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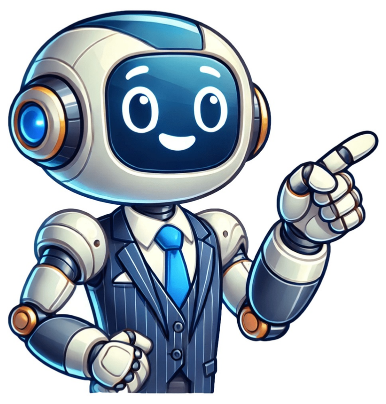

Various examples of physical phenomena Physics is a branch of science. It is one of the most fundamental scientific disciplines. The main goal of physics is to explain how things move in space and time and understand how the universe behaves. It studies matter, forces and their effects. The word physics comes from the Greek word ἡ φύσις, meaning "nature".[1] Physics can also be defined as "that department of knowledge which relates to the order of nature, or, in other words, to the regular succession of events".[2] Physics is very important in engineering and developing new technologies, such as aviation, electronics and weapons. One reason for starting the mathematical field of calculus was to help develop mechanics, a branch of physics. Modern physics connects ideas about the four laws of symmetry and conservation of energy, momentum, charge, and parity. Astronomy, now a part of physics, is the oldest natural science. In the past it was a part of 'natural philosophy' with other fields of science, such as chemistry and biology. During the scientific revolution, these fields became separate, and physics became a distinct field of knowledge. Main article: History of astronomy Astronomy is the oldest natural science. The Sumerians, and Ancient Egyptians studied the stars, mostly with a view to prediction and religion. The first Babylonian star maps date from about 1200 BC. That astronomical events are periodic also dates back to the Babylonians.[3] Their understanding was not scientific, but their observations influenced later astronomy. Much astronomy came from Mesopotamia, Babylonia, Ancient Egypt, and Ancient Greece. Astronomers from Egypt built monuments that showed how objects in the sky moved, and many of the names for the constellations in the Northern hemisphere came from Greek astronomers. Natural philosophy started in Greece around 650 BC when a movement of philosophers replaced superstition with naturalism, which refuted the spiritual. Leucippus and his student Democritus suggested the idea of the atom around this period. Islamic scholars continued to study Aristotelian physics during the Islamic Golden Age. One main contribution was to observational astronomy. Some, like Ibn Sahl, Al-Kindi, Ibn al-Haytham, Al-Farisi and Avicenna, worked on optics and vision. In The Book of Optics, Ibn al-Haytham rejected previous Greek ideas concerning vision and proposed a new theory. He studied how light enters the eye, and developed the camera obscura. European scientists later built eyeglasses, magnifying glasses, telescopes, and cameras from this book. Physics became a separate field of study after the scientific revolution.[4] Galileo's experiments helped to create classical physics. Although he did not invent the telescope, he used it when he looked into the night sky. He supported Copernicus' idea that the Earth moved around the Sun (heliocentrism). He also investigated gravity. Isaac Newton used Galileo's ideas to create his three laws of motion and his law of universal gravitation. Together these laws explained the motion of falling bodies near the earth and the motion of earth and planets around the sun.[5] In a couple centuries, the Industrial Revolution was in full swing and many more discoveries were made in many fields of science. The laws of classical physics are good enough to study objects that move much slower than the speed of light, and are not microscopic. When scientists first studied quantum mechanics, they had to create a new set of laws, which was the start of modern physics. As scientists researched particles, they discovered what classical mechanics could not explain. Classical mechanics predicted that the speed of light varied, but experiments showed the speed of light stayed the same. This was predicted by Albert Einstein's theory of special relativity. Einstein predicted that the speed of electromagnetic radiation through empty space would always be the same. His view of space-time replaced the ancient idea that space and time were quite separate things. Max Planck came up with quantum mechanics to explain why metal releases electrons when you shine a light at it, and why matter emits radiation. Quantum mechanics applies for very small things like the electrons, protons, and neutrons that make up an atom. People like Werner Heisenberg, Erwin Schrödinger, and Paul Dirac continued to work on quantum mechanics and eventually we got the Standard Model.