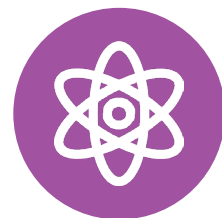


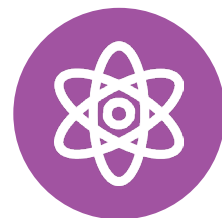
# Physics Factsheets



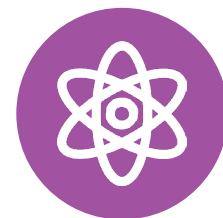
2000/2001 Series

Page 1

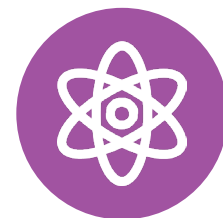
1. The quantum nature of light
2. Vectors and forces
3. Algebraic manipulation I
4. Moments and equilibrium
5. Work, energy and power
6. Numerical calculations & data handling
7. Electric current, voltage and resistance
8. Indices, standard form & orders of magnitude
9. Momentum
10. Exponentials & logarithms
11. Radioactivity I
12. Applying Newton's laws
13. Motion I
14. Particle physics
15. Algebraic manipulation II
16. Trigonometry
17. Waves basics
18. Exam technique in physics



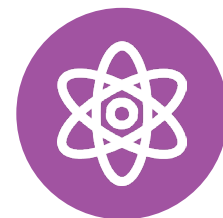
19. Circular motion
20. Simple harmonic motion – basic principles
21. Nuclear transformations and binding energy
22. Radioactivity II
23. Circuit electricity I
24. Physics of the eye
25. Molecular kinetic theory
26. Electromagnetic induction
27. The Young Modulus
28. Graphs in physics
29. Capacitors
30. Gravity and potential
31. First law of thermodynamics
32. Coulomb's law
33. Electric field strength and potential
34. The gas laws
35. Comparison of gravitational and electric fields
36. Comparison of capacitor discharge and radioactive decay



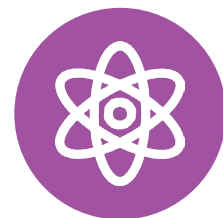
37. Specific heat capacity & specific latent heat
38. Linear particle accelerators
39. Using oscilloscopes
40. Probing matter
41. Lives of stars
42. Comparison of capacitors & springs
43. Circular particle accelerators
44. Heat engines and heat pumps
45. Magnetic fields
46. Principles of detecting particles
47. Interference
48. Damping and resonance
49. Wave-particle duality - the electron
50. Errors and uncertainties
51. Electromagnetic Doppler effect and the expanding Universe
52. Displacement-time and velocity-time graphs
53. Mechanical oscillations & the mass-spring system
54. The simple pendulum



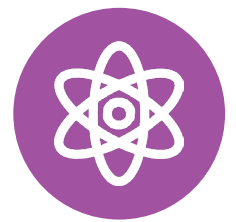
55. Waves – conservation of energy and the inverse square law
56. The potential divider and its use
57. Applications of circular motion
58. Nuclear reactors
59. Transformers
60. Stars: luminosity & surface temperature
61. Answering questions using conservation of mechanical energy
62. Answering AS questions on circuits
63. Solving problems on projectiles
64. Understanding and using pressure
65. Storing energy
66. Forces on vehicles
67. The Negative Temperature Coefficient (NTC) thermistor and the LDR
68. Energy in electric circuits
69. Experiments with waves
70. AC electricity
71. Physics of vehicles: safety
72. Why students lose marks: AS motion questions



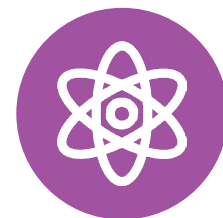
73. Why students lose marks-current electricity
74. How does a CD work
75. Line spectra
76. Introduction to Special Relativity
77. Nuclear medicine used for treatment
78. Diffraction effects
79. Models in physics
80. Success in practical assessments
81. Diffraction and light
82. The use of nuclear medicine in diagnosis
83. Experiments- Hooke's law and Young's modulus
84. Uses of capacitors
85. A2 questions radioactivity
86. Optical fibres in communication
87. Why students lose marks: AS forces



