

# Introductory Chemistry A Foundation Answer Key Zumdahl

*Introductory Chemistry Foundations of Chemistry* Introductory Chemistry: a Foundation Introductory Chemistry in the Laboratory Solutions Guide, *Introductory Chemistry, a Foundation*, *Introductory Chemistry, Basic Chemistry, Fourth Edition*, Zumdahl Student Solutions Manual Foundations of Chemistry Study Guide for Zumdahl/Decoste's Introductory Chemistry Student Solutions Manual for Zumdahl/DeCoste's Introductory Chemistry: A Foundation, 9th Foundations for Teaching Chemistry Studyguide for Introductory Chemistry Studyguide for Introductory Chemistry: a Foundation by Steven S. Zumdahl, ISBN 9781111789428 Introductory Chemistry - a Foundation + Owl2 With Mindtap Reader, 1 Term 6 Months Printed Access Card Foundations of Organic Chemistry Foundations of Analytical Chemistry Pearson IIT Foundation Physics Class 10 Study Guide for Introductory Chemistry Chemistry for Sustainable Technologies 2nd Edition The IIT Foundation Series - Chemistry Class 7 Loose-leaf Version for Introductory Chemistry Foundations of Inorganic Chemistry Chemistry Foundations of College Chemistry Environmental Chemistry in Society Chemistry *Foundation Course in Physics with Case Study Approach for JEE/ NEET/ Olympiad Class 9 - 5th Edition* Foundations of Chemistry Pearson IIT Foundation Physics Class 9 General, Organic, and Biological Chemistry PET Chemistry *Physics for Chemists* Contemporary Carbene Chemistry Pearson IIT Foundation Chemistry Class 8 Chemistry 2e Introductory Chemistry World of Chemistry *Introductory Chemistry Foundation Chemistry* Foundations of Organic Chemistry Chemistry 2012 Student Edition (Hard Cover) Grade 11

Eventually, you will very discover a new experience and execution by spending more cash. still when? pull off you assume that you require to get those all needs considering having significantly cash? Why dont you attempt to acquire something basic in the beginning? Thats something that will guide you to comprehend even more roughly speaking the globe, experience, some places, with history, amusement, and a lot more?

It is your very own epoch to produce an effect reviewing habit. accompanied by guides you could enjoy now is Introductory Chemistry A Foundation Answer Key Zumdahl below.

*Foundations of Organic Chemistry* Sep 19 2021 This book differs from other organic chemistry textbooks in that it is not focused purely on the needs of students studying premed, but rather for all students studying organic chemistry. It directs the reader to question present assumptions rather than to accept what is told, so the second chapter is largely devoted to spectroscopy (rather than finding it much later on as with most current organic chemistry textbooks). Additionally, after an introduction to spectroscopy, thermodynamics and kinetics, the presentation of structural information of compounds and organic families advances from hydrocarbons to alcohols to aldehydes and ketones and, finally, to carboxylic acids.

*Foundations of Inorganic Chemistry* Feb 10 2021 Foundations of Inorganic Chemistry by Gary Wulfsberg is our newest entry into the field of Inorganic Chemistry textbooks, designed uniquely for a one-semester stand alone course, or to be used in the first semester of a full year inorganic sequence. By covering virtually every topic in the test from the 2016 ACS Exams Institute, this book will prepare your students for success. The new book combines careful pedagogy, clear writing, beautifully rendered two-color art, and solved examples, with a broad array of original, chapter-ending exercises. It assumes a background in General Chemistry, but reviews key concepts, and also assumes enrollment in a Foundations of Organic Chemistry course. Symmetry and molecular orbital theory are introduced after the student has developed an understanding of fundamental trends in chemical properties and reactions across the periodic table, which allows MO theory to be more broadly applied in subsequent chapters. Key Features include: Over 900 end-of-chapter exercises, half answered in the back of the book. Over 180 worked examples. Optional experiments & demos. Clearly cited connections to other areas in chemistry and chemical sciences. Chapter-opening biographical vignettes of noted scientists in Inorganic Chemistry. Optional General Chemistry review sections.

*Loose-leaf Version for Introductory Chemistry* Mar 14 2021 Introductory Chemistry creates light bulb moments for students and provides unrivaled support for instructors! Highly visual, interactive multimedia tools are an extension of Kevin Revell's distinct author voice and help students develop critical problem solving skills and master foundational chemistry concepts necessary for success in chemistry.

