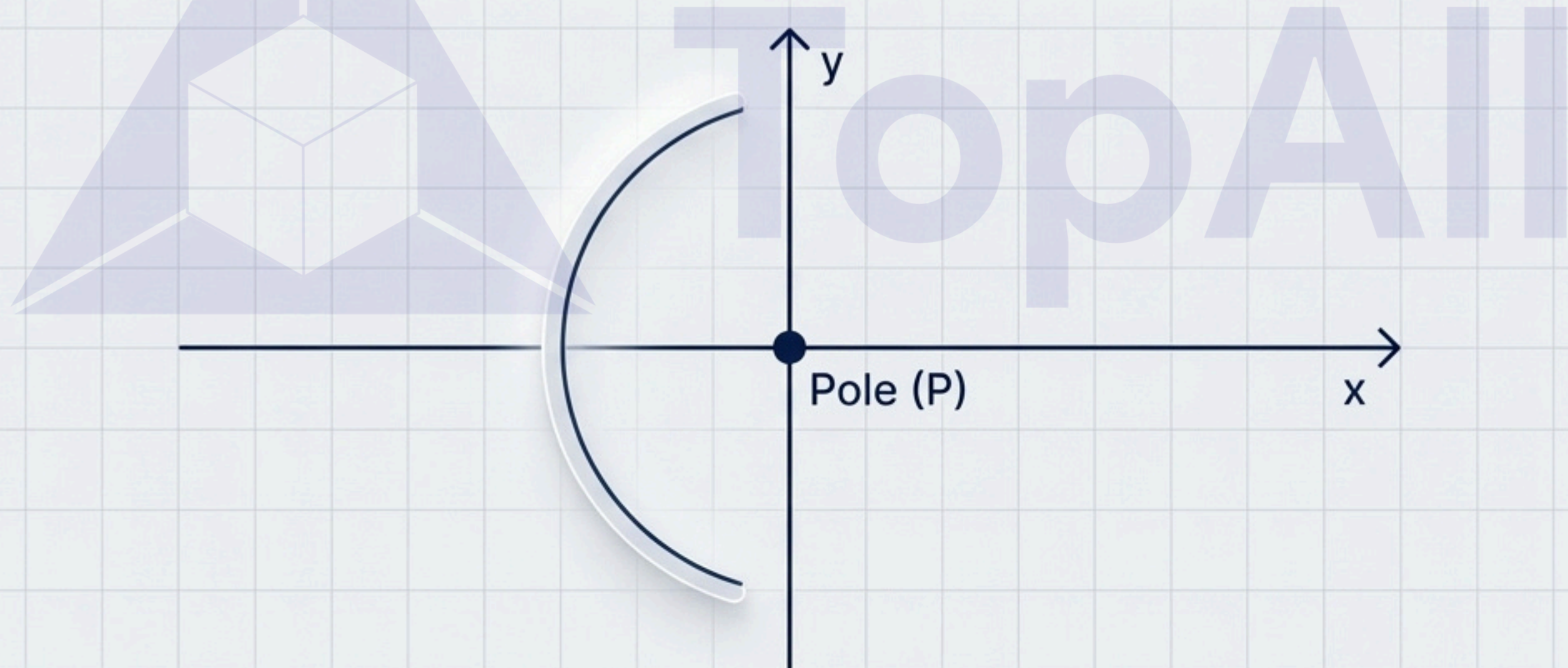


9.2.1 Cartesian Sign Convention

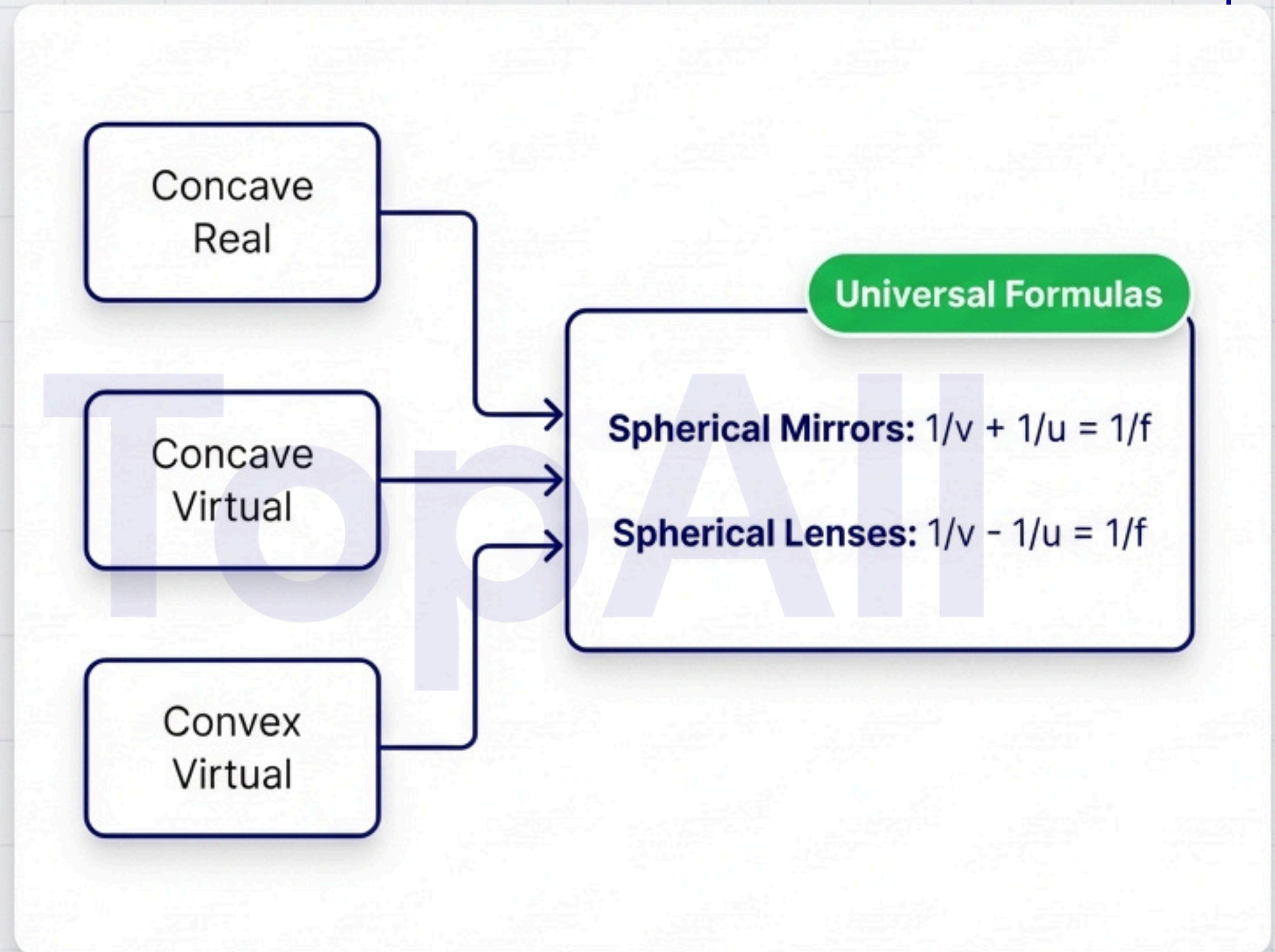
The Master Framework for Ray Optics



The Magic of a Common Convention

Mirrors and lenses can form real, virtual, erect, or inverted images depending on object placement.

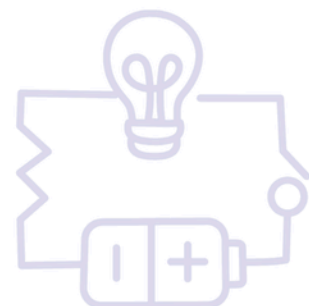
Instead of memorizing dozens of unique formulas for every specific optical case, we use one mathematical rulebook to handle them all automatically.





**You've Learned the Theory.
Let's Test Them Now.**

$$E=mc^2$$



Turn theory into marks with **unlimited MCQs, smart analysis, and focused revision.**

