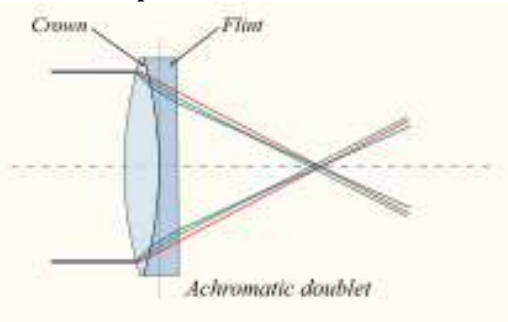


CHAPTER 24- MIRRORS AND LENSES

Vocabulary

1. an **achromatic lens** is a lens that is corrected to bring two wavelengths into focus in the same plane



2. **chromatic aberration** is a type of distortion in which there is a failure of a lens to focus all colors to the same convergence point. It occurs because lenses have a different refractive index for different wavelengths of light. The refractive index decreases with increasing wavelength.

3. a **concave lens** is a lens that is curved inwards on both sides

4. a **concave mirror** is a mirror that is curved inwards

5. a **convex lens** is one that is curved outwards on both sides

6. a **convex mirror** is one that is curved outwards

7. an **erect image** is one that is facing upwards

8. the distance from the mirror to the focal point is called the **focal length**

9. the point half the distance between the center of curvature and the mirror or lens is the **focal point**

10. **the image** is what is processed by the observer's eye

11. a **lens** is made by forming spherical surfaces on both sides of a circular glass disk

12. the **lens/mirror equation** can determine the location of images by the formula

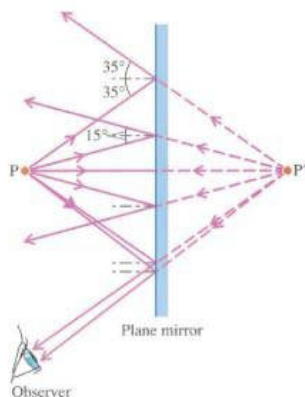
$$\frac{1}{s} + \frac{1}{s'} = \frac{1}{f}$$

← know this one!!

13. **magnification** is how much bigger or smaller an image is relative to the object

14. an **object** is the original focus of the observer

15. a **plane mirror** is a mirror that has no curve



16. the **principal axis** is a line that passes through the center of curvature of a lens so that light is neither reflected nor refracted
17. a **real image** is an upside down image that is later straightened out by the brain
18. a **spherical aberration** occurs if either incident or reflected rays make relatively large angles with the optical axis. These rays will not all converge at exactly the same image point. This means that the image produced will be somewhat blurry.

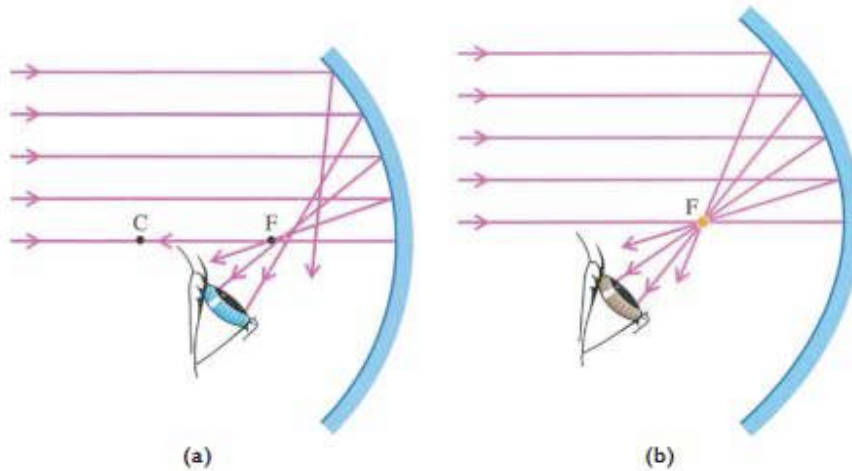
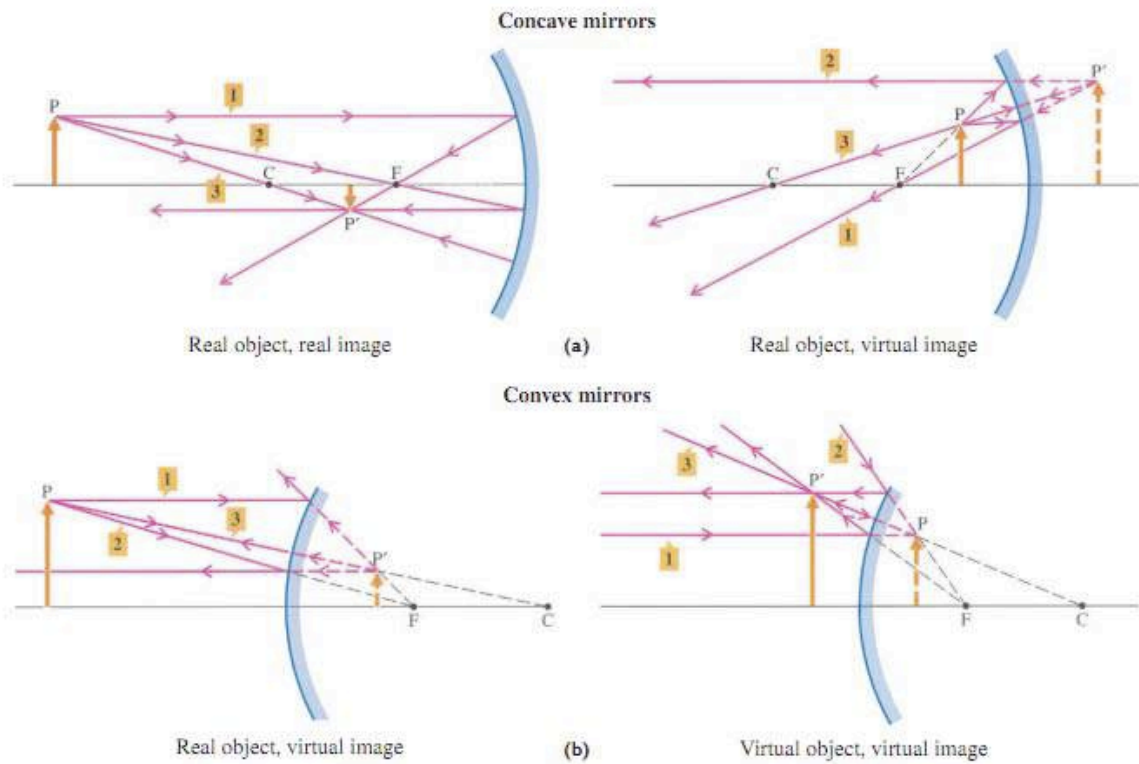


