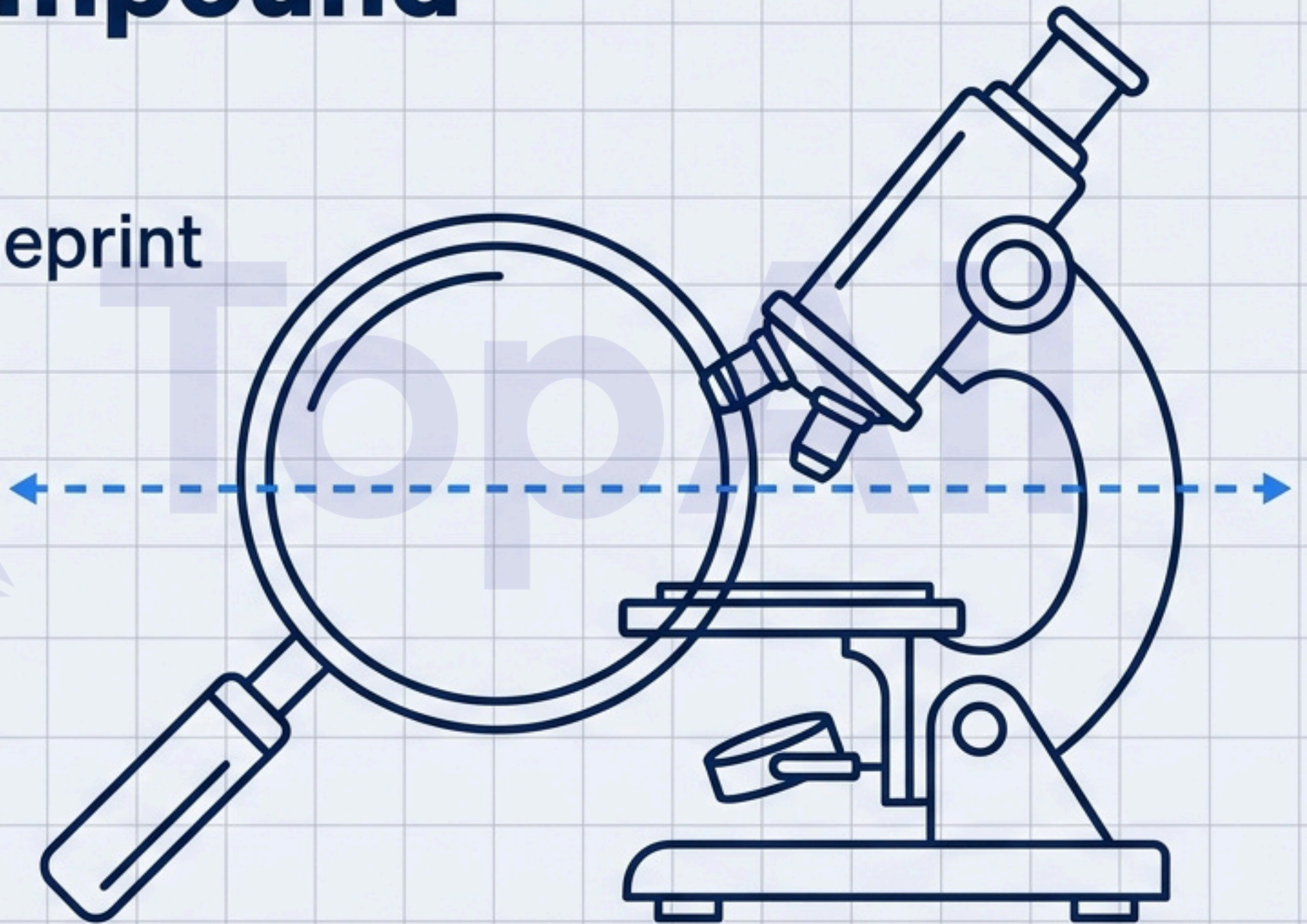


Simple and Compound Microscope

JEE Physics Revision Blueprint

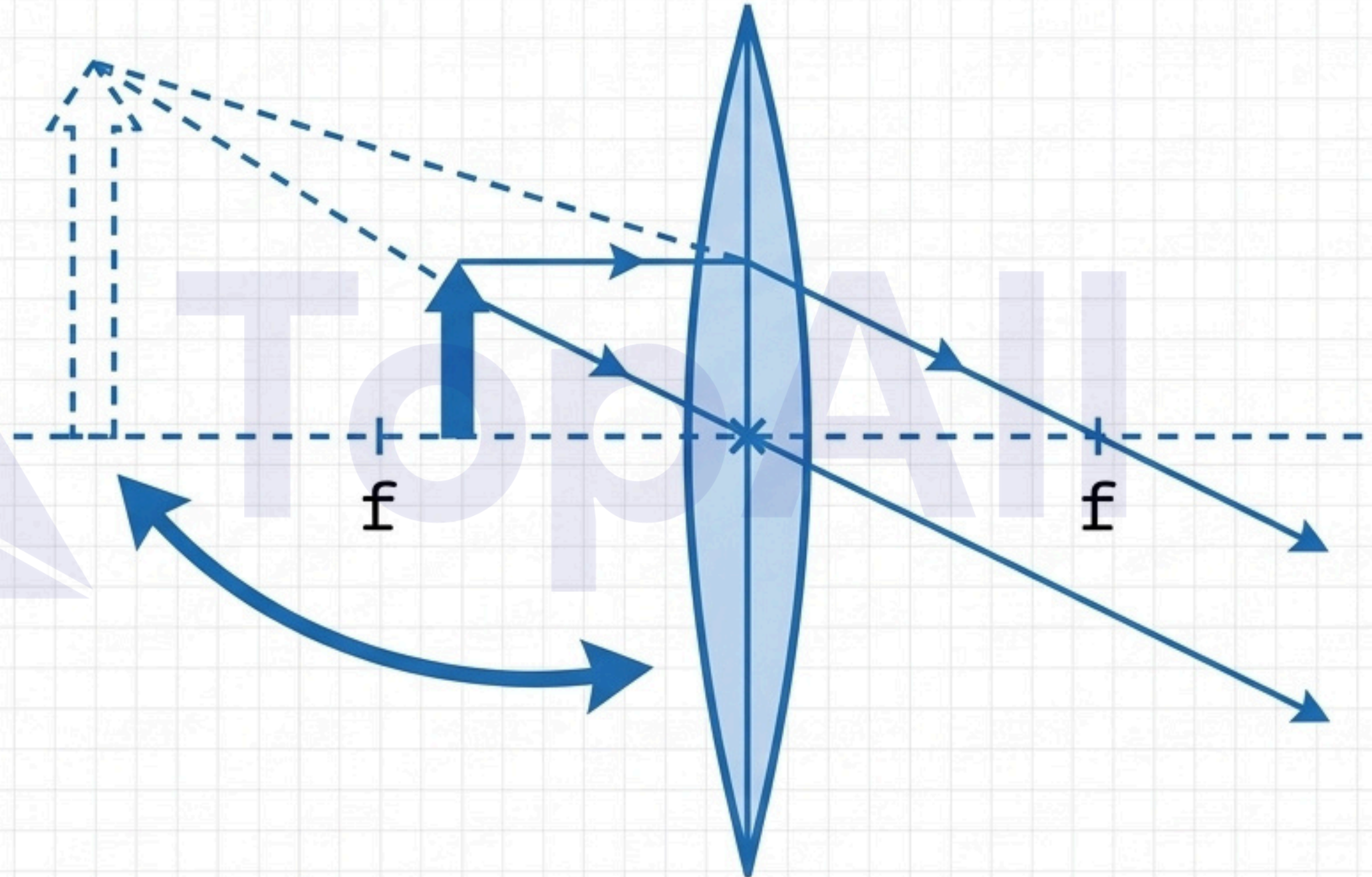


The Simple Microscope: First Principles

A simple microscope is simply a converging lens of small focal length.

