Stellar Remnants Names of Group: _____ _____ _____ _____

ASTR/PHYS 1060, Dan Wik, In-class activity on Oct. 22nd

Object	White Dwarfs	Neutron Star (Pulsars)	Black Hole
Progenitor			
Pressure Support			
Mass			
Size			
Density			

Discuss with your group the correspondence between the stellar remnant and its properties and fill in the table above.

Progenitor (the star from which the remnant formed):

- **Highest-mass Stars:** Stars with masses above ∼20 $M_\odot$
- **Higher-mass Stars:** Stars with masses between 8-20 $M_\odot$
- **Low-mass Stars:** Masses less than ∼8 $M_\odot$

Pressure Support: Some internal pressure is needed to resist the force of gravity in any star.

- **No Pressure Support:** Nothing preventing the object from collapse.
- **Nuclear Fusion:** Pressure support comes from fusing together lighter elements.
- **Electron Degeneracy:** Electrons pressed very close together. They push back and keep the star from collapsing.
- **Neutron Degeneracy:** Neutrons pressed very close together. They push back and keep the star from collapsing.

Mass: The mass of the stellar remnant left behind.

- **0.6 $M_\odot$**
- **2 $M_\odot$**
- **6 $M_\odot$**

Size:

- **5000 km** Radius
- **10 km** Radius
- **8 km** Radius

Density: If you have time, use the mass and the radius to calculate the density:
Density $= \frac{3\,\text{Mass}}{4\pi\,\text{Radius}^3}$
Express answers in kg/m^3.

1 $M_\odot = 2 \times 10^{30}$ kg