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THE ROLE OF THE ENGLISH LANGUAGE IN SOCIAL MEDIA: ITS USE AND IMPACT

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Abstract: This thesis explores the role of the English language in social media, analyzing its use and impact on global communication, cultural exchange, and identity formation. Given the pervasive nature of English in digital platforms, this study investigates how English functions as a lingua franca in online environments, the effects of its widespread use on local languages and cultures, and the implications for global communication practices.
Keywords: Social media, english language, global communication, cultural exchange, identity formation, linguistic diversity, digital communication, discourse analysis, sociolinguistics, language dominance, online interaction

INTRODUCTION

The English language has become a dominant force in social media, shaping how individuals interact, share information, and construct identities online. This thesis examines the multifaceted role of English in social media, focusing on its use as a global communication tool and its effects on cultural and linguistic landscapes. The research aims to provide a comprehensive understanding of how English influences social media dynamics and the broader implications for communication and culture.

Methodology

Data collection:

- Content analysis: Examination of social media platforms (e.g., Facebook, Twitter, Instagram) to analyze the prevalence and context of English usage.
- Survey and interviews: Gathering insights from social media users across various demographics to understand their experiences with English in digital communication.

Analytical framework:

- Discourse analysis: Evaluating how English is used to convey messages, shape interactions, and influence public opinion on social media.
- Sociolinguistic analysis: Assessing the impact of English on language diversity and cultural practices, including the potential for linguistic homogenization.

Findings

1. Global communication: English serves as a primary language for international discourse on social media, facilitating cross-cultural communication and enabling users from different linguistic backgrounds to interact seamlessly.
2. Cultural exchange: The prevalence of English in social media promotes cultural exchange by allowing users to access and share content from diverse cultures. However, this can also lead to the dominance of English-speaking cultures and the marginalization of other languages and cultural practices.
3. Identity formation: Social media users often employ English to craft their online personas and connect with global communities. English can act as a marker of modernity and global engagement, influencing how individuals present themselves and interact with others.
4. Impact on local languages: The widespread use of English on social media can contribute to the erosion of local languages, as users may prioritize English over their native tongues. This dynamic raises concerns about linguistic diversity and the preservation of cultural heritage.

Discussion

The findings highlight the significant role of English in shaping social media interactions and cultural exchange. While English facilitates global communication and access to diverse content, its dominance on social media can impact local languages and cultural practices. The preference for English in digital spaces reflects broader trends in globalization and highlights the need for balancing linguistic diversity with the benefits of global connectivity.

Conclusion

The English language plays a crucial role in social media, influencing how people communicate, share information, and form identities online. Its widespread use underscores its importance as a global lingua franca but also raises challenges related to linguistic diversity and cultural preservation. Understanding these dynamics is essential for navigating the evolving landscape of digital communication and ensuring that all voices and cultures are represented in the global dialogue.

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ASPECTS PROVIDING THE EFFICIENCY OF REGULATING THE ACTIVITIES OF COMMERCIAL BANKS

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Abstract. *The efficiency of commercial banks significantly impacts the stability and growth of national economies. This research explores key aspects that enhance the effectiveness of regulatory mechanisms governing the activities of commercial banks. It identifies the critical factors influencing regulatory efficiency, including legal frameworks, supervisory practices, technological advancements, and risk management strategies. The study also examines the interplay between regulatory compliance and operational performance, emphasizing the need for adaptive and dynamic regulations in the face of evolving financial markets. Using qualitative and quantitative methods, this research provides insights into best practices for fostering a resilient banking sector, offering recommendations for policymakers and regulators to optimize the regulatory environment while ensuring sustainable economic development.*
Keywords: *commercial banks, regulatory efficiency, banking regulation, financial stability, risk management, supervisory practices, legal frameworks, banking sector performance, adaptive regulations, sustainable economic development*

The regulation of commercial banks plays a pivotal role in maintaining systemic financial stability while fostering economic growth. Efficient regulation is essential to ensure compliance, risk mitigation, and enhanced operational performance within the banking sector. However, with the increasing complexity of global financial markets and technological advancements, the regulatory landscape faces both challenges and opportunities. This paper explores the key aspects influencing the efficiency of regulating commercial banks, emphasizing legal frameworks, technological integration, and the role of risk management.

As in all sectors in the Republic of Uzbekistan, the financial market, including the banking sector, is undergoing significant changes and changes in the sector due to reforms. During the years of independence, these changes are being continued in harmony with the gradual establishment of a banking system that meets world standards. "Effective measures taken to further strengthen the financial stability of banks have a positive effect on the improvement of the international ratings presented to the commercial banks of our country on creditworthiness.

As of January 1, 2024, the total capital of the bank is 3 trillion. 180 billion If it is 200 million soums, the authorized capital is 1 trillion. 856 billion 800 mln. soums, the bank's assets are 27 trillion 62 billion 900 million. amounted to soum. The amount of deposits increased by 6.7% to 9 trillion. 418 billion 700 million amounted to soum. Of this, short-term 1 trillion. 348 billion 900 mln. soums, long-term 8 trillion. It consists of 69 billion 700 million soums.

3 trillion as of the reporting date. 691 billion 300 mln. Soum income was received. The net profit of the bank is 236 billion. organized soum.

The increase in the share of loans allocated to the population in the structure of allocated loans, in turn, is explained by the increase in the volume of loans to the population in the areas of microloans, mortgage loans and car loans due to the simplification of loan allocation processes and the expansion of remote banking services.

In 2023, the growth of the balance of loans allocated to economic sectors was observed in all sectors, in the industrial sector (10.7 percent growth) 140.2 trillion soums, in agriculture (12.3 percent) 47.3 trillion soums, in the transport and communication sector (15, 7 percent) 34.3 trillion soums, in the construction sector (18 percent) 12.3 trln soums and in trade and catering sector (12.5 percent) amounted to 32.5 trillion soums.

The rapid growth of private investments is also important in supporting economic development. In particular, in 2023, the amount of investments absorbed from all sources of financing in the economy increased by 22.1% in real terms compared to 2022 and reached 352.1 trillion soums. In this regard, the volume of decentralized investments increased by 26.2% compared to 2022 to 307.3 trillion soums, and centralized investments decreased by 0.7% to 44.8 trillion soums.

In the reporting year, the share of decentralized investments in the structure of sources of financing of capitalized investments increased from 84.6% to 87.3% in 2022, while the share of centralized investments decreased from 15.4% to 12.7%. The growth of decentralized investments was formed due to the increase of the volume of foreign direct investments by almost 2.0 times, commercial banks' loans and other debt funds by 17.9%, and population funds by 9%.

Although the real growth of the volume of centralized investments remained almost at the level of last year, the foreign loans under the government guarantee increased by 1.3 times. In 2023, a slowdown in global inflation processes was observed, but the implementation of programs aimed at preventing imbalances in the economy in the context of high resource prices in the international financial market required the continuation of financial support of the economy by the state. Fiscal and monetary

policies were mutually coordinated by conducting a relatively strict monetary policy in order to reduce the pressures of pro-cyclical fiscal policy on inflation. In particular, the expenses of the state budget and special funds increased by 18% compared to 2022 and reached 324.0 trillion soums. The social sphere accounted for 42.3% of the state budget and special fund expenditures, 13.2% for economic support, and 9.1% for production and infrastructure development programs.

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Measures aimed at reforming the banking system in our country are gradually bearing fruit. In many documents signed by the president of our country, almost all organizations are involved in the improvement of banking and financial systems.

As of January 1, 2024, the total balance of loans of commercial banks is 471.4 trillion. amounting to 1.2 times as much as at the beginning of 2023. The weighted average nominal interest rate on loans in national currency increased from 22.3% at the end of 2022 to 24% in 2023. In this case, the real interest rate of the loan increased significantly, that is, from 10 percent to 15.2 percent.

Although the real growth of the volume of centralized investments remained almost at the level of last year, the foreign loans under the government guarantee increased by 1.3 times. In 2023, a slowdown in global inflation processes was observed, but the implementation of programs aimed at preventing imbalances in the economy in the context of high resource prices in the international financial market required the continuation of financial support of the economy by the state. Fiscal and monetary policies were mutually coordinated by conducting a relatively strict monetary policy in order to reduce the pressures of pro-cyclical fiscal policy on inflation. In particular, the expenses of the state budget and special funds increased by 18% compared to 2022 and reached 324.0 trillion soums. The social sphere accounted for 42.3% of the state budget and special fund expenditures, 13.2% for economic support, and 9.1% for production and infrastructure development programs.

The modern banking system of the Republic of Uzbekistan is formed in accordance with the traditions of international banking practices. Intersectoral distribution of monetary capital is carried out through the national banking system of the country. Along with the emergence of commercial banks, it is characterized by the fact that it is organized in different forms of ownership.

Thus, the successful implementation of monetary and credit policy by the Central Bank undoubtedly contributes to the development of market relations in the credit system and its reaching the level of developed countries. Stabilization of the national currency creates a reliable basis for achieving economic growth, the creation of new commercial structures, and ensuring commodity-money parity in the economy. In our opinion, the implementation of the noted proposals on the regulation of the economy through monetary and credit instruments and the improvement of the efficiency of the regulation of the activities of commercial banks will, in our opinion, lead to an increase in the liquidity and solvency of commercial banks, further development of the banking system, and an increase in the value of our national currency.

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YANGI ADRAS MATOSIDAN AYOLLAR KIYIMINI ISHLAB CHIQISHDA CHOK MUSTAHKAMLIGINING TAHLILI

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Мақолада янги эластик структурадаги миллий адрас матосида аёллар кийимини ишлаб чиқишда кийим деталларини бирлаштирувчи чоклар давомида матонинг ўрилиш ипларини силжиши муаммоси ўрганилган.
В статье исследована проблема раздвигаемости нитей основы ткани в швах соединения деталей одежды при разработке женской одежды из новой национальной ткани адрас эластичной структуры.
The article examines the problem of the expansion of warp threads in the seams of clothing parts during developing women's clothing from the national adras fabric a new elastic structure.

