



**SAFE ROUTES
TO SCHOOLS**
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Title: Eco Points Score Card

Grade level: 5-8

Introduction: This is a game which assigns points to daily activities which require fossil fuel or electricity. Playing the game teaches students about the impact of their transportation choices and energy use on the environment. This is best done in teams.

Objective: Each team must answer certain questions about how they use energy (transportation, appliances etc.) for a cumulative team score. The higher your score the greater your team's impact on the environment. Teams can reduce their totals by answering questions about transportation alternatives and renewable vs. non-renewable energy sources and their effect on the environment.

Skill Set: data collection, systems analysis, math

Set Up: regular classroom

Duration: One or two average class periods, depending on the amount of discussion you wish to engage in.

Materials:

- question sheets
- scrap paper for keeping score
- answer key
- pens/pencils

Preparation:

- copy question sheets and answer key

Discussion:

- What does the term "ecological footprint" mean

(Every living being uses resources from the ecosystem, defined as a community of plants and animals and the environment in which they live, to exist. We define the ecological footprint as the area of the planet that is required to annually supply these requirements. For humans, we can record our activities and use this data to determine the area of the earth that is required to support each of us.

The average American uses 24 acres to support his or her current lifestyle. In comparison, the average Canadian lives on a footprint 30 percent smaller (17

acres), and the average Italian on a footprint 60 percent smaller (9 acres).

- Have you (or your parents) ever changed the way you do something in order to “save the planet”?
(recycling, buying recycled products, car pooling, buying a hybrid car...)
- Why do we need to “save the planet”? What’s happening now that’s never happened before?
(We’re running out of natural resources global warming, the holes in the ozone)
- What natural resources are we running out of?
(water, fossil fuel, land for construction, agricultural land, forest products, plant and animal species...)
- Can any of these things be replaced/restored once they are gone?
(land can be restored in some instances, otherwise once a plant or animal is extinct it is gone forever)
- Won’t science/technology invent a solution?
(In some areas better technology already exists, we must choose to use it. One example would be the choice to buy a Hybrid vehicle instead of an SUV or build a home with a solar heating system. Many of our smaller purchases and practices concerning technology, particularly chemical technology also matter, such as buying paper made from recycled products and not using pesticides in our gardens.)
- What will life be like in the future if we continue to use and pollute the way we do?
(climate change, rising ocean levels resulting in the loss of islands and coastlines, sickness resulting from air and water quality, food and housing will become very expensive, we will lose our open spaces)
- What kinds of things can we do to help the situation?
(See game questions)

Instruction/Modeling:

- relate a personal experience (commitment to human powered transportation, choosing to live close to work, buying locally grown and made food and goods to reduce the pollution generated by shipping...)
- Explain that we will be playing a game where we answer questions about certain things we do everyday, probably without thinking much about them. We will be assigning these activities point values based on their negative impact on the environment. The object is to have the lowest total. We are playing in teams to

demonstrate that even if some people are very careful about how they use energy

what your neighbor does really matters; we are very much in this together. Some questions allow you to reduce your point total and you may also reduce the teams score by answering the bonus questions about energy sources and the environment.

Assessment:

- Were students able to calculate scores for their groups?
- Were students able to reduce their scores by answering questions about transportation, energy sources and the environment?

Closing:

- Have a discussion about decisions they are going to make as adults which will affect their environment.
- Have students brainstorm about ways they can help their families make changes today.



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Eco Score Card

Choose the answer which best describes what you usually do.

1) Did you leave the water running while you brushed your teeth this morning?

Yes ____ 10 points No ____ 0 points

2) Many of our local trip destinations are within 2 miles, such as our friends houses, the store, the library, the park or sports field. The last time you went someplace about 2 miles away (about 5 minutes by car) did you

ask for a ride in the car ____ 20 points walked or rode my bike ____ subtract 10 points

3) The last time you needed to ask for a ride in the car

you considered whether it could wait until you were out for something else. ____ subtract 3 points

you considered other errands you could run at the same time. ____ subtract 3 points

you asked other members of your family if they had any errands which could be done at the same time. ____ subtract 3 points

I only thought about where I needed to go ____ 10 points

4) How did you get to school today?

Carpool (more than one family) ____ 2 points Bus ____ subtract 5 points

Walked, Rode a bike, scooter or other human powered vehicle ____ subtract 10 points

Family car ____ 20 points

5) Does your classroom/school recycle?

paper yes ____ 0 points no ____ 10 points

containers yes ____ 0 points no ____ 10 Points

batteries yes ____ 0 points no ____ 10 Points

6) Does your house recycle?

paper

yes ____ 0 points no ____ 10 points

containers

yes ____ 0 points no ____ 10 points

batteries

yes _____ 0 points no _____ 10 points

7) In the last month have you taken a Golden Gate Transit bus or Ferry to get somewhere?

Yes _____ subtract 10 points no _____ 0 points

8) The last time you wanted something out of the refrigerator did you think about what you were getting first or did you stand around with the door open trying to figure out what you wanted?

thought first _____ 0 points thought with the door open _____ 5 points

9) Have you eaten red meat more than twice this week?

yes _____ 5 points no _____ 0 Points

10) Have you ever planted a tree?

yes _____ subtract 7 points from your total no _____ 0 Points

11) The last time you got together with several friends did you

each arrive separately _____ 10 points arrange to share rides _____ subtract 5 points

12) In the last week, at any time, did you ride a human powered vehicle (bike, scooter, skateboard) or walk to get someplace you wanted to go (store, school, friends house)?

yes _____ subtract 10 points no _____ 0 Points

13) When you put away leftover food what do you prefer to use:

Saran wrap or aluminum foil _____ 5 points reusable containers _____ 0 Points

14) The last time I was cold in my house I:

put on some warmer clothing _____ 0 points turned up the thermostat _____ 10 points

15) The last time I spilled something I cleaned it up with:

paper towel _____ 5 points sponge or cloth towel or rag _____ 0 points

16) At home we unplug electronics with LED's (light emitting diodes) when they are not being used.

yes _____ 0 points no _____ 5 points

Bonus Questions

1) Compact fluorescent bulbs use _____ of the energy of a regular bulb and last longer so even though they cost more they save money.

