

The book was found

Physics Equations & Answers (Quick Study Academic)

Quick Study Academic **PHYSICS EQUATIONS & ANSWERS**

Essential Tool for Physics Learners, Concepts, Variables and Equations Including: Sample Problems, Common Pitfalls, and Helpful Hints

BASICS

A. Units for Physical Quantities

Base Units	Symbol	Unit
Length	L	Meter - m
Mass	m, M	Kilogram - kg
Temperature	T	Kelvin - K
Time	t	Second - s
Theory Constant	c	Angstrom - Å (10 ⁻¹⁰ m)

Derived Units

Symbol	Unit	
Acceleration	a	m/s ²
Ang. Area	A	radian ²
Ang. Momentum	L	kg m ² /s
Ang. Velocity	ω	radian/s
Angle	θ, φ	radian
Capacitance	C	Farad F (C ² /V)
Charge	Q, q, e	Coulomb C (A·s)
Density	ρ	kg/m ³
Displacement	s, Δs	meter - m
Electric Field	E	V/m
Electric Flux	Φ _E	V·m
Electromotive Force (EMF)	ε	Volt - V
Energy	E, E, K	Joule (kg m ² /s ²)
Energy	U	Joule
Force	F	Newton - N (kg m/s ²)
Frequency	f, ν	Hertz - Hz (cycles/s)
Heat	Q	Joule - J
Magnetic Field	B	Tesla (Weber/m ²)
Magnetic Flux	Φ _B	Weber (kg m ² /s ² A)
Momentum	p	kg m/s
Power	P	Wattage W (J/s)
Power	P, P	Watt - W (J/s)
Pressure	P	Pascal - Pa (N/m ²)
Resistance	R	Ohm Ω (V/A)
Temperature	T	Kelvin - K
Velocity	v	m/s
Volume	V	m ³
Wavelength	λ	meter - m
Work	W	Joule - J (N·m)

B. Fundamental Physical Constants

Base Units	Symbol	Unit
Mass of electron	m _e	9.11 × 10 ⁻³¹ kg
Mass of proton	m _p	1.67 × 10 ⁻²⁷ kg
Avogadro Constant	N _A	6.022 × 10 ²³ mol ⁻¹
Elementary charge	e	1.602 × 10 ⁻¹⁹ C
Faraday constant	F	96,485 C/mol
Speed of light	c	3 × 10 ⁸ m/s
Molar Gas Constant	R	8.314 J mol ⁻¹ K ⁻¹
Boltzmann Constant	k	1.38 × 10 ⁻²³ J K ⁻¹
Gravitation Constant	G	6.67 × 10 ⁻¹¹ m ³ kg ⁻¹ s ⁻²
Permittivity of Space	ε ₀	8.85 × 10 ⁻¹² C ² /N·m ²
Permeability of Space	μ ₀	4π × 10 ⁻⁷ T·m/A

C. Conversion Factors and alternate units

Unit	Description
Angle	1 radian = 57.3°
Energy	1 eV = 1.602 × 10 ⁻¹⁹ J
Force	1 dyne = 10 ⁻⁵ N
Volume	1 L = 1 dm ³
Pressure	1 bar = 10 ⁵ Pa
Length	1 Å = 10 ⁻¹⁰ m

MATHEMATICAL CONCEPTS

1. Vector Algebra

1. Vector: Three-dimensional (denoted using (x, y, z) components)

a. Unit vectors: i along x, j along y, k along z

b. Vector: $\vec{A} = A_x \hat{i} + A_y \hat{j} + A_z \hat{k}$

c. Length of $\vec{A} = \sqrt{A_x^2 + A_y^2 + A_z^2}$

2. Addition of vectors: $\vec{A} + \vec{B} = (A_x + B_x)\hat{i} + (A_y + B_y)\hat{j} + (A_z + B_z)\hat{k}$

3. Sample Addition and Length Calculations

$\vec{A} = 3\hat{i} + 4\hat{j}$ $\vec{B} = \sqrt{3^2 + 4^2} = 5$

$\vec{A} + \vec{B} = 7\hat{i} + 4\hat{j}$ $|\vec{A} + \vec{B}| = \sqrt{7^2 + 4^2} = 8.6$

$\vec{A} + \vec{B} = 7\hat{i} + 4\hat{j}$ $|\vec{A} + \vec{B}| = \sqrt{7^2 + 4^2} = 8.6$

Note: $|\vec{A} + \vec{B}| \neq |\vec{A}| + |\vec{B}|$

a. This is scalar product: $\vec{A} \cdot \vec{B} = |\vec{A}||\vec{B}|\cos\theta$

b. Note: θ is the angle between \vec{A} and \vec{B}

$\vec{A} = 3\hat{i} + 4\hat{j}$ $|\vec{A}| = 5$

$\vec{B} = 4\hat{i} + 3\hat{j}$ $|\vec{B}| = 5$

$\vec{A} \cdot \vec{B} = 3 \times 4 + 4 \times 3 = 24$

$24 = 5 \times 5 \times \cos\theta$ $\cos\theta = 24/25 = 0.96$

$\theta = \cos^{-1}(0.96) = 16.3^\circ$

2. Multiply \vec{A} & \vec{B}

a. This is scalar product: $\vec{A} \cdot \vec{B} = |\vec{A}||\vec{B}|\cos\theta$

