**Symbols used to denote physical quantities related to space and time:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/ Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| r | Radius, the radius of curvature | Meter | Functions as both scalar and vector |
| s | Displacement | Meter | Vector |
| d | Distance | Radian | Scalar |
| θ, φ | Angular displacement, angular separation, the rotational angle | Meter | Functions as both scalar and vector |
| x, y, z | Cartesian coordinates | Unitless | Scalar |
| î, ĵ, k̂ | Cartesian unit vectors | Unitless | Vector |
| r, θ, φ | Spherical coordinates | Meter/Radian | Scalar |
| r̂, θ̂, φ̂ | Spherical unit vectors | Unitless | Vector |
| r, θ, z | Cylindrical coordinates | Meter/Radian | Scalar |
| r̂, θ̂, ẑ | Cylindrical unit vectors | Unitless | Vector |
| n̂ | Normal unit vector | Unitless | Vector |
| t̂ | Tangential unit vector | Unitless | Vector |
| h | Height, depth | Meter | Scalar |
| ℓ, L | Length | Meter | Scalar |
| t | Time | Second | Scalar |
| D | Diameter | Meter | Scalar |
| C | Circumference | Meter | Scalar |
| A, A | Area | Square meter | Functions as both scalar and vector |
| V | Volume | Cubic meter | Scalar |
| t | Time, duration | Second | Scalar |
| T | Periodic time | Second | Scalar |
| τ | Time Constant | Second | Scalar |
| f | Frequency | Hertz | Scalar |
| ω | Angular frequency | Radian per second | Scalar |

**Symbols used to denote physical quantities related to Waves and Optics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| M | Magnification | Unitless | Scalar |
| f | Focal length | Meter | Scalar |
| n | Index of refraction | Unitless | Scalar |
| L | Level | Decibel, decineper | Scalar |
| I | Intensity | Watt per square meter | Scalar |
| v, c | Wave speed | Meter per second | Scalar |
| λ | Wavelength | Meter | Scalar |
| P | Power of a lens | Dioptre | Scalar |

**Symbols used to denote physical quantities related to Mechanics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/ Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| v | Velocity, speed | meter per second | Functions as vector |
| a | Acceleration | meter per second squared | Functions as and vector |
| ac | Centripetal/Centrifugal acceleration | meter per second squared | Functions as vector |
| g | Acceleration due to gravity | meter per second squared | Functions vector |
| m | Mass | Kilogram | Scalar |
| F | Force | Newton | Functions as vector |
| Fg/W | Force due to gravity/Weight | Newton | Functions as vector |
| Fn, N | Normal force, normal | Newton | Functions as vector |
| Ff | Force of friction | Newton | Functions as vector |
| µ | Coefficient of friction | Unitless | Scalar |
| p | Momentum | Kilogram meter per second | Functions as vector |
| J | Impulse | Newton second | Functions as vector |
| E | Energy | Joule | Scalar |
| K | Kinetic energy | Joule | Scalar |
| U | Potential energy | Joule | Scalar |
| Vg | Gravitational potential | Joule per kilogram | Scalar |
| η | Efficiency | Unitless | Scalar |
| P | Power | Watt | Scalar |
| ω | Rotational speed, rotational velocity | Radian per second | Functions as vector |
| α | Rotational acceleration | Radian per second squared | Functions as vector |
| τ | Torque | Newton meter | Functions as vector |
| I | Moment of inertia | Kilogram meter squared | Scalar |
| L | Angular momentum | Kilogram meter squared per second | Functions as vector |
| H | Angular impulse | Newton meter second | Functions as vector |
| k | Spring constant | Newton per meter | Scalar |
| p | Pressure | Pascal | Scalar |
| σ | Stress | Pascal | Scalar |
| τ | Shear stress | Pascal | Scalar |
| ρ | Density, volume mass density | Kilogram per cubic meter | Scalar |
| σ | Area mass density | Kilogram per square meter | Scalar |
| λ | Linear mass density | Kilogram per meter | Scalar |
| FB, B | Buoyancy | Newton | Functions as vector |
| qm | Mass flow rate | Kilogram per second | Scalar |
| qV | Volume flow rate | Cubic meter per second | Scalar |
| FD, R | Drag or air resistance | Newton | Functions as vector |
| CD | Drag coefficient | Unitless | Scalar |
| η | Viscosi | Pascal-second | Scalar |
| ν | Kinematic viscosity | Square meter per second | Scalar |
| Ma | Mach number | Unitless | Scalar |
| Re | Reynolds number | Unitless | Scalar |
| Fr | Froude number | Unitless | Scalar |
| E | Young’s modulus of elasticity | Pascal | Scalar |
| G | Shear modulus of rigidity | Pascal | Scalar |
| K | Bulk modulus of compression | Pascal | Scalar |
| ε | Linear strain | Unitless | Scalar |
| γ | Shear strain | Unitless | Scalar |
| θ | Volume strain | Unitless | Scalar |
| γ | Surface tension | Newton per meter | Scalar |