88. The physics of the Hubble telescope
89. Momentum - macroscopic & microscopic
90. Answering exam questions: series and parallel calculations
91. Accuracy in electrical investigations
92. Answering exam questions: simple harmonic motion
93. Polaroids and polarisation
94. Simple electronic systems
95. Lifting devices
96. Dynamic experiments using light gates
97. A2 electromagnetic problems
98. A2 fields and forces problems
99. Gas law practicals and absolute zero
100. Stationary waves on strings and in air columns
101. Principles of flight
102. The physics of semiconductor diodes

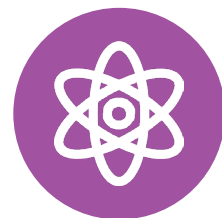


103. Real And apparent weightlessness
104. Difficulties with motion and energy problems
105. Calculations on the photoelectric effect
106. Measuring distances in astronomy
107. Calculations – charged particles in electric and magnetic fields
108. Where students make mistakes: balanced forces and action-reaction pairs
109. An inventory of the Solar System: Part I
110. The physics of speaker enclosures
111. Electrons as charge carriers
112. Practicalities of domestic wind energy generation
113. Electrical aspects of domestic wind energy production
114. Circular motion and vectors
115. Practical techniques for damping oscillations
116. Graphical work in electricity
117. An inventory of the Solar System: Part II

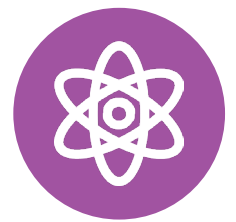


118. Electrical puzzle boxes
119. Calculations on the quantum atom
120. Interpreting and drawing graphs of motion
121. Sound compression
122. Uses of ultrasound
123. Understanding frictional forces
124. Forces on static structures
125. Energy efficiency in power generation
126. CO<sub>2</sub> calculations
127. Molecules, moles and mass
128. Calculations: first law of thermodynamics
129. Cathode ray oscilloscope
130. Heat engines and heat pumps
131. Refraction calculations
132. Uncertainty in practical work

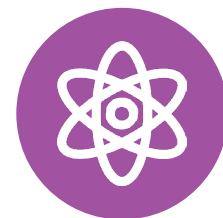




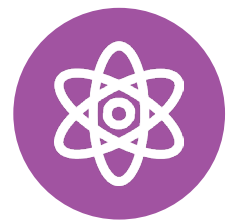
133. Answering essay questions in physics
134. Atomic calculations from the Bohr Model
135. Energy Changes for vertical motion
136. Interpreting and using V-I graphs
137. Mass defect and mass loss
138. Radioactive decay calculations
139. Graphical work with electromagnetic induction
140. How science works - The use of tables in practical work
141. Combining concepts in calculations
142. Wave energy
143. Damping in oscillations
144. Conservation laws in particle physics
145. Finding intercepts
146. Particle paths
147. Stress and strain in metals



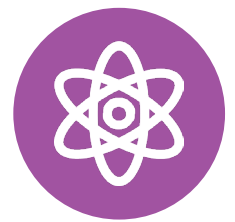
- 148. The discovery of the electron
- 149. Special Relativity
- 150. Special Relativity - experiments & examples
- 151. Telescopes
- 152. Light sources
- 153. Semiconductors and the Hall effect
- 154. Fluid dynamics
- 155. Aspects of quantum theory
- 156. Properties of materials
- 157. The physics of the ear
- 158. Uses of lasers
- 159. Non ionising medical imaging: MRI, PET, ultrasound & thermography
- 160. X rays in medicine
- 161. Reactive circuits
- 162. Converging lenses



