Answer on Question #70656, Physics / Molecular Physics | Thermodynamics

A 10-meter object is placed at a distance of 175 meters in front of a lens whose focal length is 50 meters. Which of the following describes the image formed?

Solution:

Using thin lens formula: $\frac{1}{s_1}+\frac{1}{s_2}=\frac{1}{f}$,

$where\ \boldsymbol{f}-focal\ length,\ \ \boldsymbol{s_1}, \boldsymbol{s_2}-distance\ from\ the\ object\ and\ image\ to\ the\ lens$

So, $s_2=\frac{fs_1}{s_1-f}-distance\ to\ the\ image$

Magnification: $M=\frac{s_2}{s_1}=\frac{h_{image}}{h_{object}}\rightarrow h_{image}=\frac{s_2 h_{object}}{s_1}=\frac{f*h_{object}}{s_1-f}=50*\frac{10}{125}=4\ m$

Answer:

Image height: **4m**