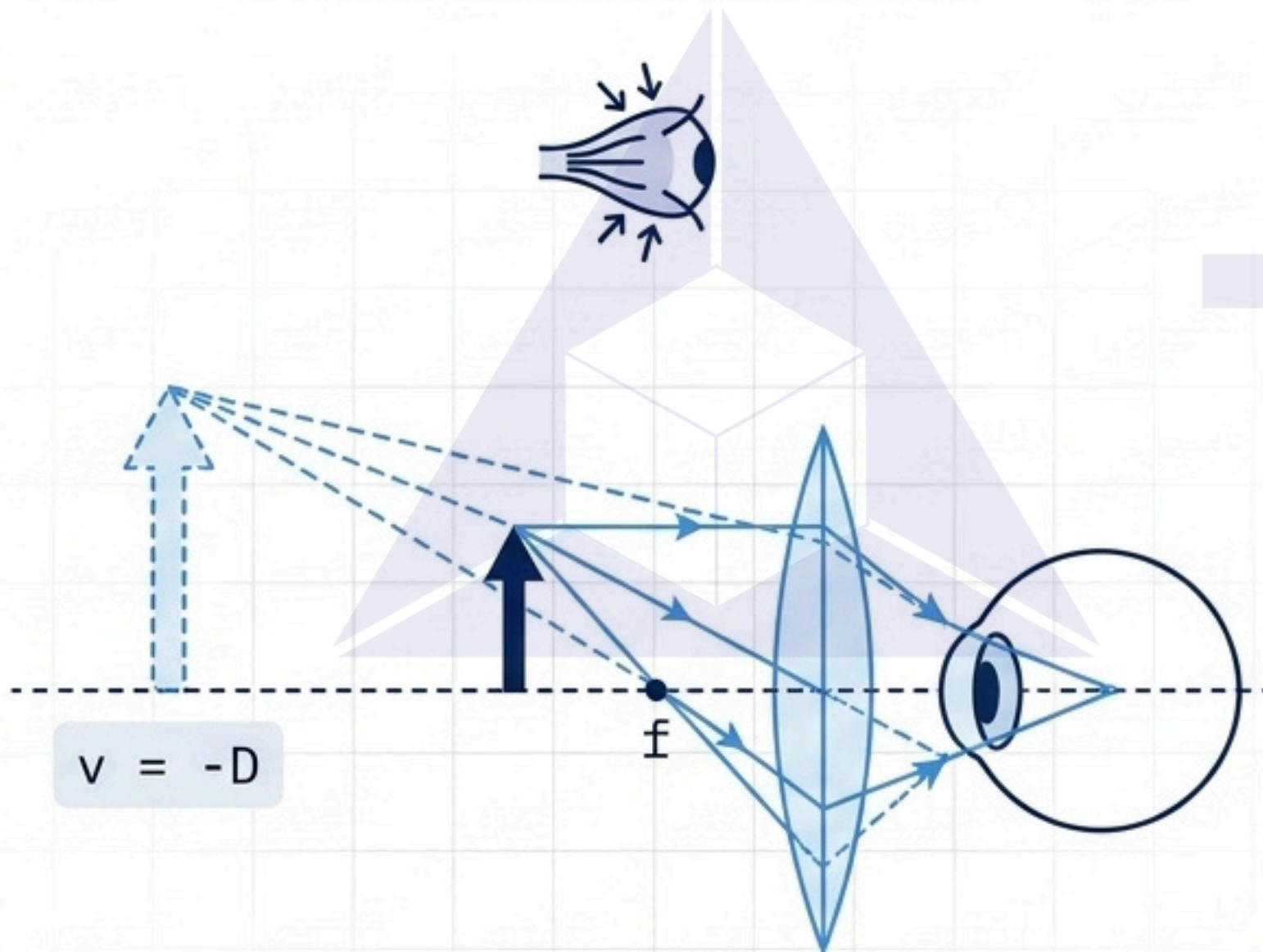
Image Properties

- 1. Virtual
- 2. Erect
- 3. Magnified

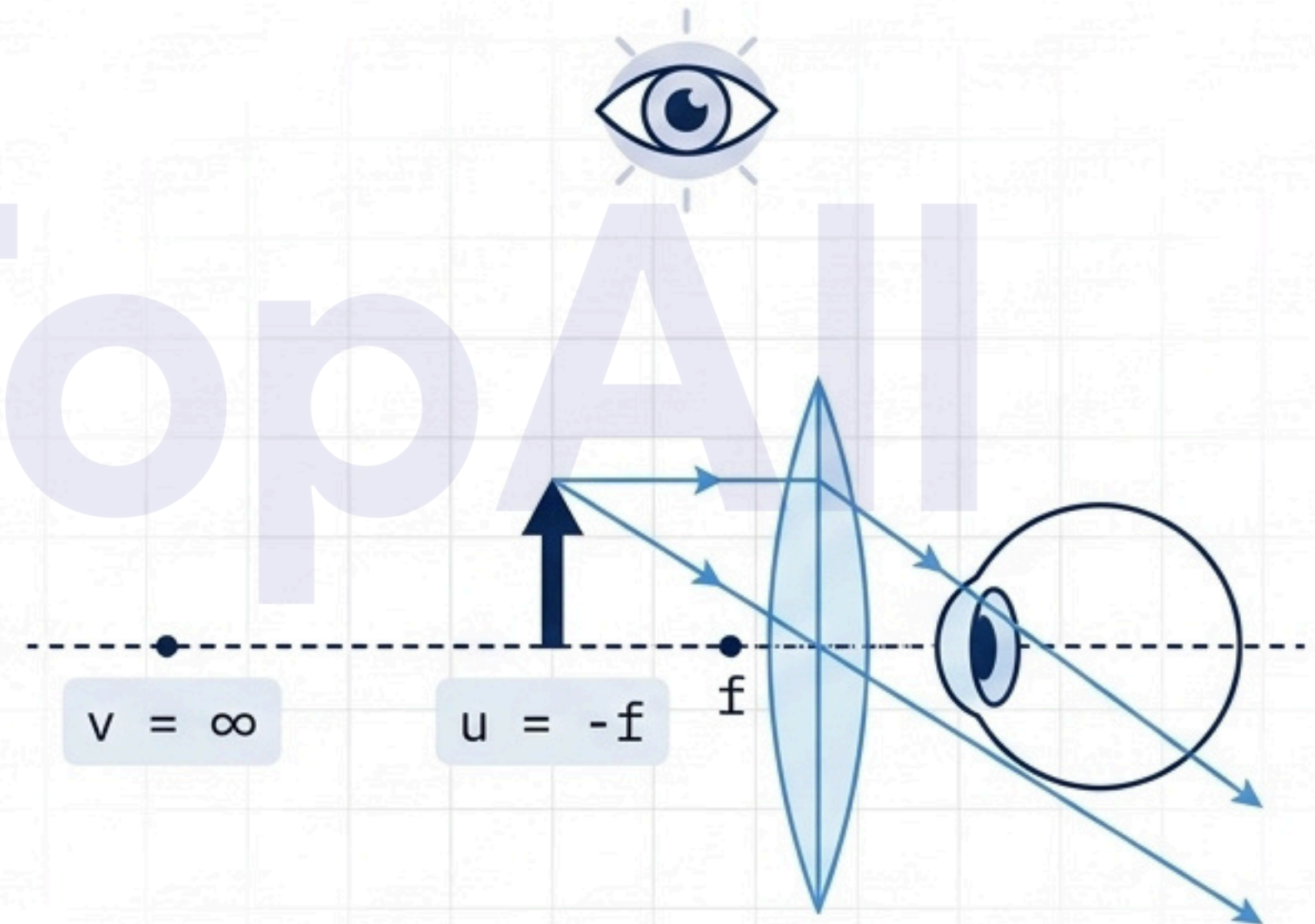


Two Modes of Vision: Strain vs. Relaxation

Maximum Strain



Relaxed Eye





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$$E=mc^2$$



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Formula Bank: Simple Microscope