[6][7] Physics is the study of energy and matter in space and time and how they are related to each other. Physicists assume the existence of mass, length, time and electric current and then define (give the meaning of) all other physical quantities in terms of these basic units. Mass, length, time, and electric current are never defined but the standard units used to measure them are always defined. In the International System of Units (abbreviated SI from the French Système International), the kilogram is the basic unit of mass, the metre is the basic unit of length, the second is the basic unit of time, and the ampere is the basic unit of electric current. In addition to these four units, there are three other ones: the mole, which is the unit of the quantity of matter, the candela which measures the luminous intensity (the power of lighting) and the kelvin, the unit of temperature. Physics studies how things move, and the forces that make them move. For example, velocity and acceleration are used by physics to show how things move. Also, physicists study the forces of gravity, electricity, magnetism and the forces that hold things together. Physics studies very large things, and very small things. For instance, physicists can study stars, planets and galaxies but could also study small pieces of matter, such as atoms and electrons.They may also study sound, light and other waves. As well as that, they could examine energy, heat and radioactivity, and even space and time. Physics not only helps people understand how objects move, but how they change form, how they make noise, how hot or cold they will be, and what they are made of at the smallest level. In short, physics is the branch of science that deals with properties of matter and energy along with the interaction between them. Physics is a quantitative science because it is based on measuring with numbers. Mathematics is used in physics to make models that try to predict what will happen in nature. These predictions are compared to the way the real world works. Physicists are always working to make their models of the world better. Classical mechanics contains major topics such as Newton's laws of motion, Lagrangian mechanics, Hamiltonian mechanics, kinematics, statics, dynamics, chaos theory, acoustics, fluid dynamics, continuum mechanics. Classical mechanics is all about forces acting on a body in nature, balancing forces, maintaining equilibrium state, etc. Electromagnetism is study of charges on a particular body. It contains subtopics such as Electrostatics, electrodynamics, electricity, magnetism, magnetostatics, Maxwell's equations, optics. Thermodynamics and statistical mechanics are related with temperature. It includes main topics such as Heat engine, kinetic theory. It uses terms such as heat(Q), work(W), and internal energy (U). First law of thermodynamics gives us the relation them by the following equation (ΔU = Q − W) Quantum mechanics is the study of particle at the atomic level taking into consideration the atomic model. It includes subtopics Path integral formulation, scattering theory, Schrödinger equation, quantum field theory, quantum statistical mechanics. Physics is the science of matter and how matter interacts. Matter is any physical material in the universe. Everything is made of matter. Physics is used to describe the physical universe around us, and to predict how it will behave. Physics is the science concerned with the discovery and characterization of the universal laws which govern matter, movement and forces, and space and time, and other features of the natural world. The sweep of physics is broad, from the smallest components of matter and the forces that hold it together, to galaxies and even larger things. There are only four forces that appear to operate over this whole range. However, even these four forces (gravity, electromagnetism, the weak force associated with radioactivity, and the strong force which holds protons and neutrons in an atom together) are believed to be different parts of a single force. Physics is mainly focused on the goal of making ever simpler, more general, and more accurate rules that define the character and behavior of matter and space itself. One of the major goals of physics is making theories that apply to everything in the universe. In other words, physics can be viewed as the study of those universal laws which define, at the most basic level possible, the behavior of the physical universe. Physics uses the scientific method. That is, data from experiments and observations are collected. Theories which attempt to explain these data are produced. Physics uses these theories to not only describe physical phenomena, but to model physical systems and predict how these physical systems will behave. Physicists then compare these predictions to observations or experimental evidence to show whether the theory is right or wrong. The theories that are well supported by data and are especially simple and general are sometimes called scientific laws. Of course, all theories, including those known as laws, can be replaced by more accurate and more general laws, when a disagreement with data is found.