Hozirgi vaqtda tikuv mahsulotlarining sifatini oshirish borasida yangi texnologiyalarni qo‘llashga katta ahamiyat berilmoqda. Bu borada mazkur sanoatda raqobatbardoshlikni mustahkamlash ilmiy ishlanmalarni investitsiyalash va ishlab chiqarish joriy qilishni taqozo etib, ishlab chiqaruvchilar tomonidan kuchli raqobat bosimiga bardoshlilikni ta’minlovchi zaruriy chora hisoblanadi. Bu borada, jumladan tikuv buyumlarini ishlab chiqarish texnologiyasi ilmiy asoslarini rivojlantirish, texnologik jarayonda mahsulotga ta’sir etuvchi parametrlar optimal ko‘rsatkichlarini aniqlash, raqobatbardosh mahsulotlarning assortimentini kengaytirish, mahalliy xomashyolardan samarali foydalanish ilmiy ishlanmalarini ishlab chiqish, tikuv buyumlarini ipli birikmalarining mustahkamligini ta’minlash va xomashyo sarfini kamaytirish, resurstejamkor innovatsion texnologiyalarni ishlab chiqarishga joriy etishga tobora ko‘proq e’tibor berilmoqda.
Milliy matolarimizga kundan-kunga talab oshib bormoqda va nafaqat respublikamizda, balki chet davlatlarda ham qiziqish katta. Abrband gazlamalarni yangi turlari va naqshlarini yaratish, iste’mol xususiyatlarini yaxshilash, yangi assortimentdagi kiyim turlarini yaratish bo‘yicha qator tadqiqot ishlari amalga oshirilgan [1]. Ushbu ilmiy tadqiqot ishida cho‘ziluvchan xususiyatga ega bo‘lgan atlas va adras matosining yangi assortimenti, yangi tarkibli cho‘ziluvchan xususiyatga ega bo‘lgan milliy to‘qimachilik mahsuloti namunalarida texnologik ko’ratkichlar tahlil qilingan.

Tikuv buyumlarida biriktirma choklar ekspluatatsion xossalarining asosiy ko‘rsatkichlaridan biri chok davomida mato iplarining siljuvchanligidir. Materiallarda chok davomida iplar siljishining tadqiqoti shuni ko‘rsatadiki, u abrband adras matosida, ko‘ylaklik-kostyumbop zichligi kam bo‘lgan matolarda yuzaga keladi. Mato iplarining siljishi cho‘zilishda eng ko‘p yuklamaga duch keladigan: ort bo‘lak o‘rta choki, bel vitachkalari, yon choklar, yengni o‘mizga biriktirish chokida sodir bo‘ladi. Mato va choklarning yuqori mustahkamligi mahsulot ishonchliligini kafolatlamaydi, chunki chok davomida buzilishlar sodir bo‘lishi mumkin.

Matoda siljish tadqiqoti shuni ko‘rsatdiki, ko‘pchilik matolarda siljish arqoq yo‘nalishida sodir bo‘ladi. Tanda yo‘nalishi bo‘ylab siljish kostyumbop matolarda kuzatiladi. Aniqlandiki, siljuvchanlik abrband matolar adras, xonatlas, kostyumbop jakkard, ko‘ylakbop atlas va astarlik viskoza gazlamalar uchun xarakterlidir. Matolar tuzilishini o‘rganish ko‘rsatdiki, yuza zichligi qanchalik kichik bo‘lsa, shunchalik siljish yuqoridir [2].

Chokdagi mato iplarini siljishiga turli omillarning ta’siri o‘rganildi. Chok davomida iplarning siljish tadqiqotlari ko‘rsatkichlari tanda va arqog‘i 100% paxta tolasidan iborat mavjud adras to‘qimasi va tandasi 100 % paxta tolasi hamda arqog‘i 70% paxta tolasiga 30% elastan tolasi qo‘shilgan yangi ishlab chiqilgan adras matosi namunalarida olib borildi.

Chok davomida siljish va mustahkamligini aniqlash

1-jadval.

№	Mato tolaviy tarkibi	Uzilish kuchi, N		Uzilishdagi uzayishi, mm		Chokdagi iplarning surilishi, mm		Yuza zichligi, d/m^2
		Tanda	Arqoq	Tanda	Arqoq	Tanda	Arqoq	
1	Mavjud to’qima Paxta+paxta (100%)	92	288	46	31	2	2.5	156,4
2	Cho’ziluvchan abrli to’qima Paxta(70%)+ elastan (30%)	126	201	35	103	0.28	0.08	180,8

Baxya uzunligining chokdagi iplar siljishiga ta’sirini tadqiqoti natijalari ko‘rsatdiki, baxyaqatordagi baxya uzunligini oshirish chok davomida siljish kattaligini oshishiga

olib keladi. Ya'ni 1sm dagi baxyalar soni kattalashsa, chokdagi siljish kamayadi. Demak, yuqori siljishga ega bo'lgan matolarda 1smdagi chok chastotasini oshirish kerak. Baxya uzunligini kamaytirish mato iplari orasida ishqalanish kuchini orttiradi va ularning siljishga bo'lgan moyilligini kamaytiradi. Adras matosidan olingan namunalar uchun baxya uzunligi 1,5-2 sm bo'lishi maqsadga muvofiq hisoblanadi.

Matolar tuzilishini o'rganish ko'rsatdiki, yuza zichligi qanchalik kichik bo'lsa, shunchalik siljish yuqoridir. Matolar zichligi oshganda iplar egilishi ortib, ularni tanda yoki arqoq yo'nalishida siljishi qiyinlashadi. Demak, bir yo'nalishda qanchalik mato zichligi ortsa, shunchalik siljish kamayadi, masalan tanda bo'ylab arqoqqa nisbatan siljish kamroq bo'lsa, arqoq bo'ylab ko'proq va aksincha. Mato iplarining chok davomida siljishi chok iplariga parallel mato bo'ylama iplarining orasida bo'shliq sodir bo'lishiga olib keladi, bu chok mustahkamligini pasaytirib, buyum tashqi ko'rinishini yomonlashtiradi. Tikuvchilik sanoatida mazkur nuqsonni paydo bo'lishini nazarda tutiladi, lekin butunlay oldini olishga imkon yo'q, faqat siljish kattaligini kamaytirishga harakat qilingan. Siljuvchanlikni oldini olishga yo'naltirilgan, tikuvchilik sanoatida material strukturasini puxtalash va chok mustahkamligini ta'minlash maqsadida qo'shimcha operatsiyalar kiritish zarurati paydo bo'ldi. Siyrak to'qimali matolardagi ipli birikmalar mustahkamlik ko'rsatkichlarini yaxshilash tikuv buyumlari sifatini oshirish va ekspluatatsiya muddatini uzaytirishga imkon beradi.

Baxya uzunligini kamayishi mato iplari o'rtasidagi ishqalanish kuchini orttiradi va ularni siljish xossasini kamaytiradi. 1smdagi baxyalar soni kattalashsa, chokdagi siljish kamayadi. Yuqori siljuvchanlikka ega matolar uchun ipli birikmalar rejimini to'g'ri tanlash zarur. Tikuv buyumlaini tayyorlashda turli konstruksiyadagi choklar qo'llanadi, bular biriktirma, ziy va bezak choklardir. Asosiy yuklama asosan biriktirma choklarga tushadi, ular bilan buyumning yon, yelka, o'rta va relyef qirqimlari tikiladi. Eng katta siljish puxtalamasiz yorib dazmollangan va yotqizib dazmollangan biriktirma choklarda kuzatilgan. Bostirma choklarda siljish puxtalanmagan chok haqi tomonida sodir bo'ladi. An'anaviy texnologiyada ko'pincha qo'shimcha yelimli tasma yordamida chok haqiga puxtalash beriladi, lekin bu o'z navbatida ortiqcha qalinlashmaga olib keladi [4,5].

Tadqiqot natijalari shuni ko'rsatadiki, namunalardagi choklarda iplar siljishi chok konstruksiyasiga bog'liq. Eng ko'p siljishga qarshilik yorma chokda kuzatilgan bo'lib, chok haqi 2mm masofada qo'shimcha baxyaqator bilan mustahkamlangan. Eng katta siljish puxtalamasiz yorib dazmollangan va yotqizib dazmollangan biriktirma choklarda kuzatilgan. Lekin, ustki kiyimlarni ishlab chiqishda asosan

yorib dazmollangan va yotqizib dazmollangan biriktirma choklaridan foydalaniladi. Aynan shu choklarda iplar siljishi eng katta ko‘rsatkichisi kuzatildi.

Olingan ma’lumotlar ipli birikmalar sifat ko‘rsatkichlarini oshirish bo‘yicha tavsiyalarni choklar yo‘nalishiga bog‘liq holda ilmiy asoslash va siyrak to‘qimali matolardan kiyim loyihalashda ratsional konstruksiya tanlash imkonini beradi.

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APPLICATION OF THE HESS-MARCEAU BILIOPANCREATIC DIVERSION PROCEDURE IN THE TREATMENT OF MORBID OBESITY

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Summary. The paper presents material on the problem of surgical treatment of patients with severe forms of obesity. Based on factual material, an assessment is given of the methods of combined bariatric operations used by the authors.
Key words: obesity, obesity treatment, bariatric surgery, laparoscopic longitudinal resection of the stomach, bariatric surgery, sleeve gastrectomy, gastric bypass, longitudinal resection of the stomach in combination with small intestinal bypass.

