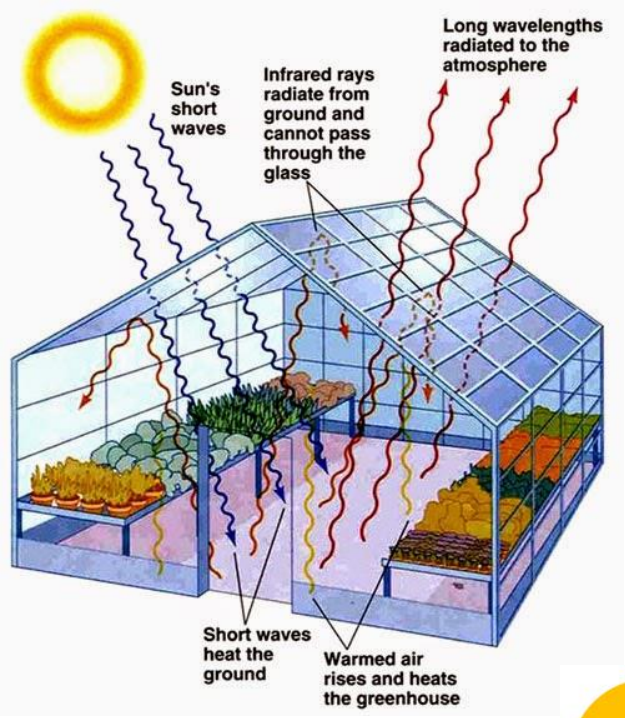
Name _____ Date _____ Period _____ 85

Greenhouse Effect

Activity 1 – What's in the Picture?

Image 1



1. Where does the energy come from to heat a greenhouse?

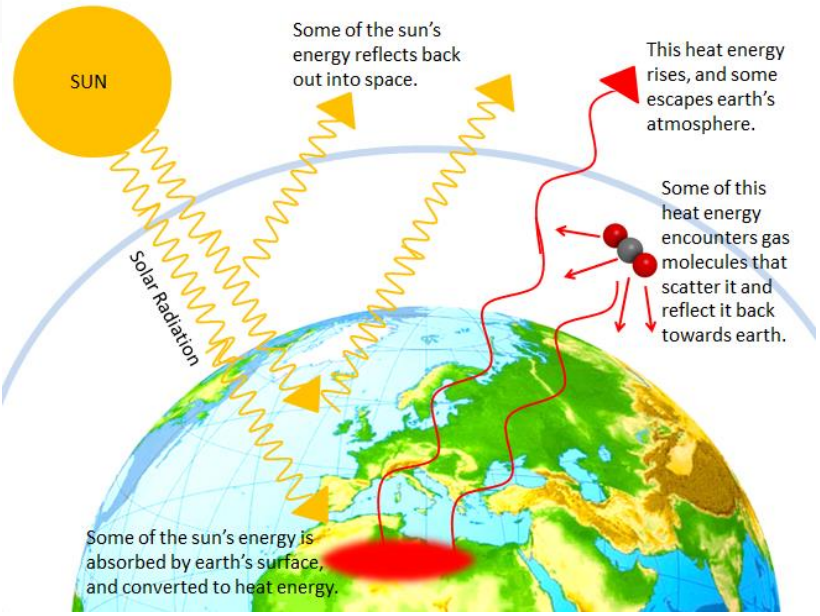
2. What type of wave's heat the ground?

3. How is a greenhouse heated?

4. Do all forms of radiation stay inside the greenhouse?

5. What type of electromagnetic wave cannot pass through the glass?

Image 2



6. Where does the energy come from to heat the Earth?

7. Where is solar radiation converted to heat energy?

8. What happens when some of the heat energy encounters (come in contact with) gas molecules in the atmosphere?

9. Do atmosphere gases trap all of the heat energy? Explain why.

10. How are some gases in the atmosphere acting like glass in a greenhouse?

11. Explain the greenhouse effect using evidence from the diagrams to support your answer

Activity 2 – What is the Greenhouse Effect?

The Earth's atmosphere is made from a mix of gases that include nitrogen (78%), oxygen (21%), and other trace gases (1%). There is only a small amount of carbon dioxide, water vapor, and methane, but they are the gases that produce the greenhouse effect in Earth's atmosphere.

The term greenhouse effect describes the natural phenomenon where gases in the atmosphere allow sunlight (radiation) in, but trap the heat that would normally escape back into space. The greenhouse effect results in the Earth having an average temperature of about 15°C, which is warmer than it, would be without an atmosphere. About 75% of the natural greenhouse effect is due to water vapor.

1. What is the most common gas in the atmosphere?
2. What gases are known as greenhouse gases?
3. What affect does the greenhouse effect have on Earth's surface temperatures?
4. Predict what you think might happen if there were no greenhouse gases in the atmosphere.

Activity 3 – A Solar Oven

In this project, you will be part of a team that will compete to build a solar energy collector for cooking. Your goal is to design, research, build, and test a solar oven that will reach an internal temperature of **180 degrees F**. That should be hot enough to melt marshmallows in order to make "S'mores".

There are a few requirements that you must meet:

1. Your oven will be a **box style**.
2. You must choose a variable to test during the project
    a. Small box vs. large box
    b. Light color paper inside vs. dark colored paper inside
    c. Open box vs. tightly closed box
    d. Insulation vs. no insulation.
3. You are not allowed to use anything that has magnification (magnifying glasses and papers are not allowed)
4. Can only use items from home, no purchasing items

Team Members:

12. Who are you working with to complete this project? (**Groups may not be larger than 3**)
    a.
    b.

Research

Research on the Internet to find what shape, size or other features are needed to collect the most sunlight effectively. To do this correctly, choose 3 to 5 different internet sites and research how solar ovens are similar and different.

13. What are 3 common things you notice are used to make different types of box solar ovens?
    a.
    b.
    c.

Variable to Test (Use list from above) _____

Materials: Assign who is bringing what to next class.

Team Member Names	Materials bringing to next class.