[8] Physics is more quantitative than most other sciences. That is, many of the observations in physics may be represented in the form of numerical measurements. Most of the theories in physics use mathematics to express their principles. Most of the predictions from these theories are numerical. This is because of the areas which physics has addressed work better with quantitative approaches than other areas. Sciences also tend to become more quantitative with time as they become more highly developed, and physics is one of the oldest sciences. Classical physics normally includes the fields of mechanics, optics, electricity, magnetism, acoustics and thermodynamics. Modern physics is a term normally used to cover fields which rely on quantum theory, including quantum mechanics, atomic physics, nuclear physics, particle physics and condensed matter physics, as well as the more modern fields of general and special relativity, but these last two are often considered fields of classical physics as they do not rely on quantum theory. Although this difference can be found in older writings, it is of little new interest as quantum effects are now understood to be of importance even in fields that before were called classical. There are many ways to study physics, and many different kinds of activities in physics. The two main types of activities are the collection of data, and the development of theories. Some subfields of physics can be studied by experiment. For example, Galileo Galilei invented kinematics by making experiments and studying the data. Experimental physics focuses mainly on an empirical approach. Some experiments are done to explore nature, and other experiments are performed to produce data to compare with the predictions of theories. Some other fields in physics like astrophysics and geophysics are mostly observational sciences because most of their data has to be collected passively instead of through experimentation. Galileo, for example, could only look at Jupiter and discover that it has moons. However, observational programs in these fields use many of the same tools and technology that are used in the experimental subfields of physics. Theoretical physics often uses quantitative approaches to develop the theories that attempt to explain the data. In this way, theoretical physicists often use tools from mathematics. Theoretical physics often can involve creating quantitative predictions of physical theories, and comparing these predictions quantitatively with data. Theoretical physics sometimes creates models of physical systems before data is available to test and support these models. These two main activities in physics, data collection, theory production and testing, use many different skills. This has led to a lot of specialization in physics, and the introduction, development and use of tools from other fields. For example, theoretical physicists use mathematics and numerical analysis and statistics and probability and computer software in their work. Experimental physicists develop instruments and techniques for collecting data, using engineering and computer technology and many other fields of technology. Often the tools from these other areas are not quite appropriate for the needs of physics, and need to be changed or more advanced versions have to be made. It is frequent for new physics to be discovered if experimental physicists do an experiment that current theories cannot explain, or for theoretical physicists to generate theories which can then be put to the test by experimental physicists. Experimental physics, engineering and technology are related. Experiments often need specialized tools such as particle accelerators, lasers, and important industrial applications such as transistors and magnetic resonance imaging have come from applied research. Galileo Galilei (1564–1642) Christiaan Huygens (1629–1695) Isaac Newton (1643–1727) Leonhard Euler (1707–1783) Joseph Louis Lagrange (1736–1813) Pierre-Simon Laplace (1749–1827) Joseph Fourier (1768–1830) Nicolas Léonard Sadi Carnot (1796–1842) William Rowan Hamilton (1805–1865) Rudolf Clausius (1822–1888) James Clerk Maxwell (1831–1879) J. Willard Gibbs (1839–1903) Ludwig Boltzmann (1844–1906) Hendrik A. 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B. Kibble (1932– ) Steven Weinberg (1933– ) Gerald Guralnik (1936–) Sidney Coleman (1937–2007) C. R. Hagen (1937–) Ratko Janev (1939– ) Leonard Susskind (1940– ) Michael Berry (1941– ) Bertrand Halperin (1941– ) Stephen Hawking (1942–2018 ) Alexander Polyakov (1945–) Gerardus 't Hooft (1946– ) Jacob Bekenstein (1947–) Robert Laughlin (1950–) American Physical Society Astronomy Energy Matter Time ↑ At the start of The Feynman Lectures on Physics, Richard Feynman offers the atomic hypothesis as the single most important scientific concept, that all things are made up of atoms – little particles that move around in perpetual motion, attracting each other when they are a little distance apart, but repelling upon being squeezed into one another ..." ↑ Maxwell J.C. 1878. Matter and motion. Van Nostrand, p9. ISBN 0-486-66895-9 ↑ Aaboe A. 1991. Mesopotamian mathematics, astronomy, and astrology. The Cambridge Ancient History. Volume III (2nd ed). Cambridge University Press. ISBN 978-0-521-22717-9 ↑ Dijksterhuis E.J. 1986. The mechanization of the world picture: Pythagoras to Newton. Princeton, New Jersey: Princeton University Press. ISBN 978-0-691-08403-9 ↑ Ben-Chaim M. 2004. Experimental philosophy and the birth of empirical science: Boyle, Locke and Newton. Aldershot: Ashgate. ISBN 0-7546-4091-4 ↑ Einstein, Albert and Infeld, Leopold 1938. The evolution of physics: from early concept to relativity and quanta. Cambridge University Press. A non-mathematical account. ↑ Feynman R.P; Leighton R.B. & Sands M. 1963. The Feynman Lectures on Physics. 