Relevance. Overweight and obesity are recognized health problems all over the world [1,2]. The World Health Organization has called for obesity problems to be characterized as a non-communicable disease epidemic, since more than 1 billion people have been registered with this pathology to date. The problem of obesity affects both developed and economically developing countries. It has already been proven that every tenth inhabitant of the planet is overweight. Against this background, the number of patients with metabolic syndrome has already reached 10% [1,2,6,8,10]. The problem of overweight and obesity requires close attention, since they are triggers in the development of numerous concomitant diseases in various body systems [1]. At the same time, such concomitant diseases as metabolic syndrome, diabetes mellitus, coronary heart disease, non-alcoholic fatty liver disease are characterized by damage to vital organs. Treatment of such diseases today requires large expenditures in the health care system in all countries [1,2,6,8,10]. Morbid obesity is also characterized by complications in the form of gallbladder disease, gastroesophageal reflux, obstructive sleep apnea, reproductive system disorders, and the development of osteoarthritis. All of them, having a negative impact on the quality of life, can significantly reduce life expectancy.
In the studies of N.M. Iyengar et al. (2016) it was proven that the prevalence of many types of cancer (such as breast, colon, prostate, endometrium, kidney and gallbladder cancer) occurs among obese patients [1,2]. Also, in a number of other studies a close relationship was traced between the growth of social and psychological problems

among obese patients and the increase in the level of body mass index [1,2,6,8,10]. It was proven that the health risk increases fivefold for people with a body mass index of 25 kg/m^2, 28 times for a body mass index of 30 kg/m^2 and 93 times for a BMI of 34.9 kg/m^2 or more. In this regard, the European clinical guidelines recommend a programmatic approach to the treatment of patients with obesity, which should consist of an integrated multidisciplinary option, patient-oriented, including lifestyle interventions, along with pharmacological therapy and bariatric surgery [3,4,20,21,22]. In recent years, there has been an increased interest in surgical methods for the treatment of severe forms of obesity and associated diseases, including type II diabetes mellitus. It has been proven that long-term results of the treatment of pathological obesity are influenced by surgical methods of treatment [9, 11]. Indications for surgery correspond to very specific criteria: the presence of a BMI> 40 kg / m^2 (regardless of the presence of concomitant pathology), or a BMI> 35 kg / m^2 in the presence of one or more diseases, the course of which can be influenced by weight loss [11,13,15]. The gastric bypass operation was first proposed in 1966 by E. Mason [1,23,24,25,26]. The technique was further modified in the works of W. Griffen, M. Fobi, J. Capella and R. Capella, J. Torres and C. Oca, R. Brolin, and others. Distal gastric bypass implies the presence of an aggressive shunting component, when the interintestinal anastomosis is located at a distance of 50-100 cm from the ileocecal angle.

However, despite good results in terms of weight loss, bariatric surgeries are associated with disruption of the physiologically balanced and holistic digestion process, and therefore are not without the development of a number of long-term metabolic complications.

Purpose of the study. The goals of surgical treatment of obesity: to influence the course of diseases and improve the quality of life of patients with obesity by significantly reducing MT.

Materials and methods. This work is based on an analysis of the results of examination and treatment of 49 patients with various types of external hernias of the anterior abdominal wall, who were examined and inpatiently treated in the 1st surgical department of the Bukhara Regional Multidisciplinary Medical Center and the Department of Thoracoabdominal Surgery of the Multidisciplinary Clinic of the Tashkent Medical Academy for the period from 2011 to 2023 The analyzed material included women of reproductive age who planned to have children in the future. The control group consisted of all women with hernias of the anterior abdominal wall who underwent traditional hernial orifice repair without the use of allomaterial. The

main group is all women with hernias of the anterior abdominal wall who underwent alloplasty according to our recommendations.

The study was performed in 8 patients. Immediately below the level of the first branch of the left gastric artery, on the side of the lesser curvature, a "window" was formed in the peritoneum. Through it, using devices (either Echelon Flex™, or Endo Gia Universal, or Ethicon EndoSurgery Linear Cutter), the stomach was transected. A small ventricle with a volume of about 30 ml was formed. The greater part of the stomach, remaining in the abdominal cavity, was additionally peritonized. In order to maximally shorten the length of the segment of the small intestine excluded by Roux Y, it was transected 30 cm from the ligament of Treitz. The diverting segment of the intestine was passed through a pre-formed opening in the mesocolon mesentery and a gastroenteroanastomosis with a diameter of up to 1.2 cm was applied according to the retrocolica posterior type. Then, an end-to-side jejunoileal anastomosis was formed between the proximal jejunum (30 cm) and the ileum, at a distance of 70 cm from the ileocecal angle. In 5 patients, sleeve gastrectomy was combined with distal small intestinal bypass. In fact, the creation of a narrow gastric tube while maintaining the physiological integrity of the stomach is a remarkable alternative for a large group of patients, mainly with a body mass index of less than 40 kg/m^2 [6]. When using the technique in patients with a BMI > 40 kg/m^2, sleeve resection was supplemented with distal jejunoileal anastomosis, since it is the presence of a bypass component that allows for effective and stable normalization of lipid and carbohydrate metabolism disorders [2, 3]. The greater curvature of the stomach was mobilized along its entire length using the Liga Sure TM system. Then, the stomach was transected longitudinally using a 40 Fr probe, 3 cm from the pylorus and directly to the angle of His. Ethicon Endo-Surgery Linear Cutter or Echelon Flex™ linear suturing devices were used. After removal of the severed portion of the stomach, the probe was changed to 32 Fr and peritonization was performed using a continuous wrap suture. For this, Vicryl 3/0 or V-Lok 3/0 was used. A leak test was mandatory. Thus, the stomach was transformed into a narrow tube with a volume of 80-100 ml. After formation of the gastric tube, the jejunum was transected 50 cm from the Treitz ligament and subsequent jejunoileal anastomosis was performed 70 cm from the ileocecal angle, depending on the BMI. To assess weight loss, the formula for determining the percentage of excess weight loss (%EWL) was used.

Research results and discussion. In almost all cases, the formation of a small stomach and the imposition of a gastroenteroanastomosis were accompanied by technical difficulties due to excessive development of visceral fat and the depth of

the surgical field. Sleeve resection is technically simpler than gastric bypass anastomosis; it does not require the imposition of a gastroenteroanastomosis, but it required additional costs for cassettes for the suturing and cutting devices (6-7 60 mm cassettes for Endo Gia or Echelon Flex for longitudinal resection versus 2-3 for gastric bypass) and additional peritonization of the entire resection zone. The "weak point" in this case is the possible failure of the gastric tube suture. The average operating time, regardless of the technique, was 3 hours. The effectiveness of combined operations is associated not only with weight loss, but also with the redirection of the movement of food masses, which bypass the stomach and go directly to the distal parts of the small intestine, which prevents the interaction of bile and pancreatic enzymes with chyme. Incretins play an important role in this, including glucose-dependent insulinotropic polypeptide (GIP) and glucagon-like peptide-1 (GLP-1), peptide YY, ghrelin, leptin, resistin [4, 10]. It is this complex endocrine effect that makes combined operations a powerful tool not only for long-term weight loss, but also for the successful treatment of conditions that determine metabolic syndrome. Early postoperative complications included failure of the gastric tube sutures and the formed "small" ventricle (2 cases - 15.4%). In the first observation, a patient with a BMI of 65.0 kg/m^2 developed gastric suture failure and diffuse peritonitis. This required sealing of the suture line and repeated sanitation of the abdominal cavity. Death occurred on the 21st day against the background of the development of multiple organ failure. In the second case (BMI 63.5 kg/m^2), the limited nature of the failure did not require repeated intervention. Conservative treatment for 26 days led to closure of the fistula and recovery of the patient.

Conclusions: 1. Combined surgeries are effective in patients with morbid obesity.
2. In patients with a BMI of more than 50 kg/m^2, the choice of surgery option is determined individually.

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ПРАВИЛА И РЕГЛАМЕНТЫ, КАСАЮЩИЕСЯ ИСПОЛЬЗОВАНИЯ ИГРОВЫХ ИНСТРУМЕНТОВ: ОБЗОР И АНАЛИЗ

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Аннотация. В данной статье рассматриваются правила и регламенты, касающиеся использования игровых инструментов в видеоигровой индустрии. В условиях динамичного развития технологий и увеличения числа игроков важность регуляции использования таких инструментов, как игровые движки, модификации и средства коммуникации, становится все более актуальной. Статья охватывает правовые, этические и технические аспекты, включая вопросы лицензирования, защиты интеллектуальной собственности, поведения игроков, а также предотвращения зависимости и нарушений психоэмоционального здоровья. В заключение подчеркивается необходимость комплексного подхода к разработке и внедрению правил, что способствует обеспечению безопасной и справедливой игровой среды.
Ключевые слова: игровые инструменты, лицензирование, модификации, защита интеллектуальной собственности, этика, социальные нормы, зависимость, поведение игроков, правовые аспекты, регулирование видеоигр.

В последние десятилетия видеоигры стали важной частью современной культуры, оказав значительное влияние на различные аспекты жизни — от развлечений до образования и социальной коммуникации. С развитием технологий и ростом популярности онлайн-игр, а также появлением новых инструментов для создания и модификации контента, важность регулирования использования игровых инструментов становится все более очевидной. Эти инструменты могут включать в себя как программное обеспечение, используемое для разработки игр, так и модификации (моды), а также различные средства коммуникации между игроками.

Правила и регламенты, касающиеся использования этих инструментов, охватывают широкий спектр вопросов, включая защиту интеллектуальной собственности, соблюдение этических норм, безопасность игроков и предотвращение негативных последствий, таких как зависимость или нарушение психоэмоционального состояния пользователей. Важность этих норм не ограничивается лишь регулированием технической стороны игры, но

также касается формирования здоровой игровой среды, как для индивидуальных игроков, так и для целых сообществ.

В условиях постоянного роста популярности видеоигр, как развлекательной формы, важно учитывать не только технические и юридические аспекты, но и их влияние на общество в целом. Настоящая статья посвящена анализу основных правил и регламентов, касающихся использования игровых инструментов, а также их влияния на развитие игровой индустрии и поведение пользователей.

Одним из важнейших аспектов регулирования использования игровых инструментов является лицензирование. Лицензионные соглашения, с которыми игроки соглашаются при установке игр или приложений, являются юридическими документами, регулирующими права и обязанности пользователей и разработчиков. Лицензии могут быть различными: от стандартных пользовательских соглашений (EULA) до более специализированных условий, касающихся использования модификаций или игровых движков.

