1. Draw a ray diagram to show how a magnifying glass forms the image of a nearby object.
   Comment on the image formed - Is it upright or inverted? Is it real or virtual?

2. Draw a ray diagram to show how a camera lens forms the image of a distant object.
   Comment on the image formed - Is it upright or inverted? Is it real or virtual?

3. Problem 24-61 from text: An object 1.5-cm high is placed a distance of 20-cm in front of a converging lens with a focal length of 5.0-cm. (a) Where is the image formed? (b) Is the image real or virtual? (c) How big is the image?

   \[
   \frac{1}{d_i} = \frac{1}{f} - \frac{1}{d_o} = 0.15 \Rightarrow d_i = 6.7\text{cm}
   \]
   \[
   d_i + \Rightarrow \text{Real (}d_o > f\text{)} \quad d_i + \Rightarrow \text{Real}
   \]
   \[
   m = -\frac{d_i}{d_o} = \frac{h_i}{h_o} = -0.335
   \]
   \[
   m = \frac{h_i}{h_o} \Rightarrow h_i = -0.335 \times (1.5) \Rightarrow h_i = -0.5\text{cm}
   \]

4. Problem 24-67 from text: A 5-cm tall object is 25-cm in front of converging lens with a focal length of 40-cm. Where is the image formed?

   \[
   \frac{1}{d_i} = \frac{1}{f} - \frac{1}{d_o} = -0.015 \Rightarrow d_i = -6.7\text{cm}
   \]
   \[
   d_i - \Rightarrow \text{Virtual}
   \]
   \[
   d_i < f
   \]