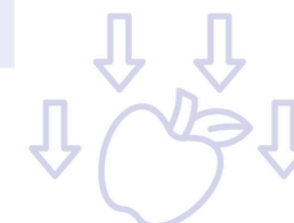
Practice Now



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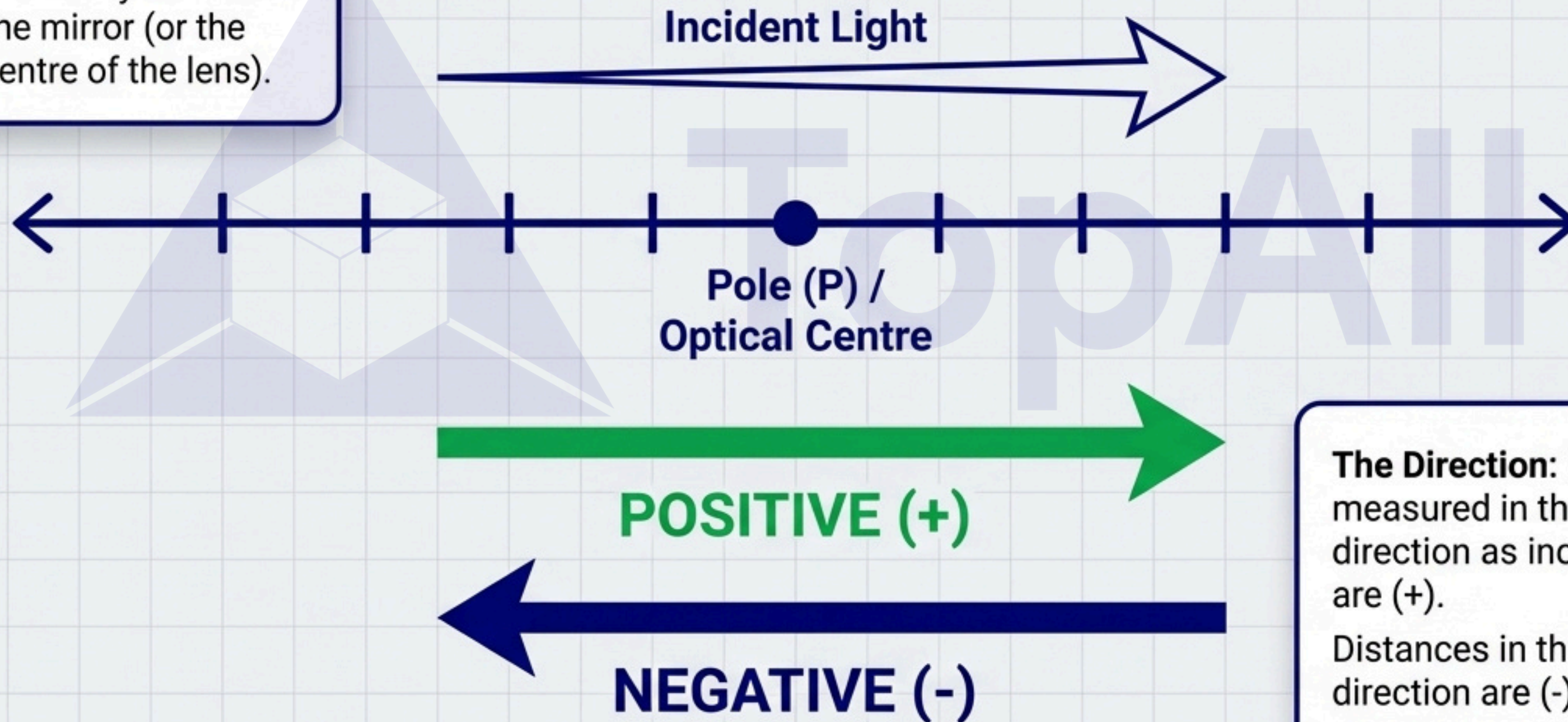
Key Highlights

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- » Push Your Limits with Level-Based Challenges
- » Climb the Leaderboard Among Fellow Aspirants
- » Practice Unlimited MCQs for NEET & JEE
- » Get Clear Explanations, Not Just Marks
- » Track Your Performance Smarter



The X-Axis: Measuring Distances

The Origin: All distances are measured strictly from the pole of the mirror (or the optical centre of the lens).

