

Lumen Calculator

Estimates required lumens, target lux, and an initial fixture count from room area, target illuminance, coefficient of utilization, light loss factor, and fixture lumens.

Generated October 10, 2026

<https://www.elecatrix.com/lighting/lumen-calculator/>

Inputs

Input	Value	Unit
Room area	300	sq ft
Target illuminance	30	fc
Coefficient of utilization	0.7	CU
Light loss factor	0.8	LLF
Lumens per fixture	4000	lm

Results

Result	Value	Unit
Required lumens	16071.4286	lm
Estimated fixture count	5	fixtures
Target illuminance	322.9172	lux
CU x LLF factor	0.56	x

Calculation details

Detail	Value	Unit
Calculation basis	Required lumens are target footcandles times area, adjusted by coefficient of utilization and light loss factor.	
Design boundary	Lighting estimate only; no photometric file, glare, spacing criterion, controls, emergency lighting, energy code, or final lighting design is verified.	

Formulas

$$\text{Required lumens} = (\text{Area} \times \text{Target illuminance (fc)} / \text{CU} \times \text{LLF})$$

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$$\text{Fixture count} = \begin{cases} \lceil \text{Required lumens} / \text{Lumens per fixture} \rceil, & \text{if fixture lumens} > 0 \\ 0, & \text{if fixture lumens} = 0 \end{cases}$$

$$\text{Target illuminance (lux)} = \text{Target illuminance (fc)} \times 10.76390625$$

Warnings and limitations

This lumen estimate is for early lighting planning. It does not replace fixture photometrics, spacing checks, glare review, energy-code review, or project lighting design.