

# Index

## A

**aberration**  
10.10: Spherical Mirrors

**Aberrations**  
1.6: Optics

**Absolute Value Function**  
2.8: Functions

**Absorbed dose**  
1.14: Nuclear Physics

**Ac circuit**  
8.4: RLC Series AC Circuits

**AC circuits**  
8.4: RLC Series AC Circuits

**AC current**  
6.8: Alternating Current versus Direct Current

**AC voltage**  
6.8: Alternating Current versus Direct Current

**accommodation**  
10.16: The Eye  
10.25: Physics\_of\_the\_Eye

**activity**  
12.4: Radioactive Decay

**acute otitis media**  
10.23: Eye\_and\_Ear\_Basic\_Concepts

**Adiabatic**  
1.8: Thermodynamics

**adjacent side**  
2.9.2: Right Angle Triangle Trigonometry

**adjacent to**  
2.9.2: Right Angle Triangle Trigonometry

**algebraic function**  
2.8.1: Basic Functions

**alpha ( $\alpha$ ) rays**  
12.5: Nuclear Reactions

**alpha decay**  
12.5: Nuclear Reactions

**Alpha particles**  
1.14: Nuclear Physics

**alternating current**  
6.8: Alternating Current versus Direct Current

**Ampere's Law**  
7.10: Magnetic Fields Produced by Currents-Ampere's Law

**ammeter**  
6.5: Electrical Measuring Instruments  
6.7.5: DC Voltmeters and Ammeters

**ampere (unit)**  
5.2: Current  
5.3: Electrical Current

**analog meter**  
6.7.5: DC Voltmeters and Ammeters

**angle of depression**  
2.9.2: Right Angle Triangle Trigonometry

**angle of elevation**  
2.9.2: Right Angle Triangle Trigonometry

**angular magnification**  
10.13: The Simple Magnifier

**Angular momentum**  
1.1: Mechanics  
1.10: Quantum Physics  
1.13: Theory of Groups

**Annihilation operator**  
1.15: Quantum Field Theory and Particle Physics

**antielectrons**  
12.5: Nuclear Reactions

**antineutrino**  
12.5: Nuclear Reactions

**apparent depth**  
10.11: Images Formed by Refraction

**Apparent forces**  
1.1: Mechanics

**arc length with regards to a circle**  
2.9.1: Review of Trigonometry

**associative**  
2.9.3: Scalars and Vectors

**Associative ionization**  
1.11: Plasma physics

**Associative law**  
1.13: Theory of Groups

**Astigmatism**  
10.26: Vision\_Correction  
1.6: Optics

**Astrophysics**  
1.16: Astrophysics

**atomic mass**  
12.2: Properties of Nuclei

**Atomic mass unit**  
12.2: Properties of Nuclei

**atomic nucleus**  
12.2: Properties of Nuclei

**atomic number**  
12.2: Properties of Nuclei

**auricle**  
10.23: Eye\_and\_Ear\_Basic\_Concepts

**Avelian**  
1.13: Theory of Groups

**axis of a polarizing filter**  
11.4: Polarization

## B

**back emf**  
8.10: Back Emf

**Band structure of solids**  
1.12: Solid State Physics

**Baryons**  
1.15: Quantum Field Theory and Particle Physics

**Base functions**  
1.13: Theory of Groups

**base quantities**  
1.4: Units and Standards

**base quantity**  
1.4: Units and Standards

**base unit**  
1.4: Units and Standards

**Base units**  
1.4: Units and Standards

**BCS model**  
1.12: Solid State Physics

**BCS theory**  
5.11: Superconductors

**becquerel (Bq)**  
12.4: Radioactive Decay

**Bernoulli's equation**  
1.9: Transport Phenomena

**Bessel function**  
1.5: Waves

**beta ( $\beta$ ) rays**  
12.5: Nuclear Reactions

**Beta decay**  
12.5: Nuclear Reactions  
1.14: Nuclear Physics

**binding energy**  
1.14: Nuclear Physics

**binding energy (nuclear)**  
12.3: Nuclear Binding Energy

**binding energy per nucleon (BEN)**  
12.3: Nuclear Binding Energy

**Bioelectricity**  
5.10: Nerve Conduction–Electrocardiograms  
6.7: Circuits, Bioelectricity, and DC Instruments

**Birefringenc**  
1.6: Optics

**birefringence**  
9.4: Polarization

**birefringent**  
11.4: Polarization

**Black body radiation**  
1.10: Quantum Physics

**Black hole**  
1.3: Relativity

**Blasius's equation**  
1.9: Transport Phenomena

**Boltzmann transport equation**  
1.11: Plasma physics

**bosons**  
1.10: Quantum Physics

**Boundary layers**  
1.9: Transport Phenomena

**Boussinesq's assumption**  
1.9: Transport Phenomena

**Boyle temperature**  
1.7: Statistical Physics

**Bragg planes**  
11.15: X-Ray Diffraction

**breeder reactor**  
12.6: Fission

**Brewster's angle**  
9.4: Polarization

**Brewster's law**  
9.4: Polarization

**Brewster's angle**  
11.4: Polarization

**Brewster's law**  
11.4: Polarization

**bridge device**  
6.7.6: Null Measurements

**Brightness**  
1.16: Astrophysics

**Brownian motion**  
1.7: Statistical Physics

## C

**camera**  
10.14: The Camera

**Candela**  
10.17: A\_Vision

**Capacitance**  
4.7: Capacitors and Dielectrics  
4.9: Energy Stored in Capacitors  
1.2: Electricity and Magnetism

**capacitive**  
8.3: Reactance, Inductive and Capacitive

## capacitive reactance

[8.3: Reactance, Inductive and Capacitive](#)

## capacitor

[4.7: Capacitors and Dielectrics](#)

[4.8: Capacitors in Series and Parallel](#)

## capacitors in parallel

[4.8: Capacitors in Series and Parallel](#)

## capacitors in series

[4.8: Capacitors in Series and Parallel](#)

## Carnot cycle

[1.8: Thermodynamics](#)

## Carnot efficiency

[1.8: Thermodynamics](#)

## Cassegrain design

[10.15: Microscopes and Telescopes](#)

## Cayley table

[1.13: Theory of Groups](#)

## Centre of mass

[1.1: Mechanics](#)

## Cepheids

[1.16: Astrophysics](#)

## Cerenkov radiation

[1.6: Optics](#)

## cerumen impaction

[10.23: Eye\\_and\\_Ear\\_Basic\\_Concepts](#)

## Character

[1.13: Theory of Groups](#)

## characteristic time constant

[8.2: RL Circuits](#)

## Charge transfer

[1.11: Plasma physics](#)

## chart of the nuclides

[12.2: Properties of Nuclei](#)

## Christoffel symbols

[1.3: Relativity](#)

## Chromatic aberration

[1.6: Optics](#)

## circadian

[10.17: A\\_Vision](#)

## circuit

[5.3: Electrical Current](#)

## circuits

[6.7: Circuits, Bioelectricity, and DC Instruments](#)

## circumference of a circle

[2.9.1: Review of Trigonometry](#)

## Classes

[1.13: Theory of Groups](#)

## CNO cycle

[1.16: Astrophysics](#)

## coherent waves

[11.5: Young's Double-Slit Interference](#)

## Cold factor

[1.8: Thermodynamics](#)

## Collective model

[1.14: Nuclear Physics](#)

## Collisions

[1.1: Mechanics](#)

[1.7: Statistical Physics](#)

## color constancy

[10.27: Color\\_and\\_Color\\_Vision](#)

## Coma

[1.6: Optics](#)

## coma (optics)

[10.10: Spherical Mirrors](#)

## comets

[9.6: Momentum and Radiation Pressure](#)

## Commutative

[2.9.3: Scalars and Vectors](#)

[1.13: Theory of Groups](#)

