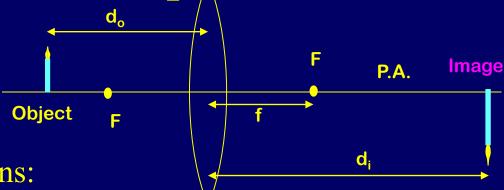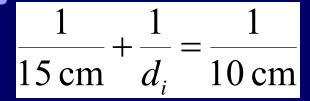# Lens Equation
Same as mirror equation

$$\frac{1}{d_o} + \frac{1}{d_i} = \frac{1}{f}$$

- **d_o = distance object is from lens:**
  - Positive: object <u>in front</u> of lens
  - Negative: object <u>behind</u> lens

- **d_i = distance image is from lens:**
  - Positive: <u>real</u> image (behind lens)
  - Negative: <u>virtual</u> image (in front of lens)

- **f = focal length lens:**
  - Positive: <u>converging</u> lens
  - Negative: <u>diverging</u> lens

Example

$$\frac{1}{15\,\text{cm}} + \frac{1}{d_i} = \frac{1}{10\,\text{cm}}$$

$$\longrightarrow \quad d_i = 30\,\text{cm}$$

$$m = -\frac{d_i}{d_o} = -2$$