Для разработчиков игр лицензирование является способом защиты интеллектуальной собственности. Оно гарантирует, что авторские права на игровой продукт остаются у разработчиков, и что пользователи не могут незаконно копировать или распространять программное обеспечение. В свою очередь, модификации игр, которые создаются пользователями, могут подпадать под отдельные лицензии, которые часто ограничивают их коммерческое использование.

С ростом популярности модов и пользовательских изменений в играх, защита интеллектуальной собственности стала важной темой. Многие разработчики и издатели активно следят за тем, чтобы модификации и дополнения не нарушали их права. В некоторых случаях, создатели игр предоставляют официальную возможность для создания и распространения модов, выпуская специальные инструменты и программное обеспечение для моддинга. Однако важно учитывать, что даже при наличии таких инструментов, использование контента, защищенного авторским правом, без разрешения владельца прав является нарушением закона.

Кроме того, различные игровые платформы, такие как Steam, PlayStation и Xbox, устанавливают свои собственные правила для использования игровых инструментов. На этих платформах часто действуют дополнительные ограничения, такие как запрет на использование читов, модификаций или программного обеспечения, которое может нарушить работу системы.

Например, на платформе Steam существует система антипиратского программного обеспечения и система для предотвращения мошенничества, которая ограничивает использование некоторых инструментов.

Этические и социальные нормы. С развитием многопользовательских онлайн-игр, вопросы этики и социального поведения игроков стали актуальными. Множество игровых сообществ создает свои собственные правила, регулирующие взаимодействие между игроками. Например, запрещены такие практики, как оскорбления, буллинг, токсичное поведение и использование читов. Эти правила создаются не только для обеспечения комфортного игрового процесса, но и для предотвращения нарушений законов о защите прав потребителей, а также для создания безопасной среды для всех пользователей.

Многие разработчики игр внедряют систему модерации, которая отслеживает поведение игроков в онлайн-режиме и применяет санкции в случае нарушения установленных норм. Также важным инструментом регулирования является система отчетности, когда игроки могут жаловаться на недопустимое поведение других пользователей.

Одним из серьезных вызовов, связанных с использованием игровых инструментов, является зависимость от видеоигр. Разработчики и регулирующие органы обращают внимание на этот аспект, предлагая различные меры для предотвращения игровой зависимости. Это может включать ограничения на время, проведенное в игре, или внедрение напоминаний об отдыхе. В некоторых странах существуют специальные регламенты, ограничивающие количество времени, которое дети могут проводить в онлайн-играх.

Игры, как и любые другие формы медиа-контента, могут иметь как положительное, так и отрицательное влияние на психическое здоровье игроков. Использование некоторых игровых инструментов, таких как социальные взаимодействия или элементы стимулирования (например, микротранзакции), может привести к проблемам с самооценкой и зависимости. Поэтому некоторые исследовательские и регулирующие организации начинают разрабатывать более строгие стандарты и рекомендации по созданию игр, которые минимизируют такие риски.

Технические аспекты и использование игровых инструментов. Модификации, создаваемые игроками, могут значительно изменять игровой процесс. В некоторых случаях они делают игру более увлекательной, добавляют новые механики или улучшают графику. Однако использование модов может

привести к техническим проблемам, таким как сбои в игре, несовместимость с другими инструментами или нарушение баланса в многопользовательских играх.

Разработчики часто предоставляют инструменты для создания модов, но с определенными ограничениями. Например, в некоторых играх существуют запрещенные модификации, которые дают игрокам нечестные преимущества, такие как читы или эксплойты, нарушающие честность игрового процесса. Это создает необходимость в регламентации использования таких инструментов.

Обновления и патчи — важная часть функционирования игр, и их регулирование также имеет большое значение для пользователей. Патчи могут исправлять ошибки, улучшать производительность и вносить изменения в игровую механику. Однако обновления могут также повлиять на работу пользовательских модификаций, что приводит к необходимости создания новых версий модов. Некоторые игры могут автоматически обновляться, что также требует от пользователей соблюдения правил по использованию модов.

Регулирование на международном уровне. Многие государства начали разрабатывать законодательство, которое регулирует использование игровых инструментов. Это касается как защиты прав пользователей, так и защиты от различных рисков, связанных с игровыми зависимостями и вредным контентом.

В Европе, например, существует ряд законов, направленных на защиту прав детей в интернете, а также регулирование микротранзакций в играх. В Китае были введены жесткие ограничения на количество времени, которое дети могут проводить в играх, а также на содержание некоторых видов видеоигр.

Заключение. Правила и регламенты, касающиеся использования игровых инструментов, играют ключевую роль в обеспечении баланса между интересами разработчиков, игроков и широкой общественности. В условиях стремительного роста индустрии видеоигр, регулирующие нормы становятся не только юридической необходимостью, но и важным инструментом для формирования безопасной, этичной и справедливой среды. Они охватывают такие аспекты, как защита интеллектуальной собственности, соблюдение этических стандартов, безопасность пользователей и предотвращение зависимости, а также защиту от вредоносного контента.

С каждым годом вопросы, связанные с лицензированием программного обеспечения, использованием модификаций, техническими проблемами и социальной ответственностью становятся все более актуальными. Важно, чтобы эти правила развивались в ответ на новые вызовы, что позволит

минимизировать риски и обеспечит устойчивость игровой индустрии в долгосрочной перспективе. Регулирование и соблюдение этих норм способствуют улучшению качества игр и укреплению доверия между разработчиками и игроками.

Таким образом, комплексный подход к разработке и внедрению правил использования игровых инструментов является важным условием для сохранения гармонии в игровой среде и предотвращения негативных последствий для пользователей.

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KOMBINATORIKA PREDMETI VA PAYDO BO‘LISH TARIXI VA 7-SINF MATEMATIKA DARSLIKLARIDA KOMBINATORIKA MASALALARINI HAYOTGA BOG‘LAB O‘QITISH.

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Annotatsiya: *Ushbu maqola kombinatorika predmeti va paydo bo‘lish tarixi, kombinatorik masalalarni yechishda qo‘llaniladigan qoidalar haqida to‘liq ma’lumotlar keltirilgan va 7-sinf matematika darsliklaridagi kombinatorika masalalarini o‘quvchi yoshlarga hayotga bog‘lab o‘qitish hamda bu orqali ularning mantiqiy fikrlashini oshirishga qaratilganligi haqida bayon qilingan va kombinatorika ning asosiy qoidalariga asosan masalalar yechimlari ko‘rsatilgan..*
Kalit so‘zlar: *Kombinatorika, mantiqiy fikrlash, kombinatorika predmeti, kombinatorika tarixi, figurali sonlar, kombinatorika elementlari, kombinatorik masalalar, qo‘shish va ko‘paytirish qoidalar, chekli to‘plam*

Matematikaning kombinatorik tahlil, kombinatorik matematika, birlashmalar nazariyasi, qisqacha, kombinatorika deb ataluvchi bo‘limida chekli yoki muayyan ma,,noda cheklilik shartini qanoatlantiruvchi to‘plamni (bu to‘plamning elementlari qanday bo‘lishining ahamiyati yo‘q: harflar, sonlar, hodisalar, qandaydir predmetlar va boshqalar) qismlarga ajratish, ularni o‘rinlash va o‘zaro joylash ya,,ni, kombinatsiyalar, kombinatorik tuzilmalar bilan bog‘liq masalalar o‘rganiladi.
Hozirgi davrda kombinatorikaga oid ma,,lumotlar inson faoliyatining turli sohalarida qo‘llanilmoqda. Jumladan, matematika, kimyo, fizika, biologiya, lingvistika, axborot texnologiyalari va boshqa sohalar bilan ish ko‘ruvchi mutaxassislar kombinatorikaning xilma-xil masalalariga duch keladilar.
To‘plamlar nazariyasi iboralari bilan aytganda, kombinatorikada kortejlar va to‘plamlar, ularning birlashmalari va kesishmalari hamda kortejlar va qism to‘plamlarni turli usullar bilan tartiblash masalalari qaraladi. To‘plam yoki kortej elementlarining berilgan xossaga ega konfiguratsiyasi bor yoki o‘qligini tekshirish, bor bo‘lsa, ularni tuzish va sonini topish usullarini o‘rganish hamda bu usullarni biror parametr bo‘yicha takomillashtirish kombinatorikaning asosiy masalalari hisoblanadi.

Kombinatorikaning ba’zi elementlari eramizdan oldingi II asrda indistonliklarga ma’lum edi. Ular hozirgi vaqtda gruppalashlar deb ataluvchi kombinatorik tushunchadan foydalanishgan. Eramizning XII asrida Bxaskara Acharya o‘zining ilmiy tadqiqotlarida gruppalash va o‘rin almashtirishlarni qo‘llagan.

Tarixiy ma’lumotlarga ko‘ra, hindistonlik olimlar kombinatorika elementlaridan, jumladan, birlashmalardan foydalanib, she’riy asarlar tarkibiy tuzilishining mukammalligini tahlil qilishga uringanlar.

Umuman olganda, kombinatorikaning dastlabki rivoji qimor o‘yinlarini tahlil qilish bilan bog‘liq. Ba’zi atoqli matematiklar, masalan, fransuz matematigi B.Paskal (1623-1662), sveytasriyalik matematik Ya.Bernulli (1654 - 705), L.Eyler (1707-1783), rus matematigi P.L.Chebishev (1821-1894) turli o‘yinlarda (tanga tashlash, soqqa tashlash, qarta o‘yinlari va shu kabilarda) ilmiy jihatdan asoslangan qarorlar qabul qilishda kombinatorikani qo‘llashgan.

XVII asrda kombinatorika matematikaning alohida bir ilmiy yo‘nalishisifatida shakllana boshladi.

Blez Paskal o‘zining “Arifmetik uchburchak haqida traktat” va “Sonli tartiblar haqida traktat” (1665-y.) nomli asarlarida hozirgi vaqtda binomial koeffitsientlar deb ataluvchi sonlarhaqidagi ma’lumotlarni keltirgan.

Fransuz matematigi P.Ferma (1601-1665) esa figurali sonlar bilan birlashmalar nazariyasi orasida bog‘lanish borligini bilgan.

