолданбалы	прикладной
application	қолдану	приложение
application of algebra	алгебраны қолдану	приложение алгебры
appliedmaths	қолданбалы математика	прикладная математика
apply	қолдану	прилагать,применить
applicable	қолданбалы	приложимый применимый
application point	әсер ету нүктесі	точка действие,приложение
applied force	түсірелген күш	приложенная сила

applied physics	қолданбалы физика	прикладная физика
apply	қолдану	прилагать, наложить
approach	жақындау	приближаться
appropriate	сәйкес	соответсвенный
approximate	жақын жуық	пр576леженный
approximate value	жуық мәні	приблеженное значение
approach	жақындау, жуықтау	приближать
appropriate	кез-келген мән	произвольное значение
approximately	жуықтау	приблизительно
arbitrary	кез-келген	произвольный
arc	доға	дуга
arc length	доға ұзындығы	длина дуги
arc measure	доғаны өлшеу	измерение дуги
Archimeds	Архимед	Архимед
area	аудан	площадь
area between curves	қисықтармен шектелген аудан	площадь, ограниченная кривыми
area of a polygon	көпбұрыш ауданы	площадь многоугольника

area of a rectangle	тік төртбұрыш ауданы	площадь прямоугольника
area of a square	квадраттың ауданы	площадь квадрата
area of a triangle	үшбұрыштың ауданы	площадь треугольника
area of a trapezoid	трапецияның ауданы	площадь трапеции
argument	талқылау	рассуждение
arithmetic	арифметика	арифметика
arithmetic mean	арифметикалық орта	среднее арифметическое
arithmetic sequence	арифметикалық тізбек	арифметическая последовательность
arithmetic series	арифметикалық қатар	арифметический ряд
arithmetic progression	арифметикалық прогрессия	арифметическая прогрессия
arms of the curve	қисықтардың құраушылары	составляющие кривой
arrange	орналастыру	размещать
arrangement	реті,орны	расположение
arc	доға	дуга
area under a curve	қисықпен шектелген аудан	площадь под кривой

arrange	орналастыру	размещать
array of numbers	сандар кестесі	таблица чисел
arc length	доға ұзындығы	длина дуги
assert	бекіту	утверждать
assertion	бекіту	утверждение
assumption	болжам,шамалау	предположение
atomic particle	атомдық бөлшек	атомная частица
atomic physics	атомдық физика	атомная физика
atomic pile	ядролық реактор	ядерный реактор
atomic radius	атомдық радиусы	радиус атома
atomic spectra	атомдық спектр	атомный спектр
atmospheric pressure	атмосфералық қысым	атмосферное давление
atom	атом	атом
atomic bomb	атом бомбасы	атомная бомба
atomic energy	атом энергиясы	атомная энергия
atomic energy levels	атомдық этникалық	уровни атомных энергии
atomic fission	атомдық ыдырау	атомный распад
atomic heat	атом жылуы	атомная теплота
atomic mass	атомдық масс	атомная масса
atomic nucleus	атом ядросы	атомное ядро

atomic weight	атомдық салмақ	атомный вес
atmosphere	атмосфера	атмосфера
attract	тарту	пприятивать
attraction force	тартылыс күші	сила притяжение
auxiliary	көмекші	вспомогательный
average	орташа (сан)	среднее(число)
average acceleration	орташа үдеу	среднее ускорение
average velocity	орташа жылдамдық	средная скорость
axiom	аксиома	аксиома
axioms of equality	теңдік аксиома	аксиома равенства
axis(axes)	түзу.өс	ось, прямая
axis of ordinates	ордината өсі	ось ординат
axis of parabola	парабола өсі	ось параболы
axis of symmetry	симметрия өсі	ось симметрии
bar	баған	столбец
balance	теңестіру	уравновешивать
balanced force	теңестірелген куш	уравношенная сила

Balmer series	Бальмер сериясы	серия Бальмера
bar	бар	бар
barometer	барометр	барометр
barometric pressure	барометрлік қысым	барометрическое давление
base	табан	основания
base angles	табан бұрыштары	углы при основании
base area	табан ауданы	площадь основания
base of cone	конустың табаны	основание конуса
base metal	арзан металл	неблагородный металл
base of numerals	санның негізі	основания чисел
base of pyramid	пирамиданың табаны	основание пирамиды
base ten numerals	ондық санның негізі	основание десятичных чисел
basic	негіз	основа
basic properties	негізгі қасиеттер	основные свойства
beam	сәулелік шоқ	пучок
bend	бүгу	сгибать
Bernoulli principle	Бернулли принсібі	принцип Бернулли

beta decay	бета ыдырау	бета распад
beta emission	бета сауле шығару	бета излучение
beta particle	бета бөлшегі	бета частица
beta rays	бета сәулелері	бета лучи
between's	қатынас	соотношение
bilateral symmetry	екі жақты симметрия	двухсторонная симметрия
binary	қос	двойной
binary system	қос жүйе	двойная система
binomial expansions	биномиалдық кеңейту	биномиальное расширение
bisect	тең екіге бөлу, қақ бөлу	делить пополам
bisect a line segment	кесіндіні тең екіге бөлу	деление отрезка пополам
bisect an angle	бұрышты қақ екіге бөлу	деление угла пополам
bisector	биссектриса	биссектриса
Bolzano's Theorem	Бальзано теоремасы	теорема Бальзано
bound	жақ	грань
boundary	шекара,шет	край,граница
bounded	шектелген	ограниченный
bounded sequence	шектелген тізбек	ограниченная последовательность

bounded set	шектелген жиын	ограниченное множество
bracket	квадрат жақша	квадратная скобка
briefly	қысқаша	кратко
broken	сынық	ломаная
broken line	сынық сызық	ломаная линия
black hole	қара тесік	черная дыра
blackbody radiation	қара дененің сәуле шығару	излучение черного тела
block	блок	блок
Bracket series	Брэкет сериясы	серия Брэкета
bridge	көпір	мост
Buoyant force	архимед күші	сила Архимеда
buoyancy	қалқымалық	плавучесть
brake	тежегіш, тежеу	тормоз
bright	жарқыраған	яркий, блестящий
calculate	есептеу	вычислять
calculator	электронды калькулятор	электронный калькулятор
cancel	қысқарту	сокращать
cancellation	бөлшекті қысқарту	сокрашение дроби
cancellation property addition	қосындыны қысқарту қасиеті	свойства сокращения суммы

candela	кандела	кандела
candle	шырақ	свеча
capacitance	электр сыйымдылық	элетроемкость
capacitive reactance	сыйымды импеданс	емкостный импеданс
capacitor	конденсатор	конденсатор
capillary tube	капиллярлық түтікші	капиллярная трубка
Carnot cycle	карно циклы	цикл Карно
cathode	катод	катод
cathode rays	катодтық сәулелер	катодные лучи
Cavendish apparatus	кавендиш аппараты	аппарат Кавендиша
cavity	қуыс	полость
capacity	сыйымдылық	емкость
Cartesian	декарттық	декартовый
cartesian coordinate plane	тік бұрышты декарттық жазықтық	прямоугольная декартовая плоскость
cartesian coordinates	декарттық координаттары	декартовый координаты
case	корпус	корпус
centre	орталық	центральный
centre of circle	шеңбердің центрі	центр окружности

centre of sphere	сфераның бағыты	центр сферы
centre of curvature	қисықтың бағыты	направление кривизны
centre of gravity	ауырлық центрі	центр тяжести
central angle	орталық бұрыш	центральный угол
cell	гальвваникалық элемент	галванический элемент
cell potential	потенциалдық элемент	потенциальный элемент
Celsius temperature	цельси шкаласы	шкала Цельсия
center of gravity	ауырлық центрі	центр тяжести
centrifuge	центрифуга	центрифуга
chain	тізбек	цепь
chain reaction	тізбекті реакция	цепная реакция
charged	зарядалган	заряженный
charging by induction	индукция арқылы зарядталган	заряжение индукцией
chat	кесте,үлгі,диаграмма	схема,таблица
check	тексеру	проверка
chord	хорда	хорда
chord of circle	шеңбердің хордасы	хорда окружности