## commutators

[1.10: Quantum Physics](#)

## Compensators

[1.6: Optics](#)

## composite function

[2.8: Functions](#)

## compound microscope

[10.15: Microscopes and Telescopes](#)

## Compton effect

[1.10: Quantum Physics](#)

## concave mirror

[10.10: Spherical Mirrors](#)

## Conductance current

[1.2: Electricity and Magnetism](#)

## conductive hearing loss

[10.23: Eye\\_and\\_Ear\\_Basic\\_Concepts](#)

## conductor

[3.3: Conductors and Insulators](#)

[3.8: Conductors and Electric Fields in Static Equilibrium](#)

## cone

[10.17: A\\_Vision](#)

## Conjugate elements

[1.13: Theory of Groups](#)

## Conjugated field

[1.15: Quantum Field Theory and Particle Physics](#)

## conjunctiva

[10.23: Eye\\_and\\_Ear\\_Basic\\_Concepts](#)

## conjunctivitis

[10.23: Eye\\_and\\_Ear\\_Basic\\_Concepts](#)

## Conservation laws

[6.7.4: Kirchhoff's Rules](#)

[1.9: Transport Phenomena](#)

## Conservative force fields

[1.1: Mechanics](#)

## constructive interference

[11.2: Wave Interference](#)

## Continuity equation

[1.2: Electricity and Magnetism](#)

## Continuous groups

[1.13: Theory of Groups](#)

## conventional current

[5.3: Electrical Current](#)

## converging (or convex) lens

[10.12: Thin Lenses](#)

## converging lens

[10.12: Thin Lenses](#)

## conversion factor

[1.5: Unit Conversion](#)

## convex mirror

[10.10: Spherical Mirrors](#)

## Cooper pairs

[5.11: Superconductors](#)

## Coordinate system

[1.1: Mechanics](#)

## cornea

[10.17: A\\_Vision](#)

[10.23: Eye\\_and\\_Ear\\_Basic\\_Concepts](#)

## corner reflector

[10.4: The Law of Reflection](#)

## cosecant

[2.9.1: Review of Trigonometry](#)

[2.9.2: Right Angle Triangle Trigonometry](#)

## cosine

[2.9.1: Review of Trigonometry](#)

[2.9.2: Right Angle Triangle Trigonometry](#)

## cosmological constant

[1.3: Relativity](#)

## cosmology

[1.3: Relativity](#)

## cotangent

[2.9.1: Review of Trigonometry](#)

[2.9.2: Right Angle Triangle Trigonometry](#)

## Coulomb interaction

[1.11: Plasma physics](#)

## Coulomb force

[3.4: Coulomb's Law](#)

[1.2: Electricity and Magnetism](#)

## Coulomb interaction

[3.7: Electric Forces in Biology](#)

## Coulomb logarithm

[1.11: Plasma physics](#)

## Coulomb repulsion

[1.14: Nuclear Physics](#)

## Coulomb's Law

[3.4: Coulomb's Law](#)

## Coupled conductors

[1.4: Oscillations](#)

## Covalent bond

[1.12: Solid State Physics](#)

## CP violation

[1.15: Quantum Field Theory and Particle Physics](#)

## Cramer's rule

[2.7.5: Solving a System of Linear Equations with Cramer's Rule](#)

## Creation operator

[1.15: Quantum Field Theory and Particle Physics](#)

## critical angle

[10.6: Total Internal Reflection](#)

## critical mass

[12.6: Fission](#)

## Critical temperature

[5.11: Superconductors](#)

[1.7: Statistical Physics](#)

## criticality

[12.6: Fission](#)

## Critically damped oscillator

[1.4: Oscillations](#)

## Crystal structure

[1.12: Solid State Physics](#)

## cubic function

[2.8.1: Basic Functions](#)

## curie (Ci)

[12.4: Radioactive Decay](#)

## Curie temperature

[7.3: Ferromagnets and Electromagnets](#)

## current

[5.2: Current](#)

[6.7.2: Resistors in Series and Parallel](#)

[1.2: Electricity and Magnetism](#)

## current density

[5.4: Model of Conduction in Metals](#)

## current sensitivity

[6.7.5: DC Voltmeters and Ammeters](#)

## curved mirror

[10.10: Spherical Mirrors](#)

## Cut off frequency

[1.5: Waves](#)

## Cylindrical waves

[1.5: Waves](#)

## D

Damping frequency (oscillator)

