Lecture Questions: Global Warming

These questions are taken from chapter 3 of your textbook and from the *Summary for Policymakers* (SPM) from the IPCC Working Group I Fifth Assessment Report (AR5); a link to this document is on the Lecture Schedule page of the course website. Also feel free to use Internet research to answer some questions; be sure to use your own words, with appropriate citations when needed. Do not cut and paste images from other sources, though you may create your own.

The IPCC web site and the Sceptical Science web site are also good sources of information about climate change.

1. How much of the sunlight that reaches the earth is:
   a) reflected back to space without being absorbed?
   b) absorbed by the atmosphere?
   c) absorbed by Earth's surface?
2. Describe the greenhouse effect. In your explanation, define *greenhouse gases* (GHGs) and list the five most important GHGs *naturally present* in the atmosphere.
3. Describe the global carbon cycle and how humans have affected it.
4. How much has atmospheric CO_2 increased since 1750? If all anthropogenic emissions of CO_2 ceased immediately, how long would it take for the atmosphere to revert to 1750 levels?
5. The atmospheric concentration of other GHGs have also increased due to human activities. List the important ones, the amount of the increase since 1750, and the main activities that resulted in that increase.
6. What is *radiative forcing*? How much has it increased since 1750?
7. What has been the average global surface temperature increase in the last century? What is the current rate of increase per decade?
8. What does the IPCC predict will happen to the global average temperature and the sea level in the next by 2100?