



ACTIVITY 4: THE GREENHOUSE EFFECT

(ADAPTED FROM US EPA)

NJ Standards Correlation

SCIENCE:

5.3 Mathematical Applications

B.2 Use a variety of measuring instruments and record measured quantities using appropriate units.

5.7 Physics

B.2 Identify sources of heat and demonstrate that heat can be transferred from one object to another.

5.10 Environmental

B.1 Explain how meeting human requirements affect the environment.

MATH:

4.2 Geometry and Measurement

D.3 Select and use appropriate standard units of measure and standard measurement tools to solve real-life problems.

SOCIAL STUDIES:

6.2 Civics

E.5 Identify current issues that may have a global impact and discuss ways to address them.

NY Standards Correlation

SCIENCE:

7.1 b The Living Environment

Over time humans have changed their environment by cultivating crops and raising animals, creating shelter, using energy, manufacturing goods, developing means of transportation, changing populations, and carrying out other activities.

7.2 c The Living Environment

Humans, as individuals or communities, change environments in ways that can be either helpful or harmful for themselves and other organisms.

MATH:

3.CN.1

Students will recognize, understand, and make connections in their everyday experiences to mathematical ideas.



Use either I or II

I

OBJECTIVES:

To prove that a transparent or semitransparent covering traps heat, just as gases in the atmosphere trap heat like a greenhouse.

MATERIALS:

1 empty plastic soda bottle (two-liter size) with a cap, a nail, two thermometers.

ACTIVITY:

Both thermometers and the bottle should be outdoors on the ground in full sunlight. Using the nail, make a hole near the top of the plastic bottle. Place one of the thermometers in the hole. Place the other thermometer outside the bottle, next to it on the ground. Be sure that both thermometers are receiving the same amount of sunlight.

WHAT HAPPENS?

Do both thermometers register the same temperature? If not, which one is higher? Why?

II

OBJECTIVES:

To prove that a transparent covering traps heat, just as gases in the atmosphere trap heat like a greenhouse.

MATERIALS:

2 thermometers, use of a car.

ACTIVITY:

Take the class or group to the presenter's or teacher's car. Place one of the thermometers in the car. Place the other thermometer outside the car. Be sure that both thermometers are receiving the same amount of sunlight.

WHAT HAPPENS?

Do both thermometers register the same temperature? If not, which one is higher? Why?