*General, Organic, and Biological Chemistry* Jun 04 2020

The IIT Foundation Series - Chemistry Class 7 Apr 14 2021

Introductory Chemistry in the Laboratory Jul 30 2022 Features 29 experiments organized according to the topical presentation in the text.

Annotations in the main text IAE indicate where the labs from this manual are relevant to chapter content.

*Student Solutions Manual* May 28 2022 This manual contains answers and detailed solutions to all the in-chapter Exercises, Concept Checks, and Self-Assessment and Review Questions, plus step-by-step solutions to selected odd-numbered end-of-chapter problems. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

World of Chemistry Oct 28 2019 Our high school chemistry program has been redesigned and updated to give your students the right balance of concepts and applications in a program that provides more active learning, more real-world connections, and more engaging content. A revised and enhanced text, designed especially for high school, helps students actively develop and apply their understanding of chemical concepts. Hands-on labs and activities emphasize cutting-edge applications and help students connect concepts to the real world. A new, captivating design, clear writing style, and innovative technology resources support your students in getting the most out of their textbook. - Publisher.

*Chemistry for Sustainable Technologies 2nd Edition* May 16 2021 Following the success of the first edition, this fully updated and revised book continues to provide an interdisciplinary introduction to sustainability issues in the context of chemistry and chemical technology. Its prime objective is to equip young chemists (and others) to more fully to appreciate, defend and promote the role that chemistry and its practitioners play in moving towards a society better able to control, manage and ameliorate its impact on the ecosphere. To do this, it is necessary to set the ideas, concepts, achievements and challenges of chemistry and its application in the context of its environmental impact, past, present and future, and of the changes needed to bring about a more sustainable yet equitable world. Progress since 2010 is reflected by the inclusion of the latest research and thinking, selected and discussed to put the advances concisely in a much wider setting - historic, scientific, technological, intellectual and societal. The treatment also examines the complexities and additional challenges arising from public and media attitudes to science and technology and associated controversies and from the difficulties in reconciling environmental protection and global development. While the book stresses the central importance of rigour in the collection and treatment of evidence and reason in decision-making, to ensure that it meets the needs of an extensive community of students, it is broad in scope, rather than deep. It is, therefore, appropriate for a wide audience, including all practising scientists and technologists. Extracts from reviews of the first edition: "The book forms the basis for a superb training course on sustainability from

a chemist's viewpoint, and a wonderful introduction to the subject for undergraduates and postgraduates... this unique book is highly recommended reading for all chemists' Trevor Laird, *Org. Process Res. Dev.*, 2013, 17(7), 991 'I would even go so far as to recommend this to any serious graduate or undergraduate scientist as a must read' David Harwood, *Reviews: A Guide to Publications in the Physical Sciences*, 2011, 12(1), 9

**Contemporary Carbene Chemistry** Mar 02 2020 Presents the most innovative results in carbene chemistry, setting the foundation for new discoveries and applications The discovery of stable carbenes has reinvigorated carbene chemistry research, with investigators seeking to develop carbenes into new useful catalysts and ligands. Presenting the most innovative and promising areas of carbene research over the past decade, this book explores newly discovered structural, catalytic, and organometallic aspects of carbene chemistry, with an emphasis on new and emerging synthetic applications. *Contemporary Carbene Chemistry* features contributions from an international team of pioneering carbene chemistry researchers. Collectively, these authors have highlighted the most interesting and promising areas of investigation in the field. The book is divided into two parts: Part 1, Properties and Reactions of Carbenes, explores new findings on carbene stability, acid-base behavior, and catalysis. Carbene structure and reactivity are examined in chapters dedicated to stable carbenes, carbodienes, carbenes as guests in supramolecular hosts, tunneling in carbene and oxacarbene reactions, and ultrafast kinetics of carbenes and their excited state precursors. Theoretical concerns are addressed in chapters on computational methods and dynamics applied to carbene reactions. Part 2, Metal Carbenes, is dedicated to the synthetic dimensions of carbenes, particularly the reactions and catalytic properties of metal carbenes. The authors discuss lithium, rhodium, ruthenium, chromium, molybdenum, tungsten, cobalt, and gold. All the chapters conclude with a summary of the current situation, new challenges on the horizon, and promising new research directions. A list of key reviews and suggestions for further reading also accompanies every chapter. Each volume of the Wiley Series on Reactive Intermediates in Chemistry and Biology focuses on a specific reactive intermediate, offering a broad range of perspectives from leading experts that sets the stage for new applications and further discoveries.