Image at Near Point


$$m = 1 + \frac{D}{f}$$

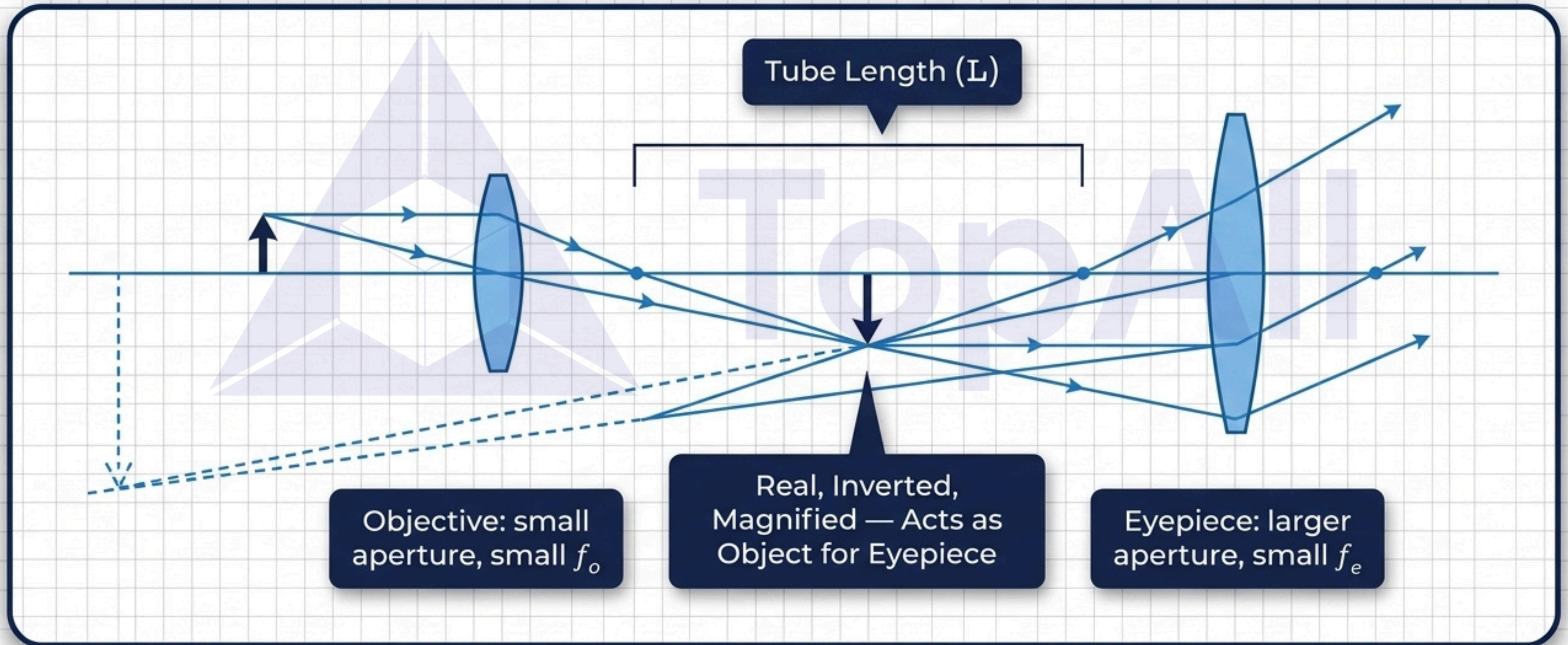
Image at Infinity

$$m = \frac{D}{f}$$

$$D \approx 25 \text{ cm}$$

(Least distance of distinct vision)

The Compound Microscope: Compounding Magnification

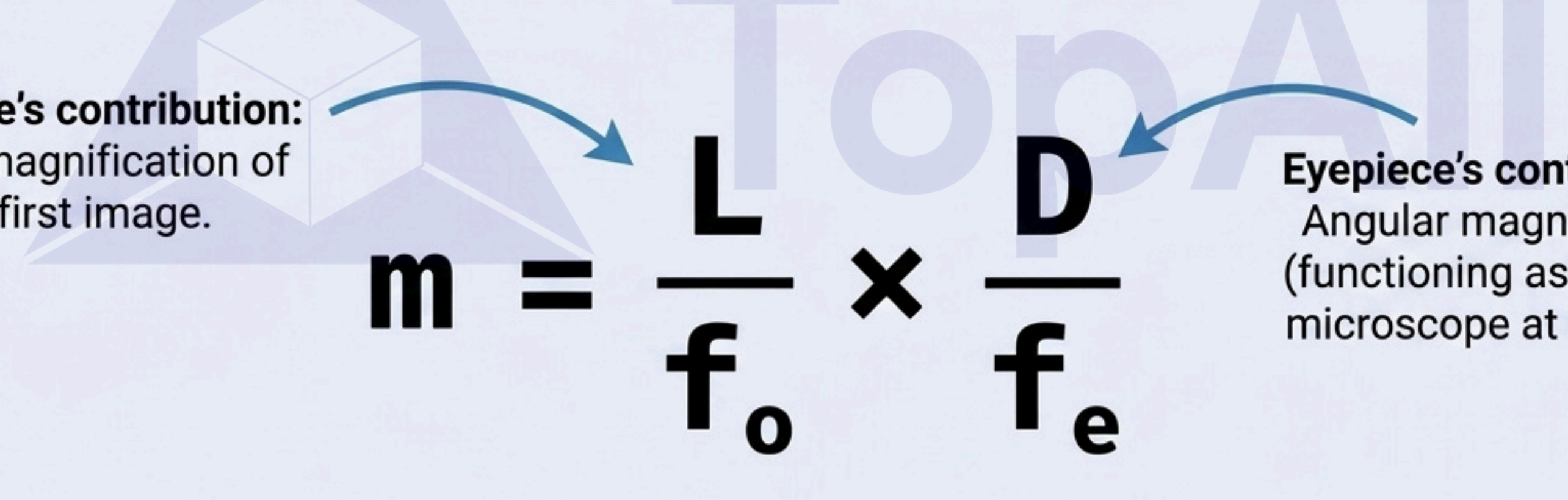


Formula Bank: Compound Microscope

$$m = m_o \times m_e$$

Total magnification is the product of objective and eyepiece magnification.

Objective's contribution:
Linear magnification of
the first image.


$$m = \frac{L}{f_o} \times \frac{D}{f_e}$$

Eyepiece's contribution:
Angular magnification
(functioning as a simple
microscope at infinity).

Final Blueprint: Review & Avoid Traps



Heuristic for Magnification: Near point viewing always adds +1 to the magnification formula ($1 + D/f$). Infinity viewing means a relaxed eye, so **drop the +1** (D/f).



The final image in a compound microscope is **inverted** with respect to the original object. (Common conceptual MCQ trap).

Do not confuse Tube Length L (**distance between the two internal focal points**) with the actual physical distance between the lenses ($v_o + u_e$).



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