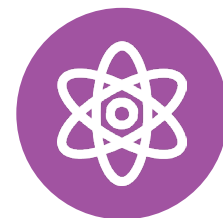
163. Nuclear instability, fission and fusion
164. Triangles and parallelograms of forces
165. Simple Harmonic Motion (S.H.M.) – basic principles
166. The physics of maintaining body temperature
167. Quality of written communication
168. Refraction -natural occurrences & applications
169. The physics of medical measurement
170. Units and unit analysis
171. The 2nd law of thermodynamics
172. Resistors and capacitors in series and parallel
173. Properties and uses of radio waves and microwaves
174. Applications of electromagnetic induction
175. Thermometry
176. Use of logarithmic and exponential functions in physics
177. The physics of the heart



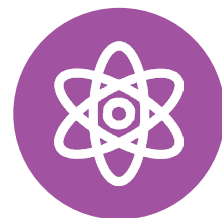
178. Alternative theories, paradoxes and contradictions
179. Important definitions
180. Moments
181. Key preparation for A level physics
182. Use of trig functions in physics
183. Probability in physics
184. Experiments with sound waves
185. Rotational mechanics
186. Momentum, collisions and explosions
187. Misconceptions
188. Heat engines
189. Essential mathematical techniques – solving algebraic equations
190. MRI, PET, CAT & ultrasound scans
191. The physics of the eye
192. Centripetal force & gravitational orbits



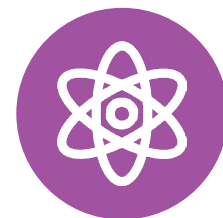
193. Projectile motion
194. Interactions between particles
195. Stellar evolution and types of stars
196. Key errors – identified by examiners
197. Key preparation for A level physics : circuit electricity
198. Photovoltaic solar cells
199. Ideal gases I: the gas laws
200. Meters
201. Key preparation for A Level I – waves, light and sound
202. Quantities and measurements in astrophysics
203. Conservation laws in physics
204. Splitting up voltage
205. Ideal gases II
206. Key experiments 1: The ball bearing “Ski Jump”
207. Nuclear fusion and fission



208. Applying Kepler's laws
209. Key experiments Factsheet – resistivity of aluminium
210. Electromagnetic Induction: Key principles and equations
211. Key Preparation Factsheet: waves, light and sound 2
212. Determining viscosity
213. Electromagnetic induction experiments
214. Determining the Planck's constant
215. Key issues with circuit electricity: internal resistance
216. Key preparation Factsheet: mechanisms of heat transfer
217. Diffraction theory
218. Determining the half-life of a radioactive isotope
219. Diffraction experiments
220. The Big Bang Theory and the evolution of the Universe
221. Wave-particle duality (the basics)
222. Analogue and digital communication techniques

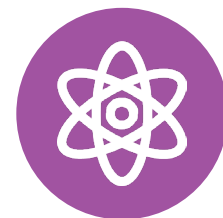


- 223. Key preparation for A level physics magnetism and fields
- 224. Physics at work
- 225. Graph plotting and interpretation 1
- 226. Investigating the characteristic of a thermistor
- 227. Handling differential equations
- 228. Graph interpretations 2
- 229. Low temperature, superconductors, superfluids
- 230. Precision and accuracy
- 231. Key preparation for atomic structure
- 232. Spectroscopy
- 233. The Higgs Boson
- 234. The physics of structures
- 235. Friction
- 236. Comparing alpha, beta, and gamma radiation
- 237. Key preparation electromagnetism

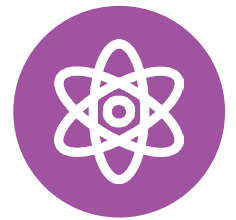


238. Kinetic Energy and Momentum
239. Moment of Inertia
240. Investigating The Electron
241. Comparing and Contrasting X-rays and Gamma rays
242. Vectors and Scalars in Physics
243. Key Preparation for A Level: Electromagnetic Induction
244. Investigating Charles' Law And Boyle's Law For A Gas
245. Microwaves and their uses
246. Accurate Measurement of Refractive Index
247. Investigation of the Charge and Discharge of Capacitors
248. Determination of the Young modulus
249. Investigation of Stationary (Standing) Waves on a String
250. Determination of  $g$  by a Free-fall Method
251. Wien's and Stefan's Laws
252. Applications of potential divider circuits