circle	дөңгелек,шеңбер	круг,окружность
circular	дөңгелек	круговой,круглым
circular arc	дөңгелек доға	круговая дуга
circular cylinder	дөңгелек цилиндр	круглый цилиндр
circular diagram	дөңгелек диаграмма	круговая диаграмма
circular function	дөңгелек функция	круговая функция
circular motion	шеңбер бойымен қозғалыс	движение по окружности
circular wave	сфералық толқын	сферическая волна
circumcenter of a triangle	сырттай сызылған үшбұрыш	описанный треугольник
circumscribed circle	сырттай сызылған шеңбер	описанная окружность
circumscribed polygon	сырттай сызылған көпбұрыш	описанный многоугольник
circumscribed quadrilatera	сырттай сызылған төртбұрыш	описанный четырехугольник
circumscribed square	сырттай сызылған квадрат	описанный квадрат
circumference of a circle	үшбұрышқа сырттай сызылған радиусы	радиус окружности описанной около треугольника
circumstance	жағдай	обстоятельство

circuit	шынжыр	цепь
clay	саз балшық	глина
clear	тазалау	очищать
clearly	таза	чистый
clockwise direction	сағат тілі бағыты бойынша	в направлении часовой стрелки
closed curve	тұйық қисық	замкнутая кривая
classification	классификация,талдау	классификация,разбирать,разбор
closed	тұйық	замкнутый
closed interval	жабық интервал	замкнутый интервал
closed under addition	қосуға қатысты тұйықталған	замкнуто относительно сложения
closed under multilication	көбейтуге қатысты тұйықталған	замкнуто относительное умножения
closure property	тұйықтық қасиет	свойство замкнутости
coefficient	еселік	коэффицент
coefficient of matrix	матрицаның еселігі	коэффицента матрицы
coin	тиын	монета,копейка
coincide	дәл қою	совпадать
coincident	беттесетін түзулер	совпадающиеся

lines		линии
collect	жинау	собирать
collinear points	коллинер нүктелер	коллинеарные точки
co logarithm	кологарифм	кологарифм
column	бағана	колонка
colomn matrix	бағандар матрицасы	матрица столбов
combination	қосылу,жалғасу	соединение
combine	қосу,біріктіру	соединять,комбинировать
combining function	біріккен функция	комбинированная функция
comma	үтір	запятая
common	ортақ,жалпы	общий
common chord of two circles	екі шеңбердің ортақ хордасы	общая хорда двух окружностей
common devisor	ортақ бөлгіш	общий делитель
common factor	ортақ көбейткіш	общий множитель
common ratio	ортақ қатынас	общее отношение
common tangent	ортақ жанама	общая касательная
common multiple	ортақ көбейткіш	общий множитель
common	сырттайжнасқаншеңберлер	общие

external tangents of two circles	діңортақжанамалары	касательные соприкасаящихся окружностей
complement event	косымша оқиға	допольнительное событие
complement of a set	жиынның толықтауышы	дополнение множества
compare	салыстыру	сравнивать
comparison	салыстыру	сравнение
compass	циркуль	циркуль
complete revolution	толық айналым	полный оборот
complete the square	толық квадратқа толтыру	полностное завершение квадрата
complex numbers	комплекс сандар	комплексные числа
complex ratio	комлексті көрсеткіш	комлексный показатель
complex conjugate	комлексті түйіндер	комлексное сопряжение
complex fraction	төрт қабатты бөлшек	четырехэтажная дробь
complex roots	комплекс түбірлер	комплексные корни
complicated	күрделі	сложный
component	бөлшек	компонент

condition for perpendicularity	перпендикулярлық шарт	условие перпендикулярности
congruent	конгруэнтті	конгруэнтный
congruent arcs	конгуэнтті доғалар	конгруэнтные дуги
congruent circles	конгуэнтті шеңберлер	конгруэнтные окружности
conguerent line	конгуэнтті кесінділер	конгруэнтные отрезки
conical sections/conics	конустық қималар	конические сечение
conical surface	конустың беті	коническая поверхность
congugate	түйіндес	сопряженный
connect	біріктіру	соединять
connection	жалғау, байланыс	соединение,связь
consecutive integers	бүтін сандар тізбегі	последовательные целые числа
consecutive interior	ішкі бұрыштар тізбегі	внутренние последовательные углы
consecutive odd numbers	тақ сандар тізбегі	последовательные нечетные числа
consequence	салдар	следствие
consider	қарастыру	рассматривать

consist of	құралады	состоять из
consistent system	үйлесімді жүйе	совместимая система
constant	тұрақты	постоянный
constant force	тұрақты күш	постоянная сила
constant function	тұрақты функция	постоянная функция
constant velocity	бір қалыпты жылдамдық	постоянная скорость
constant monomial	мономиал тұрақтысы	мономиальная постоянная
construction	құрастыру,сызу	построение
construction of a circle	шеңбер салу	конструкция круга
continue	жалғастыру	продолжать
continuity	үздіксіздік	непрерывность
continuity at a point	бір нүктедегі үздіксіздік	непрерывность в точке
contradiction	қарсылық	противоречие
contribute	үлес қосу	внести вклад
converge	жинақталатын	сходящиеся
convergence	жинақтылық	сходимость
converse	кері тұжырым	обратное утверждение
convex	дөңес	выкуплый

convex polygon	дөңес көпбұрыш	выкуплый многоугольник
coordinate axis	координаттық өс	координатная ось
correct	дұрыс	правильный
correlation	еселігі	соотношение
corollary	салдар,нәтиже	следствие,результат
correspondence	сәйкестік	соответствие
cosecant	косеканс	косеканс
cosine	косинус	косинус
cosine low	косинус теоремасы	теорема косинуса
cotangent	котангенс	котангенс
cotangent function	котангенс функциясы	функция котангенса
count by threes	үш-үштен санау	считать тройками
counting methods	санау әдістері	методы счета
counting numbers	саналымды сандар	счетные числа
cross-sectional area	көлденең қимасының ауданы	пересекющиеся линии площадь

cross section	көлденең қима	поперечное сечение
crossing lines	қиылысатын сызықтар	поперечного сечения
cube	куб	куб
cube of number	санның кубы	куб числа
cube of difference	кубтың айырымы	разность куба
cube of sum	қосындының кубы	куб суммы
cube root	куб түбір	кубический корень
cube-root sign	куб түбірінің таңбасы	знак кубического корн
circuit	электр тізбегі	электрическая цепь
circular	дөңгелек	круговой
circular arc	дөңгелек доға	круговая дуга
circular motion	шеңбер бойымен қозғалыс	ккруговое движение
classical mechanics	классикалық механика	классическая механика
clocks- wise	сағат тілімен бағыттас	по часовой стрелке
clockwise direction	сағаттын тілімен бойынша	в направлении часовой стрелки

coefficient of expansion	ұлғаю коэфиценті	коэффицент расширение
coherent waves	когерент толқындар	когерентные волны
coil	орам	виток
collector	коллектор	коллектор
collision	соқтығысу	столкновение
collision theory	соқтығысу теориясы	теория столкновение
caloric	жылу, жылулық	теплота
combine	соединять	соединять
combustion	жану	сгорание, горение
compass	компас	компас
component	компонент	составляющая
composition	тіркестік	композиция, сочетание
compress	қысу; сызу	компонент
compressibility	сығымдау	сжать
compression	сығылу	сжитаемость , сжатие
Compton effect	Комптон эффекті	эффект Комптона
connection	байланыс	связь

