

CLASS 11

PHYSICS

NCERT SOLUTIONS

NCERT Solutions for Class 11 Physics Physical World (Legacy Chapter, Removed from 2026-27 Syllabus)

"Physical World" is the opening chapter of the CBSE Class 11 Physics syllabus (2023-rationalised, taught in 2026-27), and while it carries no numerical problems, it is far from a "skip-it" chapter. Board papers routinely draw 1-2 mark questions and assertion-reason items straight from its core ideas: what physics ac...

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Note: NCERT has replaced this chapter in the current 2026-27 syllabus. If you're looking for the current curriculum, see [Chapter 1: Units and Measurements — full solutions](#). This page is kept as a reference for the previous (pre-2023 rationalization) syllabus.

Why “Physical World” Matters for Your Boards

“Physical World” is the opening chapter of the CBSE Class 11 Physics syllabus (2023-rationalised, taught in 2026-27), and while it carries no numerical problems, it is far from a “skip-it” chapter. Board papers routinely draw 1-2 mark questions and assertion-reason items straight from its core ideas: what physics actually studies, the four fundamental forces and how they compare in strength, how scientific discoveries turn into everyday technology, and the basic steps of the scientific method. These same ideas resurface as background context in later chapters, so a clear grasp here pays off well beyond this one chapter's weightage. Note: Physical World has been fully removed from the CBSE Class 11 Physics syllabus for 2026-27 — Units and Measurements is now the official Chapter 1. This page is retained only as a reference for students following the earlier syllabus.

NCERT Solutions: Physical World – All 16 Exercise Questions (1.1 to 1.16)

Question 1.1

Question (paraphrased): Einstein remarked that “the most incomprehensible thing about the world is that it is comprehensible.” What did he mean?

Answer: Einstein was pointing to a deep puzzle: the universe is vast and complex, yet a small number of mathematical laws (Newton's laws, Maxwell's equations, thermodynamics) describe an enormous range of phenomena precisely. There is no logical guarantee nature had to be this orderly. This comprehensibility is the very foundation that makes physics possible.

Question 1.2

Question (paraphrased): “Every great physical theory starts as a heresy and ends as a dogma.” Support this with examples.

Answer: New theories usually contradict the established worldview and are first rejected, later becoming accepted “textbook truth.” **Heliocentrism** (Copernicus/Galileo) was heretical, now basic fact. **Continental drift** (Wegener) was dismissed for decades, now standard geology. **Quantum theory** (Planck/Einstein) was a radical departure, now the foundation of modern physics. **Relativity** overturned Newtonian absolute space/time, faced resistance, then became standard physics after experimental confirmation.

Question 1.3

Question (paraphrased): Explain “Science is the art of the soluble,” paralleling “Politics is the art of the possible.”

Answer: Good scientists choose problems that can actually be investigated and solved with current tools and theory, rather than chasing currently-unanswerable questions. Solving many small “soluble” problems

one at a time is how science builds a complete, reliable picture of nature.

Question 1.4

Question (paraphrased): India has a large science/technology base but hasn't become a world leader. What factors hold back this advancement?

Answer: Lower research investment as a share of GDP, limited industry-academia collaboration, historical brain drain, an education system emphasising rote learning over inquiry, fewer world-class research facilities relative to population, and social pressure toward “safe” careers over research. (Any well-reasoned factor is acceptable.)

Question 1.5

Question (paraphrased): No physicist has “seen” an electron, yet physicists believe electrons exist. A superstitious person argues ghosts must exist by the same logic. Counter this.

Answer: Belief in electrons rests on reproducible, quantifiable, testable evidence — cathode ray deflection, the photoelectric effect, electric current — independently reproducible anywhere with matching, precise predictions. Ghost sightings are not reproducible under controlled conditions and make no falsifiable predictions. Science accepts unseen entities only when supported by consistent, measurable, falsifiable evidence.

Question 1.6

Question (paraphrased): Crab shells resembling a samurai's face: explanation (a) says selective preservation by superstitious fishermen over generations; (b) says it's pure pareidolia. Which is more scientifically sound?

Answer: Explanation (a) is more defensible — it proposes a testable, evolution-based mechanism (selective breeding pressure), consistent with established science of selection. Explanation (b) explains only human perception, with no mechanism for why the pattern recurs biologically. A good scientific explanation accounts for mechanism, not just observation.

Question 1.7

Question (paraphrased): What key advances triggered the Industrial Revolution in England/Western Europe?

Answer: The steam engine (based on emerging thermodynamics), advances in metallurgy, improved textile machinery, and better transportation (steam locomotives/ships) — together converting scientific understanding into machines that replaced manual labour.

Question 1.8

Question (paraphrased): The world is undergoing a “second industrial revolution.” List key contemporary science/technology areas responsible.

