



## Family Activities

### UPPER ELEMENTARY (3-5) AND MIDDLE SCHOOL

#### ACTIVITY #1

#### Fuel for thought: Local food sleuth

Green vegetables may be good for you, but they may not be good and green for the environment—depending where they're grown, that is. Approximately 17% of fossil fuels in the U.S. are used for food production, and 80% of energy goes into transport and processing.\* Energy use and emissions—from both the production (processing, packaging, refrigeration, etc.) and transportation of food—are truly mindboggling. Think of the journey—from farm to distributor to store or restaurant. Did you know that the average piece of supermarket produce travels 1,500 miles before being consumed by an American? That's some carbon footprint!\*\*

#### Tracking footprints

In this activity, you'll take on the role of "local food" detective for a week.

Begin by doing some investigative research. On your next trip to the supermarket, bring a notebook and pencil, and jot down the origin of a variety of fruits and vegetables (e.g., red grapes from Chile, bananas from Ecuador, kiwis from Italy or New Zealand, potatoes from Idaho or Maine).

Go home and locate these countries or states on a wall map or in an atlas. Choose a few types of produce and estimate how many miles they traveled to get to you, using the map key/legend or the Internet. How do you think they were transported? By air, truck, or both?

#### Doing the math

Being green doesn't mean sitting around and watching the grass grow. The new green millennium requires serious science, combined with serious math. Your next task is to crunch some serious numbers.

Start small by calculating how much fuel it takes for a round-trip journey to your local supermarket. Follow these steps:

1. Measure the mileage of a round-trip car ride to the supermarket and back home again.

2. Next calculate your family car's average MPG rate. Here's how:

- Join your parents on their next trip to the gas station, and ask them to fill up the tank. Remember to bring your notebook and pencil.
- Write down the odometer reading or else set the trip meter to zero (push in the little button underneath the odometer; or if your car has a computerized console, refer to the owner's manual).
- Now write down the number of gallons purchased. If you're good at fractions and decimals, round down to the tenth.

Important: You need to join your parents again on the very next trip to the gas station, so remind them not to go without you! Have them drive until the tank is almost empty (but not so empty that they run out of gas, or they may make you walk to the gas station.)

- Note the odometer reading on the second time you fill up.
- Now subtract that number from the first odometer reading in your notebook.
- Divide that number (miles) by the number of gallons you purchased.
- This figure is your MPG.

3. Based on your figures from steps 1 and 2 above, calculate how much fuel you use during a round-trip drive to your local supermarket.

To calculate fuel consumption, take the number of miles you travel round-trip to the supermarket and divide by the MPG figure. The result is the number of gallons of fuel used to make the trip.

Example:

Round-trip mileage to supermarket = 10 miles

MPG = 20 miles per gallon

$10 \div 20 = .5$  gallons

(This may not seem like much, but think about the average number of trips you take to the supermarket each week...multiply the number of gallons times 52! That's a lot of fuel per year.)

4. That's just the first step (or the last one, depending on how you look at it). Now think of how far your food traveled before it even hit the supermarket shelves, and how much fuel it needed to get there. Although it's hard to calculate a precise figure for this exercise, a guesstimate is fine.

Say you're really craving strawberries for dessert, but they're not in season where you live. You live in Syracuse, NY and it's the dead of winter. The strawberries in your supermarket come from Sacramento, CA. Still, they'd taste really good right about now!

5. You can use one of the many clever mileage calculators available online to estimate how far and long it would take for a pint of strawberries to reach your supermarket, then guesstimate how much fuel it would take to transport it all that way.

Online mileage calculator example:

Rand McNally Mileage Calculator

<http://www.randmcnally.com/rmc/directions/dirGetMileage.jsp?cmtty=0>

For instance, according to the online mileage calculator, here's the journey by truck from Sacramento, CA to Syracuse, NY:

Driving Distance: 2712 miles, Driving Time: 39 hours, 35 minutes

6. Heavy trucks used for transport average 5-6 MPG. So to figure out how many gallons of fuel it takes to transport your pint of strawberries from Sacramento to Syracuse, you'd divide the number of miles by the MPG amount (use 5.5 MPG).

$$2712 \div 5.5 \text{ MPG} = 493 \text{ gallons of fuel}$$

7. Now add the figure from your calculation in #3 to see just how much fuel it would take for you to get your hands on those strawberries. And remember: this does not take into consideration the energy and fuel that were used along the way for fertilizer production, farm machinery, processing, packaging, refrigeration, and more.

Now... just how badly do you want those strawberries?

## **ACTIVITY #2:**

### **Fuel for Thought: "The Life of a Strawberry"**

Here's a fun project for those who enjoy creative writing and cartooning:

- Pick one of your favorite fruits or vegetables that is grown and shipped from another part of the country or the world.
- Use an atlas and the Internet to research the distance from its origin to its final destination.
- Write a short story or comic strip describing the life and journey of your favorite produce. Include details about the different modes of transportation, the trials and tribulations of time spent at a warehouse or distributor, the final journey to the supermarket, and the thrill of being chosen by you!

For more information, check out these links:

My MPG (*U.S. Department of Energy, U.S. Environmental Protection Agency*) helps you calculate and track your family's fuel economy. It also has a handy printable form for recording your purchases at the pump.

<https://www.fueleconomy.gov/mpg/MPG.do>

Environmental cost of shipping groceries around the world (*New York Times*)

<http://www.nytimes.com/2008/04/26/business/worldbusiness/26food.html?em>

The Carbon Footprint of a Burger (*Treehugger.com*)

[http://www.treehugger.com/files/2006/12/the\\_carbon\\_foot\\_1.php](http://www.treehugger.com/files/2006/12/the_carbon_foot_1.php)

Enter your ZIP code to find local and organic food near you. (*SustainableTable.org*)

<http://www.sustainabletable.org/>

#### Sources:

\* Minnesotans for Sustainability

"...about 17% of U.S. fossil energy expenditure supports our food system."

[http://www.mnforsustain.org/calif\\_food\\_supply\\_threatened\\_pimentel.htm](http://www.mnforsustain.org/calif_food_supply_threatened_pimentel.htm)

FoodandWaterWatch.org

<http://www.foodandwaterwatch.org/food/factoryfarms/dairy-and-meat-factories/climate-change/GreenhouseGasIndustrialAg.pdf>

*New York Times*

[http://www.nytimes.com/2008/10/12/magazine/12policy-t.html?\\_r=1&em=&adxnnl=1&pagewanted=all&adxnnlx=1232719225-o/fmcS1m24j/ffEfpIUo+g](http://www.nytimes.com/2008/10/12/magazine/12policy-t.html?_r=1&em=&adxnnl=1&pagewanted=all&adxnnlx=1232719225-o/fmcS1m24j/ffEfpIUo+g)

Food, Fuel and Freeways – Iowa State University

[www.leopold.iastate.edu/pubs/staff/ppp/food\\_mil.pdf](http://www.leopold.iastate.edu/pubs/staff/ppp/food_mil.pdf)

\*\* SustainableTable.org

<http://www.sustainabletable.org/issues/buylocal/>



For more resources, visit [www.FuelOurFutureNow.com](http://www.FuelOurFutureNow.com).