congruent	конгруэнттік	совпадающий,конгруэнтный
concave	ойыс	вогнутый
concave lens	ойыс линза	вогнутая линза
concave mirror	ойыс айна	вогнутое зеркало
concept	ұғым	понятие
concrete	нақты	конкретный
concurrent	бір нүктеге бағытталған	направленные к одной точке
condition	шарт-жағдай	условие
condition band	өткізгіштік аймағы	зона проводимости
conductor	өткізгіш	проводник
connect	қосу	соединять
conservation	сақталу	сохранение
constant	тұрақты	постоянная
constant acceleration	тұрақты үдеу	постоянное ускорение
constant force	тұрақты күш	постоянная сила
constant pressure	тұрақты қысым	постоянное давление
constant temperature	тұрақты температура	постоянная температура

constant velocity	тұрақты жылдамдық	постоянная скорость
constant volume	тұрақты көлем	постоянный объем
convection	конвекция	конвекция
converge	жинау	собирать
converging lens	жинағыш линзалар	собирающие линзы
conversely	кері,кейін қарай	обратно,наоборот
convex	дөнес	выпуклый
convex lens	дөнес линза	выпуклая линза
conductor	өткізгіш	проводник
cosine low(low of cosine	косинустар теоремасы	теорема косинусов
cosmic rays	ғарыштық сәулелер	космические лучи
correspondence	корреспенденция	корреспенденция
coulomb	кулон	кулон
Coulombs law	Кулон заңы	закон Кулона
councilor	кеңес беруші	советник
counter clock-wise	сағат тіліне қарама-қарсы	против часовой стрелки
counterclockwise direction	сағат тіліне қарсы бағытта	в направлении против часовой стрелки

couple	жұп	пара
critical angle	кризистік бұрыш	критический угол
critical point	кризистік нүкте	критическая точка
curie	кюри	кюри
current	тоқ, тоқ күші	ток-сила тока
current carrying	тоқ өткізгіш	проводник с токос
cylindrical	цилиндрлік	цилиндрический
cyclotron	циклотрон	циклотрон
clay	саз балшық	глина
dashed line	кесік сызық	прерывистая линия
data	берілген	данные
dam	дамба	дамба
damped oscillation	өшетін тербелістер	затухающие колебания
dark	қараңғы, күңгірт	темный
dark fringe	күңгірт жиек	интерференционный минимум
datum	шама	величина
decelerate	бәсеңдеу	замедлять
decimal fraction	ондық бөлшек	десятичная дробь
decision	шешім	решение

decrease	азайту	уменшать
deduce	қорыту,шығару	выводить
deduction	нәтиже	результат
deep	терең	глубокий
define	белгілі	определенный
defined	белгілі,анықталған	определенный
definite integral	анықталған интеграл	определенный интеграл
definition	анықтама	определение
degree	дәреже,көрсеткіш,	степень,показатель,градус
degree of the monomial	бір мүшенің дөрежесі	степень одночлена
degree measure of angle	бұрыштың градустық өлшемі	градусное измерение угла
demand	талап ету	требовать
denominator	бөлім	знаменатель
dense	тығыз	плотный
density	тығыздық	плотность
density function	тығыздық функциясы	функция плотности
depend	тәуелді болу	зависеть
dependence	байланысты, тәуелді	завмсимость

dependence of vectors	векорлардың тәуелділігі	зависимость векторов
depth	тереңдік	глубина
derivation	дифференциалдау	дифференцирование
derivative of constant	тұрақты санның туындысы	производная постоянной
descending order	кемімелі қатар	убывавший ряд
De Broglie wavelength	Де бройль толқындарынының ұзындығы	длина волны Де бройля
decay	бұзылу	распад
decay constant	ыдырау тұрақтысы	постоянная распада
decelerated motion	баяу қозғалыс	замедленное движения
deceleration	тежелу	замедление
decibel	децибел	децибел
deflection	ауытқу	отклонение
degree	дәреже	степень
density	тығыздық	плотность
depth	тереңдік	глубина
destructive	жойғыш	разрушающая
determine the composition	құрамды анықтау	определить состав

deuterium	дейтерий	дейтерий
device	құрал	прибор
devote	арнау, бағыштау	посвящать
diagonal	диагональ	диагональ
diagonalmatrix	диагональдық матрица	диагональная матрица
diagonal of a square	квадраттың диагоналы	диагонали квадрата
diameter	диаметр	диаметр
difference of two squares	квадраттардың айырмасы	разность квадратов
differential	дифференциалды, әр түрлі	дифференциальный
diagram	диаграмма	диаграмма
diameter	диаметр	диаметр
digits	сан	цифра
distance between point and line	нүктементүзудіңарақашықтығы	расстояние между точкой ипрямой
distribute	тарату	распределять
diagram	диаграмма	диаграмма
diamagnetism	диамагнетизм	диамагнетизм
diamond	алмас	алмаз
diatomic molecule	екі атомды молекула	двуатомная молекула

dielectric	диэлектрик	диэлектрик
diffraction	дифракция	дифракция
diffuse reflection	дифуззиялық шағылу	диффузное отражение
diffusion	диффузия	диффузия
diode	диод	диод
dipole	диполь	диполь
direct current	тұрақты тоқ	постоянный ток
direction	бағыт	направление
disk	диск	диск
disorder	ретсіздік	беспорядок
dispersion	дисперсия	дисперсия
displace	орнын ауыстыру	перемещать
distribution	тарал	распределение
distance	ара қашықтық	растояние
distinguish	айыру,ажырату	различать
divide	бөлу	делить
dividend	бөлінгіш	делимое
division	бөлу	деление
division by zero	нөлге бөлу	деление на ноль
diverge	шашырату	рассеивать
dot	нүкте	точка

dotted line	пунктир сызығы	пунктирная линия
double	екі жақты	двойной,двугранный
double root	қос түбір	двойной корень
double integral	қос иртеграл	двойной интеграл
downward	төмен	вниз
drop	тамшы	капля
dry cell	құрғақ элемент	сухой элемент
drow	сызу	чертить
dual nature	екі жақтылық	двойственность
dynamics	динамика	динамика
dynamometer	динамометр	динамометр
dyne	дина	дина
earth	жер	земля
edge	қыр,жақ	ребро грань
education	білім	образование
edge	қыр	ребро
edition	басылым,еңбек	издание
eccentricity	эксцентрлік	эксцентричность
echelon form	сатылы форма	ступенчатая форма
efficiency	тиімділік	эффективность
eliminate	шығарып, алып таста	решить,устранять

elimination	бөліну	удаление
ellipse	эллипс	эллипс
elastic	серпімді	упругое
elasticity	серпімділік	упругость
electric current	электр тоғы	электрический ток
electric dipole	электр диполы	электрический диполь
electric field	электр өрісі	электрический поле
electric flux	электе ағыны	электрический поток
electric motor	электр қозғалтқышы	электродвигатель
electrical charge	электр заряды	электрический заряд
electrified object	электрленген дене	электрифицирован ное тело
electrode	электорд	электрод
electromagnetic	электр-магнитік	электромагнитная
spectrum	спектр	спектр
electromotive force	электр қозғаушы күш	электродвижущая сила
electron	электрон	электрон

electron microscope	электронды микроскоп	электронный микроскоп
electron capture	электронды иелену	захват электрона
electron orbital	электрон орбитасы	орбита электрона
electron pair	электрондық жұп	электронная пара
elementary	элементар	элементарный
elementary charge	элементар заряд	элементаргый заряд
elliptical orbit	элиптік орбита	эдс
empty	бос	пустой
energy	энергия	энергия
energy level	энергетикалық деңгей	энергетический уровень
enable	мүмкіндік	возможность
encircle	қоршау	окружность
enclose	корытынды жасау	заключать
enlarge	көбейту	увеличивать
engine	мотор қозғалтқыш	мотор,двигатель
enrich	байыту	обогащать
equal	тең	равный
equal function	тең функция	равная функция
equal set	тең жиындар	равная множества