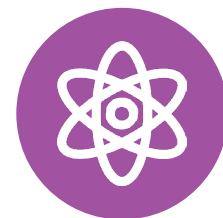




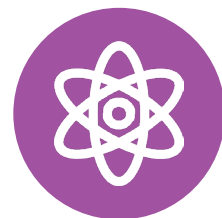
253. The Exponential Function
254. Simple Harmonic Motion: Simple Pendulum & Mass-Spring System
255. Investigating the Relationship Between Distance and Intensity for Gamma Rays
256. The Effect on Magnetic Flux Linkage of Varying the Angle Between a Search Coil and Magnetic Field Direction
257. Comparison of Light Sources
258. Feedback
259. E.M.F. and Internal Resistance of a Dry Cell
260. Displacement, Upthrust, and Archimedes' Principle
261. Investigate how the force on a wire varies with flux density, current, and length of wire using a top pan balance
262. Practical Investigation of Conservation of Momentum
263. Force Fields in Physics
264. Investigation of interference effects in light – Young's slits and diffraction grating
265. Lenz' Law in Electromagnetic Devices
266. Resistivity of a wire using a micrometer, ammeter and voltmeter
267. The Electron Microscope



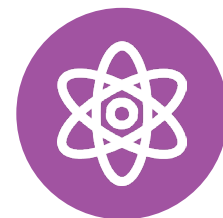
268. Engine Cycles
269. Stellar Processes and Life Cycle of Stars
270. Special Relativity
271. Using the C.R.O. (Cathode Ray Oscilloscope)
272. Writing Experimental Plans
273. Key Preparation: Mathematical Techniques
274. Forced Vibrations and Resonance
275. Nuclear Size
276. Second Law of Thermodynamics Engines and Reversed Heat Engines
277. Solving Problems with Energy
278. Combinational and Sequential Logic: Logic and Logic Gates
279. Physics of Vision
280. Exoplanets and Their Stars
281. A.C. (Alternating Current)
282. The Nature of Electromagnetic Waves



- 283. Newton's Laws and Circular Motion
- 284. Digital Photography
- 285. Gravitational Orbits and Planets
- 286. How to Avoid Losing Marks – Calculations
- 287. Introduction to Fundamental Particles
- 288. Hearing
- 289. How to Avoid Losing Marks: Language
- 290. Handling Experimental Data
- 291. Fundamental Interactions and Feynman Diagrams
- 292. Measuring the Young's Modulus of a Metal
- 293. Radioactive Decay
- 294. Energy Usage and Nuclear Safety
- 295. Operational amplifiers (Op-amps)
- 296. Magnetic Resonance Scanner and CT Scanner
- 297. Mass and Energy



298. Key Preparation - Particle Theory
299. Practical: Investigation of Force and Change of Momentum
300. The Photoelectric Effect
301. How to Avoid Losing Marks – Definitions
302. Research and Referencing
303. Data Handling 2: Averages, and Comparing Numbers Using Fractions, Ratios and Percentages
304. Practical: E.M.F and Internal Resistance
305. Newton's Third Law
306. Nuclear Fusion
307. Rotational Dynamics
308. Practical: Decay of Charge on a Capacitor
309. Key Preparation for A Level Physics: Work, Energy and Power
310. Electron Interaction with Matter
311. How to Avoid Losing Marks –Targeting Your Answer to the Question
312. Blood Pressure



- 313. Momentum: Collisions in One and Two Dimensions
- 314. Practical: Charles' Law and Absolute Zero
- 315. Solving Energy and Power Problems
- 316. Sound Waves – The Mechanics of Particles
- 317. Writing Risk Assessments for Physics Experiments
- 318. An Introduction to Magnetic Fields
- 319. Projectile Motion Calculations
- 320. Basic Concepts of Circuit Electricity
- 321. Exam Questions on Planning Experiments
- 322. Waves: Definitions and Basic Ideas
- 323. Fluid Mechanics
- 324. Balanced Forces
- 325. Required Practical: Determining the Acceleration Due to Gravity ( $g$ ) by Freefall
- 326. Lasers
- 327. Medical Radiation: X-rays