**Symbols used in modern physics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| D | Dose/ dose absorbed | gray | Scalar |
|  | Half-life | Second | Scalar |
| ψ(r,t), ψ(r)φ(t) | Wave function | Unitless | Functions as vector |
| Φ | Work function | Joule | Scalar |
| H | Effective dose | Sievert | Scalar |
| Γ | Lorentz factor/Lorentz gamma | Unitless | Scalar |

**Symbols used to denote physical quantities related to thermal physics:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| COP | Coefficient of performance | Unitless | Scalar |
| w | Ways, number of identical microstates | Unitless | Scalar |
| S | Entropy | Joule per kelvin | Scalar |
| U | Internal energy | Joule | Scalar |
| ε | Emissivity | Unitless | Scalar |
| k | Thermal conductivity | Watt per meter Kelvin | Scalar |
| P | Heat flow rate | Watt | Scalar |
| N | Number of particles | Unitless | Scalar |
| n | Amount of substance | Mole | Scalar |
| L | Latent heat/specific latent heat | Joule per kilogram | Scalar |
| c | Specific heat capacity | Joule per kilogram Kelvin | Scalar |
| Q | Heat | Joule | Scalar |
| Β | Volume expansivity, coefficient of volume thermal expansion | Inverse kelvin | Scalar |
| α | Linear expansivity, coefficient of thermal expansion | Inverse kelvin | Scalar |
| T | Temperature | Kelvin | Scalar |

**Symbols used to denote physical quantities related to Electricity and Magnetism:**

|  |  |  |  |
| --- | --- | --- | --- |
| **Symbol** | **Quantity/Coefficients** | **S.I Unit** | **Physical Quantity (Scalar/Vector)** |
| S | Poynting vector, intensity | Watt per square meter | Functions as vector |
| η | Energy density | Joule per cubic meter | Scalar |
| n | Turns per unit length | Inverse meter | Scalar |
| N | Number of turns | Unitless | Scalar |
| ΦB | Magnetic flux | Weber | Vector |
| B | Magnetic field | Tesla | Functions as vector |
| FB | Magnetic force | Newton | Functions as vector |
| σ | Conductivity | Siemens per meter | Scalar |
| G | Conductance | Siemens | Scalar |
| ρ | Resistivity | Ohm-meter | Scalar |
| R, r | Electric resistance/internal resistance | Ohm | Scalar |
| I | Electric current | Ampere | Scalar |
| ϵ | Dielectric constant | Unitless | scalar |
| C | Capacitance | Farad | Scalar |
| ℰ | Electromotive force (emf) | Volt | Scalar |
| V | voltage, electric potential | Volt | Scalar |
| UE | Electric potential energy | Joule | Scalar |
| ΦE | Electric flux | Newton meter squared per coulomb | Functions as vector |
| E | Electric field | Newton per coulomb/volt per meter | Functions as vector |
| FE | Electrostatic force | Newton | Functions as vector |
| λ | Linear charge density | Kilogram per meter | Scalar |
| σ | Area charge density | Kilogram per square meter | Scalar |
| ρ | Volume charge density | Kilogram per cubic meter | Scalar |
| q, Q | Electric charge | Coulomb | Scalar |