**Introductory Chemistry: a Foundation** Aug 31 2022 Zumdahl and DeCoste's best-selling **INTRODUCTORY CHEMISTRY: A FOUNDATION**, combines enhanced problem-solving structure with substantial pedagogy to enable students to become strong, independent problem solvers. Capturing student interest through early coverage of chemical reactions, accessible explanations and visualizations, and an emphasis on everyday applications, the authors explain chemical concepts starting with the basics and conclude by encouraging students to test their own understanding of the solution. 'Critical Thinking' questions useful for generating class discussion emphasize the importance of conceptual learning. OWLv2 provides a robust learning platform specially designed for Chemistry courses with an interactive eBook, adaptive study and homework solutions, and powerful gradebook and analytics to keep students on the path to mastery and to inform teach instruction.

**Study Guide for Introductory Chemistry** Jun 16 2021

**Introductory Chemistry** Nov 29 2019 Introductory chemistry students need to develop problem-solving skills, and they also must see why these skills are important to them and to their world. *Introductory Chemistry, Fourth Edition* extends chemistry from the laboratory to the student's world, motivating students to learn chemistry by demonstrating how it is manifested in their daily lives. Throughout, the Fourth Edition presents a new student-friendly, step-by-step problem-solving approach that adds four steps to each worked example (Sort, Strategize, Solve, and Check). Tro's acclaimed pedagogical features include Solution Maps, Two-Column Examples, Three-Column Problem-Solving Procedures, and Conceptual Checkpoints. This proven text continues to foster student success beyond the classroom with MasteringChemistry®, the most advanced online tutorial and assessment program available. This package contains: Tro, *Introductory Chemistry with MasteringChemistry®* Long, *Introductory Chemistry Math Review Toolkit*

**Environmental Chemistry in Society** Nov 09 2020 This self-contained text offers all the information necessary for readers to understand the topics surrounding environmental science and the chemistry underlying various issues. *Environmental Chemistry in Society, Third Edition*, provides a foundation in science, chemistry, and toxicology, including the laws of thermodynamics, chemical bonding, and environmental toxins. This text allows readers to delve into environmental topics such as energy in society, air quality, global atmospheric concerns, water quality, and solid waste management. The arrangement of the book provides instructors with flexibility in how they present the material, with crucial topics covered first. This Third Edition has been updated throughout. The book provides a statement of learning outcomes at the beginning of every chapter, group work questions to encourage learning and environmental awareness, and discussion questions to develop critical thinking skills. The Third Edition includes more illustrations than previous editions, and the energy chapter of the Second Edition has been divided into two chapters in this edition to make the topic more manageable. An inclusive international approach highlights the contributions of scientists from around the world. Chemical structures are presented with inline figures. **FEATURES** Offers a user-friendly approach to appeal to students with little or no science background Presents a qualitative approach to the chemistry behind many current environmental issues Updates environmental data Includes a glossary of important terms The environmental data has been updated to include the effects of COVID-19. A test bank is available to instructors upon request.

**Foundations of Chemistry** Apr 26 2022

**Pearson IIT Foundation Chemistry Class 8** Jan 30 2020 Pearson IIT Foundation Series, one of the most reliable and comprehensive source of content for competitive readiness, is now thoroughly updated and redesigned to make learning more effective and interesting for students. The core objective of this series is to help aspiring students understand the fundamental concepts with clarity, in turn, helping them to master the art of problem-solving. Hence, great care has been taken to present the concepts in a lucid manner with the help of neatly sketched illustrations and well thought-out real-life examples. As a result, this series is indispensable for any student who intends to crack high-stakes examinations such as Joint Entrance Examination (JEE), National Talent Search Examination (NTSE), Olympiads-Junior/Senior /International, Kishore Vaigyanik Protsahan Yojana (KVPY), etc. The series consists of 12 books spread across Physics, Chemistry, and Mathematics for classes VII to X.