1. ISBN 0-201-02116-1 ↑ An equation (e.g., f = m a) is called a "law" when there are clear empirical results that substantiate it. Wikimedia Commons has media related to Physics. Units and Measurements Question Retrieved from " Concepts covered in Physical World are Branches of Physics, Fundamental Forces in Nature, Nature of Physical Laws, Physics Related to Technology and Society, Scope and Excitement of Physics, The Scientific Method, What is Physics?, What is Science?.ExerciseNo. of questionsPagesExercises1413 to 41Concepts covered in Units and Measurements are Accuracy, Precision and Least Count of Measuring Instruments, Dimensional Analysis and Its Applications, Dimensional Formulae and Dimensional Equations, Dimensions of Physical Quantities, Errors in Measurements, Fundamental and Derived Units, International System of Units, Introduction of Units and Measurements, Length, Mass and Time Measurements, Measurement of Length, Measurement of Mass, Measurement of Time, Need for Measurement, Significant Figures, Units of Measurement.ExerciseNo. of questionsPagesExercises4835 to 38Concepts covered in Motion in a Straight Line are Acceleration (Average and Instantaneous), Average Velocity and Average Speed, Elementary Concept of Differentiation and Integration for Describing Motion, Instantaneous Velocity and Speed, Introduction of Motion in One Dimension, Kinematic Equations for Uniformly Accelerated Motion, Motion in a Straight Line, Position, Path Length and Displacement, Position - Time Graph, Position-time, Velocity-time and Acceleration-time Graphs, Relations for Uniformly Accelerated Motion (Graphical Treatment), Relative Velocity, Uniform and Non-uniform Motion, Uniformly Accelerated Motion.ExerciseNo. of questionsPagesExercises3555 to 60Concepts covered in Motion in a Plane are Addition and Subtraction of Vectors - Graphical Method, Angular Velocity, Cases of Uniform Acceleration Projectile Motion, Cases of Uniform Velocity, General Vectors and Their Notations, Introduction of Motion in One Dimension, Motion in a Plane, Motion in a Plane - Average Acceleration and Instantaneous Acceleration, Motion in a Plane - Average Velocity and Instantaneous Velocity, Motion in a Plane with Constant Acceleration, Multiplication of Vectors by a Real Number or Scalar, Projectile Motion, Rectangular Components, Relative Velocity in Two Dimensions, Resolution of Vectors, Scalar (Dot) and Vector (Cross) Product of Vectors, Scalars and Vectors, Uniform Circular Motion (UCM), Vector Addition – Analytical Method.ExerciseNo. of questionsPagesExercises5085 to 88Concepts covered in Laws of Motion are Aristotle's Fallacy, Circular Motion and Its Characteristics, Common Forces in Mechanics, Conservation of Momentum, Dynamics of Uniform Circular Motion - Centripetal Force, Equilibrium of a Particle, Examples of Circular Motion (Vehicle on a Level Circular Road, Vehicle on a Banked Road), Inertia, Introduction of Motion in One Dimension, Intuitive Concept of Force, Law of Conservation of Linear Momentum and Its Applications, Laws of Friction, Lubrication - (Laws of Motion), Newton's First Law of Motion, Newton's Second Law of Motion, Newton's Third Law of Motion, Rolling Friction, Solving Problems in Mechanics, Static and Kinetic Friction, The Law of Inertia.ExerciseNo. of questionsPagesExercises50109 to 113Concepts covered in Work, Energy and Power are Collisions, Concept of Work, Conservation of Mechanical Energy, Introduction of Work, Energy and Power, Kinetic Energy (K), Non - Conservative Forces - Motion in a Vertical Circle, Notions of Work and Kinetic Energy: the Work-energy Theorem, Potential Energy of a Spring, Potential Energy (U), Power, Various Forms of Energy : the Law of Conservation of Energy, Work Done by a Constant Force and a Variable Force.ExerciseNo. of questionsPagesExercises41134 to 138Concepts covered in System of Particles and Rotational Motion are Angular Momentum in Case of Rotation About a Fixed Axis, Angular Velocity and Its Relation with Linear Velocity, Centre of Mass, Centre of Mass of a Rigid Body, Centre of Mass of a Uniform Rod, Comparison of Linear and Rotational Motions, Dynamics of Rotational Motion About a Fixed Axis, Equations of Rotational Motion, Equilibrium of Rigid Body, Kinematics of Rotational Motion About a Fixed Axis, Linear Momentum of a System of Particles, Moment of