## Thin lens and magnification equations worksheet

$$\frac{1}{do} + \frac{1}{di} = \frac{1}{f} \quad , M = \frac{hi}{ho} = -\frac{di}{do}$$

1. An object 8.5 cm high is placed 28 cm from a converging lens. The focal length of the lens is 12 cm.
   a) Calculate the image distance, $d_i$.

   b) Calculate the image height, $h_i$.

2. A toy of height 8.4 cm is balanced in front of a converging lens. An inverted, real image of height 23 cm is noticed on the other side of the lens. What is the magnification of the lens?

3. A small toy building block is placed 7.2 cm in front of a lens. An upright, virtual image of magnification 3.2 is noticed. Where is the image located?

4. A coin of height 2.4 cm is placed in front of a diverging lens. An upright, virtual image of height 1.7 cm is noticed on the same side of the lens as the coin. What is the magnification of the lens?

5. A diverging lens has a focal length of 29 cm. A virtual image of a marble is located in front of the lens. Where is the marble located?