equality	теңдік	равенство
equalize	теңестіру	приравнять
equation	теңдеу	уравнение
equiangular	тең бұрышты	равноугольный
equivalence	мәндестік	равносильность
equivalence relation	эквиваленттік қатынас	отношение эквивалентности
Euclid	Евклид	Евклид
euler's number	эйлер саны	число Эйлера
evaparate	булану	испаряться
even	жұп	четный
even function	жұп функция	четная функция
even number	жұп сандар	четные числа
event	нәтиже	результат
exact	тура	точный
exactly	тура	точно
example	мысал	пример
exert	тіркеу, күш беру	прилагать силу
exist	болу	существовать
expand	үлкейту	увеличивать
expanded form	үлкейген түрі	увеличенная форма

expected value	болжамды мән	предпологаемое значение
experiment	тәжірибе	эксперимент
explanation	түсіндірме	обьяснение
explicit function	айқын функция	явная функция
exponent	көрсеткіштер	показатели
express	өрнектеу	выражать
express in lowest terms	ең кіші өрнектер түрінде жазу	упростить выражение
expression	өрнек	выражение
extend	созу	растягивать
exterior	сыртқы	внешний
external division	сырттай бөлу	внешнее деление
external point	сыртқы нүкте	внешняя точка
external tangent circles	сырттай жанасатын	внешние касающихся
equator	экватор	экватор
equidistant	тепе-тең келу	равностоящий
ether	эфир	эфир
evaporation	булану,бу түзілу	испарение
excitation	қозу	возбуждение

excited state	қозғалыстағы күн	возбужденное состояние
eyepiece	көздің қарашығы	глазной хрусталик
face diagonal	жақтың диагоналы	диагональ грани
factor	көбейткіш	множитель
failing body	түсіп бара жатқан дене	падающее тело
faraday	фарадей	фарадей
favourable	қолайлы, жарамды	подходящий, удобный
feather	мамық, сызу құралы, қалам	перо
figure	пішін	фигура
finite sequence	шектелген тізбек	ограниченная последовательность
finite set	шектелген жиын	ограниченное множество
first quadrant	бірінші квадрат	первый квадрат
fixed	білгіленген	фиксированный
figure	өріс,дене	фигура
fission	бөліну	деление
fission energy	бөліну энергиясы	энергия деление
fixed point	тұрақты нүкте	фиксированная точка
flight	ұшу	полет

fluid	сұйық	жидкость
focus	фокус	фокус
fold	бүгу	складывать,сгибать
force	күш	сила
form	түр	форма
formula	формула	формула
formulate	тұжырымдар	формулировки
foundation	негіз	основание
fraction	бөлшек	дробь
fraction in simplest	жәй түрдегі бөлшек	элементарная простейшая дробь
for example	мысалы	например
full	толған	полный
fractional equation	бөлшекті теңдеу	дробное уравнение
frequently	жиі	часто
frustum of a cone	қиық конус	усеченный конус
frustum of pyiramid	қиық пирамида	усеченная пирамида
free	еркін	свободный
free body diagram	еркін түскен дене	свободно падающее тело

free expansion	еркін ұлғаю	свободное расширение
free fall	еркін түсу	свободное падение
freeze	қату	замерзать
freezing point	қату нүктесі	точка затвердение
frequency	жиілік	частота
friction	үйкеліс	трение
frictional force	үйкеліс күші	сила трения
frictionless	тегіс	идеально гладкий
fringe	жолақ	полоса
function	функция	функция
function bounded above	жоғарыдан шектелген функция	функция ограниченная сверху
functional group	функционалды топ	функциональная группа
fundamental	негізгі	основной
fundamental laws of exponents	дәрежелеудің негігі заңдары	правила возведения в степень
fundamental unit	негізгі өлшем	основное измерение
fundamental period	негізгі период	основной период

fundamental theorem of algebra	алгебраның негізгі теоремасы	основная теорема алгебры
fundamental	іргелі	основной
furnish	жабдықтау	снабжать
fusion	синтез	синтез
gain	ұтыс	выигрыш
gamma emission	гамма сәуле шығару	гамма излучение
gamma rays	гамма сәулелер	гамма-лучи
gas constant	газ тұрақтысы	постоянный газ
general equation	жалпы теңдеу	общее уравнение
general term	ортақ мүше	общий член
general term of sequence	тізбектің ортақ мүшесі	последовательности общий член
general term of series	қатардың ортақ мүшесі	общий член ряда
geometric mean	геометриялық орта	среднее геометрическое
geometric figures	геометриялық денелер	геометрические фигуры
give a reason	себеп беру	давать повод
gradient	көлбеу	наклон
graph	график	график

greatest common factor	ең үлкен ортақ көбейткіш	наибольший общий множитель
greatest common divisor	ең үлкен ортақ бөлгіш	наиболший общий делитель
greatest lower bound	ең төменгі жақ	самая нижняя грань
group	топ	группа
generator	генератор	генератор
ground state	бастапқы күй	основно состояние
half	жарты	половина
half angle	бұрыштың жартысы	половина угла
half line	жартылай түзу	луч.полупрямая
half-life	жартылай ыдырау	период полураспада
harmonize	сәйкестік	гармонировать
harmonic motion	гармониялық тербеліс	гармонические движение
heat	жылу энегиясы	тепловая энергия
heavy	ауыр	тяжелый
half-life	жартылай ыдырау	период полураспада
harmonic motion	гармониялық тербеліс	гармонические движение

height	биіктік	высота
helping lines	көмекші сызықтар	вспомогательные линии
hellcopter	тікұшақ	вертолет
hemisphere	жарты сфера	полусфера
hence	сондықтан	следовательно
heptagon	жеті бұрыш	семиугольник
hexagon	алты бұрыш	шестиугольник
hexagonal pyramid	алты бұрышты призма	шестиугольная призма
high	биік	высокий
high degree	ең үлкен көрсеткіш	наивысший показатель
homogeneous	бір текті	однородный
horizontal	горизонталь	горизонтальный
horizontal bar graph	горизонталь бағана графигі	график горизонтального столбца
horizontal change	горизонталь өзгеріс	горизонтальное изменение
heat	жылу	теплота
heat capacity	жылу сыйымдылық	теплоемкость
heat energy	жылу энергиясы	тепловая энергия
heat of combustion	жану жылуы	теплота горения

heat of fusion	балқу жылуы	теплота плавления
high voltage	жоғарғы кернеу	высокое напрежение
Hook's law	Гук заңы	Закон Гука
hoop	құрсау	обруч,кольцо
horizontal	көлденең	горизонталь
horizontal line	көлденең сызық	горизонтальная линия
horizontal motion	горизонтал қозғалыс	горизонтальное движение
horsepower	ат күші	лошадиная сила
hydrogen peroxide	сутегінің асқын тотығы	перекись водорода
hyperbola	гипербола	гипорболическая
hypotenuse	гипотенуза	гипотеза
household appliance	тұрмыстық қолдану	бытовое применение
ice	мұз	лед
iron	темір	железо
in center of triangle	үшбұрышқа сырттай сызылған шеңбер	центр окружности вписанной в треугольник
inclined line	көлбеу түзу	наклоная линия
include	енгізу	включать
incorrect	дұрыс емес	неправильный

in common	ортақ	В общем
identical	бірдей	одинаковый
identically	тепе-теңдікте	тождественно
identity	ұқсастығы	сходство
identity element	ұқсас элементі	опозновательный элемент
identity laws	тану заңдары	опозновательные законы
identity matrix	бірлік матрица	единичная матрица
ideal gas	идеал газ	идеальный газ
identical	бірдей	одинаковый
illuminate	жарықтандыру	освещать
illustrate	көрсету	освещение
indefinite	анықталмаған	неопределенный
independence	тәуелсіздік	независимость
independent vectors	тәуелсіз векторлар	независимые векторы
indeterminate	анықталмаған	неопределенный
indeterminate forms	анықталмаған өрнектер	неопределенные выражения
index	индекс	индекс
index of permutation	айнымалы индекс	нндекс переменной

