Lens A has focal length whose magnitude is 55.0 cm. Lens B has a focal length whose magnitude is 65.0 cm. (You supply the signs.) An object is placed 98.0 cm in front of lens A. The system is in air.

(a) Calculate the position of the final image of the system expressed as a distance to the right or left of lens B.
(b) Is the final image erect or inverted?
(c) If the original object is 1.00 cm high, how high is the final image?

\[ f_A = 55 \text{ cm, } f_B = -65 \text{ cm} \]

\[ \frac{1}{s} + \frac{1}{s'} = \frac{1}{f} \]

In general, we know that \( s \) is the distance from lens to the object, \( s' \) is the distance from lens to its image.

\[ \frac{1}{s_A} + \frac{1}{s_A'} = \frac{1}{f_A} \quad \frac{1}{s_B} + \frac{1}{s_B'} = \frac{1}{f_B} \]

\[ s_A' = \frac{125.3}{cm} \]

We take \( s_B = 425.3 - 100 = 25.3 \text{ cm} \)

\[ \frac{1}{s_B} + \frac{1}{s_B'} = \frac{1}{f_B} \quad s_B' = 41.42 \text{ cm} \]

\[ \therefore \]

\[ M = \frac{s_B'}{s_B} = \frac{41.42}{25.3} = 1.636 \]

\[ M = \frac{M_A \cdot M_B}{M_A M_B} = -2.094 = -2.09 \quad \therefore \text{ inverted} \]

\[ \therefore \text{ height of the image} \]

\[ \therefore \text{ height of the image} \]