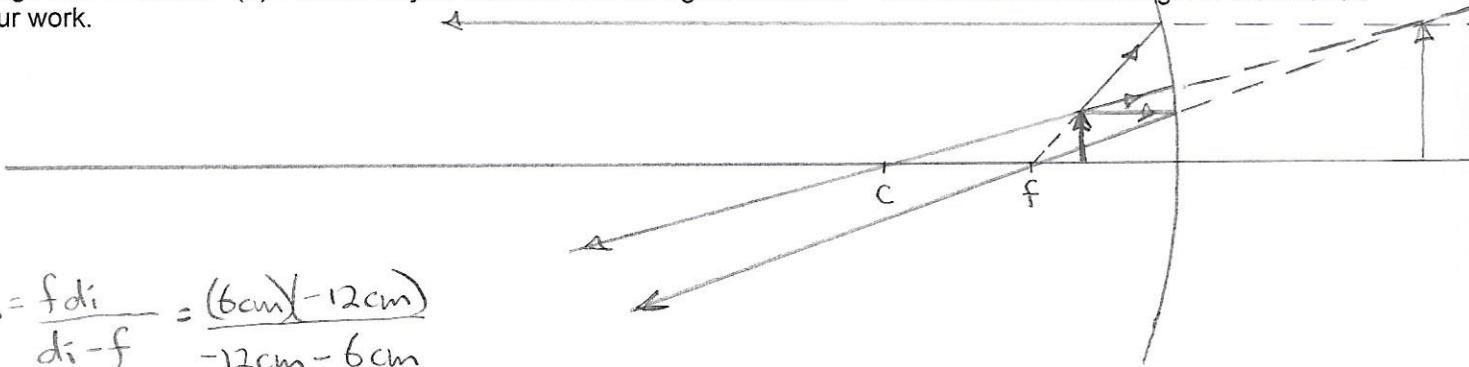


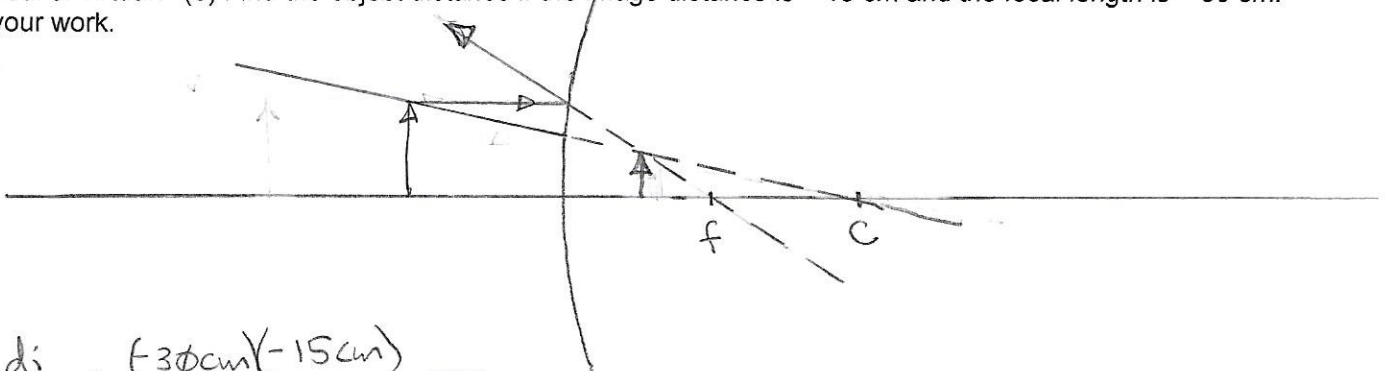
4. (a) Find the image by drawing the following diagram and using at least <sup>2</sup> three rays. (b) After looking at the image you just found, is this image smaller, larger, or the same size as the object? (c) Is the object inverted or upright? (d) Is the image real or virtual? (e) Find the object distance if the image distance is  $-12\text{ cm}$  and the focal length is  $6\text{ cm}$ . Show your work.



$$d_o = \frac{f d_i}{d_i - f} = \frac{(6\text{ cm})(-12\text{ cm})}{-12\text{ cm} - 6\text{ cm}}$$

$$d_o = 4\text{ cm}$$

5. (a) Find the image by drawing the following diagram and using at least <sup>2</sup> three rays. (b) After looking at the image you just found, is this image smaller, larger, or the same size as the object? (c) Is the object inverted or upright? (d) Is the image real or virtual? (e) Find the object distance if the image distance is  $-15\text{ cm}$  and the focal length is  $-30\text{ cm}$ . Show your work.

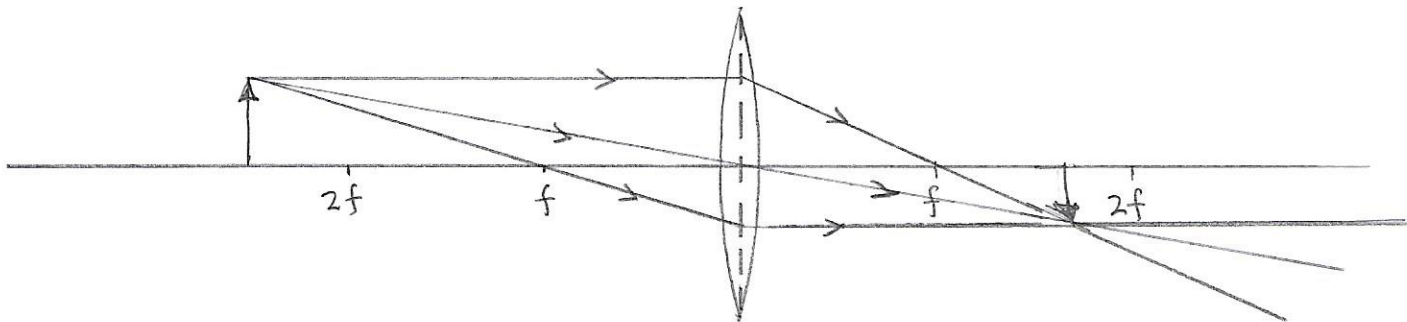


$$d_o = \frac{f d_i}{d_i - f} = \frac{(-30\text{ cm})(-15\text{ cm})}{-15\text{ cm} - (-30\text{ cm})}$$

$$d_o = 30\text{ cm}$$

**Lens Problems:**

6. (a) Find the image by drawing the following diagram and using at least <sup>2</sup> three rays. (b) After looking at the image you just found, is this image smaller, larger, or the same size as the object? (c) Is the object inverted or upright? (d) Is the image real or virtual? (e) Find the image distance if the object distance is  $15\text{ cm}$  and the focal length is  $6\text{ cm}$ . Show your work.



$$d_i = \frac{f d_o}{d_o - f} = \frac{(6\text{ cm})(15\text{ cm})}{15\text{ cm} - 6\text{ cm}}$$

$$d_i = 10\text{ cm}$$