indirect proof	жанама дәлел	косвенное доказательство
indispensable	қажетті, міндетті	необходимый, обязательный
indivisible	бөлінбейтін	не делимый
influenc	ықпал ету	влияние
infinite set	шексіз жиын	бесконечное множество
initial condition	алғашқы шарт	начальное условие
illustrate	көрсету кекіндеу	иллюстрировать,п оказывать
image	көрсету	изоброжать
image points	көрініс нүктелері	изоброжать точки
image	бейнелеу	изображать
image points	жорамал нүктелер	вображаемое точки
impact	соққы-соқтығу	удар-столкновение
image set	жиын кескіні	изоброжение множества
imaginary	жорымал	воображаемый
imaginary axis	жорымал өс	мнимая ось
imaginary roots	комплекс түбір	комплексные корни
immerse	жүктеу	погружать,окунать

importance	мәні	значение
important	маңызды	значимый,важный
impossible	мүмкін емес	невозможный
impulse	импульс	импульс
improper fraction	бұрыс бөлшек	неправильная дробь
improper integral	меншіксіз интеграл	несобственный интеграл
in general	жалпы	в общем
in place of	орнына	в место
in terms of	түрінде	в виде
inequality	теңсіздік	неравенство
incident ray	түскен сәуле	падающий луч
inclination	иілім	наклонение
inclination angle	бұрыштың қиғаштығы	угол наклона
inclined plane	көлбеу жазықтығы	наклонная плоскость
incompressible	сығылмайтын	несжимаемый
increase	өсу,үлкейу	увеличиваться
index of reaction	сыну коэффиценті	коэффицент преломления
induced charge	индукцияланған заряд	индуцированный заряд

inductor	индуктор	индуктор
inelastic	серпімсіз	неупругое
inertia	инерция	инерция
influence	әсер	влияние
initial	бастапқы	начальный
initial condition	бастапқы шарттар	начальные условия
initial point	бастапқы нүкте	начальная точка
initial position	бастапқы орны	начальная позиция
initial point	алғашқы нүкте	начальная точка
initial position	алғашқы жер	начальное положение
initial velocity	алғашқы жылдамдық	начальная скорость
injective function	инъектив функция	инъективная функция
inner product of vectors	векторлардың іштей көбейтіндісі	внутреннее произведение
inner region	ішкі облыс	внутренная область
inscribe	іштей сызу	вписывать
inscribed square	іштен сызылған квадрат	вписанный квадрат
integers	бүтін сан	целое число
integral	интегралдық	интегральный

intercept	бөлу	выделять
interchange	ауыстыру	переставлять
interior of a sphere	сфераның ішкі ауданы	внутренняя часть сферы
interior of triangle	үшбұрыштың ішкі ауданы	внутренняя область треугольника
interior region of a circle	шеңбердің ішкі аймағы	внутренная область окружности
intermediate variables	орта айнымылылар	средние переменные
internal	ішкі	внутренний(яя,ее)
internal development	іштей даму	внутреннее развитие
internal division	іштей бөліну	внутренее деление
interpret	түсіндіру,талқылау	объяснять
interpretation	түсіндіру,талқылау	интерпретация
intensity	кернеулік	интенсивость
internal	ішкі	внутренний
internal energy	ішкі энергия	внутренная энергия
internal resistance	ішкі кедергі	внутреннее сопротивление

intersect	қиып өту	пересекать, делить на части
intersection point	қиылысу нүктесі	точка пересечния
into function	функцияға	в функции
interval	интервал	интервал
introduction	кіріспе	введение
inverse	теріс	отрицательный
inverse element	кері элемент	обратный элемент
inverse function	кері функция	обратная функция
inverse of a matrix	кері матрица	обратная матрица
inverse of a relation	кері әрекет	обратная
inversely proportional	кері пропорционал	обратно пропоциональный
initial velocity	алғашқы жылдамдық	начальная скорость
insulator	изолятор, ток өткізбейтін	изолятор
inverted image	кері бейне	обратное изоброжение
irrational	иррационал	иррационал

irrational numbers	иррационал сандар	иррациональные числа
isosceles trapezoid	тең бүйірлі трапеция	равнобочная трапеция
ion	ион	ион
isotope	изотоп	изотоп
joule	джоуль	джоуль
junction	байланыс нүктесі	стык,соединение
Kelvin	Кельвин	Кельвин
Kepler's law	кеплер заңы	законы Кеплера
lateral area	бүйір ауданы	боковая площадь
local	жергілікті	местный
lawyer	адвокат	адвокат
leading coefficient	бас еселік	старший коэффицент
leading term	бас мүше	главный член
leather	тері(сатушы)	кожа (торговец)
least common multiple	ең кіші ортақ еселік	наименшее общее кратное
least upper bound	ең үстіңгі жақ	самая верхняя часть
lens	линза	линза
lever	күйенте	рычаг

length contraction	қысқарту	укорачивание
Length of a vector	вектордың ұзындығы	длина вектора
limit	шек	предел
limit of function	функцияның шегі	предел функции
line graph	сызық графигі	график линии
line segment	кесінді	отрезок
line equation	сызықтық теңдеу	линейное уравне
logarithm	логарифма	логарифм
logic	логика	логика
lower base	төменгі табан	нижнее основание
lower bound	төменгі жақ	нижняя грань
lowest common multiple	ең кіші ортақ көбейткіш	наименший общий множитель
lowest degree	ең кіші көрсеткіш	наименьший показатель
light	жарық	свет
light ray	жарық сәулесі	световой луч
linear motion	түзу сызықты қозғалыс	прямолинейное движение
linear velocity	түзу сызықты қозғалыстың жылдамдығы	скорость прямолинейного движения

liquid	сұйық	жидкий,жидкость
load	жүк	груз
loop	цикл	цикл
major arc		
magnet	магнит	магнит
magnetic field	магниттік өрісі	магнитное поле
magnetic flux	магнит ағыны	магнитный поток
magnetic force	магниттік күш	магнитная сила
magnification	үлкейту	увеличение
magnitude	модуль,шама	модуль,величина
mathematical induction	математикалық индукция	математическая индукция
mathematical expression	математикалық өрнек	математическое выражение
mathematical calculation	математикалық есептеу	математическое вычисление
mass	масса	масса
master	меңгеру	овладеть
matter	материя	материя
matrix	матрица	матрица
maximum value	ең үлкен мәні	максимальное значение
median	медиана	медиана

mean free path	еркін жолы	длина свободного пробега
measure	өлшеу	измерять
measurement	шамалау,өлшеу	измерение
mechanical energy	механикалық энергия	механическая энергия
medium	орта	среда
melting point	балқу нүктесі	точка плавления
melt	балқу,балқыту	плавление плавить
measure	өлшем	мера,размер
mid point	орта нүкте	средняя точка
mid base	орта табан	серединное основание
minimum value	ең кіші мәні	минимальное значение
minor arc	кіші доға	меньшая дуга
minuend	азайғыш	уменьшаемое
mix	араластыру	смешивать
mixture	араластыру, қоспа	смешивание, смесь
mixed number	аралас сан	смешанное число
microwave	микро толқын	микроволна
midpoint	ортаңғы нүкте	средняя точка
monomial	бірмүше	одночлен

multiplication of integers	бүтін сандарды көбейту	умножение целых чисел
monometer	манометр	манометр
modern physics	қазіргі заманғы физика	современная физика
mole	моль	моль
molecular mass	молекулалық масса	молекулярная масса
moment arm	күш иіні	плечо силы
moment of inertia	инерция моменті	момент инерции
motion	қозғалыс	движение
motion of plane	жазықтықтығы қозғалыс	движение на плоскости
motor	мотор	мотор
move	қозғалыс	движение
moving body	қозғалыстағы дене	движущееся тело
mutual inductance	өзара индукция	взаимная индукция
natural number	натурал сан	натуральное число
negate	терістеу	отрицание
negative integers	теріс бүтін сандар	отрицательные целые числа
negative number	теріс сан	отрицательное число