**Pearson IIT Foundation Physics Class 10** Jul 18 2021 Pearson IIT Foundation Series, one of the most reliable and comprehensive source of content for competitive readiness, is now thoroughly updated and redesigned to make learning more effective and interesting for students. The core objective of this series is to help aspiring students understand the fundamental concepts with clarity, in turn, helping them to master the art of problem-solving. Hence, great care has been taken to present the concepts in a lucid manner with the help of neatly sketched illustrations and well thought-out real-life examples. As a result, this series is indispensable for any student who intends to crack high-stakes examinations such as Joint Entrance Examination (JEE), National Talent Search Examination (NTSE), Olympiads-Junior/Senior /International, Kishore Vaigyanik Protsahan Yojana (KVPY), etc. The series consists of 12 books spread across Physics, Chemistry, and Mathematics for classes VII to X.

**Study Guide for Zumdahl/DeCoste's Introductory Chemistry** Mar 26 2022 Contains chapter discussions, key-term definitions, and practice chapter tests to help your students master the concepts and skills of the course.

**Foundation Course in Physics with Case Study Approach for JEE/ NEET/ Olympiad Class 9 - 5th Edition** Sep 07 2020  
**Chemistry 2e** Dec 31 2019

**Pearson IIT Foundation Physics Class 9** Jul 06 2020 Pearson IIT Foundation Series, one of the most reliable and comprehensive source of content for competitive readiness, is now thoroughly updated and redesigned to make learning more effective and interesting for students. The core objective of this series is to help aspiring students understand the fundamental concepts with clarity, in turn, helping them to master the art of problem-solving. Hence, great care has been taken to present the concepts in a lucid manner with the help of neatly sketched illustrations and well thought-

out real-life examples. As a result, this series is indispensable for any student who intends to crack high-stakes examinations such as Joint Entrance Examination (JEE), National Talent Search Examination (NTSE), Olympiads-Junior/Senior /International, Kishore Vaigyanik Protsahan Yojana (KVPY), etc. The series consists of 12 books spread across Physics, Chemistry, and Mathematics for classes VII to X.

**Foundations of Chemistry Oct 01 2022 FOUNDATIONS OF CHEMISTRY** A foundation-level guide to chemistry for physical, life sciences and engineering students **Foundations of Chemistry: An Introductory Course for Science Students** fills a gap in the literature to provide a basic chemistry text aimed at physical sciences, life sciences and engineering students. The authors, noted experts on the topic, offer concise explanations of chemistry theory and the principles that are typically reviewed in most one year foundation chemistry courses and first year degree-level chemistry courses for non-chemists. The authors also include illustrative examples and information on the most recent applications in the field. **Foundations of Chemistry** is an important text that outlines the basic principles in each area of chemistry - physical, inorganic and organic - building on prior knowledge to quickly expand and develop a student's knowledge and understanding. Key features include: Worked examples showcase core concepts and practice questions. Margin comments signpost students to knowledge covered elsewhere and are used to highlight key learning objectives. Chapter summaries list the main concepts and learning points.

**Solutions Guide, Introductory Chemistry, a Foundation, Introductory Chemistry, Basic Chemistry, Fourth Edition, Zumdahl Jun 28 2022**

**Studyguide for Introductory Chemistry: a Foundation by Steven S. Zumdahl, ISBN 9781111789428 Nov 21 2021** Never HIGHLIGHT a Book Again! Virtually all of the testable terms, concepts, persons, places, and events from the textbook are included. Cram101 Just the FACTS101 studyguides give all of the outlines, highlights, notes, and quizzes for your textbook with optional online comprehensive practice tests. Only Cram101 is Textbook Specific. Accompanys: 9781111789428 .

**Foundations of College Chemistry Dec 11 2020** Learning the fundamentals of chemistry can be a difficult task to undertake for health professionals. For over 35 years, **Foundations of College Chemistry, Alternate 14th Edition** has helped readers master the chemistry skills they need to succeed. It provides them with clear and logical explanations of chemical concepts and problem solving. They'll learn how to apply concepts with the help of worked out examples. In addition, **Chemistry in Action** features and conceptual questions checks brings together the understanding of chemistry and relates chemistry to things health professionals experience on a regular basis.