Answer: Information technology/computing (semiconductor physics), telecommunications/internet (EM waves, optical fibres), biotechnology/genetic engineering, nuclear and renewable energy, AI/robotics, and space technology/satellite communication.

Question 1.9

Question (paraphrased): Write a short speculative piece imagining 22nd-century science and technology.

Answer approach: Ground imaginative ideas in plausible extrapolation — room-temperature superconductors, fusion reactors, brain-computer interfaces, interplanetary colonies via advanced propulsion. Connect at least one idea to a real current research frontier to show genuine engagement.

Question 1.10

Question (paraphrased): State your own view on a scientific discovery with dangerous consequences — how would you resolve the dilemma?

Answer approach: Acknowledge knowledge is neutral but application carries responsibility; weigh benefits against foreseeable harms; consider precautionary steps (peer review, regulation, oversight) rather than all-or-nothing choices; reference a real parallel like nuclear fission or gene-editing debates.

Question 1.11

Question (paraphrased): Classify applications like vaccination, nuclear weapons, DDT, genetic engineering, nuclear power, space exploration, internet, IVF, new medicines, surveillance devices as clearly good, clearly bad, or unclear.

Answer: Clearly beneficial: mass vaccination, new medicines. **Clearly harmful (as weapons):** nuclear weapons. **Mixed/context-dependent:** DDT, nuclear power, genetic engineering of crops, space exploration, internet/communication tech, IVF, surveillance devices — most real applications depend on how, why, and by whom they are used and regulated.

Question 1.12

Question (paraphrased): India has a strong scholarly tradition yet superstition persists even among educated people. How can scientific knowledge counter this?

Answer: Promote scientific temper from school level; use demonstrations to disprove superstitions directly; use media/community outreach for accurate explanations; encourage critical thinking over rote memorisation; involve trusted local voices as science communicators.

Question 1.13

Question (paraphrased): Counter the unscientific view that women are less intellectually capable than men, using scientific arguments and examples.

Answer: No biological/neurological/genetic evidence supports a sex-based intelligence gap; outcome differences trace to unequal access and opportunity, not biology. Achievements of Marie Curie, Bibha Chowdhuri, Vera Rubin, Tessy Thomas, and Ada Lovelace, among many others, demonstrate that given equal opportunity, women match or exceed comparable achievement.

Question 1.14

Question (paraphrased): Dirac said “beauty in equations matters more than agreement with experiment.” Evaluate this critically.

Answer: Mathematical elegance has guided physicists toward correct theories before full confirmation — Dirac’s own equation predicted the positron from consistency requirements, confirmed later. But agreement with experiment remains the final test; an elegant but contradicted theory must be revised or discarded (falsifiability). Elegant results from this course include Newton’s law of gravitation and the classification of the four fundamental forces.

Question 1.15 (Additional Exercise)

Question (paraphrased): Read popular writings by physicists like Einstein, Bohr, Heisenberg, Chandrasekhar, Feynman on the beauty of physical laws.

Answer/Guidance: A reading-encouragement exercise. For exams, note that laws like $E=mc^2$, $F=ma$, or Maxwell’s four equations are strikingly compact despite describing vast phenomena — this “simplicity despite scope” is the beauty these physicists wrote about.

Question 1.16 (Additional Exercise)

Question (paraphrased): Scientists like Gamow and Feynman led lives full of humour and adventure — read their books.

Answer/Guidance: No fixed “answer”; a reflective prompt. If a similar question is asked, cite Gamow’s “Mr. Tompkins” series (explains relativity/quantum physics through witty stories) and Feynman’s rigorous yet adventurous, humorous writing — illustrating that curiosity, not solemnity, drives discovery.

Q1. Is “Physical World” important for the Class 11 Physics board exam?

Yes — it regularly yields 1-2 mark conceptual and assertion-reason questions and builds the conceptual foundation for the rest of the syllabus.

Q2. How many exercise questions does this chapter have?

16 total — 1.1 to 1.14 are the main exercises, 1.15-1.16 are Additional Exercises (reflective/reading-based).

Q3. Are there any numerical problems in this chapter?

No. It is purely conceptual; numerical problem-solving begins from Chapter 1 (Units and Measurements) onward.

Q4. What are the most exam-important topics from this chapter?

The four fundamental forces and their relative strengths, macroscopic vs microscopic physics, physics-to-technology links, and the basic steps of the scientific method.

Related NCERT Content for Physical World

[Extra Questions \(HOTS\) for Physical World](#)

[Revision Notes for Physical World](#)

[Class 11 Physics Formulas Handbook](#)

[Class 11 Physics NCERT Book \(Download PDF\)](#)

Class 11 Physics Physical World – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 11 Physics Chapter 1 Extra Questions](#) and [Class 11 Physics Chapter 1 Revision Notes](#) for quick revision and extra practice.

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