

Tutorial for PHYS210 Lecture 10. Stops, eyepieces

- 1) A microscope has an objective with a focal distance of 1 cm and a single-lens eyepiece with a focal distance of 2cm. The distance between the objective and the eyepiece is 18 cm.
  - a) What is the magnification of the eyepiece?
  - b) At what distance from the eyepiece should the intermediate image be to view it without accommodating the eye?
  - c) At what distance from the objective should the intermediate image be to view it without accommodating the eye?
  - d) At what position should a field stop be introduced to give the image field sharp edges?
  - e) At what distance from the objective should the object be to view it without accommodating the eye?
  - f) What is the magnification of the objective?
  - g) What is the magnification of the microscope?
  - h) Is the image inverted or upright?
  - i) What is the position of the exit pupil?  
The single-lens eyepiece is replaced by an eyepiece of the same focal distance consisting of two convex lenses. The intermediate image lies between the two lenses.
  - j) What is the name of this kind of eyepiece?
  - k) What happens to the position of the exit pupil?
  - l) What is the advantage of a two-lens eyepiece over a one-lens eyepiece?