1.4: Oscillations

daughter nucleus

12.5: Nuclear Reactions

DC circuits

6.7.7: DC Circuits Containing Resistors and Capacitors

deBroglie

1.10: Quantum Physics

Debye model

1.12: Solid State Physics

Decay

12.4: Radioactive Decay

1.11: Plasma physics

decay constant

12.4: Radioactive Decay

decay series

12.5: Nuclear Reactions

Deceleration parameter

1.3: Relativity

decreasing on the interval I

2.8: Functions

defibrillator

4.9: Energy Stored in Capacitors

degeneracy

1.13: Theory of Groups

degree

2.8.1: Basic Functions

degrees of freedom

1.7: Statistical Physics

Del operator

1.17.4: The Del-operator

dependent variable

2.8: Functions

Depolarizing field

1.2: Electricity and Magnetism

derived quantity

1.4: Units and Standards

derived unit

1.4: Units and Standards

derived units

1.4: Units and Standards

destructive interference

11.2: Wave Interference

destructive interference for a single slit

11.7: Single-Slit Diffraction

Detailed balancing

1.11: Plasma physics

Determinants

2.7.5: Solving a System of Linear Equations with Cramer's Rule

Dichroism

1.6: Optics

dielectric

4.7: Capacitors and Dielectrics

Dielectric material

1.2: Electricity and Magnetism

dielectric strength

4.7: Capacitors and Dielectrics

dielectrics

1.12: Solid State Physics

diffraction

11.7: Single-Slit Diffraction

11.11: Huygens's Principle - Diffraction

1.6: Optics

diffraction grating

11.9: Multiple-Slit Interference

11.10: Diffraction Gratings

diffraction limit

11.12: Circular Apertures and Resolution

diffusion

1.9: Transport Phenomena

digital meter

6.7.5: DC Voltmeters and Ammeters

Dimensional Analysis

1.6: Dimensional Analysis

dimensionally consistent

1.6: Dimensional Analysis

dimensionless

1.6: Dimensional Analysis

diode

5.7: Ohm's Law

Dioptic power

1.6: Optics

dipole

3.7: Electric Forces in Biology

Dirac equation

1.15: Quantum Field Theory and Particle Physics

Dirac formalism

1.10: Quantum Physics

Dirac matrices

1.10: Quantum Physics

direct current

6.8: Alternating Current versus Direct Current

Direct semiconductor

1.12: Solid State Physics

direction angle

2.9.4: Coordinate Systems and Components of a Vector

direction of magnetic field lines

7.4: Magnetic Fields and Magnetic Field Lines

direction of polarization

9.4: Polarization

11.4: Polarization

discriminant

2.7.3: Solving Quadratic Equations

Dispersion

10.7: Dispersion

1.6: Optics

dispersion relation

1.2: Electricity and Magnetism

displacement

2.9.3: Scalars and Vectors

Displacement current

9.2: Maxwell's Equations and Electromagnetic Waves

1.2: Electricity and Magnetism

Distance Formula

2.4: The Rectangular Coordinate Systems and Graphs

distortion

1.6: Optics

distributive

2.9.3: Scalars and Vectors

diverging (or concave) lens

10.12: Thin Lenses

diverging lens

10.12: Thin Lenses

domain

2.8: Functions

domains

7.3: Ferromagnets and Electromagnets

Doppler broadening

1.11: Plasma physics

doppler effect

1.5: Waves

Dot product

2.9.6: Products of Vectors

double angle formula, trigonometric

identity

2.9.1: Review of Trigonometry

drift velocity

5.2: Current

5.4: Model of Conduction in Metals

Droplet model

1.14: Nuclear Physics

## E

ECG

5.10: Nerve Conduction—Electrocardiograms

eddy current

8.8: Eddy Currents and Magnetic Damping

efficiency

1.8: Thermodynamics

Eigenfunctions

1.10: Quantum Physics

Eigenvalues

1.10: Quantum Physics

Einstein tensor

1.3: Relativity

electric charge

3.2: Static Electricity and Charge - Conservation of Charge

Electric conductance

1.12: Solid State Physics

electric current

5.2: Current

Electric dipole

1.2: Electricity and Magnetism

Electric displacement

1.2: Electricity and Magnetism

Electric displacement

1.2: Electricity and Magnetism

electric energy

5.8: Electric Power and Energy

electric field

3.5: Electric Field- Concept of a Field Revisited

3.6: Electric Field Lines

1.2: Electricity and Magnetism

Electric Field Lines

3.6: Electric Field Lines

Electric field strength

1.2: Electricity and Magnetism

electric force

1.2: Electricity and Magnetism

Electric generators

8.9: Electric Generators

Electric oscillation

1.4: Oscillations

electric potential

4.2: Electric Potential Energy and Electrical Potential Difference

4.4: Electric Potential and Potential Difference

4.5: Electrical Potential Due to a Point Charge

electric potential difference

4.4: Electric Potential and Potential Difference

electric power

5.8: Electric Power and Energy

electrical conductivity  
5.6: Resistivity and Resistance

electrical current  
5.3: Electrical Current

electrocardiogram  
5.10: Nerve Conduction–Electrocardiograms

Electromagnet  
7.3: Ferromagnets and Electromagnets

Electromagnetic energy  
9.5: Energy Carried by Electromagnetic Waves

Electromagnetic force  
3.1: Introduction

Electromagnetic induction  
8.5: Induced Emf and Magnetic Flux

Electromagnetic Momentum  
9.6: Momentum and Radiation Pressure

Electromagnetic Spectrum  
9.7: The Electromagnetic Spectrum

electromagnetic waves  
9.3: Plane Electromagnetic Waves  
9.5: Energy Carried by Electromagnetic Waves  
1.2: Electricity and Magnetism

Electromagnetic waves in matter  
1.2: Electricity and Magnetism

electromagnetism  
7.3: Ferromagnets and Electromagnets

Electromotive force  
6.7.3: Electromotive Force - Terminal Voltage

electromotive force (emf)  
6.1: Electromotive Force  
6.7.3: Electromotive Force - Terminal Voltage

Electron  
3.2: Static Electricity and Charge - Conservation of Charge

Electron capture  
1.14: Nuclear Physics

Electron diffraction  
1.10: Quantum Physics

electron volt  
4.2: Electric Potential Energy and Electrical Potential Difference

electrostatic equilibrium  
3.8: Conductors and Electric Fields in Static Equilibrium

