

AOS 100/101
Spring 2018

HOMework #2
(Due Fri. February 16)

Please provide concise, grammatically correct, neatly written answers to the following questions. All questions can be answered in, at most, a few sentences. Don't forget to write your name on the paper!!!

NAME:

- 1) Suppose you go to Camp Randall Stadium to watch the Badgers on a cold November Saturday and you can choose a wooden bleacher seat or a metal one. Does one have a lower temperature than the other? Why or why not? Which one would be more comfortable? Explain your answer with reference to conductivity.
(10 pts.)
- 2) Object A and Object B are placed next to one another in a laboratory enclosure. Object A emits 100 units of radiative energy every second and yet experiences a steady increase in temperature. What can be concluded about the amount of radiation emitted by Object B? Explain your reasoning. Under these circumstances, what must be happening to the temperature of Object B? Explain why.
(10 pts.)
- 3) Does the situation described in Problem 2 obey the Second Law of Thermodynamics? Explain your answer.
(10 pts.)
- 4) Snow behaves like a *black-body* with respect to infra-red radiation. Given this fact, explain why the temperature inside igloos and snowcaves becomes more comfortable the longer they are inhabited. (Kirchoff's Law will help here).
(10 pts.)