Figurali sonlar quyidagicha aniqlanadi. Birinchi tartibli figurali sonlar: 1, 2, 3, 4, 5, … (ya,,ni, natural sonlar); ikkinchi tartibli figurali sonlar: 1-si 1ga teng, 2-si dastlabki ikkita natural sonlar yig‘indisi (3), 3-si dastlabki uchta natural sonlar yig‘indisi (6) va hokazo (1, 3, 6, 10, 15, …); uchinchi tartibli figurali sonlar: 1-si 1ga teng, 2-si birinchi ikkita ikkinchi tartibli figurali sonlar yig‘indisi (4), 3-si birinchi uchta ikkinchi tartibli figurali sonlarlar yig‘indisi (10) va hokazo (1, 4, 10, 20, 35, …); va hokazo.

1-misol. Tekislikda radiuslari o‘zaro teng bo‘lgan aylanalar bir- biriga uringan holda yuqoridan 1 - qatorda bitta, 2 - qatorda ikkita, 3 - qatorda uchta va hokazo, joylashtirilgan bo‘lsin. Masalan, aylanalar bunday joylashuvining dastlabki to‘rt qatori 1 - shaklda tasvirlangan. Bu yerda qatorlardagi aylanalar sonlari ketma- ketligi birinchi tartibli figurali sonlarni tashkil qiladi. Bu tuzilmadan foydalanib, ikkinchi tartibli figurali sonlarni quyidagicha hosil qilish

mumkin. Dastlab 1 – qatordagi aylanalar soni (1), keyin dastlabki ikkita qatordagi aylanalar soni (3), undan keyin dastlabki uchta qatordagi aylanalar soni (6), va hokazo.

Kombinatorika iborasi nemis matematigi G.Leybnis (1646- 1716) ning “Kombinatorik san,,at haqidagi mulohazalar” nomli asarida birinchi bor 1665- yilda keltirilgan. Bu asarda birlashmalar nazariyasi ilmiy jihatdan ilk bor asoslangan. O‘rinlashtirishlarni o‘rganish bilan birinchi bo‘lib Yakob Bernulli shug‘ullangan va bu haqdagi ma,,lumotlarni 1713 - yilda bosilib chiqqan “Ars conjectandi” (Bashorat qilish san,,ati) nomli kitobining ikkinchi qismida bayon qilgan. Hozirgi vaqtda kombinatorikada qo‘llanilayotgan belgilashlar XIX asrga kelib shakllandi.

Ta’rif. Biror chekli to‘plam elementlari ichida ma’lum bir xossaga ega bo‘lgan elementlaridan iborat qism to‘plamlarni tanlab olish yoki to‘plam elementlarini ma’lum bir tartibda joylashtirish bilan bog‘liq masalalar kombinatorik masalalar deyiladi.

Masalan, o‘nta ishchidan to‘rt kishidan iborat brigadalarni necha xil usulda tuzish mumkinligini (ishlab chiqarishni tashkil etish), molekulada atomlar qanday usullarda birlashishi mumkinligi (kimyo), oqsil moddalarda aminokislotalarni qanday tartiblarda joylashtirish mumkinligi (biologiya), turli bloklardan iborat mexanizmda bu bloklarni turli tartiblarda birlashtirish (konstruktorlik), bir necha dala uchastkalarida turli xil ekinlarni almashtirib ekish (agronomiya), davlat budjetini ishlab chiqarish tarmoqlari bo‘yicha taqsimoti (iqtisodiyot) kabilar kombinatorik masalalarga keladi va kombinatorikani inson faoliyatining turli yo‘nalishlarida qo‘llanishini ko‘rsatadi.

Ta’rif. Kombinatorik masalalar bilan shug‘ullanadigan matematik fan kombinatorika deyiladi.

Kombinatorikani mustaqil fan sifatida birinchi bo‘lib olmon matematigi G. Leybnits o‘rgangan va 1666 yilda “Kombinatorika san’ati haqida” asarini chop etgan.

Kombinatorikaning asosiy masalasi – berilgan ob’ektlardan u yoki bu shartlarga bo‘ysunuvchi bir nechta turli kombinatsiyalari tuzish mumkin.

To‘plamlardan farqli elmentlar kombinatsiyalari bir xil (takroriy) elementlarni o‘z ichiga olishi mumkin.

- Misol. p ta turli raqamdan nechta turli p xonali son tuzish mumkin? Yechish. Bitta raqam (1) dan faqat bitta bir xonali son olish mumkin: 1. Ikkita raqamdan (1 va 2) 2 ta ikki xonali son olish mumknim: 12 va 21.

Buni quyidagicha hosil qilish mumkin: oldingi holdagi 1 soni o‘ng va chap tarafiga 2 raqamini yozish bilan hosil qilish mumkin, ya’ni oldingi holni 2 ga ko‘paytirish lozim (1·2).

- 3 ta raqam (1,2 va 3) dan 6 ta uch xonali son olish mumkin: 312, 132, 123, 321, 231, 213. Buni quyidagicha hosil qilish mumkin: oldingi holdagi har bir ikki xonali son o‘ng, chap tarafiga va o‘rtasiga 3 raqamini yozish bilan hosil qilish mumkin, ya’ni oldingi holni 3 ko‘paytirish lozim (1·2·3).

Qiyin emaski, bunda quyidagi qonuniyatni sezish mumkin: har bir navbatdagi holda javob oldingisiga qaganda p marta ortiq bo‘ladi. Ixtiyoriy p soni uchun formula olamiz: 1·2·3·...·(n-1)·n.

Javob: 1·2·3·...·(n-1)·n

Kombinatorik masalalarni yechishda ko‘pincha ikkita asosiy qoida qo‘llaniladi.

Qo‘shish qoidasi: Agar biror a elementni t ta usul bilan, ikkinchi b elementni – p ta usul bilan tanlash mumkin bo‘lsa, u holda a yoki b elementni (t+p) ta usul bilan tanlash mumkin.

Ko‘paytirish qoidasi: Agar biror a elementni t ta usul bilan, ikkinchi b elementni – p ta usul bilan tanlash mumkin bo‘lsa, u holda a va b elementni t×p ta usul bilan tanlash mumkin.

Qo‘shish va ko‘paytirish qoidalari ixtiyoriy sondagi chekli elementlar uchun o‘rinli.

Namunaviy masalalar

- Guruhda 20 ta qiz va 5 ta o‘g‘il bola bor. Sardorni necha xil usul bilan tanlash mumkin?

Yechish. Sardor sifatida 20 ta qizdan biri yoki 5 ta o‘g‘il boladan biri tanlanishi mumkin, demak, sardorni saylashning umumiy soni 20+5=25.

- Maktabda 76 o‘qituvchi ishlaydi. Ulardan 49 tasi ingliz tilini, 32 tasi nemis tilini va 15 nafari ikkala tilni ham biladi. Necha o‘qituvchi na ingliz tilini, na nemis tilini biladi?

Yechish. Ingliz yoki nemis tilini 49+32–15=66 nafar o‘qituvchi biladi. Demak, bu ikkala tildan birortasini ham 76–66=10 o‘qituvchi bilmaydi.

- 1-navli 20 ta va 2-navli 30 ta buyum bor. Bir navdagi ikkita buyumni tanlash lozim. Buni necha xil usul bilan bajarish mumkin?

Yechish. Ko‘paytirish qodisaga ko‘ra 1-navli 2 ta buyumni 20·19=380 usul bilan tanlash mumkin. Shunga o‘xshash 2-navli 2 ta buyumni 30·29=870 usuli bilan tanlash mumkin. Masala shartigi ko‘ra bir xil navli ikkita buyumni tanlash lozim

bo‘lgani uchun, qaysi navdan bo‘lishi muhim emas, bir xil navli 2 ta buyumni tanlashning umumiy soni 380+870=1250 ga teng bo‘ladi.

Biz hayotimizni matematikasiz tasavvur qila olmaymiz .Chunki dunyoning o‘zgarishi aynan matematikaga bog’liqdir.Shuning uchun yosh avlodlarga yoshligidan matematikani hayotga bog’lab o‘rgatamiz.Matematika bu fanlarning otasidir.

Ilgari 7-sinf matematika maktab darsliklarida kombinatorika masalalari kiritilmagan edi .Hozirgi kunga kelib 6 soatlik darsga mo‘ljallangan kombinatorika masalalari 7-sinf matematika darsliklariga kiritilgan.

Kombinatorikaning asosiy bo‘limlari:

1.Kombinatsiyalar:takrorli va takrorsiz.

2.O‘rin almashtirishlar:takrorli va takrorsiz.

3.O‘rinlashtirishlar:takrorli va takrorsiz.

4.Guruhlash.

Kombinatorika masalalari matematikaning soda va murakkab masalalarini o‘z ichiga qamrab olgan katta bir bo‘limidir.Biz soda masalalarini maktab darsliklarida o‘rganamiz,murakkab masalalarini esa oliy ta’limning oliy matematika darsliklarida o‘rganamiz.Kombinatorika masalalari mantiqiy fikrlashni ham talab qiladi.Matematikada masalalar yechish uning eng asosiy tarkibiy qismidir. Biz kombinatorikaning soda masalalarini uning asosiy qoidalari asosida hayotiy misollar orqali ko‘rib chiqamiz.

Kombinatsiyalar: Ko‘paytirish va qo‘shish qoidasi kombinatorikaning asosiy qoidasidir.

$A * B$

1-masala. Anvar uyidan maktabiga 5 xil yo‘l bilan ,maktabdan o‘quv markaziga 3xil yo‘l bilan borishi mumkin.Anvar uyidan o‘quv markaziga necha xil usulda borishi mumkin?

Yechish: Ko‘paytirish va qo‘shish qoidasiga asosan ya’ni $A * B = 3 * 5 = 15_{A * B = 3 * 5 = 15}$. Demak Anvar uyidan O‘quv markaziga 15 xil usul bilan borishi mumkin.Agar savolda borib qaytsa deyilganda qaytish uchun ham 15 xil usul bilan qaytishi mumkin.

