



Optical power

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For the power of light, see [Radiant flux](#) and [Luminous flux](#).

For magnifying power, see [Magnification](#).

Optical power (also referred to as dioptric power, refractive power, focusing power, or convergence power) is the degree to which a [lens](#), [mirror](#), or other optical system converges or diverges light. It is equal to the [reciprocal](#) of the [focal length](#) of the device: $P = 1/f$.^[1] High optical power corresponds to short focal length. The SI unit for optical power is the [inverse metre](#) (m⁻¹), which is commonly called the [dioptre](#).

[Converging lenses](#) have positive optical power, while [diverging lenses](#) have negative power. When a lens is immersed in a [refractive medium](#), its optical power and focal length change.

For two or more [thin lenses](#) close together, the optical power of the combined lenses is approximately equal to the sum of the optical powers of each lens: $P = P_1 + P_2$. Similarly, the optical power of a single lens is roughly equal to the sum of the powers of each surface. These approximations are commonly used in [optometry](#).

An [eye](#) that has too much or too little refractive power to [focus](#) light onto the [retina](#) has a [refractive error](#). A [myopic](#) eye has too much power so light is focused in front of the retina. Conversely, a [hyperopic](#) eye has too little power so when the eye is relaxed, light is focused behind the retina. An eye with a refractive power in one [meridian](#) that is different from the refractive power of the other meridians has [astigmatism](#). [Anisometropia](#) is the condition in which one eye has a different refractive power than the other eye.

See also [[edit](#)]

- [Vergence](#)
- [Lens clock](#)
- [Vertometer](#)
- [Lensmeter](#)
- [Plate scale](#)

References [[edit](#)]

1. [^] Greivenkamp, John E. (2004). *Field Guide to Geometrical Optics*. SPIE Field Guides vol. FG01. SPIE. p. 7. ISBN 0-8194-5294-7.



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