Fig. 24-14 (a) Rays from a distant point source on the optical axis are incident on a spherical mirror. Only paraxial rays converge at the focal point. (b) For a parabolic mirror all rays from a distant point source on the optical axis converge at the focal point.

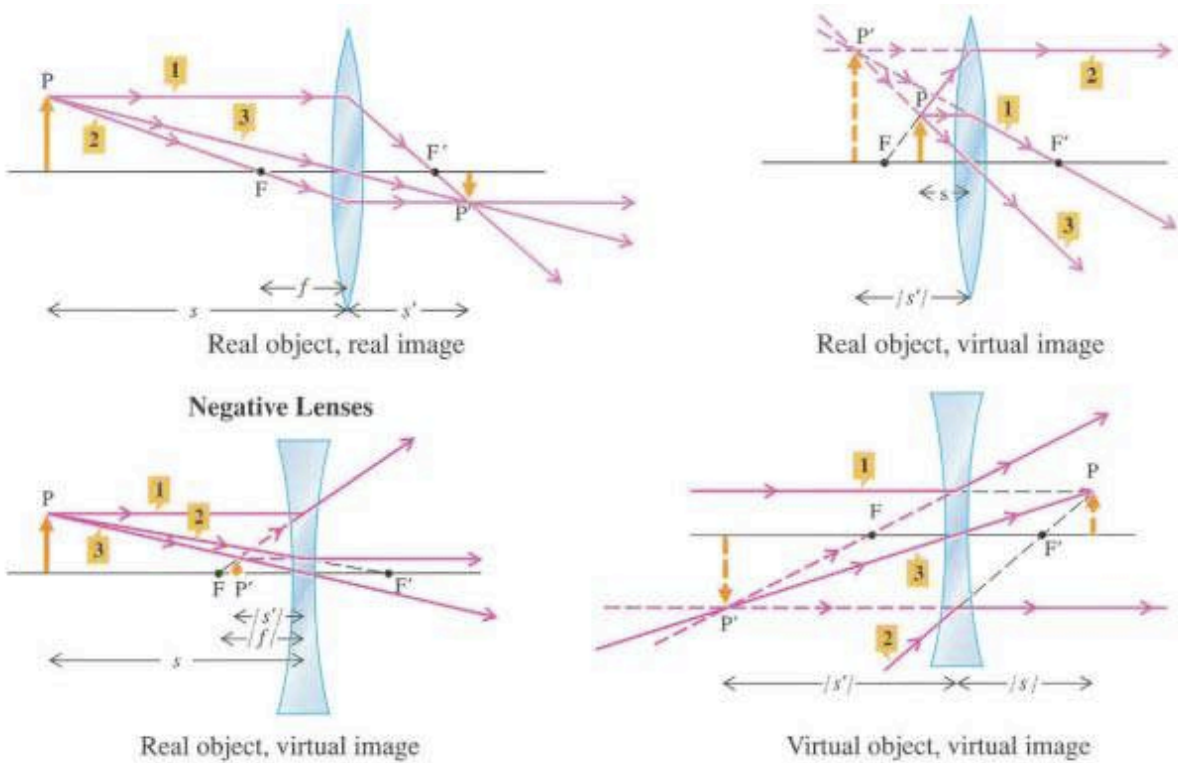
19. a **virtual image** is one that is in the upright position.

How to draw rays

mirrors



lenses



References:

Coletta, Vincent; Physics Fundamentals; Physics Curriculum & Instruction; © 2008

Williams, Jim. General Optics. Scarsdale: Scarsdale Alternative School. 2010