Inertia, Momentum Conservation and Centre of Mass Motion, Motion of Centre of Mass, Motion - Rigid Body, Rigid Body Rotation, Rolling Motion, Theorems of Perpendicular and Parallel Axes, Torque and Angular Momentum, Values of Moments of Inertia for Simple Geometrical Objects (No Derivation), Vector Product of Two Vectors.ExerciseNo. of questionsPagesExercises39178 to 181Concepts covered in Gravitation are Acceleration Due to Gravity and Its Variation with Altitude and Depth, Acceleration Due to Gravity Below and Above the Earth's Surface, Acceleration Due to Gravity of the Earth, Earth Satellites, Energy of an Orbiting Satellite, Escape Speed, Escape Velocity, Geostationary and Polar Satellites, Gravitational Potential Energy, Kepler's Laws, Newton's Universal Law of Gravitation, Orbital Velocity of a Satellite, The Gravitational Constant, Weightlessness.ExerciseNo. of questionsPagesExercises31201 to 202Concepts covered in Mechanical Properties of Solids are Application of Elastic Behaviour of Materials, Bulk Modulus, Determination of Young's Modulus of the Material of a Wire, Elastic Behaviour of Solid, Elastic Energy, Hooke's Law, Poisson's Ratio, Shear Modulus or Modulus of Rigidity, Stress and Strain, Stress-strain Curve, Young's Modulus.ExerciseNo. of questionsPagesExercises22242 to 245Concepts covered in Mechanical Properties of Fluids are Applications of Bernoulli's Equation, Archimedes' Principle, Atmospheric Pressure and Gauge Pressure, Critical Velocity, Effect of Gravity on Fluid Pressure, Equation of Continuity, Excess of Pressure Across a Curved Surface, Hydraulic Machines, Introduction of Mechanical Properties of Fluids, Pascal's Law, Reynold's Number, Stoke's Law, Streamline and Turbulent Flow, Surface Tension, Terminal Velocity, Thrust and Pressure, Torricelli's Law, Variation of Pressure with Depth, Viscous Force or Viscosity.ExerciseNo. of questionsPagesExercises46268 to 271Concepts covered in Thermal Properties of Matter are Anomalous Expansion of Water, Calorimetry, Change of State - Latent Heat Capacity, Conduction, Convection, Green House Effect, Heat and Temperature, Ideal-gas Equation and Absolute Temperature, Liquids and Gases, Measurement of Temperature, Newton's Law of Cooling, Qualitative Ideas of Black Body Radiation, Radiation, Specific Heat Capacity, Stefan's Law, Thermal Expansion, Thermal Expansion of Solids, Wien's Displacement Law.ExerciseNo. of questionsPagesExercises35294 to 297Concepts covered in Thermodynamics are Carnot Engine, First Law of Thermodynamics, Heat Engine, Heat, Internal Energy and Work, Refrigerators and Heat Pumps, Reversible and Irreversible Processes, Second Law of Thermodynamics, Specific Heat Capacity, Thermal Equilibrium, Thermodynamic Process, Thermodynamic State Variables and Equation of State, Zeroth Law of Thermodynamics.ExerciseNo. of questionsPagesExercises16316 to 317Concepts covered in Kinetic Theory are Assumptions of Kinetic Theory of Gases, Avogadro's Number, Degrees of Freedom, Equation of State of a Perfect Gas, Gases and Its Characteristics, Interpretation of Temperature in Kinetic Theory, Introduction of Kinetic Theory of an Ideal Gas, Kinetic Theory of Gases - Concept of Pressure, Law of Equipartition of Energy, Mean Free Path, Molecular Nature of Matter, RMS Speed of Gas Molecules, Specific Heat Capacities - Gases, Work Done in Compressing a Gas.ExerciseNo. of questionsPagesExercises17333 to 335Concepts covered in Oscillations are Damped Simple Harmonic Motion, Displacement as a Function of Time, Energy in Simple Harmonic Motion, Forced Oscillations and Resonance, Force Law for Simple Harmonic Motion, Oscillations - Frequency, Periodic and Oscillatory Motion, Periodic Functions, Simple Harmonic Motion and Uniform Circular Motion, Simple Harmonic Motion (S.H.M.), Simple Pendulum, Some Systems Executing Simple Harmonic Motion, Velocity and Acceleration in Simple Harmonic Motion.ExerciseNo. of questionsPagesExercises45357 to 361Concepts covered in Waves are Beats, Displacement Relation for a Progressive Wave, Doppler Effect, Introduction of Reflection of Waves, Principle of Superposition of Waves, Reflection of Transverse and Longitudinal Waves, Speed of Wave Motion, Standing Waves and Normal Modes, The Speed of a Travelling Wave, Wave Motion.ExerciseNo. of questionsPagesExercises42387 to 390Exam stress is inevitable, and as the days draw closer, so do the pre-exam jitters. While managing stress depends on every student and how well they work to make the best use of time, covering all the basics will ensure you are well-prepared and ready to tackle the exam most effectively. To ace your exams, you need to understand which subjects pose the most significant challenge and once you have recognised that, you can prepare a schedule where you dedicate more time to that subject. Challenging and complicated issues such as the class 11 physics solutions guide require students to devote more time and energy to getting a firm grip. It is this crucial step that will decide whether you will be able to ace your exams successfully. With the right notes and study material, you can be assured that you will successfully ace your exams. Class 11 NCERT solutions answers all the questions given in the NCERT textbooks in a step-by-step process. Our Physics tutors have helped us put together this for our Class 11 Students. 