Name:_____

The Sun

- is continually losing mass due to → **1.**_____
  - is → charged particles
    - escaping primarily through → Holes
    - responsible for → Aurora on the Earth
- outer layers of its atmosphere are
  - contains → Highly ionized atoms
  - **2.**_____
    - due to → Highly ionized atoms
    - temperature of → 1 Million Kelvins
    - in the → Holes
    - seen only during → Solar Eclipses
    - due to → Magnetic Heating
  - **3.**_____
    - which is → Pink in Color
    - temperature of → 4,500 Kelvins
    - seen only during → Solar Eclipses
- visible surface is called the → **Photosphere**
  - temperature of → 5,800 Kelvins
  - region where we observe → Spicules, Granules, Limb Darkening
  - region where we find → **4.**_____
    - associated with → Prominences, Solar Flares
    - dark because they are → Cooler than the surrounding Photosphere
    - regions of → Magnetic Fields
      - polarities follow a → 22 year magnetic cycle
      - revealed by the → Zeeman Effect
        - which is the → Splitting of spectral lines by magnetic fields
    - numbers occur in a → 11 year cycle
    - responsible for → Solar Flares
  - which are → Granules
    - due to → Convection Cells
- inner regions are
  - **Convective Zone**
    - energy transported by → Convective motion of gases
  - **Radiative Zone**
    - energy transported by → Radiation
  - **Core**
    - density of → 150 grams/cc
    - temperature of → 15 Million Kelvins
- generates its energy by
  - region where energy is generated by → **5.**_____
    - sufficient for → 15 Million Kelvins
    - requires a temperature of → 10 Million Kelvins
    - involves → combining 4 hydrogen atoms into a helium atom
      - emits → Gamma Rays, Neutrinos
        - Gamma Rays get degraded to → Visible light after repeated collisions with atoms
        - Neutrinos are → nearly massless particles
          - allow → Direct probe of the Sun's interior
      - releases energy by → converting some of the mass into energy