electrostatic force  
3.4: Coulomb's Law

electrostatic precipitators  
3.9: Applications of Electrostatics

electrostatic repulsion  
3.3: Conductors and Insulators

electrostatics  
3.9: Applications of Electrostatics

Electroweak theory  
1.15: Quantum Field Theory and Particle Physics

Elementary particles  
1.15: Quantum Field Theory and Particle Physics

emf  
6.7.3: Electromotive Force - Terminal Voltage  
8.7: Motional Emf

ENDOSCOPES  
10.6: Total Internal Reflection

energy  
1.1: Mechanics

energy density of the electromagnetic field  
1.2: Electricity and Magnetism

Energy distribution  
1.7: Statistical Physics

energy stored in an inductor  
8.13: Inductance

English units  
1.4: Units and Standards

enthalpy  
1.8: Thermodynamics

entropy  
1.8: Thermodynamics

equal vectors  
2.9.5: Algebra of Vectors

equation in two variables  
2.4: The Rectangular Coordinate Systems and Graphs

Equation of state  
1.7: Statistical Physics

Equilibrium state  
1.8: Thermodynamics

equipotential  
4.6: Equipotential Lines

equipotential line  
4.6: Equipotential Lines

Equivalence Principle  
1.3: Relativity

equivalent resistance  
6.2: Resistors in Series and Parallel

Euclidean space  
1.3: Relativity

Euler's angles  
1.13: Theory of Groups

even function  
2.8: Functions

Excitation  
1.11: Plasma physics

exponent  
2.8.3: Exponential\_and\_Logarithmic\_Functions

extraocular muscles  
10.23: Eye\_and\_Ear\_Basic\_Concepts

eye  
10.25: Physics\_of\_the\_Eye  
10.28: The\_Human\_Eye

eyepiece  
10.15: Microscopes and Telescopes

## F

far point  
10.16: The Eye  
10.26: Vision\_Correction

farad (Units)  
4.7: Capacitors and Dielectrics

Faraday cage  
3.8: Conductors and Electric Fields in Static Equilibrium

Faraday effect  
1.6: Optics

Faraday's Law  
8.6: Faraday's Law of Induction- Lenz's Law

Faraday's law of induction  
8.6: Faraday's Law of Induction- Lenz's Law

farsightedness  
10.16: The Eye  
10.26: Vision\_Correction

Fermat's principle  
1.6: Optics

Fermi gas  
1.12: Solid State Physics

fermions  
1.10: Quantum Physics

ferromagnetic  
7.3: Ferromagnets and Electromagnets

Ferromagnetism  
1.12: Solid State Physics

fiber optics  
10.6: Total Internal Reflection

field  
3.5: Electric Field- Concept of a Field Revisited

Field curvature  
1.6: Optics

Field interaction  
1.10: Quantum Physics

Field operator  
1.15: Quantum Field Theory and Particle Physics

Field quantization  
1.15: Quantum Field Theory and Particle Physics

Field quantum  
1.15: Quantum Field Theory and Particle Physics

Field tensor  
1.3: Relativity

Fine structure  
1.10: Quantum Physics

first focus or object focus  
10.11: Images Formed by Refraction

first law of thermodynamics  
1.8: Thermodynamics

fission  
12.6: Fission

fixed boundary condition  
11.2: Wave Interference

Fixed coordinate system  
1.1: Mechanics

Flow in tubes  
1.9: Transport Phenomena

Flow velocity  
1.9: Transport Phenomena

Flux quantization  
1.12: Solid State Physics

focal length  
10.10: Spherical Mirrors

focal plane  
10.12: Thin Lenses

focal point  
10.10: Spherical Mirrors

force  
1.1: Mechanics

Fourier number  
1.9: Transport Phenomena

fovea  
10.17: A\_Vision

Fraunhofer diffraction  
1.6: Optics

free boundary condition  
11.2: Wave Interference

free charge  
3.8: Conductors and Electric Fields in Static Equilibrium

free electron  
3.3: Conductors and Insulators

Free energy  
1.8: Thermodynamics

fringes  
11.6: Mathematics of Interference

function  
2.8: Functions

Fundamental orthogonality theorem  
1.13: Theory of Groups

## G

galvanometer  
6.7.5: DC Voltmeters and Ammeters

gamma ( $\gamma$ ) rays  
12.5: Nuclear Reactions

Gamma decay  
12.5: Nuclear Reactions  
1.14: Nuclear Physics

gamma ray  
9.7: The Electromagnetic Spectrum

Gamow factor  
1.14: Nuclear Physics

Gauge transform  
1.2: Electricity and Magnetism

gauss  
7.5: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

Gaussian lens  
1.6: Optics

general relativity  
1.3: Relativity

Generating functions  
1.1: Mechanics

generators  
8.9: Electric Generators

Geodesic postulate  
1.3: Relativity

geometric optics  
10.3: The Propagation of Light

Geometrical mass  
1.3: Relativity

Geometrical optics  
1.6: Optics

Gibbs free energy  
1.8: Thermodynamics

graph in two variables  
2.4: The Rectangular Coordinate Systems and Graphs

graph of a function  
2.8: Functions

Gravitation  
1.1: Mechanics

Gravitational waves  
1.3: Relativity

Green's function  
1.5: Waves

grounded  
3.9: Applications of Electrostatics

grounded.  
3.3: Conductors and Insulators

grounding  
4.6: Equipotential Lines

group velocity  
1.5: Waves

Groups  
1.13: Theory of Groups

## H

hadrons  
1.15: Quantum Field Theory and Particle Physics

Hall effect  
7.7: The Hall Effect  
1.12: Solid State Physics

Hall emf  
7.7: The Hall Effect

Hamilton mechanics  
1.1: Mechanics

Hamiltonian  
1.10: Quantum Physics

Hamiltonian, canonical transformation  
1.2: Electricity and Magnetism

Harmonic oscillation  
1.4: Oscillations

Harmonic oscillator (quantum)  
1.10: Quantum Physics

Heat capacity  
1.8: Thermodynamics

Heat capacity of solids  
1.12: Solid State Physics

Heat conductance  
1.9: Transport Phenomena

Heisenberg  
1.10: Quantum Physics  
1.12: Solid State Physics

Heisenberg picture  
1.15: Quantum Field Theory and Particle Physics

henry  
8.13: Inductance

Hermetian  
1.10: Quantum Physics

Higgs mechanism  
1.15: Quantum Field Theory and Particle Physics

Higgs particle  
1.15: Quantum Field Theory and Particle Physics

high dose  
12.8: Medical Applications and Biological Effects of Nuclear Radiation

hologram  
11.16: Holography

holography  
11.16: Holography

Homomorfism  
1.13: Theory of Groups

horizontally polarized  
9.4: Polarization  
11.4: Polarization

Hubble's constant  
1.3: Relativity

hues  
10.27: Color\_and\_Color\_Vision

Huygen's principle  
11.11: Huygens's Principle - Diffraction

Huygens's principle  
10.8: Huygens's Principle

Hybridization  
1.10: Quantum Physics

Hydrogen atom  
1.10: Quantum Physics

hyperbolic functions  
2.8.3: Exponential\_and\_Logarithmic\_Functions

hyperopia  
10.16: The Eye  
10.17: A\_Vision  
10.26: Vision\_Correction

hypotenuse  
2.9.2: Right Angle Triangle Trigonometry

## I

Ideal gas  
1.8: Thermodynamics

image distance  
10.9: Images Formed by Plane Mirrors

image focus  
10.11: Images Formed by Refraction

Impedance, system  
1.4: Oscillations

Inclination factor  
1.6: Optics

incoherent  
11.5: Young's Double-Slit Interference

increasing on the interval I  
2.8: Functions

independent variable  
2.8: Functions

index of refraction  
10.3: The Propagation of Light  
10.5: Refraction  
10.7: Dispersion

Indirect semiconductor  
1.12: Solid State Physics

Induced dipole interaction  
1.11: Plasma physics

induced emf  
8.5: Induced Emf and Magnetic Flux

Induced voltage  
1.2: Electricity and Magnetism

inductance  
8.13: Inductance

induction  
3.3: Conductors and Insulators

Inductive  
8.3: Reactance, Inductive and Capacitive

inductive reactance  
8.3: Reactance, Inductive and Capacitive

inductor  
8.13: Inductance

infrared radiation  
9.7: The Electromagnetic Spectrum

insulator  
3.3: Conductors and Insulators

Interaction picture  
1.15: Quantum Field Theory and Particle Physics

intercepts  
2.4: The Rectangular Coordinate Systems and Graphs

interference  
11.2: Wave Interference  
11.6: Mathematics of Interference

interference order  
11.6: Mathematics of Interference

interferometer  
11.17: The Michelson Interferometer

internal resistance  
6.1: Electromotive Force  
6.7.3: Electromotive Force - Terminal Voltage

Inverse element  
1.13: Theory of Groups

inverse hyperbolic functions  
2.8.3: Exponential\_and\_Logarithmic\_Functions

Inversion temperature  
1.8: Thermodynamics

Ion bond  
1.12: Solid State Physics

ion tail  
9.6: Momentum and Radiation Pressure

Ionization  
1.11: Plasma physics

ionosphere  
3.8: Conductors and Electric Fields in Static Equilibrium

iridescence  
11.10: Diffraction Gratings

iris

- 10.17: A\_Vision
- 10.23: Eye\_and\_Ear\_Basic\_Concepts

irradiance

- 1.2: Electricity and Magnetism

Irreducible representation

- 1.13: Theory of Groups

Irreducible tensor operators

- 1.13: Theory of Groups

Irreversible cycle

- 1.8: Thermodynamics

Isobaric

- 1.8: Thermodynamics

Isochoric

- 1.8: Thermodynamics

Isomorphism

- 1.13: Theory of Groups

Isothermal

- 1.8: Thermodynamics

isotopes

- 12.2: Properties of Nuclei

## J

Jacobi

- 1.13: Theory of Groups

Jones vector

- 1.6: Optics

Josephson effect

- 5.11: Superconductors
- 1.12: Solid State Physics

Josephson junction

- 5.11: Superconductors

Joule's law

- 6.7.2: Resistors in Series and Parallel

junction rule

- 6.7.4: Kirchhoff's Rules

## K

Kelvin's theorem

- 1.9: Transport Phenomena

Kepler's orbital equations

- 1.1: Mechanics

Kerma K

- 1.14: Nuclear Physics

Kerr effect

- 1.6: Optics

kilogram

- 1.4: Units and Standards

Kirchhoff's First Rule

- 6.3: Kirchhoff's Rules
- 6.7.4: Kirchhoff's Rules

Kirchhoff's Second Rule

- 6.3: Kirchhoff's Rules
- 6.7.4: Kirchhoff's Rules

Kirchhoff's junction rule

- 6.2: Resistors in Series and Parallel
- 6.3: Kirchhoff's Rules
- 6.7.4: Kirchhoff's Rules

Kirchhoff's loop rule

- 6.2: Resistors in Series and Parallel
- 6.3: Kirchhoff's Rules
- 6.7.4: Kirchhoff's Rules

Kirchoff's equations

- 1.2: Electricity and Magnetism

Klein Gordon equation

- 1.15: Quantum Field Theory and Particle Physics

Knudsen gas

- 1.9: Transport Phenomena

## L

lacrimal duct

- 10.23: Eye\_and\_Ear\_Basic\_Concepts

Ladder operators

- 1.10: Quantum Physics

Lagrange density

- 1.15: Quantum Field Theory and Particle Physics

Lagrange mechanics

- 1.1: Mechanics

Lamour precession

- 1.12: Solid State Physics

Landé' equation

- 1.13: Theory of Groups

Laplace equation

- 1.3: Relativity

Laplace, law of

- 1.2: Electricity and Magnetism

laser printer

- 3.9: Applications of Electrostatics

laser vision correction

- 10.26: Vision\_Correction

Lattice

- 1.12: Solid State Physics

law

- 1.1: The Scientific Method and Physics

law of conservation of charge

- 3.2: Static Electricity and Charge - Conservation of Charge

law of reflection

- 10.4: The Law of Reflection

law of refraction

- 10.5: Refraction

lens

- 10.17: A\_Vision
- 10.23: Eye\_and\_Ear\_Basic\_Concepts

lenses

- 1.6: Optics

Lenz's Law

- 8.6: Faraday's Law of Induction- Lenz's Law

Leptons

- 1.15: Quantum Field Theory and Particle Physics

lifetime

- 12.4: Radioactive Decay

light

- 10.3: The Propagation of Light

Lightspeed

- 1.2: Electricity and Magnetism

linear function

- 2.8.1: Basic Functions

linear magnification

- 10.10: Spherical Mirrors

linearization

- 1.1: Mechanics

Liouville's equations

- 1.1: Mechanics

liquid drop model

- 12.6: Fission

Logarithmic Function

- 2.8.1: Basic Functions

London equation

- 1.12: Solid State Physics

Longitudinal waves

- 1.5: Waves

loop rule

- 6.7.4: Kirchhoff's Rules

Lorentz force

- 7.5: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field
- 7.6: Force on a Moving Charge in a Magnetic Field- Examples and Applications
- 9.2: Maxwell's Equations and Electromagnetic Waves