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Below we are providing an overview of each chapter that is available in NCERT textbook for physics. Class 11 Physics Chapter 1 Physics World This first chapter can help you build a good foundation in physics for class 11 and class 12. There are different topics in this chapter like nuclear force, gravitational force, electromagnetic force, etc. This chapter also explains the basic laws in physics that govern the natural phenomenon. There are different concepts from scientists like Faraday, Ampere, Newton, etc which is explained in this chapter. Class 11 Physics Chapter 2 Units and Measurement This is a basic chapter that clears your doubts about units, derived units, base units, a system of units, and much more. This chapter will explain to you how is the international system of units decided and what is the need for it. Along with this, various methods like parallax angle, parallax method, will also be explained for measuring the length. Class 11 Physics Chapter 3 Motion in a Straight Line This chapter introduces the students to the world of kinematics. We have already learned about the fundamental properties of motion in earlier standards. This chapter will help you learn about rectilinear motion along with its measurement in technical and detailed vision. Furthermore, students will also learn about the reference point, and the frame of reference, the magnitude of displacement, path length, instantaneous velocity, relative velocity, retardation, acceleration, etc. Class 11 Physics Chapter 4 Motion in a Plane This chapter you will learn about measuring motion in a plane as well as vector and scalar quantities. You will also get to learn about diagrammatic representation of derivative laws for the addition of vector and scalar quantities. There are topics like displacement and position vector, equality of vectors, vector multiplication by real numbers, the addition of vectors through analytical methods are the topics that will be discussed in this chapter. Class 11 Physics Chapter 5 Law of Motion As far as this chapter is concerned, students will learn about moving bodies and the factors that act on these bodies. Along with this, you will learn about the direction of these moving bodies and their corresponding motion, the gravitational effect on these bodies, etc. Motion is a very ancient topic on which great scientists like Newton, Aristotle, and Galileo have studied. This will also be discussed in this chapter. Class 11 Physics Chapter 6 Work, Energy, and Power There are many basic terms of power, work, and energy that you have studied in earlier standards. But in this chapter, you will study about the relations of all these quantities. You will also have a chance to understand the scalar products and there are distributive laws taught in this chapter. This all forms the fundamentals for understanding in this chapter. Class 11 Physics Chapter 7 System of Particles and Rotational Motion There are mathematical and theoretical concepts explained in this chapter related to rotational motion. These concepts are explained in a very comprehensive manner so that students can have a better understanding of these topics. Class 11 Physics Chapter 8 Gravitation We all know that the objects get attracted to the earth. Thus, everyone is aware of the concepts in gravity and its effects and how it was discovered. However, in class 11 physics, this topic takes you in depths of the concepts related to gravitation. Furthermore, you will get a good grip on the technical basis for gravitation, Kepler's laws, gravitational law, etc. There are other topics also like Gravitational acceleration, gravity due to earth, gravitational constant, earth satellites potential energy in gravitation, etc that are discussed in this chapter. Class 11 Chapter 9 Mechanical Properties of Solids In this chapter, you will study the physical properties of solids like elasticity, plasticity, and many other things. This chapter goes in depth to reach fundamental concepts like tensile stress, compressive stress, tangential stress, tensile stress, volume strain, etc. This chapter helps in building the foundation of various properties in solids. Class 11 Chapter 10 Mechanical Properties of Fluids This chapter will introduce you to some physical properties like gases and liquids. What common characteristics are between gases and liquids? How does fluid differ from solids? The difference in solids with liquids and gases are some questions that will be answered using this chapter. External forces like pressure and tension and its effects on fluids using