

Worksheet: Understanding the Greenhouse Effect

name: _____

***Use complete sentences to answer questions marked with an asterisk.**

1. (starts on p. 472) *Explain the difference between heat and temperature without using the word “kinetic”.
2. Which has more heat? . . . a cup of very hot coffee, or a tub of warm water
3. List three ways that heat is transferred.
4. Which of your answers to question #3 is the way Earth receives energy from the Sun?
5. Which answer to #3 is the reason upstairs rooms are usually warmer than those in the basement?
6. *Look at the electromagnetic spectrum on page 473. What is the basic difference between infrared, light, and UV rays?
7. According to Figure 16.10 what percentage of the Sun’s rays (incoming solar radiation, a.k.a. “insolation”) actually makes it directly to the Earth’s surface?
8. List three possible things that happen to rays that do not make it directly to the Earth’s surface.
9. *Earth’s albedo is 30%. Explain what this means.
10. In Figure 16.20, what is the main “reflector” of the Sun’s rays?
11. *Read pages 476-477. What happens to the speed of gas molecules in the atmosphere as they absorb rays such as UV or infrared?
12. *Fortunately, most of the UV rays from the Sun do not make it to Earth’s surface. What happens to most of them?
13. *What eventually happens to the Sun’s energy that Earth’s surface absorbs?
14. Look at figure 16.22. List one material that has a high albedo and then one that has a low albedo.

15. Which two gases (greenhouse gases) are especially good at absorbing infrared waves given off by the Earth (called “terrestrial radiation”)?
16. *Explain why it gets colder as you go higher into the troposphere. (Hint: potato)
17. *Look at the diagrams at the bottom of p. 477 and read the caption. Summarize the “greenhouse effect”.
18. *Read pages 596-598 (white). Explain why levels of CO₂ in our atmosphere have increased so much over the past two centuries.
19. *What does Figure 20.19 show?
20. *How do scientists know how much CO₂ was in the atmosphere in 200,000 years ago (caption by graph)
21. *What is the point of the pie graph on p. 597?
22. List the three kinds of fuel in the pie graph that are “fossil fuels”.
23. *Explain what “biomass” is, and tell what kind is often burned in Helena area homes.
24. *Explain an example of a feedback mechanism (p. 600), and tell whether it is “positive” or “negative”.
25. *Look at (and read) figure 20.20. What is the point of this graphic?