**IB Physics**

**FA IB8.2 – Thermal Radiation and Greenhouse Effect**

Name

Favorite Metaphor

**Show your work, and circle your answers and use sig figs to receive full credit.**

When you have finished this, go to the website and check your answers. If you got a problem wrong, cross it off on the front, and do it correctly on the back.

1-2: A solar water heater has an albedo of 0.112. It measures 1.30 m by 2.15 m, and on a particular day, the intensity of the sun is 1150 W m-2.

1. What is the intensity of the reflected light, and the absorbed light?

2. What is the maximum energy it could absorb in an hour?

3. A particular star has a peak black body wavelength of 517 nm. What is its temperature in Kelvins?

4. A power adapter has an outside area of 0.00540 m2, an emissivity of 0.720, and is dissipating 45.0 mW of heat by black body radiation to a room that is at a temperature of 20.0 oC. What is the temperature of the power adapter?

5. A planet has an upper atmosphere with an albedo of 0.170. Radiation from the star it orbits strikes the side facing the star with an intensity of 1370 W m-2. If there is no greenhouse effect, what would be the equilibrium temperature of the planet with space?