

**Worksheet: The Greenhouse Effect**

**name:** \_\_\_\_\_

Use sentences to answer those marked with an asterisk\*.

1. \*Look at figure 12 on page 486. What is “solar radiation” better known as? Think!

\_\_\_\_\_

2. List the 3 primary types of solar radiation that reach the Earth’s and their percentages. (See recent handout “NOTES: Hole in the Ozone Layer”)

\_\_\_\_\_

3. List three ways that heat is transferred. (p. 483-485)

\_\_\_\_\_

4. Which of these three is the way that Earth receives energy from the Sun? \_\_\_\_\_

5. Which is the reason upstairs rooms are usually warmer than those in the basement?

Circle one:            conduction            convection            radiation

6. \*Look at the electromagnetic spectrum on page 484. What is the basic difference between infrared, light, and UV rays?

7. According to figure 12 on p. 486, what percentage of the Sun’s rays (incoming solar radiation) actually makes it to the Earth’s surface? (Be exact. It is NOT 50%.) \_\_\_\_\_

8. List three possible things that happen to those rays that do not make it directly to the Earth’s surface. (Figure 12 on p. 486) Limit your answer to three words.

\_\_\_\_\_

9. According to figure 12 on p. 486, what is the main “reflector” of the Sun’s rays in the atmosphere?

\_\_\_\_\_

10. Read the section titled “Absorption” on page 486-487. Which two gases in our atmosphere are the major absorbers of heat (a.k.a. “greenhouse gases”)?

\_\_\_\_\_

11. The solar energy absorbed by the atmosphere and the Earth’s surface are eventually transferred back into space by \_\_\_\_\_. Circle one.

Conduction            Radiation            Reflection            Convection

12. \*Explain why it gets colder as you go higher into the troposphere. (Hint: baked potato)
  
13. \*Explain why it would be difficult for life to exist on Earth if there were no “greenhouse effect”. (p. 602)
  
14. \*Read about the surface temperature on Venus (p. 651). Why does Venus have such an extreme greenhouse effect?
  
15. \*Read about Mercury (p. 649-650). It gets extremely hot during the day (427 C) and incredibly cold at night (-173 C). Explain why the lack of an atmosphere causes it to get so cold at night.
  
16. According to graph A on page 602, approximately when did CO<sub>2</sub> levels start to increase rapidly?
  
17. \*What is the point of the graph in the upper right of page 603?
  
18. \*Read the section on **Global Warming** (p. 602-603). How might more evaporation (caused by warming) increase Earth’s greenhouse effect?
  
19. \*Explain how the disappearance of sea ice would cause more solar radiation to be absorbed.