**Physics for Chemists Apr 02 2020** The development of science, technology and industry in the near future requires new materials and devices, which will differ in many aspects from that of past years. This is due to the fact that many sophisticated processes and new materials are being invented. The computer engineering field is a typical example. The main building block for these achievements is science, and leading it is physics, which provides the foundation for the chemical, biological and atomic industries. **Physics for Chemists** contains many instructive examples complete with detailed analysis and tutorials to evaluate the student's level of understanding. Specifically it is focused to give a robust and relevant background to chemistry students and to eliminate those aspects of physics which are not relevant to these students. This book is aimed at chemistry students and researchers who would by using the book, not only be able to perform relevant physical experiments, but would then also be in a position to provide a well founded explanation of the results. \* Fundamental principles of modern physics are explained in parallel with their applications to chemistry and technology \* Large number of practical examples and tasks \* Presentation of new aspects of chemical science and technology e.g. nanotechnology and synthesis of new magnetic materials

**PET Chemistry May 04 2020** Personalized medicine employing patient-based tailor-made therapeutic drugs is taking over treatment paradigms in a variety of fields in oncology and the central nervous system. The success of such therapies is mainly dependent on efficacious therapeutic drugs and a selective imaging probe for identification of potential responders as well as therapy monitoring for an early benefit assessment. Molecular imaging (MI) is based on the selective and specific interaction of a molecular probe with a biological target which is visualized through nuclear, magnetic resonance, near infrared or other methods. Therefore it is the method of choice for patient selection and therapy monitoring as well as for specific endpoint monitoring in modern drug development. PET (positron emitting tomography), a nuclear medical imaging modality, is ideally suited to produce three-dimensional images of various targets or processes. The rapidly increasing demand for highly selective probes for MI strongly pushes the development of new PET tracers and PET chemistry. 'PET chemistry' can be defined as the study of positron-emitting compounds regarding their synthesis, structure, composition, reactivity, nuclear properties and processes and their properties in natural and - natural environments. In practice PET chemistry is strongly influenced by the unique properties of the radioisotopes used (e. g. , half-life, chemical reactivity, etc. ) and integrates scientific aspects of nuclear-, organic-, inorganic- and biochemistry.

**Introductory Chemistry Nov 02 2022** The Seventh Edition of Zumdahl and DeCoste's best-selling **INTRODUCTORY CHEMISTRY: A FOUNDATION** that combines enhanced problem-solving structure with substantial pedagogy to enable students to become strong independent problem solvers in the introductory course and beyond. Capturing student interest through early coverage of chemical reactions, accessible explanations and visualizations, and an emphasis on everyday applications, the authors explain chemical concepts by starting with the basics, using symbols or diagrams, and conclude by encouraging students to test their own understanding of the solution. This step-by-step approach has already helped hundreds of thousands of students master chemical concepts and develop problem-solving skills. The book is known for its focus on conceptual learning and for the way it motivates students by connecting chemical principles to real-life experiences in chapter-opening discussions and **Chemistry in Focus** boxes. The Seventh Edition now adds a questioning pedagogy to in-text examples to help students learn what questions they should be asking themselves while solving problems, offers a revamped art program to better serve visual learners, and includes a significant number of revised end-of-chapter questions. Important Notice: Media content referenced within the product description or the product text may not be available in the ebook version.

**Student Solutions Manual for Zumdahl/DeCoste's Introductory Chemistry: A Foundation, 9th Feb 22 2022** Homework help! This manual contains detailed solutions for the even-numbered end-of-chapter problems and cumulative review exercises.

**Introductory Chemistry - a Foundation + Owl2 With Mindtap Reader, 1 Term 6 Months Printed Access Card Oct 21 2021**

**Foundations of Organic Chemistry Jul 26 2019**

**Introductory Chemistry Sep 27 2019** The Sixth Edition of **INTRODUCTORY CHEMISTRY: A FOUNDATION, INTERNATIONAL EDITION** offers unparalleled teaching and learning resources, with a robust technology package, in addition to the superior problem-solving pedagogy, engaging writing style, and strong emphasis on everyday applications that comprise the hallmarks of this best-selling text. Chemical reactions are covered early, to capture student interest, leaving more abstract material for later chapters. The authors explain chemical concepts by starting with the basics, using symbols or diagrams, and concluding by encouraging students to test their own comprehension of the solution. This step-by-step approach helps students develop critical problem-solving skills. Also, the accessible explanations and visualizations throughout the text motivate students and engage them in the material by helping them to connect abstract chemical principles to real-life experiences. The pedagogy includes chapter-opening discussions that introduce students to relevant applications and **Chemistry in Focus** boxes that describe everyday applications of chemistry such as artificial sweeteners, foaming chewing gum, and fake fats. Current applications appear throughout the text with easy-to-understand explanations and analogies.