- 1.2: Electricity and Magnetism

Lorentz profile

- 1.11: Plasma physics

Lorentz transform

- 1.3: Relativity

low dose

- 12.8: Medical Applications and Biological Effects of Nuclear Radiation

## M

magnetic damping

- 8.8: Eddy Currents and Magnetic Damping

Magnetic dipole

- 1.2: Electricity and Magnetism

magnetic field

- 7.4: Magnetic Fields and Magnetic Field Lines
- 7.6: Force on a Moving Charge in a Magnetic Field- Examples and Applications

magnetic field lines

- 7.4: Magnetic Fields and Magnetic Field Lines

Magnetic field strength

- 7.10: Magnetic Fields Produced by Currents- Ampere's Law
- 1.2: Electricity and Magnetism

magnetic field strength at the center of a circular loop

- 7.10: Magnetic Fields Produced by Currents- Ampere's Law

magnetic field strength inside a solenoid

- 7.10: Magnetic Fields Produced by Currents- Ampere's Law

Magnetic field.

- 1.2: Electricity and Magnetism

magnetic flux

- 8.5: Induced Emf and Magnetic Flux

Magnetic flux density

- 1.2: Electricity and Magnetism

Magnetic force

- 7.5: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field
- 7.6: Force on a Moving Charge in a Magnetic Field- Examples and Applications
- 7.8: Magnetic Force on a Current-Carrying Conductor
- 7.11: Magnetic Force between Two Parallel Conductors

Magnetic induction

- 1.2: Electricity and Magnetism

magnetic monopoles

- 7.3: Ferromagnets and Electromagnets

magnetic pole

- 7.2: Magnets

magnetic resonance imaging

- 7.12: More Applications of Magnetism

magnetism

- 7: Magnetism

Magnetization

- 1.2: Electricity and Magnetism
- 1.12: Solid State Physics

magnetized

- 7.3: Ferromagnets and Electromagnets

magnetocardiogram

- 7.12: More Applications of Magnetism



magnetoencephalogram  
7.12: More Applications of Magnetism

**Magnification**  
10.9: Images Formed by Plane Mirrors  
1.6: Optics

**magnifying glass**  
10.13: The Simple Magnifier

**Magnitude**  
2.9.3: Scalars and Vectors

**Magnitudes**  
1.16: Astrophysics

**Magnus effect**  
1.9: Transport Phenomena

**Malus law**  
1.6: Optics

**Malus's law**  
9.4: Polarization  
11.4: Polarization

**Mass absorption coefficient**  
1.14: Nuclear Physics

**mass defect**  
12.3: Nuclear Binding Energy

**mass number**  
12.2: Properties of Nuclei

**mathematical model**  
2.8.1: Basic Functions

**Matrix methods**  
1.6: Optics

**Maxwell relations**  
1.8: Thermodynamics

**Maxwell's equations**  
7.10: Magnetic Fields Produced by Currents-  
Ampere's Law  
9.2: Maxwell's Equations and Electromagnetic  
Waves  
1.2: Electricity and Magnetism  
1.3: Relativity

**MCG**  
7.12: More Applications of Magnetism

**mechanical energy**  
4.2: Electric Potential Energy and Electrical  
Potential Difference

**Mechanical oscillation**  
1.4: Oscillations

**MEG**  
7.12: More Applications of Magnetism

**Meissner effect**  
5.11: Superconductors  
1.12: Solid State Physics

**mesons**  
1.14: Nuclear Physics  
1.15: Quantum Field Theory and Particle Physics

**Metallic bond**  
1.12: Solid State Physics

**metals**  
5.4: Model of Conduction in Metals

**Meter**  
1.4: Units and Standards  
7.9: Torque on a Current Loop - Motors and Meters

**metric system**  
1.4: Units and Standards

**Metric tensor**  
1.3: Relativity

**Michelson interferometer**  
11.17: The Michelson Interferometer

**Microscopes**  
10.15: Microscopes and Telescopes

**microshock sensitive**  
5.9: Electric Hazards and the Human Body

**microwaves**  
9.7: The Electromagnetic Spectrum

**Midpoint Formula**  
2.4: The Rectangular Coordinate Systems and  
Graphs

**Minkowski metric**  
1.3: Relativity

**mirrors**  
1.6: Optics

**missing order**  
11.8: Double-Slit Diffraction

**model**  
1.1: The Scientific Method and Physics

**moderate dose**  
12.8: Medical Applications and Biological Effects of  
Nuclear Radiation

**Molecular orbitals**  
1.10: Quantum Physics

**molecules**  
1.10: Quantum Physics

**Moment of Inertia**  
1.1: Mechanics

**momentum**  
1.1: Mechanics

**monochromatic**  
11.5: Young's Double-Slit Interference

**Monochromatic plane waves**  
1.2: Electricity and Magnetism

**monopoles**  
7.3: Ferromagnets and Electromagnets

**rotational emf**  
8.7: Motional Emf

**Motion around an equilibrium**  
1.1: Mechanics

**motor**  
7.9: Torque on a Current Loop - Motors and Meters

**moving charge**  
7.6: Force on a Moving Charge in a Magnetic Field-  
Examples and Applications

**Moving coordinate system**  
1.1: Mechanics

**MRI**  
7.12: More Applications of Magnetism

**Multipoles**  
1.2: Electricity and Magnetism

**mutual inductance**  
8.13: Inductance

**myopia**  
10.16: The Eye  
10.17: A\_Vision  
10.23: Eye\_and\_Ear\_Basic\_Concepts  
10.26: Vision\_Correction

## N

**N particle system**  
1.10: Quantum Physics

**natural exponential function**  
2.8.3: Exponential\_and\_Logarithmic\_Functions

**natural logarithm**  
2.8.3: Exponential\_and\_Logarithmic\_Functions

**near point**  
10.16: The Eye  
10.26: Vision\_Correction

**nearsightedness**  
10.16: The Eye  
10.26: Vision\_Correction

**Nernst's law**  
1.8: Thermodynamics

**nerve conduction**  
5.10: Nerve Conduction–Electrocardiograms

**net magnification**  
10.15: Microscopes and Telescopes

**neutrino**  
12.5: Nuclear Reactions

**neutron number**  
12.2: Properties of Nuclei

**neutrons**  
1.14: Nuclear Physics

**Newton's rings**  
11.13: Interference in Thin Films

**Newton's rings**  
11.14: Thin Film Interference

**Newtonian design**  
10.15: Microscopes and Telescopes

**Newtonian equations of motion**  
1.1: Mechanics

**Newtonian limit**  
1.3: Relativity

**Newtonian liquid**  
1.9: Transport Phenomena

**NMR**  
7.12: More Applications of Magnetism

**Nodal points**  
1.6: Optics

**nonohmic**  
5.7: Ohm's Law

**north magnetic pole**  
7.2: Magnets

**Nuclear Binding Energy**  
12.3: Nuclear Binding Energy

**nuclear fusion**  
12.7: Nuclear Fusion

**nuclear fusion reactor**  
12.7: Nuclear Fusion

**nuclear magnetic resonance**  
7.12: More Applications of Magnetism

**nucleons**  
12.2: Properties of Nuclei

**nucleosynthesis**  
12.7: Nuclear Fusion

**nuclide**  
12.2: Properties of Nuclei

**null measurements**  
6.7.6: Null Measurements

**null vector**  
2.9.5: Algebra of Vectors

**number e**  
2.8.3: Exponential\_and\_Logarithmic\_Functions

**Numerical Aperture (NA)**  
11.12: Circular Apertures and Resolution

## O

**object distance**  
10.9: Images Formed by Plane Mirrors

**object focus**  
10.11: Images Formed by Refraction

**objective**  
10.15: Microscopes and Telescopes

**odd function**  
2.8: Functions

**ohm**  
5.6: Resistivity and Resistance

## Ohm's law

- 5: Electric Current, Resistance, and Ohm's Law
- 5.7: Ohm's Law
- 6.7.2: Resistors in Series and Parallel