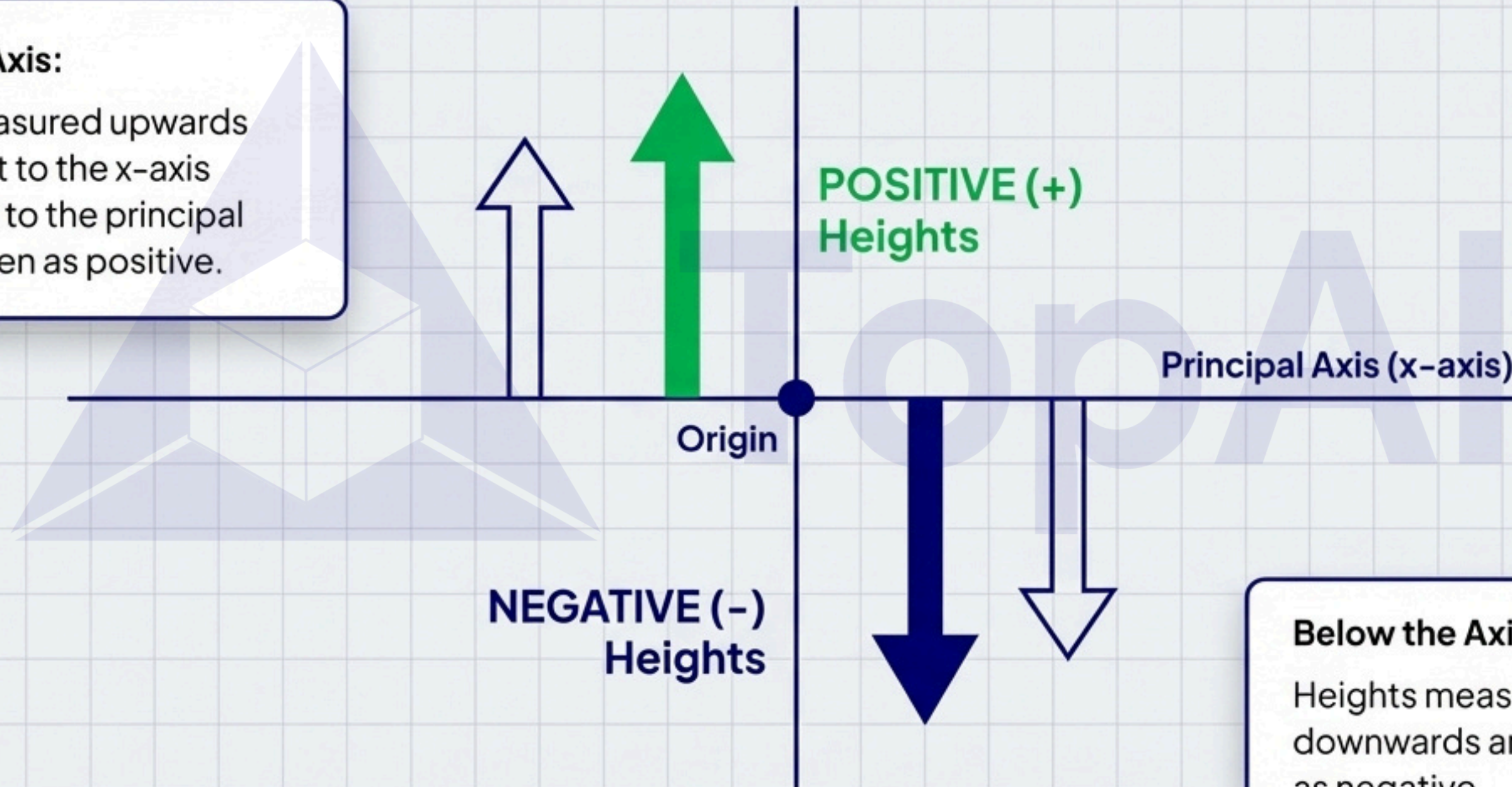


The Direction: Distances measured in the same direction as incident light are (+). Distances in the opposite direction are (-).

The Y-Axis: Measuring Heights

Above the Axis:

Heights measured upwards with respect to the x-axis (and normal to the principal axis) are taken as positive.



Below the Axis:

Heights measured downwards are taken as negative.

Final Review & Pitfalls

[Origin = Pole]

[Principal Axis = x-axis]

[With Light = (+)]

[Upwards = (+)]

Key Takeaways Panel

Applying this Cartesian system allows a single mirror equation ($\frac{1}{v} + \frac{1}{u} = \frac{1}{f}$) and linear magnification formula ($m = \frac{h'}{h}$) to perfectly handle every reflection scenario.

! Common Mistakes

- **Mistake 1:** Assuming 'left is always negative.' (Reality: It strictly depends on the direction of incident light!)
- **Mistake 2:** Measuring distances starting from the object instead of starting from the Pole/Optical Centre.



You've Learned the Theory.

Now Let's Test It.

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Jump in while the concept is still fresh in your head

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