number line	сан түзу	числовая пряма
number sense	сандық болжау	представление о числе
nature of light	жарық табиғаты	природа света
negative charge	теріс заряд	отрицательный заряд
negative ion	теріс ион	отрицательный ион
neglect	ескермеу	пренебрегать
net charge	қорытқы заряд	результатный заряд
neutral	бейтарап	нейтральный
neutron	нейтрон	нейтрон
Newtonian mechanics	Ньютон механикасы	Ньютоновксая механика
Newton's law	Ньютон заңы	Закон Ньютона
no uniform	бір қалыпсыз	неравномерное
normal	қалыпты	нормальный
north pole	солтүстік полюсі	северный полюс
notation	жазу	запись,записывние
nuclear	ядролық	ядерная
nuclear fusion	ядролық синтез	ядерный синтез
nuclear reaction	ядролық реакция	ядерная реакция

nucleon	нуклон	нуклон
nucleus	ядро	ядро
numerator	алым	числитель
oblique prism	көлбеу призма	наклонная призма
obtuse angle	доғал бұрыш	тупой угол
object	дене,объект	тело,объект
observe	бақылау	наблюдать
odd function	тақ санкция	нечетная функция
odd number	тақ сан	нечетная число
one sided derivative	бір жақты туынды	односторанная производная
one sided limit	бір жакты шек функция	одностороний предел функции
open interval	ашық интервал	открытый интервал
open line segment	жай жақша	простые скобки
order relation	қатынас реті	порядок соотношения
ordered pair	реттелген жұп	упорядоченная пара
Ohm's law	Ом заңы	Закон Ома
opposition	қарсы тұру	противостояние
oil	мұнай	нефть

optic axis	оптикалық өс	оптическая ось
optics	оптика	оптика
optical microscope	оптикалық микроскоп	оптический микроскоп
orbit	орбита	орбита
oscillation	тербеліс	колебание
oscillator	осцилятор	осцилятор
oscillatory motion	тербелмелі қозғалыс	колебательное движение
oxygen	оттегі	кислород
parabola	парабола	парабола
parallel lines	параллельные прямые	параллельные плоскости
partial derivative	дербес туынды	частная производная
Pachen series	Пашен сериясы	серия Пашена
part	бөлшек,бөлім	часть
particle	бөлік	частица
Pascal	Паскаль	Паскаль
path	траектория	траектория
path difference	жүріс айырымы	разность хода
pattern	үлгі, мүсін	образец, модель

perfect cube ofsum of two numbers	екі санның айырмасының кубы	куб разности двух чисел
perimeter of the base	табан периметрі	периметр основания
period of a function	функцияның периоды	период функции
pendulum	маятник	маятник
penumbra	жартылай көлеңке	полу тень
perfectly elastic	пбсолют серпімді	абсолютно упругое
performance	орындалу	выполняемость
period	период	период
periodic motion	периодты қозғалыс	периодическое движение
periodic waves	периодтық толқындар	периодические волны
permanent magnet	тұрақты магнит	постоянный магнит
perpendicular	перпендикуляр	пепендикуляр
point of tangency	жанасу нүктесі	точка касания
point on a graph	график нүкте	точка графика
polynomial	көп муше	многочлен

positive number	оң сан	положительное число
positive charge	оң заряд	положительный заряд
position	орын	место, положение
postulate	алдын ала жағдай	предварительное условие
premise	алдын ала шарт	предпосылка
prime number	жай сан	простое число
product	көбейтінді, кобейу	ппроизведение, умножить
proof of existence	болғанын дәлелдеу	доказания, существование
proper(simple) fraction	дұрыс бөлшек	правильная дробь
properties	қасиет	свойства
properties of integers	бүтін сандарынын қасиеті	свойства целых чисел
proportion	пропорция, қатынас	пропорция, отношение
proposition	тұжырым	утверждение
protractor	транспортир	транспортир
Pythagorean theorem	Пифагор теоремасы	теорема Пифагора
permeability	өтімділік	проницаемость
phase	фаза	фаза

phase angle	фазалық бұрыш	фазовый угол
phase diagram	фазалық жиаграмма	фазовая диаграмма
phase difference	фазалардың ығысуы	сдвиг фаз
photocell	фотоэлемент	фотоэлемент
photon	фотон	фотон
photon emission	фотондарды шығару	испускание фотонов
physical change	физикалық өзгеріс	физические изменение
physical property	физикалық қасиет	физическое свойство
planet	планета	планета
plane angle	жазық бұрыш	плоский угол
plane figure	жазық дене	плоская фигура
plane	жазықтық	плоскость
plate	пластинка	пластинка
plastics	пластикалық материал	пластические материалы
point	нүкте	точка
point charge	нүктелік заряд	точечный заряд
point source	нүктелік жарық көзі	точечный источник света
polar	полярлық	полярный

pole	полюс	полюс
pose	ұсыныс жасау, тағайындау	ставить, предлагать
position	орын	место-положение
position vector	нектордың радиусы	радиус вектор
positive	оң,дұрыс	положительный
positive charge	оң заряд	положительный заряд
positron	позитрон	позитрон
positron decay	позитрондық ыдырау	позитронный распад
potential energy	потенциалдық энергия	потенциальная энергия
power	қуат	мощность
power station	электр стансасы	электростанция
predict	болжау	предсказывать
press	басу,қысу	нажимать,давить
pressure	қысым	давление
prevent	бөгет жасау,кері тарту	препятствовать
principal quantum	бас кванттық сан	главное квантовое число
principle axis	басты өс	главная ось
project	жоба	проект

projectile motion	снарядтың ұшуы	полет снаряда
projection of a vector	вектор проекциясы	проектор вектора
propagation	таралу	распространение
propagation of light	жарықтың таралуы	распространение света
propagation of waves	толқындардың таралуы	распространение волн
property	ерекшклік	особенность
proton	протон	протон
proton number	протондар саны	число протонов
pull	тарту	тянуть
pulley	блок	блок
pulse	пульс	пульс
pure	таза,қоспасыз	чистый,без примесей
push	итеру	толкать
quadratic equation	квадраттық теңдеу	квадратное уравнение
quadratic inequality	квадраттық теңсіздік	квадратичное неравенство
quadrilateral	төртбұрыш	четырехугольна
quantifier	мөлшер	количество
quotient	бөлім,бөлінді	частное

quantity	сан, мөлшер	количество
quantum	кванттық	квантовая
quantum mechanics	кванттық механика	квантовая механика
radian	радиан	радиан
radical	түбір	корень
radial	радиал	радиальный
radian	радиан	радиан
radian measure	радиандық өлшем	радианная мера
radioactive capture	радиоактивті қармалу	радиоактивный захват
radioactive decay	радиоактивті ыдырау	радиоактивный распад
railroad track	темір жол	железная дорога
radium	радий	радий
radius	радиус	радиус
rate	жылдамдық	скорость
ratio	қатынас	отношение
ray	сәуле	луч
ray diagram	сәуле диаграммасы	диаграмма лучи
range	ара қашықтық	расстояние
ratio	қатынас	отношение

rational inequality	рационал теңсіздік	рациональное неравенство
rational number	рационал сандар	рациональное число
reciprocal	кері шама	обратная величина
reciprocal of a numbers	өзара кері сандар	взаимно обратные числа
rectangle	тіктөртбұрыш	прямоугольник
record	жазба,жазу	запись
reducible fraction	қысқартылатын бөлшек	сократимые дроби
regard	қайта карау, есептеу	рассматривать, считать
regardless	солай болса да	невзирая на
regular polygon	дұрыс көпбұрыш	правильный многоугольник
remainder	қалдық	остаток
remainder theorem	қалдық теоремасы	теорема остатка
represent	бейнелеу	изображать, представлять
rhombus	ромб	ромб
right angle	тік бұрыш	прямой угол
right triangle	тік үшбұрыш	прямой треугольник
ring	сақина	кольцо