## ohmic

- 5.7: Ohm's Law

## ohmmeter

- 6.7.6: Null Measurements

## Oliquity

- 1.6: Optics

## One electron atom

- 1.10: Quantum Physics

## Operators

- 1.10: Quantum Physics

## opposite

- 2.9.2: Right Angle Triangle Trigonometry

## opposite side

- 2.9.2: Right Angle Triangle Trigonometry

## optic nerve

- 10.23: Eye\_and\_Ear\_Basic\_Concepts

## optical axis

- 10.10: Spherical Mirrors

## optical power

- 10.16: The Eye

## optically active

- 9.4: Polarization
- 11.4: Polarization

## Orbital equations

- 1.1: Mechanics

## order

- 11.6: Mathematics of Interference

## order of magnitude

- 1.1: The Scientific Method and Physics

## orthogonal vectors

- 2.9.3: Scalars and Vectors

## Oscar Had A Heap Of Apples

- 2.9.2: Right Angle Triangle Trigonometry

## otitis externa

- 10.23: Eye\_and\_Ear\_Basic\_Concepts

## ototoxic medications

- 10.23: Eye\_and\_Ear\_Basic\_Concepts

## P

### P violation

- 1.15: Quantum Field Theory and Particle Physics

## parallel

- 4.8: Capacitors in Series and Parallel
- 6.7.2: Resistors in Series and Parallel

## parallel circuit

- 6.2: Resistors in Series and Parallel

## parallel conductors

- 7.11: Magnetic Force between Two Parallel Conductors

## parallel lines

- 2.5: Finding Angle Measurements

## Parallel Plate Capacitor

- 4.7: Capacitors and Dielectrics

## parallel postulate

- 2.5: Finding Angle Measurements

## parallel vectors

- 2.9.3: Scalars and Vectors

## Paramagnetism

- 1.12: Solid State Physics

## paraxial approximation

- 10.10: Spherical Mirrors

## parent nucleus

- 12.5: Nuclear Reactions

## parity

- 1.10: Quantum Physics

## Particle physics

- 1.13: Theory of Groups

## Path integrals

- 1.15: Quantum Field Theory and Particle Physics

## Pauli principle

- 1.10: Quantum Physics

## Peltier effect

- 1.2: Electricity and Magnetism

## Pendulums

- 1.4: Oscillations

## Penning ionization

- 1.11: Plasma physics

## Perihelion shift

- 1.3: Relativity

## periodic function

- 2.8.2: Trigonometric Functions
- 2.9.1: Review of Trigonometry

## permeability of free space

- 7.10: Magnetic Fields Produced by Currents-Ampere's Law

## Perturbation theory

- 1.10: Quantum Physics

## phase space

- 1.1: Mechanics

## Phase transitions

- 1.8: Thermodynamics

## phase velocity

- 1.5: Waves

## Phonons

- 1.12: Solid State Physics

## photoconductor

- 3.9: Applications of Electrostatics

## Photon trajectory

- 1.3: Relativity

## Physical Constants

- 1.17.1: Physical Constants

## physical quantity

- 1.4: Units and Standards

## physics

- 1.1: The Scientific Method and Physics

## Planck

- 1.10: Quantum Physics

## plane mirror

- 10.9: Images Formed by Plane Mirrors

## Plane waves

- 9.3: Plane Electromagnetic Waves
- 1.5: Waves

## Plasma

- 1.11: Plasma physics

## Plasma transport

- 1.11: Plasma physics

## Plasma waves

- 1.11: Plasma physics

## Pockels effect

- 1.6: Optics

## point charge

- 3.5: Electric Field- Concept of a Field Revisited
- 4.5: Electrical Potential Due to a Point Charge

## Poisson/s equation

- 1.8: Thermodynamics

## Polar coordinates

- 1.1: Mechanics

## polar molecule

- 3.7: Electric Forces in Biology
- 4.7: Capacitors and Dielectrics

## polarization

- 3.3: Conductors and Insulators
- 9.4: Polarization
- 11.4: Polarization
- 1.2: Electricity and Magnetism
- 1.6: Optics

## polarized

- 3.8: Conductors and Electric Fields in Static Equilibrium
- 9.4: Polarization
- 11.4: Polarization

## polynomial function

- 2.8.1: Basic Functions

## positron

- 12.5: Nuclear Reactions

## positron emission tomography (PET)

- 12.8: Medical Applications and Biological Effects of Nuclear Radiation

## potential difference

- 4.2: Electric Potential Energy and Electrical Potential Difference
- 6.1: Electromotive Force
- 6.7.3: Electromotive Force - Terminal Voltage

## potential drop

- 6.1: Electromotive Force

## potentiometer

- 6.7.6: Null Measurements

## power function

- 2.8.1: Basic Functions

## Powers of 10

- 1.17.2: Prefixes for Powers of 10

## Poynting vector

- 9.5: Energy Carried by Electromagnetic Waves
- 1.2: Electricity and Magnetism

## Prandtl number

- 1.9: Transport Phenomena

## presbycusis

- 10.23: Eye\_and\_Ear\_Basic\_Concepts

## presbyopia

- 10.17: A\_Vision
- 10.23: Eye\_and\_Ear\_Basic\_Concepts
- 10.25: Physics\_of\_the\_Eye

