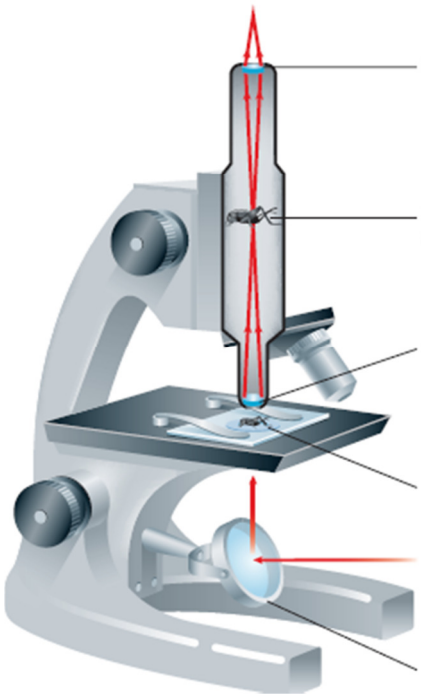
6.2 Extending Human Vision
Name _____
Date_____
Block _____

Microscopes

- A compound light microscope uses two _____ lenses to magnify _____, _____ objects.
  - Magnify means to make the image look _____ than the real size.
- To focus the image, the object is moved closer to or farther away from the _____ lens.
  - Adjusting the distance to make the image clear is called _____.

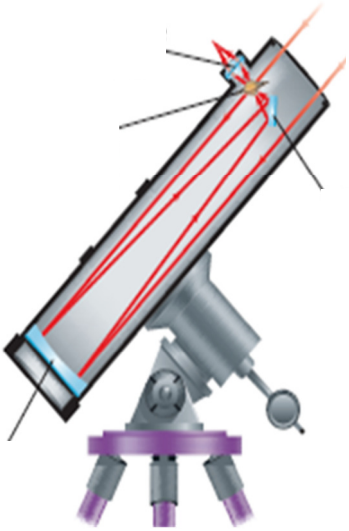


Refracting Telescopes

- A refracting telescope has a convex lens to collect and focus light from a _____ object, and a _____ eyepiece lens to magnify the image.
- Problems with refracting telescopes include:
  - Large objective lenses _____, due to their own weight and distort the image.
  - Glass lenses, even of the highest quality, _____ some of the light and are _____.

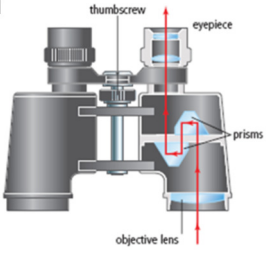
Reflecting Telescopes

- A reflecting telescope uses a _____ mirror, a _____ mirror, and a _____ lens.
  - Light enters the telescope and is _____ after reflecting off the _____ mirror.
  - A plane mirror reflects the light towards the _____.
  - The convex lens in the eyepiece _____ the image.
- Most large telescopes are reflecting telescopes.



Binoculars

- Binoculars are actually two _____ telescopes mounted side by side.
- To shorten the length of the tubes in binoculars, _____ are used to reflect the light back and forth

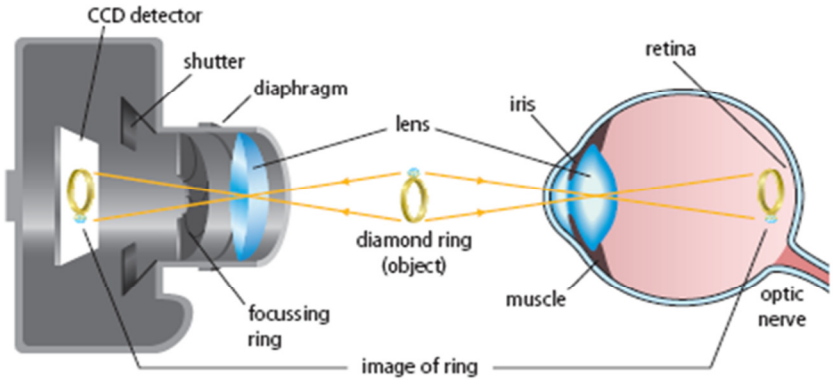


Cameras

- Light enters the camera through an opening called the _____.
- Light then passes through a lens which focuses the image on the _____.
- Cameras can have different types of lenses.
  - _____ lens allow for a wide _____.
  - _____ lenses allow distant object to appear _____.

Cameras Have Similarities to Human Eyes

Eye	Camera
Eyelid	
Iris	
Retina	
Rods and cones	



Lasers and Laser Surgery

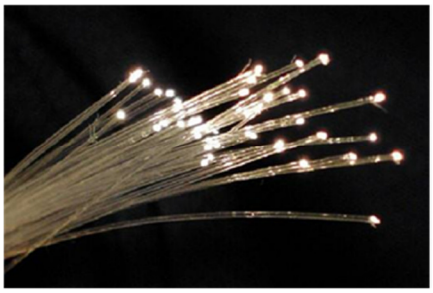
- Laser light is light of only one _____.
- Can travel great distances without spreading out and contains a lot of _____.
- Lasers can be used in place of _____ in surgery.
  - Remove _____
  - Reattach _____
  - Laser eye surgery to _____ the _____.

Optical Fibres

- Optical fibres are transparent _____ that can transmit light from one place to another.
- Optical fibres transmit light using _____.

- Total internal reflection is when light strikes a _____ between two materials and is totally _____.

- Optical fibres are used for:
  - Medical procedures (orthoscopic surgery)
  - Telecommunications (telephone, internet, video)



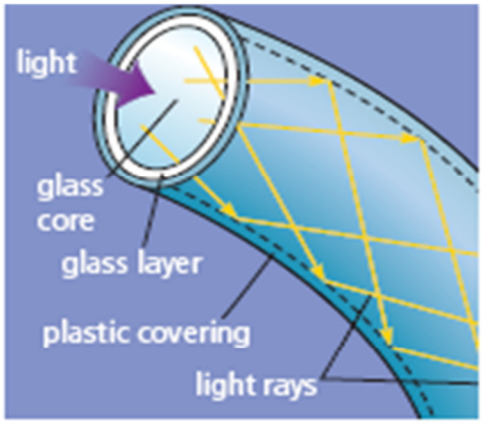


Figure 6.29 Optical fibres make use of total internal reflection.