roots of an equation	теңдеудің түбірлері	корни уравнение
rotate	айналу,дөңгелену	вращать(ся)
round off	дөңгелектеу	округлять
royal	корольдық	королевский
reaction	реакция	реакция
reaction heat	реакция жылуы	тепло реакций
real	шын,нақты	действительное
real image	шын көрініс	действительное изображение
rectifier	түзеткіш	ректификатор
reference point	санның нүктесі	точка отсчета
reflect	шағылысу	отражаться
reflection	шағылу	отражение
reflection of light	жарықтың шағылуы	отражение света
refracted ray	сынған сәуле	переломленный луч
refraction	сыну	преломление
region	облыс,аймақ	область
relation	қатынас	отношение
relativity	салыстырмалық	относительность
relative velocity	салыстырмалы жылдамдық	относительная скорость

repel	итеру	отталкивание
resistance	кедергі	сопротивление
resistance of conductor	өткізгіш кедергісі	сопротивление проводника
resistivity	кедергі	сопротивление
resistor	резистор	резистор
resolution	рұқсат ету	разрешение
resolving power	ажыратушы күш	разделяющая сила
resonance frequency	резонанс жиілігі	резонансная частота
respectively	лайық, сәйкес	соответственно
rest energy	тыныштық энергиясы	энергия покоя
resorting force	серпімділік күші	сила упругости
resultant force	тең әсерлі күш	равнодействующая сила
rigid body	қатты дене	твердое тело
rise	көтерілу	подниматься
rod	таяқ	палка
roll	айналу,домалау	вращаться,кататься
rolling	домалану	качение
rough	ойлы-қырлы	шершавый

rotate	айналдыру,айналу	вращать,вращаться
rotation	айналым	вращение
rotation of axes	осьтердің айналуы	вращение оси
rotational motion	айналмалы қозғалыс	вращательное движение
sample space	іріктеме кеңістік	выборочное пространство
satellite	серік	спутник
scalar	скаляр	скаляр
scalene triangle	кез-келген үшбұрыш	произвольный треугольник
secant	қиюшы	секущая
sector	сектор	сектор
secular reflection	толық шағылу	полное отражение
segment of circle	дөңгелек сегіменті	круговой сегмент
semicircle	жарты шеңбер	полуокружность
screw	винт	винт-шуруп
self induction	өздік индукция	самоиндукция
semiconductors	жартылай өткізгіштер	полупроводники
semi major axis	үлкен жарты өс	большая полу ось

semi minor axis	кіші жарты өс	малая полу ось
sensitivity	сезімталдық	чуствительность
separate	бөлу	отделять
separation	айрылу,бөліну	разделение
series circuit	тізбектеп қосу	последовательное соединение
sequences	тізбек	последовательность
series	қатар	ряд
set	жиын	порядка
side	қабырға	сторона
sign table	таңба кестесі	таблица знаков
signal function	сигнум функциясы	сигнум-функция
similarity	ұқсастық	подобие,сходства
simplification	қысқарту	сокращение
simplifying a fraction	бөлшекті қысқарту	сокращение дроби
sine	синус	синус
size	өлшем,шама	обьем
solid	қатты дене	твердое тело
slope	көлбеу бұрышы	угол наклона
solid geometry	стереометрия	стереометрия

slution	шешім	решение
solution of an equation	теңдеудің шешімі	решение уравнение
space	кеңістік	пространство
sphere	шар,сфера	шар,сфера
square	шаршы квадрат	квадрат
square of equation	айырманың квадраты	квадрат разности
square of the sun	косындының квадраты	квадрат суммы
square prism	дұрыс призма	правильная призма
square root	квадрат түбірі	квадратнвй корень
stable	орныкты, тиянақты	устойчивый
step function	сатылы функция	ступенчатая функция
straight angle	жазық бұрыш	развернутый угол
straight line	түзу	прямая
ststic	орныққан,қозғалмайтын	статический
subset	ішкі жиын	подмножество
subtraction	азайту	вычитание
substance	зат, нәрсе	вещество
sum	қосынды	сумма
sum of cubes	қосындының кубы	сумма кубов

sum of function	функциялар қосындысы	сумма функции
sum of two cubs	екі сан кубтарының қосындысы	сумма кубов двух чисел
supply	жеткізу, тапсырыс	снабжать,поставлять
supplementary angles	толықтырушы бұрыштар	дополнительные углы
surface area	беттің ауданы	площадь поверхности
survive	сақтау	сохраниться, уцелеть
symmetric property	симметриялық қасиет	симметрическое свойство
system of equations	теңдеулер жүйесі	система уравнений
synchrotron	синхротрон	синхротрон
scalar	скаляр	скалярное
scalar quantity	скаляр шама	скалярная величина
scale	өлшем,таразы	весы,мера
scientific notation	ғылыми белгіленуі	научный обозначение
scientific study	гылыми жұмыс	научная работа
shadow	көлеңке	тень

shallow	таяз	мелкий , неглубокий
shape	түр,форма	форма
short circuit	қысқаша тұйықталу	короткое замыкание
SI unit	СИ бірліктер жүйесі	система единиц СИ
significant figures	мағыналы сандар	значащие цифры
simple harmonic motion	қарапайы гармониялық қозғалыс	простое гармоническое движение
simple pendulum	математикалық маятник	математический маятник
simple pulley	жай блок	простой блок
simultaneity	біруақыттылық	одновременность
single slit	бір саңылау	одна щель
sinusoidal	синусойдалық	синусоидальный
slide	сырғанау	скользить
sliding	тайғанау	скольжение
slope	еңіс,құлама	наклон,откос
smooth	тегіс	гладкий
scalar battery	күн батареясы	солнечная батарея
solar day	ашық күн	солнечный день
solar energy	күн энергиясы	солнечная энергия

solar spectrum	күн спектрі	солнечный спектр
solenoid	соленойд	соленоид
solid	қатты дене	твердое тело
solid state	қатты күй	твердое состояние
solidification	қатаю	затвердевание
solution	ерітінді	раствор
sound	дыбыс	звук
source	көз	источник
source of light	жарық көзі	источник света
south pole	оңтүстік полюсі	южный полюс
space	ғарыш	космос
specific gravity	меншікті жылу	удельная теплота
specific heat	спецификалық жылу	специфическое тепло
spectral analysis	спектрлік анализ	спектральный анализ
spectral lines	спектрлі сызықтар	спектральные линии
spectrum	спектр	спектр
speed	жылдамдық	скорость
spherical	сфералық	сферический
spherical conductor	сфералық өткізгіш	сферический проводник

spherical mirror	сфералық айна	сферическое зеркало
spin	спин	вращение,спин
split	жару	расщеплять(ся)
spontaneous emission	спонтандық эмиссия	спонтанная эмиссия
spring	серіппе	пружина
spring constant	серпімділік коэфиценті	коэффициент упругости
stable	орнықты	устойчивый
stable equilibrium	орнықты тепе-теңдік	устойчивое равновесие
standing wave	тұрғын толқындар	стоячая волна
star	жұлдыз	звезда
start	старт	старт
state	жағдай күй	состояние
static	статикалық	статический
steam	су буы	водяной пар
steam turbine	бу турбинасы	паровая турбина
stimulate	шақырту	вызывать
store	сақтау	хранить
straight line	тік сызық	вертикальные линии
straight wave	тура толқын	прямая волна