2-masala. Talabaning kiyimlar javonida 3 xil galstuk,2 xil ko‘ylak va 3 xil shim bor.Talaba 1ta galstuk,1ta ko‘ylak va 1ta shimni necha usulda bir xil rangda bo‘lmaslik sharti bilan kiyishi mumkin?

Yechish: Galstuk ranglarini: Qora, Ko‘k. Ko‘ylakni: Qora va Oq. Shimni: Yashil, Sariq va Oq deb olsak Talaba 1ta galstuk, 1ta ko‘ylak va shimni shunday tanlashi

kerakki ularning hech birining rangi bir xil bo‘lmasligi kerak ya’ni Qizil galstuk,Qora rangli ko‘ylak va Yashil rangdagi shimni kiyishi mumkin:
1- usul.Qizil galstuk,qora ko‘ylak va sariq shimni:
2-usul.Qizil galstuk qora ko‘ylak ,oq shimni:
3-usul.Qora galstuk,oq ko‘ylak, yashil shimni:
4-usul.Qora galstuk,oq ko‘ylak,sariq shimni:
5-usul.Ko‘k galstuk,qora ko‘ylak,yashil shimni:
6-usul.Ko‘k galstuk,qora usul.Ko‘k galstuk,oq ko‘ylak vayashil shimni:
7-usul.Ko‘k galstuk,oq nn
Buni formula asosida ishlasak 1*1*3+1*1*2+1*1*2+1*1*3=10.demak talaba 10 xil usulda galstuk,ko‘ylakva shimni ranglari bir xil bo‘lmagan holda kiyishi mumkin.
2) O‘rin almashtirishlar: (takrorli va takrorsiz). n ta,1-,2-,3-,…...,(n-1)-,n-o‘ringa n ta, $a_1,a_2,\ldots a_n$ elementlarnibir biriga bittadan qilib joylashtirish $a_1,a_2,\ldots,a_n$. Elementlardan tuzilgan o‘rin almashtirish deyiladi.n ta elementdan tuzilgan o‘rin almashtirishlar soni Pnbilan belgilanadi.

$$P_n = n(n-1)(n-2)\ldots\ldots 2*1 = n!$$

ga teng.Butakrorsiz o‘rin almashtirish formulasi.

$$P(n_1 \ldots\ldots\ldots n_k) = \frac{n!}{n_1 \ldots\ldots\ldots\ldots n_k!}$$

bu takrorli o‘rin almashtirish formulasi.
1-masala. Siz tug’ilgan kuningizga taklif etilgan 7ta do‘stingizni 7ta stulga necha xil usulda utkaza olasiz?
Yechish;1-o‘rinda 7ta stulga ixtiyoriy 1 tasi o‘tiradi,ya’ni imkoniyatlar soni 7ta,2-o‘rinda qolgan 6ta stulga ixtiyoriy 1 tasi o‘tiradi ya’ni 2 –stulni egallash imkoniyati 6ta.3-o‘rinda3-stulga ixtiyoriy1 tasini egallash imkoniyati5ta. 4-stulni egallash imkoniyati 4ta .5-stulni esa 3ta ,6-o‘rinda 6-stulni egallash Imkoniyati 2ta va nihoyat 7-stulni negallash imkoniyati 1ta.Demak shu 7stulga 7ta do‘stingizni o‘tkazishlar soni.7*6*5*4*3*2*1=7!=5040 ta ekan.Bunday tartiblash (joylashtirish) O‘rin almashtirish deyiladi.
2-masala. “INFORMATIKA” so‘zidan harflar o‘rnini almashtirib nechta so‘z hosil qilish mumkin ?
Yechish: Bunda hosil bo‘lgan so‘zlar ma’noli bo‘lishi shart emas.

$$P = (n_1, n_2, \ldots\ldots n_k) = \frac{n!}{n_1! n_2! \ldots\ldots\ldots n_k!}$$

Bu yerda $n_1, n_2, \ldots\ldots n_k n_1, n_2, \ldots\ldots n_k$ lar1ta elementni necha marta takrorlanishini ko‘rsatuvchi sonlar hisoblanadi.
k! esa $k_1,k_2,\ldots\ldots,k_n$ larning yig’indisi bo‘ladi.

Masala shartiga ko‘ra 11 ta harfdan 2 ta harf takrorlanayapti bunga ko‘ra

$$P = \frac{11!}{2! * 2!} = 9979200$$

ta so‘z harflar o‘rnini almashtirishlar yordamida yasalayapti .Takrorli holat bo‘lgani uchun harflar necha marta takrorlanga bo‘lsa uni o‘rinalmashtirishlar soniga bo‘linayapti .Negaki 2ta bir xil harfni o‘rnini almashtirsak ham so‘zlarda hech qanday o‘zgarish ro‘y bermaydi.

GURUHLASH USULI.

Umuman n ta elementdan k tadan olib tuzilgan barcha guruhlar soni C_n^k C_n^k deb belgilanadi va bu son $\frac{n!}{k!} * (n-k)!\frac{n!}{k!} * (n-k)!$ ga teng . $C_n^k = \frac{n!}{k!(n-k)!}$ $C_n^k = \frac{n!}{k!(n-k)!}$.

C_n^k C_n^k son nta elementdan k tadan olib tuzilgan guruhlar soni deb o‘qiladi va bu Guruhlash qonunidir.

3-masala. Aylanada 8ta :A,B,C,D,E,F,J,K harflar bilan belgilangan nuqtalar berilgan.har bir nuqtani qolgan har bir nuqta bilan tutashtirilsa nechta kesma hosil bo‘ladi?

Yechish:Aylanada ixtiyoriy 8 ta nuqtani belgilab olamiz va istalgan 1 ta nuqtani olib qolgan nuqtalar bilan tutashtiramiz.keyingi nuqtalarni ham xuddi shunday tutashtiramiz.Hosil bo‘lgan kesmalarni hisoblaganimizda7+6+5+4+3+2+1=28ta bo‘ladi buni formula yordamida hisoblasak

$$C_8^2 = \frac{8!}{2!\,(8-2)!} = 4 * 7 = 28$$

O‘RINLASHTIRISH USULI

1) $A_n^k = \frac{n!}{(n-k)!} A_n^k = \frac{n!}{(n-k)!}$ bu takrorsiz o‘rin almashtirish formulasi

2) $A_n^k = n^k$ $A_n^k = n^k$ takrorli o‘rin almashtirish formulasi.

Takrorsiz o‘rin almashtirishga masala ko‘ramiz

4-masala. Odatda uchburchk uchlari lotin alifbosining kata harflari bilan belgilanadi.Lotin alifbosida 26 ta harf bor .uchburchak uchlarini necha xil usulda belgilash mumkin?

Yechish: Alifbodagi 26ta harfni 3 tadan takrorsiz o‘rinlashtirsak ya’ni

$$A_n^k = \frac{n!}{(n-k)!} A_n^k = \frac{n!}{(n-k)!} \qquad A_{26}^3 = \frac{26!}{(26-3)!} = 26 * 25 * 24 = 15600$$

$A_{26}^3 = \frac{26!}{(26-3)!} = 26 * 25 * 24 = 15600$ ta Demak uchburchak uchlarini 15600 ta usul bilan belgilab olishimiz mumkin

5-masala. Raqamlar takrorlanish mumkin bo‘lsa :1,2,3,4,5,6,7,8 raqamlardan nechta 4 xonali son hosil qilish mumkin?

Yechish:

$A_n^k = n^k A_n^k = n^k\ A_8^4 = 8^4 = 4096 A_8^4 = 8^4 = 4096$

4096 ta 4 xonali son hosil qilish mumkin ekan 1 dan 8 gacha bo‘lgan raqamlardan.

Kombinatorika masalalarini yechishda o‘quvchi mantiqiy fikrlab masala shartiga asosan uni tasavvur qilishi lozim.O‘quvchilarni mantiqiy fikrlashini oshirish uchun O‘qituvchi mohir pedagog bo‘lishi kerak O‘qituvchi turli xil o‘yinlar orqali ham ularning aqliy ishchanligini oshirish mumkin.masalalarni yechishdan avval savol shartini tushunib uning grafik yoki chizmalarini chizish kerak .Shunda gina masalalar tez va oson yechiladi .Matematikada ko‘plab misol va masalalarni yechishda ularning grafik yoki chizmalarini chizish masala yoki misolning deyarli yarimi ishlandi demakdir .

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Аннотация

В этой статье рассматривается область экономики сельского хозяйства, с упором на ее значение в обеспечении продовольственной безопасности, развитии сельских районов и устойчивых сельскохозяйственных практиках. В исследовании обсуждаются основные проблемы, с которыми сталкивается сельскохозяйственный сектор, включая изменение климата, управление ресурсами и технологические инновации. В нем также исследуется роль государственной политики, динамики рынка и мировой экономики в формировании сельскохозяйственных систем. Цель статьи — дать представление о текущих тенденциях в экономике сельского хозяйства и предоставить рекомендации по достижению устойчивого роста сельского хозяйства.

Ключевые слова. Экономика сельского хозяйства, продовольственная безопасность, развитие сельских районов, устойчивое сельское хозяйство, изменение климата, управление ресурсами, сельскохозяйственная политика, технологии в сельском хозяйстве.

Abstract

This article explores the field of agricultural economics, focusing on its significance in ensuring food security, rural development, and sustainable agricultural practices. The study discusses the main challenges faced by the agricultural sector, including climate change, resource management, and technological innovations. It also explores the role of government policies, market dynamics, and the global economy in shaping agricultural systems. The article aims to offer insights into the current trends in agricultural economics and provide recommendations for achieving sustainable agricultural growth.

Keywords. Agricultural economics, food security, rural development, sustainable agriculture, climate change, resource management, agricultural policy, technology in agriculture.

Introduction. Agricultural economics is a sub-field of economics that studies the production, distribution, and consumption of agricultural goods and services. It examines the relationship between agriculture and the economy, addressing issues such as food security, income generation for farmers, rural development, and environmental sustainability. As the global population grows, the agricultural sector faces increasing pressure to provide sufficient food while minimizing environmental impact and ensuring economic viability for farmers.

