Global Warming Questions

The following questions have been adapted from a collection that was developed by several academic and research scientists for college students, which was originally published in the New York Times. Please answer all questions on the scantron and include your name on the form. You will not be graded for accuracy, only credited for participation. (T/F) (A=True; B=False)

1. Earth's lower atmosphere is comprised of a homogeneous mixture of molecules in the gas phase.

2. The lower atmosphere can be best described as being comprised of:
   a. Mostly oxygen with all other molecules present in very small amounts.
   b. Mostly nitrogen with all other molecules present in very small amounts.
   c. Mostly nitrogen and oxygen with more oxygen than nitrogen, and with some other trace molecules.
   d. Mostly nitrogen and oxygen with more nitrogen than oxygen, and with some other trace molecules.

3. The Earth is relatively warm due to
   a. Ultraviolet radiation from the sun being absorbed by ozone molecules in the stratosphere.
   b. X-rays and gamma rays exciting nitrogen and oxygen gas molecules in the lower atmosphere.
   c. Infrared radiation being absorbed by certain trace gas molecules in the lower atmosphere.
   d. The very high temperature of the molten inner core of the Earth which is composed mostly of iron.

4. Not all molecules absorb energy from sunlight. Which of the following does not absorb heat?
   a. carbon dioxide
   b. oxygen
   c. water vapor
   d. ozone

5. Which statement best describes the relationship of the greenhouse effect (absorbing and trapping heat) to life on Earth?
   a. It is thought that it can only be beneficial to life on Earth.
   b. It is thought that it can potentially be harmful to life on Earth.
   c. It is thought that it has little direct impact on life on Earth.

6. Without the atmosphere's natural greenhouse effect, Earth's temperature at the surface would be:
   a. 10-20 ºF warmer
   b. 30-40 ºF warmer
   c. 10-20 ºF cooler
   d. 50-60 ºF cooler

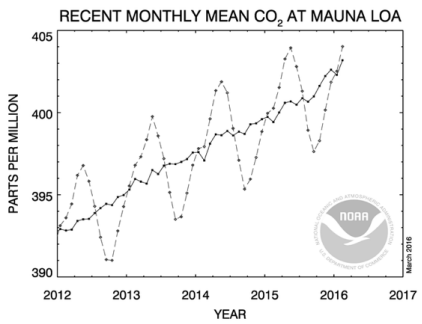
7. (T/F) Global warming, the long-term increase in world temperatures, occurs mainly because certain man made chemicals thin the ozone layer, allowing more solar radiation to reach Earth's surface.

8. Which of these chemical processes adds carbon dioxide to the atmosphere?
   a. burning fossil fuels
   b. cement production
   c. flatulence (farting) from food digestion in certain animals
   d. all of the above

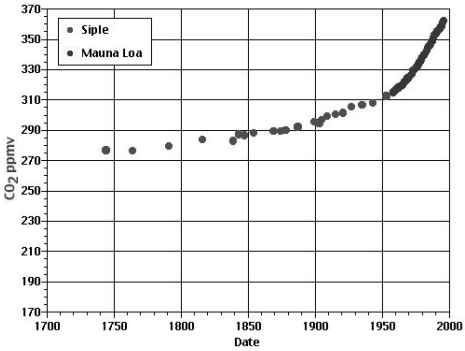
9. (T/F) Burning gasoline chemically produces water and carbon dioxide.

10. Burning 1 gallon of gasoline produces:
    a. about 2 kilograms of carbon dioxide
    b. about 2 pounds of carbon dioxide.
    c. about 20 kilograms of carbon dioxide.
    d. about 20 pounds of carbon dioxide.

11. Charles David Keeling took the first regular measurements of carbon dioxide in the atmosphere, at Mauna Loa in Hawaii, which correlated with the rise in atmospheric temperatures on an annualized basis. What of the following choices can explain the variation in carbon dioxide concentration within each year?



    a. Carbon dioxide levels decline from May to September because of the increase in photosynthesis by plants.
    b. Less carbon dioxide dissolves in the oceans during the winter.
    c. Auto emissions increase carbon dioxide levels during the peak tourist season.
    d. There is no logical explanation for the variation.

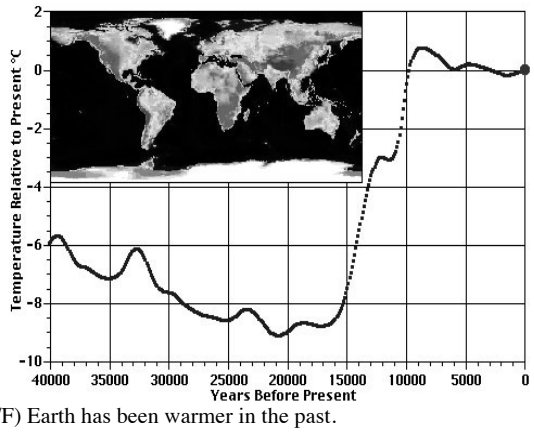


12.(T/F) The concentration of carbon dioxide in the atmosphere today is significantly higher than at the start of the Industrial Revolution, around 1750.

13.(T/F) Some kinds of particulate pollution in the atmosphere counteract global warming by reducing the solar radiation that reaches Earth's surface.

14.(T/F) Ocean life is not threatened from the effects of carbon dioxide buildup and climate change.

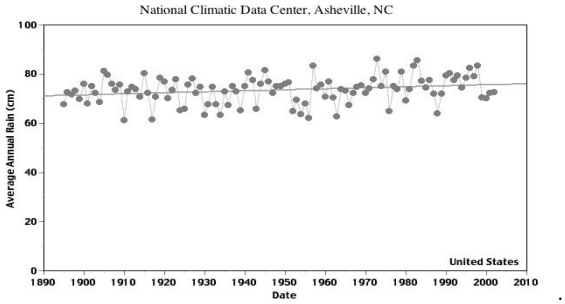
15.(T/F) Scientists can derive evidence of the chemical composition of Earth's atmosphere and temperature hundreds of thousands of years ago from ice cores and the gas bubbles trapped in ancient ice.



16.(T/F) Earth has been warmer in the past.

17.(T/F) Earth has been colder in the past.

18.(T/F) There is no place on Earth that can possibly be, on average, colder today than it was 100 years ago.



19.(T/F) As average global temperature rises, average precipitation increases.

20.(T/F) Using renewable biofuels like ethanol and biodiesel in place of gasoline will eliminate global warming.