mathematical expressions are some of the topics you will understand in this chapter. Class 11 Chapter 11 Thermal Properties of Matter This chapter will teach you the exact meaning of heat and how this heat is measured. There are various topics related to heat flow that will be discussed in this chapter. Some of the interesting daily life phenomena like why the wind reverses its direction near a sea beach or why the blacksmiths healthier iron rings before they fit a rim on the wooden wheel will be explained through this chapter. You will also learn why the temperature does not change when the water boils even though it goes through a great of heat change in the process in this chapter. Class 11 Chapter 12 Thermodynamics Thermodynamics usually deals with the ideas related to the temperature and heat as well as interconversion of heat and other forms of energy. This is considered as a macroscopic science. Furthermore, it deals with the bulk systems and often it does not include the molecular constitution of the matters. Class 11 Chapter 13 Kinetic Energy This chapter will help you in understanding the favor of gases along with fast-moving molecules and atoms. Since the 19th century, Kinetic energy is being studied by some of the great scientists like Maxwell, Newton, Boyle, and many more. This and all is explained in this chapter of kinetic theory. Class 11 Chapter 14 Oscillations This chapter further dwells into projectile motion, rectilinear motion, and other similar motions that you have studied in earlier chapters. The study of oscillations is considered as very basic in physics. This chapter does into detail about the oscillation as well as oscillatory motion. Class 11 Chapter 15 Waves There different waves and its influences which will be understood through this chapter. Furthermore, this chapter will help you develop a conceptual study about the longitudinal and transverse waves, angular wave and wavelength number, frequency, and angular frequency, etc. NCERT Solutions for Class 11 Physics helps you by providing each and every solution in detail. Thus, it acts as a perfect guide for you to develop a good understanding of this subject. Figure \(\PageIndex{1}\) Physics is more than calculating the momentum of billiard balls hitting each other or the friction acting on a speeding car's tires. Physics includes the study of practically every form of matter and how it interacts with other matter and with energy in various forms. The image shows one of several large parabolic antennas that NASA physicists used for years to communicate with ships and devices completing solar system exploration missions. What is physics? Physics is the branch of science that studies the physical world, including objects as small as subatomic particles and as large as galaxies. It studies the nature of matter and energy and how they interact. Physicists are inquisitive people who want to know the causes of what they see. How does the moon move? Why does the moon move? Why do the stars shine? Why do your hands get warm when you rub them together? Physicists, like all scientists, hope to find explanations that describe more than one phenomenon and offer a better understanding of how the universe works. People commonly believe that physics is all about solving word problems and memorizing equations. While it is true that many physics classes focus on the equations, it is important to remember that the purpose of physics is less about the problems and more about using equations, laws, and theories to understand the world we live in. Summary Physics is the branch of science that studies matter and energy and how they interact. Review Give your own definition of physics. What do you already know about physics? What do you think you know? Physics is all around us, all the time. Give a few examples of physics you have experienced. Use the resource below to answer the questions that follow. Why can't Hadfield dip the washcloth in a bag full of water? Pause the video at 1:55. What do you expect will happen as he wrings out the washcloth? What does the water do? Why? Video: Real World Application: Ollie Up Real World Application: Teen Uses Science to Make Water Safe Video: Video: LICENSED UNDER It helps us understand the natural world and forms the foundation for various advanced technological developments. For Class 11 students, the NCERT Physics Class 11 textbook is a vital resource. The book provides a deeper understanding of both theoretical and practical aspects of physics, preparing students for competitive exams like the JEE and NEET.The Class 11 Physics NCERT book PDF provides a structured approach to understanding various complex topics. Both Part 1 and Part 2 of the book are vital for students aiming to excel in the subject. Below are direct download links to NCERT Books - Physics I and Physics II, combined (complete book) and separate chapter-wise PDFs.Class 11 Physics Part 1 textbook - Chapter-wise PDFNCERT NCERT Physics (Part I) Class 11 