strain	деформация	деформация
stress	кернеу	напряжение
stretch	созу, созылу	растягивать
string	жіп	нить
stroboscope	стробоскоп	стробоскоп
subtraction of vectors	векторларды азайту	вычитание векторов
sunlight intensity	күн сәулесінің интенсивтігі	иинтенсивность солнечного света
superconductivity	өткізгіштік	сверхпроводимость
superconductor	өткізгіш	сверхпроводник
superposition of waves	толқындар суперпозициясы	суперпозиция волн
surface	бет	поверхность
surface area	бет ауданы	площадь поверхности
surface tension	беттік керілу	поверхностное натяжение
surrounding	айнала	окружение
survey	жерді межелеу	межевать
suspend	ілу	вешать
swing	тербелу,тербеу	качать
switch	кілт-кнопка	кнопка-ключ

synchronization	синхронизация	синхронизация
tablet	тақтайша	дощечка(с надписью)
tangent	тангенс	тангенс
tens digits	ондық сан	десятичные числа
terminal point	соңғы нүкте	конечная точка
third degree equation	үшінші дәрежелі теңдеу	уравнение третьей степени
three dimensional geometry	үш өлшемді геометрия	трехмерная геометрия
trapezoid	трапеция	трапеция
triangular pyramid	үшбұрышты пирамида	тругольная пирамида
trigonometric function	тригонометриялық функция	тригонометрическ ая функция
trigonometry	тригонометрия	тригонометрия
tangential	тангенциалды	тангенциальное
target	нысана	мишень, цель
telescope	телескоп	телескоп
temperature	температура	температура
tension	кернеу	ннапряжение натяжение
Tesla	Тесла	Тесла

theory of relativity	салыстырмалық теориясы	теория относительности
thermal equilibrium	жылулық тепе-теңдік	тепловое равновесие
thermal expansion	жылулық ұлғаю	тепловое расширение
thermodynamic	термодинамика	термодинамика
thermodynamic	термодинамика	термодинамика
thermometer	термометр	термометр
thermonuclear energy	термоядролық энергия	термоядерная энергия
thickness	жуандық, қалыңдық	толщина
thimbleful	аз сан	небольшое количество
thin film	жұқа пленка	тонкая пленка
time dilation	уақытты баяулату	замедление времени
time interval	уақыт аралығы	временной интервал
tire	шина, қақпақ	шина, покрышка
tool	құрал-жабдық	инструмент
toroid	тороид	тороид
torque	күш моменті	момент сил
transformer	трансформатор	трансформатор

transistor	транзистор	транзистор
transmission	өткізу	пропускание
transmit	жеткізу	передовать
transparence	мөлдірлік	прозрачность
transparent	мөлдір	прозрачный
transport	көлік	транспорт
transverse waves	көлденең толқындар	поперечные волны
treat	қарау, ұстау	обращаться,обходиться
tunnel	жер асты жолы	туннель
twin paradox	егіздер парадоксі	парадокс близнецов
two dimensional	қос өлшемді	двухмерный
unbounded sequence	шектелмеген тізбек	неограниченная последовательность
union	біріктіру	объединение
unit circle	бірлік шеңбер	единичная окружность
unit fraction	бөлшекті құраушылар	составляющие дроби
unit vector	бірлік вектор	единичный вектор
universal set	универсал жиын	универсальное множество

upper base	үстіңгі табан	верхнее основание
upper bound	ең үстіңгі жақ	самая верхняя грань
upper, lower limit	жоғарғы, төменгі шек	верхний, нижний предел
ultraviolet light	ультракүлгін сәуле	ультрафиолетовый луч
umbra	толқын көлеңке	полная тень
unbalanced	тепе-теңсіздік	неуравновешанный
uniform	бірқалыпты	равномерный
uniform circular motion	бір қалыпты қисық сызықты қозғалыс	равномерное круговое движение
uniformly	бірқалыпты	равномерно
uniformly accelerated	бір қалыпты үдемелі	равноускоренное
uniformly accelerated motion	бір қалыпты үдемелі қозғалыс	равномерно ускоренное движение
uniformly decelerated motion	бір қалыпты баяу қозғалыс	равномерно замедленное движение
unit	өлшем бірлігі	единица
unit charge	бірлік заряд	единичный заряд
unit mass	негізгі масса	основная масса

unit of measure	өлшем негізі	основа меры
unit vector	бірлік векторы	единичный вектор
universal	әмбебап	универсальный
universal constant	әмбебап тұрақты	универсальная постоянная
universal gravitation	бүкіл әлемдік тартыыс	всемирное тяготение
universe	әлем	вселенная
unstable	тұрақсыз,орнықсыз	неустойчивый
upward	жоғары	вверх
uranium	уран	уран
variable	айнымалы шама	переменная
variation	вариация	вариация
variation	ауысу	вариация, изменение
vacuum	вакум	вакуум
valance	валентті	валентный
valance electron	электрон орбитасы	электронная орбита
valance orbital	валеннтік орбита	валлентная орбита
valid	жарамды	применим
value	мағына	значение
valve	клапан	клапан

vapor	бу	пар
vapor pressure	бу қысымы	давление пара
vaporization	булану	испарение
vector	вектор	вектор
vary	өзгеру, құбылу	меняться, изменяться
vector	вектор	вектор
velocity	жылдамдық	скорость
velocity vector	жылдамдық векторы	вектор скорости
vertical component of a vector	вектордың вертикаль құраушысы	вертикальная составляющая вектора
vertical motoin	вертикаль қозғалыс	вертикальное движение
vertex	төбе	вершина
vertical (opposite) angle	бұрыштың төбесі	вершина угла
vertical angles	вертикаль бұрыштар	вертикальные углы
vertical asymptotes	вертикаль асимптота	вертикальная асимптота
vertical bar graph	вертикаль бағана	вертикальный столбец

vertical line	вертикаль түзу	вертикальная прямая
volume of a cone	конустың көлемі	объем конуса
vibrate	селкілдеу	вибрировать
vibration	селкілдеу	вибрация
virtual	виртуальді,жалған	мнимое, виртуальное
viscosity	тұтқырлық	вязкость
visiable	көрінетін	видимый
volt	вольт	вольт
voltage	кернеу	напряжение
voltage	кернеу	напряжение
voltage amplitude	кернеудің амплитудасы	напряжение амплитуда
voltage source	кернеу көзі	источник напряжения
volume	көлем	объем
volume expansion	көлемнің үлкеюі	расширение.увеличение объема
whole number	бүтін сан	целое число
water	су	вода
walt	ватт	ватт
wave	толқын	волна

wave length	толқын ұзындығы	длина волны
wave mechanics	толқын механикасы	волновая механика
weight	салмақ	вес
weight of pure gold	таза алтынның салмағы	вес чистого золота
wheel	дөңгелек	круг
width	ені	ширина
wing	қанат	крыло
wire	сым темір	провод
work	жұмыс	работа
work done by compressed spring	жиырылған серіппенің істеген жұмысы	работа совершенная сжатой пружиной
work by force	күш арқылы істелген жұмыс	работа совершенная силой
x-intercept of a curve	қисықтыңх-осіменқиылысқаннүктесі	точка пересечения кривой с осью х
x-axis	абсциссалар осі	ось абсцисс
x-coordinate (abscissa)	абсцисса	абсцисса
x-coordinates	х-координатасы	координата-х
x-intercept	х-осімен қиылысу нүктесі	точка пересечения с осью х

x-y coordinates	X және у координаттары	координаты x и y
x-ray	рентген сәулелері	рентгеновские лучи
x-ray photon	рентгендік фотон	рентгеновский фотон
x-ray tube	рентгендік түтікше	рентгеновская трубка
x-rays diffraction	рентген сәулелерінің сынуы	преломление рентгеновских лучей
y-intercept of a curve	қисықтың-осіменқиылысқаннүктесі	точка пересечения кривой с осью y
y-axis	ординаталар осі	ось ординат
y-coordinate (ordinate)	ордината	ордината
y-intercept	y-осімен қиылысу нүктесі	точка пересечения с осью y
zero polynomial	нөлдік көпмүше	нулевой многочлен

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PREFACE