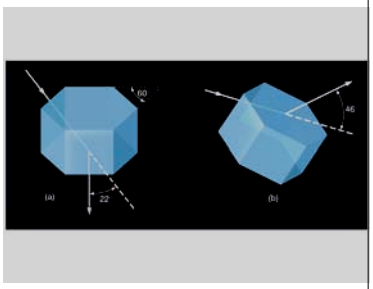
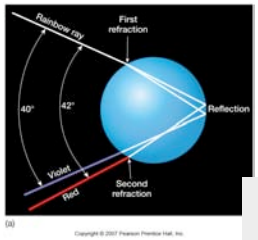
Halos

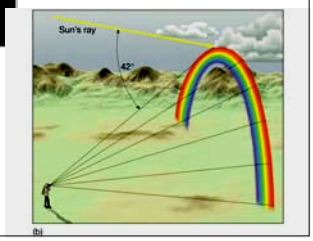
•Since the ice crystals are in random orientation, a circular halo forms

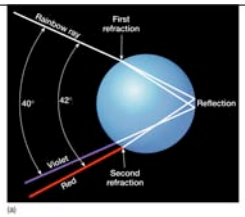
•Often means a rainy day ahead



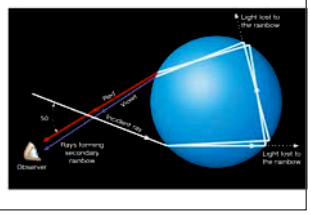


Formation of a Rainbow



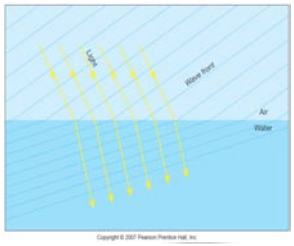


Secondary Rainbow



Mirage - Cause

- Refraction
  - bending of light
  - only occurs when light hits at an angle other than 90°
  - Angle depends on density of medium and refracted toward denser medium



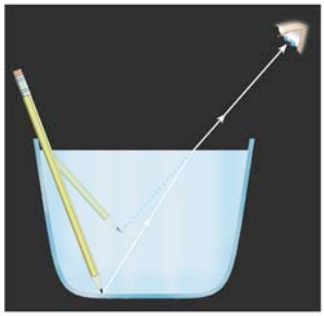
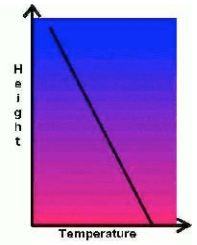


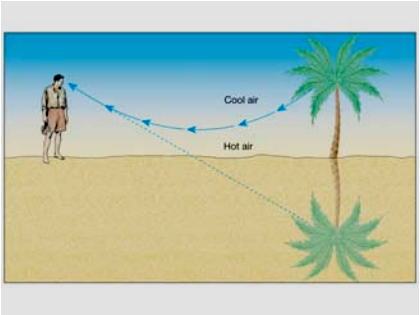
Image formed by Refraction

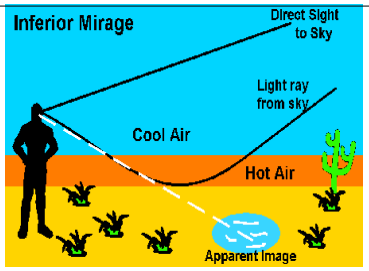
Types of Mirage

- Inferior
  - during normal temp. conditions
  - mirage is below the real object
  - object can appear inverted or distorted
  - common types:
    - highway mirage
    - desert oasis



Inferior Images: Hot air below cool air



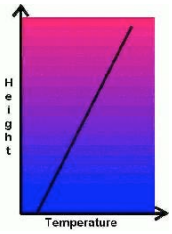


•Strength of the mirage is determined by the temperature gradient in the lowest 1 m of air

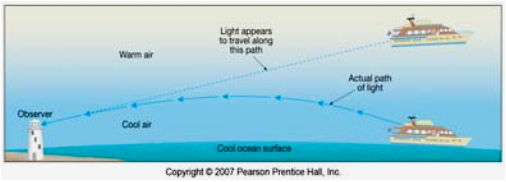
- <1.7°C (3°F) - no mirage
- ~2.8°C (5°F) - moderate mirage
- >4.4°C (8°F) - strong mirage

Types of Mirage

- Superior
  - During temp. inversion
  - mirage is above the real object
  - object can appear distorted (great vertical exaggeration) or inverted
  - common types:
    - Fata Morgana
    - Arctic Image



Superior Images: Cool air below warm air



Both types of mirages: Image inversion occurs when the temperature gradient is especially strong as the bending of the light is in turn much more extreme.