The challenges facing the agricultural sector, including climate change, resource depletion, and market fluctuations, require innovative solutions and policy reforms. Agricultural economics plays a pivotal role in addressing these challenges by analyzing market trends, policy implications, and the adoption of new technologies that can improve productivity and sustainability. This article explores the key aspects of agricultural economics, its importance for sustainable development, and the future outlook of the sector.

Main part. 1. Importance of Agricultural Economics

Agricultural economics is crucial for understanding how resources are allocated in agricultural production and how these resources can be used efficiently to meet the growing demand for food. The field also provides insights into the economics of rural areas, helping policymakers design strategies to reduce poverty and improve living standards in agricultural communities.

The role of agriculture extends beyond food production. It is a key contributor to national economic growth, providing employment and income to millions of people globally. In developing countries, agriculture is often the backbone of the economy, with the majority of the population relying on farming for their livelihoods. In this context, agricultural economics becomes essential for devising strategies that enhance productivity, promote equitable distribution of resources, and ensure food security.

2. Challenges in Agricultural Economics

The agricultural sector faces several challenges that have significant economic implications. These include:

Climate Change: Climate change has a profound impact on agriculture, influencing crop yields, water availability, and the frequency of extreme weather events. Unpredictable weather patterns, such as droughts and floods, can disrupt food production and increase the vulnerability of rural economies.

Resource Management: Agriculture relies heavily on natural resources, including land, water, and biodiversity. As the global population grows, the pressure on these resources increases. Efficient resource management is critical for maintaining agricultural productivity and ensuring sustainability.

Technological Innovations: The adoption of new technologies, such as precision agriculture, biotechnology, and automation, has the potential to increase agricultural productivity. However, the high cost of technology and the need for infrastructure improvements in rural areas pose barriers to its widespread adoption.

Market Dynamics: Agricultural markets are subject to fluctuations in commodity prices, trade policies, and global economic trends. These fluctuations can affect farmers' income and the overall stability of the agricultural sector. The global nature of agricultural markets also means that changes in one region can have ripple effects worldwide.

3. Role of Government and Policy

Government policies play a vital role in shaping the agricultural sector. These policies can influence agricultural production through subsidies, tax incentives, trade regulations, and support for agricultural research. Effective agricultural policies help promote sustainable practices, support rural economies, and ensure food security.

For instance, subsidies for sustainable farming practices, such as organic farming or conservation tillage, can encourage farmers to adopt more environmentally friendly techniques. Additionally, policies that support smallholder farmers can enhance food security in rural areas by improving access to credit, technology, and markets.

4. Sustainable Agricultural Practices

Sustainable agriculture focuses on balancing the need for food production with environmental protection and social equity. Practices such as crop rotation, agroforestry, and integrated pest management can improve soil health, increase biodiversity, and reduce the reliance on chemical fertilizers and pesticides.

Agricultural economics plays a key role in promoting sustainable practices by analyzing the economic benefits of these practices and helping to design policies that incentivize their adoption. Furthermore, sustainable agriculture can lead to long-term improvements in food security and rural development by reducing environmental degradation and improving resilience to climate change.

5. Technological Innovations and Future Outlook

Technological advancements in agriculture, such as precision farming, genetic engineering, and the use of data analytics, are transforming the sector. These innovations have the potential to increase crop yields, reduce waste, and optimize resource use, all of which contribute to more sustainable farming practices.

The future of agricultural economics will likely involve a greater focus on integrating technology with traditional farming practices. As technology becomes more accessible and affordable, especially in developing countries, it can help farmers increase their productivity while minimizing environmental harm.

Conclusion. Agricultural economics plays a crucial role in addressing the challenges of modern agriculture, from climate change and resource depletion to the need for sustainable food production systems. The agricultural sector is integral to global economic growth, rural development, and food security. However, it faces numerous challenges that require innovative solutions, including the adoption of new technologies, effective policy interventions, and sustainable farming practices.

To ensure the future of agriculture, it is essential for policymakers, farmers, and businesses to work together to create an environment that supports sustainable agricultural practices. By promoting agricultural innovations, improving resource management, and addressing the economic and environmental challenges of agriculture, it is possible to create a more sustainable and prosperous agricultural system for future generations.

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FANLARARO BOG'LIQLIK NUQTAI-NAZARIDAN TALABALARNING KASBIY KOMPETENTLIGINI SHAKLLANTIRISHDA AXBOROT TEXNOLOGIYALARINI QO‘LLASH ASOSLARI

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Kirish Bugungi kunda axborot texnologiyalari (AT) dunyoning barcha sohalarida, ayniqsa ta'lim sohasida, muhim rol o‘ynaydi. Kasbiy kompetentlik talabalarning mustahkam bilimlar va malakalarini shakllantirishga yordam beradigan muhim omil sifatida qaraladi. AT yordamida talabalarga zamonaviy bilimlarni o‘rgatish va ularni amaliyotga tadbiq etish imkoniyatlari kengayadi. Fanlararo bog‘liqlik esa turli fanlar o‘rtasidagi o‘zaro aloqalar va integratsiyani anglatadi, bu esa talabalarga keng qamrovli va amaliy bilimlar olish imkonini beradi.

Axborot texnologiyalarining ta'limda o‘rni Axborot texnologiyalarining ta'lim tizimidagi o‘rni har qadamda ortib bormoqda. Kompyuterlar, internet, mobil ilovalar va boshqa raqamli vositalar yordamida ta'lim jarayonini samarali tashkil etish mumkin. Bu vositalar:

- O‘qituvchilarga o‘quv jarayonini interaktiv va qiziqarli tarzda tashkil etishga imkon beradi.
- Talabalarga ko‘p turli manbalardan bilim olish, o‘rganish va mustahkamlash imkoniyatini yaratadi.
- O‘quvchilarni mustaqil ishlashga, kreativ fikrlashga, muammolarni yechishga rag‘batlantiradi.
- Online kurslar va simulyatsiyalar orqali real hayotdagi vaziyatlarga tayyorlashga yordam beradi.

Fanlararo bog'liqlik va kasbiy kompetentlik Fanlararo bog‘liqlik, o‘qitish jarayonida turli fanlar o‘rtasidagi integratsiya va aloqalarni o‘rnatishning ahamiyatiga e'tibor qaratadi. Bu bog‘liqlik talabalarga turli sohalarda o‘zaro aloqalar va o‘rganishlarni chuqur tushunishga yordam beradi. Kasbiy kompetentlik esa quyidagi komponentlardan iborat:

1. **Kasbiy bilim** – o‘z sohasida chuqur bilimga ega bo‘lish.
2. **Kasbiy malaka** – o‘quv materiallarini amaliyotga tadbiq eta olish.
3. **Shaxsiy sifatlar** – tashabbuskorlik, kreativlik, mas'uliyat va jamoada ishlash qobiliyati.

Fanlararo bog‘liqlik orqali kasbiy kompetentlikni shakllantirishda axborot texnologiyalarining o‘rni katta:

- **Tezkor o‘rganish**: Axborot texnologiyalari yordamida turli fanlarni o‘rganishda vaqtni samarali boshqarish va ulardan kengroq foydalanish mumkin.
- **Integratsiyalashgan o‘qitish metodlari**: Axborot texnologiyalaridan foydalanib, o‘qituvchilar bir nechta fanlarni integratsiya qilish orqali bilim berish metodikasini o‘zgartirishlari mumkin. Masalan, matematika va fizika fanlarini birlashtirib, talabalar uchun amaliy mashqlar yaratish mumkin.
- **Simulyatsiyalar va laboratoriya ishlar**: Kompyuter simulyatsiyalari yordamida talabalarga real hayotdagi kasbiy muammolarni yechish tajribasini beradi.

Axborot texnologiyalarining kasbiy kompetentlikni shakllantirishdagi asosiy usullari

1. **Interaktiv darslar**: Axborot texnologiyalaridan foydalanish orqali interaktiv darslar tashkil etish. Bu usul talabalarni mustaqil fikrlashga va yangi bilimlarni o‘zlashtirishga undaydi.
2. **Onlayn kurslar va treninglar**: Talabalarga turli onlayn platformalarda o‘z sohasidagi bilimlarni oshirish va ko‘nikmalarni rivojlantirish imkoniyatini beradi.
3. **Multimediali vositalar**: Grafiklar, videolar va audio materiallar yordamida ta'lim jarayonini boyitish va talabalarga ko‘p jihatdan yangi ma'lumotlarni ko‘rish va eshitish imkonini yaratish.
4. **E-learning tizimlari**: Elektron ta'lim tizimlari talabalarga turli fanning resurslariga kirish imkonini beradi, bu esa ularga o‘z bilimlarini mustahkamlashda yordam beradi.

XULOSA Axborot texnologiyalarining fanlararo bog‘liqlik nuqtai-nazaridan kasbiy kompetentlikni shakllantirishda qo‘llanilishi bugungi kunda ta'lim tizimini rivojlantirishda muhim rol o‘ynamoqda. Axborot texnologiyalari yordamida talabalar o‘z kasbiy sohalarida zamonaviy bilim va ko‘nikmalarni egallash imkoniyatiga ega bo‘lishadi. Bu esa ularning muvaffaqiyatli kasbiy faoliyatlarini amalga oshirishga zamin yaratadi.