1/2 _____ 1/4 _____ 1/3 _____

2) If you're sitting still with the car motor running for more than _____ you should turn the car off.

30 seconds _____ 60 seconds _____ 2 minutes _____

3) Styrofoam takes _____ to break down; don't buy things in Styrofoam containers, choose cardboard instead (for example when buying eggs)

5 years _____ 50years _____ 500 years _____

4) Paper can be made from things other than trees.

True _____ False _____

5) The number one single cause of air pollution in the US today is:

factories _____ power plants _____ automobiles _____

6) California gets more of it's electricity from

coal burning power plants in Nevada, Arizona and Colorado _____

solar power plants in the Mojave desert _____

7) Which causes less pollution:

coal burning power plants _____ power plants which burn natural gas _____

8) Which of these energy sources is renewable? (place a check on the line)

Coal _____ natural gas _____ nuclear power _____ fossil fuel _____
hydroelectric power _____ solar power _____ wind power _____ wood _____

9) You can't generate solar power when it's cloudy.

True _____ False _____

10) The typical American family generates averages an average of 3 _____ 5 _____ 7 _____
car trips per day, most of them under 2 miles _____ over 2 miles _____

Answer Key

1) If you leave the water running while you brush your teeth for two minutes that's nearly ten gallons of water. Think about all the ways we waste water: water running down the gutter from over watering the lawn, hosing off the sidewalk instead of sweeping it, letting the water run in the kitchen or bathroom sink when we aren't actually using it. Water is a diminishing resource we often take for granted.

2/3/4) Our choice of transportation is the most important decision we make about our environment.

5/6) Landfill is taking up a lot of space so recycling helps conserve land. When trash is burned it pollutes the air so recycling reduces pollution. Paper is made from trees so recycling paper and cardboard or using it for scratch preserves our forests.

- 7) Our choice of transportation is the most important decision we make about our environment.
- 8) Refrigerators waste energy in many ways; leaving the door open, setting the temperature too low, letting ice build up in the freezer or having an older fridge which isn't well insulated are big wastes of energy.
- 9) Cattle production in many parts of the world has led to the destruction of much of the rain forests.
- 10) Planting a tree will help keep the air clean, provide a habitat for wildlife, provide shade and make our communities more attractive.
- 11/12) Our choice of transportation is the most important decision we make about our environment.
- 13) Aluminum production is a highly toxic process. Both plastic wrap and aluminum foil do not break down but become permanent land fill. Reusable containers instead of dishes covered by foil or plastic solves the problem.
- 14) Artificially heating and cooling our environments is something we do without first considering other ways to stay warm or cool off.
- 15) Many paper products can be replaced by reusable cloth products such as canvas shopping bags instead of paper or plastic and cloth napkins.
- 16) The little lights on the VCR and the stereo don't use a lot of electricity but they sure do add up.

Bonus Answers, Values and Discussion Points

1) Compact fluorescent bulbs use _____ of the energy of a regular bulb and last longer so even though they cost more they save money.

1/2 _____ 1/4 X 1/3 _____ (-2 points)

2) If you're sitting still with the car motor running for more than _____ you should turn the car off.

30 seconds 60 seconds _____ 2 minutes _____ (-2 points)

(sitting in the car with the motor running is a big waste of fuel and cause of pollution.)

3) Styrofoam takes _____ to break down; don't buy things in Styrofoam containers, choose cardboard instead (for example when buying eggs)

5 years _____ 50years _____ 500 years (-2 points)

(Don't buy things in Styrofoam containers, choose cardboard instead, for example when buying eggs)

4) Paper can be made from things other than trees.

True False _____ (-2 points)

(Paper can be made without trees by using such fibers as hemp. When buying paper made from trees choose recycled.)

5) The number one single cause of air pollution in the US today is:

factories _____ power plants _____ automobiles (-4 points)

6) California gets more of it's electricity from

coal burning power plants in Nevada, Arizona and Colorado

solar power plants in the Mojave desert _____

(-5 points)

7) Which causes less pollution:

coal burning power plants _____ power plants which burn natural gas (-2 points)

(Burning coal for fuel causes serious air pollution. Natural gas burns cleaner but is much more expensive. Both are nonrenewable sources of energy.)

8) Which of these energy sources is renewable? (place a check on the line)

Coal _____ natural gas _____ nuclear power _____ fossil fuel _____
hydroelectric power solar power wind power wood

(-2 points for each correct answer)

9) You can't generate solar power when it's cloudy.

True _____ False X (-2 points)

10) The typical American family generates averages an average of 3 _____ 5 _____ 7 X _____ car trips per day, most of them under 2 miles X over 2 miles _____

(-2 points for each correct answer)

(Coal, natural gas, nuclear power and fossil fuel are nonrenewable sources of energy which means we will eventually run out. Hydroelectric power, solar power, wind power are renewable sources of energy. Wood is renewable, in many parts of the world people still use wood for heating and cooking but are cutting down the forests faster than they can grow back. Burning anything causes air pollution.)