

JEE Main MCQ Mini Mock Test 01 — Offline Numerical Worksheet

Questions 21–25 (Physics), 46–50 (Chemistry) and 71–75 (Mathematics) — Southwide original practice content, not an official NTA question paper. The online mini mock covers the 60 single-correct MCQs (20 each in Physics, Chemistry and Mathematics). These 15 Section-B numerical-value questions use an integer-entry response type the website's engine doesn't score yet, so they're provided here as a downloadable worksheet with the full answer key and concise solutions for self-assessment. This is practice scoring (+1/0), not the official JEE Main +4/–1 scheme — see the online test page for details.

Physics

Q21. Projectile Motion

A ball is projected vertically upward with speed 30 m/s. Enter the maximum height reached, in metres. (Use $g = 10 \text{ m/s}^2$.)

Q22. Current Electricity

Three resistors of 6 ohm each are connected in parallel across a 12 V battery. Enter the total current drawn from the battery, in amperes.

Q23. Ray Optics

A convex lens of focal length 20 cm forms a real image at a distance of 60 cm from the lens. Enter the object distance, in centimetres.

Q24. Nuclear Physics

A radioactive sample has a half-life of 4 hours. If its initial mass is 80 mg, enter the mass remaining, in mg, after 12 hours.

Q25. Modern Physics

An electron is accelerated through a potential difference of 150 V. Using $h = 6.6 \times 10^{-34} \text{ J s}$, $m_e = 9.1 \times 10^{-31} \text{ kg}$, and $e = 1.6 \times 10^{-19} \text{ C}$, enter its de Broglie wavelength in picometres, rounded to the nearest integer.

Chemistry

Q46. General Organic Chemistry

Enter the number of sigma bonds in one molecule of ethane, C_2H_6 .

Q47. Solutions

A solution is prepared by dissolving 5.85 g NaCl (molar mass 58.5 g/mol) to make 500 mL of solution. Enter its concentration in millimoles per litre.

Q48. Chemical Kinetics

For a zero-order reaction, $[\text{A}]_0 = 0.80 \text{ mol L}^{-1}$ and $k = 0.020 \text{ mol L}^{-1} \text{ s}^{-1}$. Enter the time, in seconds, for $[\text{A}]$ to fall to 0.20 mol L^{-1} .

Q49. Stereoisomerism

Enter the total number of stereoisomers possible for 2,3-dichlorobutane.

Q50. Thermodynamics

One mole of an ideal gas undergoes reversible isothermal expansion at 300 K from 10 L to 20 L. Using $R = 8.314 \text{ J mol}^{-1} \text{ K}^{-1}$ and $\ln 2 = 0.693$, enter the magnitude of work done by the gas in joules, rounded to the nearest whole number.

Mathematics

Q71. Logarithms

If $\log_2 x = 5$, enter the value of x .

Q72. Trigonometric Equations

Enter the number of solutions of $\sin x = 1/2$ in the interval $[0, 2\pi]$.

Q73. Determinants

If the 2×2 determinant with rows $(x, 2)$ and $(3, 4)$ equals 10, enter the value of x .

Q74. Coordinate Geometry

Enter the area, in square units, of the triangle with vertices $(0,0)$, $(4,0)$ and $(0,6)$.

Q75. Three-Dimensional Geometry

If the lines $(x-1)/2 = (y+1)/3 = z/6$ and $x/3 = y/2 = z/k$ are perpendicular, enter the value of k .

Answer key

Q	Answer	Q	Answer	Q	Answer
21	45	46	7	71	32
22	6	47	200	72	2
23	30	48	30	73	4
24	10	49	3	74	12
25	100	50	1729	75	-2

Note: Q25, Q47 and Q75 reflect corrections made during QA against the official JEE Main 2026 Information Bulletin so that every Section B response is an integer.

Concise solutions

Q21. Maximum height $H = u^2/(2g) = 900/20 = 45 \text{ m}$.

Q22. Equivalent resistance of three 6-ohm resistors in parallel = 2 ohm; current = $12/2 = 6 \text{ A}$.

Q23. Using $1/f = 1/v - 1/u$ with $f = -20 \text{ cm}$ and $v = 60 \text{ cm}$ gives $u = -30 \text{ cm}$, so the object distance is 30 cm.

Q24. Twelve hours equals three half-lives; remaining mass = $80 / 2^3 = 10$ mg.

Q25. de Broglie wavelength = $h / \sqrt{2 m_e e V}$ is approximately 1.00 angstrom, which is approximately 100 pm.

Q46. Ethane contains six C-H sigma bonds and one C-C sigma bond: total 7.

Q47. Moles of NaCl = $5.85/58.5 = 0.10$; concentration = $0.10/0.50 = 0.20$ mol/L = 200 mmol/L.

Q48. For a zero-order reaction, $[A] = [A]_0 - kt$; $t = (0.80 - 0.20)/0.020 = 30$ s.

Q49. 2,3-dichlorobutane has one enantiomeric pair plus one meso form: 3 stereoisomers in total.

Q50. Reversible isothermal work $W = nRT \ln 2 = 1 \times 8.314 \times 300 \times 0.693$, approximately 1729 J.

Q71. $x = 2^5 = 32$.

Q72. In $[0, 2\pi]$, $\sin x = 1/2$ at $x = \pi/6$ and $x = 5\pi/6$: 2 solutions total.

Q73. $4x - 6 = 10$, so $x = 4$.

Q74. Area = $(1/2) \times 4 \times 6 = 12$ square units.

Q75. Direction vectors are (2,3,6) and (3,2,k). Perpendicularity requires $6 + 6 + 6k = 0$, so $k = -2$.

This is an original practice paper, not an official NTA question paper. Mathematical notation is simplified for worksheet readability. Pattern source: official JEE Main 2026 Information Bulletin (style reference only; not a reproduction of any official paper).