Book PDF Download NCERT NCERT Physics (Part II) Class 11 Book PDF Download The following chapters are rationalized from the Class 11 NCERT.Overview of NCERT Physics Class 11 TextbookThe NCERT Physics Class 11 textbook is divided into two parts:Physics NCERT Class 11 PDF Part 1 covers foundational concepts that provide a strong base for understanding advanced topics.Physics NCERT Class 11 PDF Part 2 includes more challenging areas of physics, preparing students for the Class 12 syllabus and competitive exams.The Importance of NCERT Physics for Class 11The NCERT textbooks are recommended by CBSE, JEE, NEET, and other competitive exams due to their clarity and simplicity. These books are specially designed to:Align with the syllabus of CBSE and various state boards. Simplify complicated concepts using easy-to-understand language.Provide ample examples, diagrams, and exercises for thorough understanding.Prepare students for board exams and entrance tests.The NCERT Class 11 Physics PDF can be downloaded through our website, allowing students to study anytime, anywhere.Physics NCERT Class 11 PDF - Part 1The first part of the Class 11 NCERT Physics PDF introduces fundamental concepts in physics. It consists of 8 chapters, each dealing with important topics that every student should learn thoroughly.Chapters in Physics NCERT Class 11 PDF Part 1Chapter 2: Units and MeasurementsIt explains the importance of measurements in experiments. It covers SI units, accuracy, precision, significant figures, and dimensional analysis, which are fundamental for any physics calculation.Chapter 3: Motion in a Straight LineThis provides knowledge for kinematics, explaining concepts like displacement, velocity, acceleration, and uniform and non-uniform motion along a straight path.Chapter 4: Motion in a PlaneA continuation of kinematics, this chapter introduces motion in two dimensions: vectors and the concept of projectile motion. It includes graphical methods and vector algebra for a better understanding of two-dimensional motion.Chapter 5: Laws of MotionOne of the most critical chapters deals with Newton's three laws of motion. It also covers topics such as the law of inertia, momentum and the application of these laws in real-life situations.Chapter 6: Work, Energy, and PowerThis chapter explores the relationships between work, energy, and power. Concepts such as kinetic energy, potential energy, conservation of energy, and power are covered with practical examples.Chapter 7: System of Particles and Rotational MotionA complex topic that deals with the centre of mass, rotational motion, torque, and angular momentum. Chapter 8: GravitationThis chapter explains the universal law of gravitation, the motion of planets, gravitational potential energy, and satellites, among other things. It builds on Newton's law of gravitation and extends it to celestial bodies.Physics NCERT Class 11 PDF - Part 2Physics NCERT Class 11 PDF Part 2 dives deeper into more advanced topics, including thermodynamics, electromagnetism, and waves. Mastering these topics is essential for moving on to the Class 12 syllabus and competitive exams.Chapters in Physics NCERT Class 11 PDF Part 2Chapter 9: Mechanical Properties of SolidsThis chapter focuses on the behaviour of solids under external forces. Topics like stress, strain, Young's modulus, bulk modulus, and shear modulus are discussed in depth.Chapter 10: Mechanical Properties of FluidsMoving from solids to fluids, this chapter deals with fluid dynamics, pressure, viscosity, and the Bernoulli principle. The concept of buoyancy and Archimedes' principle are also covered here.Chapter 11: Thermal Properties of MatterThis chapter explores how different materials respond to changes in temperature. Concepts like heat transfer, thermal expansion, and specific heat are essential for understanding the thermal properties of substances.Chapter 12: ThermodynamicsA key chapter for understanding how energy is transferred and transformed. It covers the first and second laws of thermodynamics, entropy, and the Carnot engine.Chapter 13: Kinetic TheoryThis chapter presents the molecular theory of gases, explaining the behaviour of gases using concepts such as kinetic energy, the ideal gas equation, and degrees of freedom.Chapter 14: OscillationsOscillatory motion is an essential concept in physics. This chapter covers simple harmonic motion, damping, resonance, and the mathematical description of oscillations.Chapter 15: WavesThe final chapter explains the nature of waves and covers various types of waves, such as mechanical and electromagnetic. Concepts like the Doppler effect, wave speed, and frequency are also introduced here.The NCERT Physics Class 11 textbook is a cornerstone for students preparing for both board exams and competitive entrance tests. Its structured approach, easy-to-understand language, and comprehensive coverage of concepts make it an indispensable resource. 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