## Pressure

- 1.7: Statistical Physics

## principal axes

- 1.1: Mechanics

## principal maximum

- 11.9: Multiple-Slit Interference

## Principal plane

- 1.6: Optics

## Principle of equivalence

- 1.3: Relativity

## prisms

- 1.6: Optics

## proton

- 3.2: Static Electricity and Charge - Conservation of Charge

## Proton proton chain

- 1.16: Astrophysics

## protons

- 1.14: Nuclear Physics

## pupil

- 10.17: A\_Vision
- 10.23: Eye\_and\_Ear\_Basic\_Concepts

## pyramid

- 2.9.2: Right Angle Triangle Trigonometry

## pythagorean identities, trigonometric identities

- 2.9.1: Review of Trigonometry



## Pythagorean Theorem

2.4: The Rectangular Coordinate Systems and Graphs

## Q

### Q value

12.7: Nuclear Fusion

### quadratic formula

2.7.3: Solving Quadratic Equations

### quadratic function

2.8.1: Basic Functions

### Quadrupole

1.2: Electricity and Magnetism

### Quality (mechanical oscillator)

1.4: Oscillations

### Quantum chromodynamics

1.15: Quantum Field Theory and Particle Physics

### Quantum fields

1.15: Quantum Field Theory and Particle Physics

### quantum gravity

1.15: Quantum Field Theory and Particle Physics

### Quantum statistics

1.10: Quantum Physics

### Quarks

1.15: Quantum Field Theory and Particle Physics

## R

### radar

9.7: The Electromagnetic Spectrum

### Radians

2.8.2: Trigonometric Functions

2.9.1: Review of Trigonometry

### Radiation dose

1.14: Nuclear Physics

### radiation dose unit (rad)

12.8: Medical Applications and Biological Effects of Nuclear Radiation

### Radiation dosimetry

1.14: Nuclear Physics

### radiation pressure

9.6: Momentum and Radiation Pressure

1.2: Electricity and Magnetism

### Radiative recombination

1.11: Plasma physics

### radio tower

2.9.2: Right Angle Triangle Trigonometry

### radio waves

9.7: The Electromagnetic Spectrum

### radioactive dating

12.4: Radioactive Decay

### Radioactive decay

1.14: Nuclear Physics

### radioactive decay law

12.4: Radioactive Decay

### radioactive tags

12.8: Medical Applications and Biological Effects of Nuclear Radiation

### Radioactivity

12.4: Radioactive Decay

### radiopharmaceutical

12.8: Medical Applications and Biological Effects of Nuclear Radiation

### radius of a nucleus

12.2: Properties of Nuclei

### Radius of curvatur

1.6: Optics

### range

2.8: Functions

### rational function

2.8.1: Basic Functions

### ray

10.3: The Propagation of Light

### ray tracing

10.12: Thin Lenses

### Rayleigh criterion

11.12: Circular Apertures and Resolution

### RC circuit

6.6: RC Circuits

6.7.7: DC Circuits Containing Resistors and Capacitors

### RC circuits

6.7.7: DC Circuits Containing Resistors and Capacitors

### Reactance

8.3: Reactance, Inductive and Capacitive

### real image

10.9: Images Formed by Plane Mirrors

### Reciprical lattice vector

1.12: Solid State Physics

### Red and blue shift

1.3: Relativity

### Reducible representation

1.13: Theory of Groups

### reflected light that is completely polarized

11.4: Polarization

### reflection

1.6: Optics

### Refraciton

1.6: Optics

### refraction

10.5: Refraction

10.11: Images Formed by Refraction

### Refractive index

1.5: Waves

1.6: Optics

### relative biological effectiveness (RBE)

12.8: Medical Applications and Biological Effects of Nuclear Radiation

### Relative motion

1.1: Mechanics

### Renormalization

1.15: Quantum Field Theory and Particle Physics

### Representations

1.13: Theory of Groups

### resisitivity

5.5: Resistance and Resistivity

### resistance

5.5: Resistance and Resistivity

5.6: Resistivity and Resistance

6.7.2: Resistors in Series and Parallel

### resistivity

5.6: Resistivity and Resistance

### Resistor

6.7.2: Resistors in Series and Parallel

1.2: Electricity and Magnetism

### Resistors in Parallel

6.2: Resistors in Series and Parallel

6.7.2: Resistors in Series and Parallel

### resistors in series

6.2: Resistors in Series and Parallel

6.7.2: Resistors in Series and Parallel

### resolution

11.12: Circular Apertures and Resolution

1.6: Optics

### Resonance curve

1.4: Oscillations

### Resonance frequency

1.4: Oscillations

### resultant

2.9.3: Scalars and Vectors

### resultant vector

2.9.3: Scalars and Vectors

### Retarders

1.6: Optics

### retina

10.17: A\_Vision

10.23: Eye\_and\_Ear\_Basic\_Concepts

### retinex

10.27: Color\_and\_Color\_Vision

### retinex theory of color vision

10.27: Color\_and\_Color\_Vision

### Retroreflectors

10.4: The Law of Reflection

### Reversible cycle

1.8: Thermodynamics

### Reynolds Number

1.9: Transport Phenomena

### rhodopsin

10.17: A\_Vision

### Ricci tensor

1.3: Relativity

### Riemann geometry

1.3: Relativity

### Riemann tensor

1.3: Relativity

### right hand rule

7.5: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

7.10: Magnetic Fields Produced by Currents- Ampere's Law

### right triangle

2.9.2: Right Angle Triangle Trigonometry

### right triangle trigonometry, applied

### problems

2.9.2: Right Angle Triangle Trigonometry

### RL circuits

8.2: RL Circuits

### RLC series

8.4: RLC Series AC Circuits

### rms current

6.8: Alternating Current versus Direct Current

### rms voltage

6.8: Alternating Current versus Direct Current

### rod

10.17: A\_Vision

### rods and cones

10.27: Color\_and\_Color\_Vision

### roentgen equivalent man (rem)

12.8: Medical Applications and Biological Effects of Nuclear Radiation

### root function

2.8.1: Basic Functions

## S

### S matrix

1.15: Quantum Field Theory and Particle Physics

### Scalar

4.3: Electric Potential in a Uniform Electric Field

### scalar components

2.9.4: Coordinate Systems and Components of a Vector

scalar equation  
2.9.3: Scalars and Vectors

scalar field  
1.15: Quantum Field Theory and Particle Physics

Scalar product  
2.9.6: Products of Vectors

Scattering  
1.14: Nuclear Physics

schematic  
5.3: Electrical Current

Schrödinger picture  
1.15: Quantum Field Theory and Particle Physics

Schrodinger's Equation  
1.10: Quantum Physics

Schur's lemma  
1.13: Theory of Groups

Schwartzchild metric  
1.3: Relativity

Schwartzschild  
1.16: Astrophysics

sclera  
10.23: Eye\_and\_Ear\_Basic\_Concepts

screening  
3.7: Electric Forces in Biology

secant  
2.9.1: Review of Trigonometry  
2.9.2: Right Angle Triangle Trigonometry

second  
1.4: Units and Standards

second focus or image focus  
10.11: Images Formed by Refraction

second law of thermodynamics  
1.8: Thermodynamics

secondary maximum  
11.9: Multiple-Slit Interference

Selection rules  
1.10: Quantum Physics

Self organization  
1.9: Transport Phenomena

Semiconductors  
1.12: Solid State Physics

semipermeable  
5.10: Nerve Conduction–Electrocardiograms

sensorineural hearing loss  
10.23: Eye\_and\_Ear\_Basic\_Concepts

Series  
4.8: Capacitors in Series and Parallel  
6.7.2: Resistors in Series and Parallel

series circuit  
6.2: Resistors in Series and Parallel

shell model  
1.14: Nuclear Physics

shock hazard  
5.9: Electric Hazards and the Human Body  
6.4: Household Wiring and Electrical Safety  
8.12: Electrical Safety - Systems and Devices

short circuit  
5.9: Electric Hazards and the Human Body

Shunt resistance  
6.7.5: DC Voltmeters and Ammeters

SI inits  
1.16: Astrophysics

SI Units  
1.4: Units and Standards  
1.17: Physical Constants, Units, Del Operator

sievert (Sv)  
12.8: Medical Applications and Biological Effects of Nuclear Radiation