**Foundations for Teaching Chemistry Jan 24 2022** Chemistry is a subject that has the power to engage and enthuse students but also to mystify and

confound them. Effective chemistry teaching requires a strong foundation of subject knowledge and the ability to transform this into teachable content which is meaningful for students. Drawing on pedagogical principles and research into the difficulties that many students have when studying chemical concepts, this essential text presents the core ideas of chemistry to support new and trainee chemistry teachers, including non-specialists. The book focuses on the foundational ideas that are fundamental to and link topics across the discipline of chemistry and considers how these often complex notions can be effectively presented to students without compromising on scientific authenticity. Chapters cover: the nature of chemistry as a science the chemistry triplet substances and purity in chemistry the periodic table energy in chemistry and chemical bonding contextualising and integrating chemical knowledge Whilst there are a good many books describing chemistry and many others that offer general pedagogic guidance on teaching science, Foundations for Teaching Chemistry provides accounts of core chemical topics from a teaching perspective and offers new and experienced teachers support in developing their own 'chemical knowledge for teaching'.

*Foundation Chemistry* Aug 26 2019 A good way to prepare for your exam is to practise solving exam-style questions. This book provides a comprehensive range of chemistry problems at a foundation level, especially formulated to familiarise the student with exam questions. Although the book is based on the AS level specification (UK), it can be used by anyone studying foundation chemistry. The book covers the following topics: Atomic Structure, Amount of Substance, Bonding, Periodicity, Introduction to Organic Chemistry, and Alkanes.

*Chemistry 2012 Student Edition (Hard Cover) Grade 11* Jun 24 2019 The new Pearson Chemistry program combines our proven content with cutting-edge digital support to help students connect chemistry to their daily lives. With a fresh approach to problem-solving, a variety of hands-on learning opportunities, and more math support than ever before, Pearson Chemistry will ensure success in your chemistry classroom. Our program provides features and resources unique to Pearson--including the Understanding by Design Framework and powerful online resources to engage and motivate your students, while offering support for all types of learners in your classroom.

*Foundations of Analytical Chemistry* Aug 19 2021 This book offers a completely new approach to learning and teaching the fundamentals of analytical chemistry. It summarizes 250 basic concepts of the field on the basis of slides. Each of the nine chapters offers the following features: • Introduction: Summary. General scheme. Teaching objectives. • Text containing the explanation of each slide. • Recommended and commented bibliography. • Questions to be answered. • Slides. A distinct feature of this novel book is its focus on the fundamental concepts and essential principles of analytical chemistry, which sets it apart from other books presenting descriptive overviews of methods and techniques.

*Foundations of Chemistry* Aug 07 2020 "The goal of POGIL [Process-orientated guided-inquiry learning] is to engage students in the learning process, helping them to master the material through conceptual understanding (rather than by memorizing and pattern matching), as they work to develop essential learning skills." -- P. v.

*Chemistry* Jan 12 2021 The Target Science books are aimed at the average/below average student studying for public examinations at age 16 or above. The text is organized in double-page-spreads and designed to be as accessible as possible. There is a much higher proportion of open space used to help lower ability students. The reading level has been closely controlled and the amount of text restricted. Glossaries of new terms are provided at the end of each chapter and examination-style questions are included.

*Chemistry* Oct 09 2020 Emphasises on contemporary applications and an intuitive problem-solving approach that helps students discover the exciting potential of chemical science. This book incorporates fresh applications from the three major areas of modern research: materials, environmental chemistry, and biological science.

*Studyguide for Introductory Chemistry* Dec 23 2021 Never HIGHLIGHT a Book Again Virtually all testable terms, concepts, persons, places, and events are included. Cram101 Textbook Outlines gives all of the outlines, highlights, notes for your textbook with optional online practice tests. Only Cram101 Outlines are Textbook Specific. Cram101 is NOT the Textbook. Accompanys: 9780521673761