Physics 200 (Stapleton) Name: _____
Lens Equation (and magnification)

The Lens Equation: $\frac{1}{f} = \frac{1}{d_o} + \frac{1}{d_i}$ Magnification Equation: $M = \frac{H_i}{H_o} = \frac{-d_i}{d_o}$

** After the first problem or two, feel free to create a spreadsheet to speed up this task.

1. (object beyond 2f) An object with a **height of 1.2cm** is placed on top of the principal axis of a convex lens, **7.8cm from the center of the lens**. The **focal length of the lens is 3cm**.

   a. Where is the image located?

   b. What is the image height?

   c. Is the image upright or inverted?

   d. What is the magnification of the object in this position?

   e. Is the image real or virtual?

2. (object at 2f) An object with a **height of 2cm** is placed on top of the principal axis of a convex lens, **6cm from the center of the lens**. The **focal length of the lens is 3cm**.

   a. Where is the image located?

   b. What is the image height?

   c. Is the image upright or inverted?

   d. What is the magnification of the object in this position?

   e. Is the image real or virtual?

3. (object between 1f and 2f) An object with a **height of 1.5cm** is placed on top of the principal axis of a convex lens, **5cm from the center of the lens**. The **focal length of the lens is 3cm**.

   a. Where is the image located?

   b. What is the image height?

   c. Is the image upright or inverted?

   d. What is the magnification of the object in this position?

   e. Is the image real or virtual?

4. (object at f) An object with a **height of 3cm** is placed on top of the principal axis of a convex lens, **3cm from the center of the lens**. The **focal length of the lens is 3cm**.

   a. Where is the image located?

   b. What is the image height?

   c. Is the image upright or inverted?

   d. What is the magnification of the object in this position?

   e. Is the image real or virtual?

5. (object between lens and f) An object with a **height of 1.7cm** is placed on top of the principal axis of a convex lens, **1cm from the center of the lens**. The **focal length of the lens is 3cm**.

   a. Where is the image located?

   b. What is the image height?

   c. Is the image upright or inverted?

   d. What is the magnification of the object in this position?

   e. Is the image real or virtual?