Simple Magnifer  
10.13: The Simple Magnifier

simplified theory of color vision  
10.27: Color\_and\_Color\_Vision

sine  
2.9.1: Review of Trigonometry  
2.9.2: Right Angle Triangle Trigonometry

slope  
2.8.1: Basic Functions

Snell's law of refraction  
10.5: Refraction  
10.8: Huygens's Principle

Snellen chart  
10.23: Eye\_and\_Ear\_Basic\_Concepts

SO(3)  
1.13: Theory of Groups

SohCahToa  
2.9.2: Right Angle Triangle Trigonometry

solenoid  
7.10: Magnetic Fields Produced by Currents-Ampere's Law

south magnetic pole  
7.2: Magnets

Special relativity  
1.3: Relativity

Spectra line broadening  
1.11: Plasma physics

spectroscopic dispersion  
11.10: Diffraction Gratings

Spherical aberration  
1.6: Optics

spherical aberration  
10.10: Spherical Mirrors

Spherical harmonics  
1.13: Theory of Groups

spherical waves  
1.5: Waves

spin  
1.10: Quantum Physics

Spin 0 particles  
1.15: Quantum Field Theory and Particle Physics

Spin 1/2 fields  
1.15: Quantum Field Theory and Particle Physics

Spin 1/2 particles  
1.15: Quantum Field Theory and Particle Physics

Spin waves  
1.12: Solid State Physics

spinors  
1.10: Quantum Physics

Spontaneous fission  
1.14: Nuclear Physics

spring  
1.4: Oscillations

SQUID  
5.11: Superconductors

Standard Model  
1.15: Quantum Field Theory and Particle Physics

Stark broadening  
1.11: Plasma physics

stars  
1.16: Astrophysics

state function  
1.8: Thermodynamics

static electricity  
3.1: Introduction

Stationary phase method  
1.5: Waves

Statistical mechanics  
1.8: Thermodynamics

Steiner's theorem  
1.1: Mechanics

Stellar atmospheres  
1.16: Astrophysics

Stiffness (oscillator)  
1.4: Oscillations

stimulated emission  
1.11: Plasma physics

Stirling cycle  
1.8: Thermodynamics

Stokes parameters  
1.6: Optics

Strong nuclear force  
12.2: Properties of Nuclei

Strouhal number  
1.9: Transport Phenomena

Subgroups  
1.13: Theory of Groups

Superconductivity  
1.12: Solid State Physics

superconductors  
5.11: Superconductors

superior colliculus  
10.17: A\_Vision

superposition  
11.2: Wave Interference

suprachiasmatic nucleus  
10.17: A\_Vision

symmetry about the origin  
2.8: Functions

Symmetry breaking  
1.15: Quantum Field Theory and Particle Physics

## T

table of values  
2.8: Functions

tangent  
2.9.1: Review of Trigonometry  
2.9.2: Right Angle Triangle Trigonometry

TE  
1.5: Waves

Telescopes  
10.15: Microscopes and Telescopes

TEM  
1.5: Waves

terminal voltage  
6.1: Electromotive Force  
6.7.3: Electromotive Force - Terminal Voltage

tesla  
7.5: Magnetic Field Strength- Force on a Moving Charge in a Magnetic Field

test charge  
3.5: Electric Field- Concept of a Field Revisited

Thales  
2.9.2: Right Angle Triangle Trigonometry

the component form of a vector  
2.9.4: Coordinate Systems and Components of a Vector

the Dot Product  
2.9.6: Products of Vectors

The Scalar Product  
2.9.6: Products of Vectors

theory  
1.1: The Scientific Method and Physics

**thermal agitation**

9.7: The Electromagnetic Spectrum

**thermal hazard**

5.9: Electric Hazards and the Human Body  
6.4: Household Wiring and Electrical Safety  
8.12: Electrical Safety - Systems and Devices

**Thermodynamic potential**

1.8: Thermodynamics

**thermodynamics**

1.8: Thermodynamics

**Thermoionic voltage**

1.2: Electricity and Magnetism

**thin film interference**

11.14: Thin Film Interference

**Throttle coefficient**

1.8: Thermodynamics

**Time dependent perturbation theory**

1.10: Quantum Physics

**Time independent perturbation theory**

1.10: Quantum Physics

**tinnitus**

10.23: Eye\_and\_Ear\_Basic\_Concepts

**TM**

1.5: Waves

**tonic activity**

10.17: A\_Vision

**Torque**

7.9: Torque on a Current Loop - Motors and Meters

**Total Internal Reflection**

10.6: Total Internal Reflection

**transcendental function**

2.8.1: Basic Functions

**transformation of a function**

2.8.1: Basic Functions

**Transformer**

8.11: Transformers

**transformer equation**

8.11: Transformers

**Transformers, couples**

1.4: Oscillations

**Transmission**

1.6: Optics

**transmission hologram**

11.16: Holography

**Transport phenomena**

1.9: Transport Phenomena

**transuranic element**

12.5: Nuclear Reactions

**transversal**

2.5: Finding Angle Measurements

**transverse wave**

9.4: Polarization

**transverse waves**

1.5: Waves

**tree, how tall**

2.9.2: Right Angle Triangle Trigonometry

**trigonometric functions**

2.8.2: Trigonometric Functions  
2.9.1: Review of Trigonometry  
2.9.2: Right Angle Triangle Trigonometry

**trigonometric identity**

2.8.2: Trigonometric Functions  
2.9.1: Review of Trigonometry

**tube length**

10.15: Microscopes and Telescopes

**Tunnel effect**

1.10: Quantum Physics

**Turbulence**

1.9: Transport Phenomena

**tympanic membrane**

10.23: Eye\_and\_Ear\_Basic\_Concepts

**type I superconductor**

1.12: Solid State Physics

**type II superconductor**

1.12: Solid State Physics

## U

**ultraviolet radiation**

9.7: The Electromagnetic Spectrum

**Uncertainty principal**

1.10: Quantum Physics

**Unification**

1.15: Quantum Field Theory and Particle Physics

**Uniform Electric Field**

4.3: Electric Potential in a Uniform Electric Field

**unit circle**

2.8.2: Trigonometric Functions  
2.9.1: Review of Trigonometry  
2.9.2: Right Angle Triangle Trigonometry

**Unit element**

1.13: Theory of Groups

**Unit vector**

2.9.3: Scalars and Vectors

**units**

1.4: Units and Standards

**unpolarized**

9.4: Polarization  
11.4: Polarization

## V

**Van de Graaff generator**

3.9: Applications of Electrostatics

**Van der Pol equation**

1.5: Waves

**Van der Waals bond**

1.12: Solid State Physics

**Van der Waals equation of state**

1.7: Statistical Physics

**Variational Calculus**

1.1: Mechanics

**vector**

3.6: Electric Field Lines  
4.3: Electric Potential in a Uniform Electric Field

**Vector Addition**

3.6: Electric Field Lines

**vector components**

2.9.4: Coordinate Systems and Components of a Vector

**vector equation**

2.9.3: Scalars and Vectors

**vectors**

2.9.3: Scalars and Vectors

**vertex**

10.10: Spherical Mirrors

**vertical line test**

2.8: Functions

**vertically polarized**

9.4: Polarization  
11.4: Polarization

**vertigo**

10.23: Eye\_and\_Ear\_Basic\_Concepts

**vestibulocochlear nerve**

10.23: Eye\_and\_Ear\_Basic\_Concepts

**Virial theorem**

1.1: Mechanics

**virtual image**

10.9: Images Formed by Plane Mirrors

**visible light**

9.7: The Electromagnetic Spectrum

**vision**

10.17: A\_Vision

**Voigt profile**

1.11: Plasma physics

**voltage**

4.2: Electric Potential Energy and Electrical Potential Difference  
4.4: Electric Potential and Potential Difference

**voltage drop**

6.7.2: Resistors in Series and Parallel

**voltmeter**

6.5: Electrical Measuring Instruments  
6.7.5: DC Voltmeters and Ammeters

**Von Karman**

1.9: Transport Phenomena

**Vortex**

1.9: Transport Phenomena

**Vortex state**

1.12: Solid State Physics

**Vorticity**

1.9: Transport Phenomena

## W

**Wave equation**

1.5: Waves

**Wave functions**

1.10: Quantum Physics

**wave optics**

10.8: Huygens's Principle

**Waveguide**

1.5: Waves

**Waveplates**

1.6: Optics

**Waves in long conductors**

1.4: Oscillations

**Wheatstone bridge**

6.7.6: Null Measurements

**Wigner coefficients**

1.13: Theory of Groups

## X

**xerography**

3.9: Applications of Electrostatics

## Y

**Young double slit**

11.5: Young's Double-Slit Interference

**Yukawa potential**

1.14: Nuclear Physics

## Z

**Zeeman effect**

1.10: Quantum Physics

**zeros of a function**

2.8: Functions

**zeroth law of thermodynamics**

1.8: Thermodynamics