$\vec{A} = 3\hat{i} + 4\hat{j}$ $|\vec{A}| = 5$

$\vec{B} = 4\hat{i} + 3\hat{j}$ $|\vec{B}| = 5$

$\vec{A} \cdot \vec{B} = 3 \times 4 + 4 \times 3 = 24$

$24 = 5 \times 5 \times \cos\theta$ $\cos\theta = 24/25 = 0.96$

$\theta = \cos^{-1}(0.96) = 16.3^\circ$

3. Imparting

1. Basic relations for a triangle: $a^2 = b^2 + c^2 - 2bc\cos A$

2. Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

3. Cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

4. Area of triangle: $\frac{1}{2}bc\sin A$

4. Trigonometry

1. Basic relations for a triangle: $a^2 = b^2 + c^2 - 2bc\cos A$

2. Sine rule: $\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$

3. Cosine rule: $a^2 = b^2 + c^2 - 2bc\cos A$

4. Area of triangle: $\frac{1}{2}bc\sin A$

5. Unit and sine waves

Unit: $\sin^{-1}(\sin \theta) = \theta$

Sine wave: $y = A \sin(\omega t + \phi)$



Synopsis

Essential tool for physics laws, concepts, variables and equations, including sample problems, common pitfalls and helpful hints.

Book Information

Series: Quick Study Academic

Pamphlet: 6 pages

Publisher: QuickStudy; Lam Crds edition (February 14, 2006)

Language: English

ISBN-10: 1423201906

ISBN-13: 978-1423201908

Product Dimensions: 8.5 x 11 x 0.1 inches

Shipping Weight: 0.3 ounces (View shipping rates and policies)

Average Customer Review: 4.7 out of 5 stars [See all reviews](#) (56 customer reviews)

Best Sellers Rank: #10,918 in Books (See Top 100 in Books) #4 in [Books > Science & Math > Physics > Mathematical Physics](#) #8 in [Books > Science & Math > Reference](#) #22 in [Books > Textbooks > Science & Mathematics > Physics](#)

Customer Reviews

Many books will go out of date, from 2006, this pamphlet of Physics Equations & Answers (Quick Study Academic) Pamphlet â “ February 14, 2006 will not. It is a given. It's fact! When you don't have all this committed to memory, then this pamphlet will allow you to refresh and remember. It is really worth having. I like it a lot.

This study guide is a nice reference to have in my backpack for physics class. Seeing examples of mathematical concepts and theories really helps me learn the material, and the pamphlet format of these study guides is convenient and accessible for referencing when needed.

Very helpful product. Bought "used", came in "new" shape. Very direct and to-the-point equations and insight. Great help for taking those physics finals and mid-terms or your all-around nerve-killing quiz!

Was a good reference chart to share with my classes and then my son borrowed for his college class. Always recommend you have these quick study charts available. I always think they are a bit

pricey though.

BarCharts are a great little reference. I would not recommend them as a study aid, but as a quick reference, they are great! I have used them for Chem, Physics, Electronics and Math. They are great for what they are.

Exactly what my son needed. The pricing could not be beat and the shipping was FAST. It provided the insight and details the teacher was not "TEACHING" the kids.

Physics Equations & Answers (Quick Study Academic) by Bar Charts Inc is what I expected. I bought it as a gift and the receiving individual likes it.

These laminated quick reference sheets are perfect for holding onto and inserting in your notebook. Important information is available immediately.

[Download to continue reading...](#)

Physics Equations & Answers (Quick Study Academic) Algebra Essentials Practice Workbook with Answers: Linear & Quadratic Equations, Cross Multiplying, and Systems of Equations (Improve Your Math Fluency Series) Physics (Quick Study Academic) Nclex-Rn Study Guide (Quick Study Academic) Differential Equations and Boundary Value Problems: Computing and Modeling (5th Edition) (Edwards/Penney/Calvis Differential Equations) Differential Equations: Computing and Modeling (5th Edition) (Edwards/Penney/Calvis Differential Equations) Fundamentals of Differential Equations (8th Edition) (Featured Titles for Differential Equations) Applied Partial Differential Equations with Fourier Series and Boundary Value Problems (5th Edition) (Featured Titles for Partial Differential Equations) Fundamentals of Differential Equations and Boundary Value Problems (6th Edition) (Featured Titles for Differential Equations) Student Solutions Manual for Differential Equations: Computing and Modeling and Differential Equations and Boundary Value Problems: Computing and Modeling Transformations Of Coordinates, Vectors, Matrices And Tensors Part I: LAGRANGE'S EQUATIONS, HAMILTON'S EQUATIONS, SPECIAL THEORY OF RELATIVITY AND CALCULUS ... Mathematics From 0 And 1 Book 16) The Solid State: An Introduction to the Physics of Crystals for Students of Physics, Materials Science, and Engineering (Oxford Physics Series) Ekgs / Ecgs (Quick Study: Academic) Endocrine System (Quick Study Academic) Circulatory System Advanced (Quick Study: Academic) Medical Coding: Icd-10-Pcs (Quick Study Academic) The Foot (Quick Study Academic) Anatomy Test (Quick Study Guides-Academic)

Spanish Grammar (Quick Study: Academic) Nursing Pharmacology (Quick Study: Academic)

[Dmca](#)