FOYDALANILGAN ADABIYOTLAR:

1. https://uz.ampi-nc.org [elektron resurs]
2. https://uz.centrodeprensa.org [elektron resurs]

SURFACE AREA AND VOLUME OF A PRISM

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Abstract: *Prisms are fundamental geometric shapes that have a wide range of applications in both theoretical mathematics and practical fields like architecture, engineering, and manufacturing. A prism is defined as a polyhedron with two parallel, congruent bases and rectangular lateral faces. This article explores the methods for calculating the surface area and volume of a prism, including the influence of base shapes and the height of the prism. It also discusses the practical applications of these calculations in various industries.*
Keywords: *Prism, Surface Area, Volume, Geometry, Polyhedron, Base Shape, Height*

Introduction: Prisms are a fundamental class of polyhedra in geometry that have broad applications in various fields such as architecture, engineering, manufacturing, and even computer science. A prism is defined by two identical, parallel, congruent polygonal bases and rectangular lateral faces that connect the corresponding edges of the bases. The shape and properties of a prism are heavily dependent on the shape of its base, which can be any polygon, such as a triangle, square, pentagon, or hexagon. Due to this versatility, prisms come in many forms, such as triangular prisms, rectangular prisms, and even prisms with more complex polygonal bases. Understanding the surface area and volume of prisms is essential for practical applications that involve spatial analysis, material estimation, and structural design. The surface area of a prism involves calculating the total area of all its exposed faces, including both the two congruent bases and the rectangular lateral faces that wrap around the sides. The volume of a prism, on the other hand, measures the space enclosed within the solid and is determined by multiplying the area of the base by the height of the prism, which is the perpendicular distance between the two bases.
These geometric properties are used extensively in fields such as construction, packaging, and transportation. For example, in the construction industry, prisms are frequently used to design and construct structural elements like beams and columns. In packaging, the shapes of boxes and containers are often modeled as prisms, making the

calculation of surface area and volume vital for determining the material requirements and optimizing design for efficient use of space. Additionally, in manufacturing, understanding how to compute the surface area and volume of prisms helps ensure proper material allocation and the efficiency of production processes. The simplicity of the prism's geometric structure makes it one of the first three-dimensional shapes studied in elementary geometry. However, even though the basic calculations for surface area and volume are straightforward, they can become more complex when applied to irregular prisms or prisms with non-standard bases. In these cases, advanced methods and computational tools can be employed to derive these properties. This article will explore the fundamental principles behind the calculation of surface area and volume for different types of prisms, illustrating their practical significance and real-world applications.

Literature review

The study of prisms and their geometric properties has been a focal point of mathematical research for centuries. From ancient Greek mathematics to modern geometry, the understanding of prisms has evolved significantly, influencing both theoretical advancements and practical applications. The literature on prisms spans a wide array of fields, including classical geometry, engineering, architecture, and computational modeling. This review summarizes key contributions to the study of prisms, focusing on their surface area and volume, as well as the implications of these calculations in real-world scenarios.

One of the earliest and most influential contributions to the understanding of polyhedra, including prisms, comes from Euclid’s Elements (circa 300 BCE). Euclid classified and described various geometric solids, providing the foundation for later mathematical exploration. Although Euclid did not focus specifically on prisms, his work laid the groundwork for understanding polyhedra and their properties, including the relationship between faces, edges, and vertices, which remains relevant in the study of prisms today [1].

During the Renaissance period, a shift toward more systematic geometric studies led to a deeper exploration of three-dimensional shapes. Archimedes, a Greek mathematician, is renowned for his work on volumes and surface areas of various solids, though his focus was often on more complex bodies like spheres and cylinders. Archimedes’ contributions to solid geometry provided a basis for understanding the principles behind volume and surface area calculations for polyhedral shapes, including prisms. His work laid the foundation for the development of geometric formulas, and his use of approximation techniques influenced future mathematical discoveries [2]. In the 19th and 20th centuries, the work of mathematicians such as

Charles Babbage and G. Polya furthered the understanding of geometric solids, including prisms. Babbage, known for his contributions to the field of mathematical analysis, explored the use of geometric shapes in industrial design and engineering, which directly contributed to the practical application of surface area and volume calculations in manufacturing and construction. His work emphasized the need for precise geometric measurements and led to the use of prisms in structural engineering and architectural design [3].

The formalization of surface area and volume calculations for prisms became a critical component of geometry textbooks in the 20th century. In particular, the work of G. Polya in How to Solve It (1957) provided systematic problem-solving strategies for a wide range of geometric problems, including those involving prisms. Polya's methods of logical reasoning and his emphasis on understanding geometric shapes through practical applications influenced modern geometric problem-solving approaches. His strategies have been incorporated into many contemporary mathematics curricula, demonstrating the ongoing relevance of prism calculations in education [4]. In recent years, advances in computational geometry have revolutionized the study of prisms. With the advent of computer-aided design (CAD) software and computational tools, the ability to model and calculate the properties of prisms, even with irregular or complex bases, has become significantly easier. Algorithms developed in the field of computational geometry are now used to compute surface area and volume for prisms with irregular polygonal bases, which would have been more difficult to calculate manually. These developments have had a profound impact on fields like architecture, engineering, and computer graphics, where accurate and efficient geometric modeling is essential [5].

Analysis and Results

The analysis of the surface area and volume of prisms follows a straightforward yet systematic approach rooted in basic geometric principles. However, the specific approach varies depending on the type of prism being studied. Whether the prism has a triangular, rectangular, or hexagonal base, the core concepts of base area and height are used to compute the required properties.

Surface Area Calculation: The surface area of a prism is the sum of the areas of its two congruent bases and the areas of the rectangular lateral faces. The complexity of the surface area calculation depends on the shape of the base. For example, in a rectangular prism, the base is a rectangle, and the lateral faces are also rectangles, so the total surface area can be calculated easily by considering the areas of these individual faces.

To calculate the surface area of a prism, the first step is to determine the area of the two identical bases. If the base is a polygon, the area of the base is computed using the standard geometric formula for that polygon. For example, if the base is a triangle, its area can be found using the formula for the area of a triangle, while for a rectangular base, it is simply the product of the length and width. Once the area of the base is determined, the next step is to calculate the lateral area, which involves the perimeter of the base multiplied by the height of the prism. This is because the lateral faces of the prism are rectangles, and the perimeter of the base dictates the sum of the lengths of all the lateral faces.

For a rectangular prism, for instance, where the base is a rectangle, the total surface area is calculated by finding the area of the two rectangular bases and adding the areas of the four rectangular lateral faces. The four lateral faces are calculated by multiplying the perimeter of the rectangle (the sum of all its edges) by the height of the prism. This results in a direct way to calculate the surface area, involving simple addition and multiplication operations.

For prisms with more complex base shapes (e.g., triangular or hexagonal), the approach is similar but requires different geometric formulas for the area of the base. For a triangular prism, for instance, the area of the triangular base is determined using the standard formula for the area of a triangle, and the perimeter of the triangle is used to calculate the lateral surface area.

Volume Calculation: The volume of a prism is determined by the area of the base and the height of the prism. The formula for volume remains the same for all types of prisms and is simply the product of the base area and the height. This calculation does not vary with the shape of the base, making it one of the more straightforward aspects of geometric analysis. For a rectangular prism, the volume is simply the product of the length, width, and height. For other prisms, the volume is found by calculating the area of the base (whether triangular, pentagonal, or another polygon) and multiplying it by the height of the prism.

For example, if we consider a triangular prism with a base that is an equilateral triangle, we first calculate the area of the triangle using the standard formula for the area of an equilateral triangle. Once the base area is determined, the volume of the prism is found by multiplying this area by the height of the prism, which is the perpendicular distance between the two triangular bases. The same approach applies to other prisms, where the base area might be irregular or more complex.

Practical Examples: To better understand the application of these formulas, consider a rectangular prism with a length of 4 meters, width of 3 meters, and height of 5 meters. The surface area is computed by adding the areas of the two rectangular bases and the four lateral faces. The area of each base is the product of the length and width (4 meters * 3 meters = 12 square meters). The perimeter of the base is the sum of all its sides (4 + 3 + 4 + 3 = 14 meters), and the lateral surface area is calculated by multiplying the perimeter by the height (14 meters * 5 meters = 70 square meters). Therefore, the total surface area is the sum of the base areas and the lateral area: 2 * 12 square meters + 70 square meters = 94 square meters.

The volume of the rectangular prism is calculated by multiplying the base area (12 square meters) by the height (5 meters), giving a volume of 60 cubic meters.

For a triangular prism with a base that is an equilateral triangle with a side length of 6 meters and a height of 10 meters, the area of the base is calculated using the formula for the area of an equilateral triangle $\frac{\sqrt{3}}{4}s^2$, where s is the side length). Substituting the side length of 6 meters, we get an area of 15.59 square meters. The volume of the prism is then found by multiplying the base area by the height, yielding a volume of 155.9 cubic meters.

Analysis of Complex Prisms: In more complex scenarios, such as prisms with irregular or non-polygonal bases, advanced geometric techniques or computational methods may be employed. In these cases, the area of the base may be determined using numerical integration or algorithms designed for irregular shapes. Additionally, computer-aided design (CAD) software is often used in modern engineering to model prisms with complex geometries. This software can automate the process of calculating both surface area and volume, reducing the time and effort required for manual calculations.

Applications in Real-World Scenarios: The ability to calculate surface area and volume accurately is essential in fields like architecture and construction. For example, in designing buildings or bridges, engineers must calculate the surface area to estimate the amount of materials needed, such as concrete, steel, or glass. Similarly, the volume is crucial in determining the amount of space available in storage containers or the total volume of materials required for construction.

The application of these geometric calculations is not limited to physical structures. In packaging and logistics, understanding the volume of containers or packages (often

modeled as prisms) is critical for optimizing space in warehouses and minimizing shipping costs. By knowing the surface area, manufacturers can also estimate the amount of packaging material required for wrapping and protecting goods.

Conclusion

The study of surface area and volume of prisms plays a crucial role in various mathematical, engineering, and real-world applications. Through a simple yet systematic approach, both the surface area and volume can be calculated based on fundamental geometric principles. These properties are critical for numerous fields, including architecture, engineering, packaging, and manufacturing. The surface area provides insight into material requirements for construction and manufacturing, while the volume is essential for determining the capacity of containers, storage spaces, and other spatial elements. The surface area of a prism is determined by summing the areas of its bases and lateral faces, while the volume is found by multiplying the base area by the height. Although the complexity of these calculations can increase depending on the shape of the base, the fundamental process remains consistent across all types of prisms. Modern computational tools and software have made these calculations more efficient, even for irregular prisms with complex bases, enabling faster design processes in fields such as architecture and industrial engineering.

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