Activity Preparation Guide for

How Much Is That?

How can we think about how much energy is involved in some common activities?

Advance Preparation Materials & Procedures

- How Much is That game board template (Website)
- Big Mac cards template (Website)
- Refrigerator cards template (Website)
- Wood & Gasoline burned cards template (Website)
- How Much is That answer sheet (Website)
- Card stock
- Scissors
- Paper cutter (optional)
- Clear tape

1. Print the 6 game board pages in color, on white paper or card stock.
2. Cut around the dark lines of each of the tables on these six pages and lay them out as shown in the diagram below.

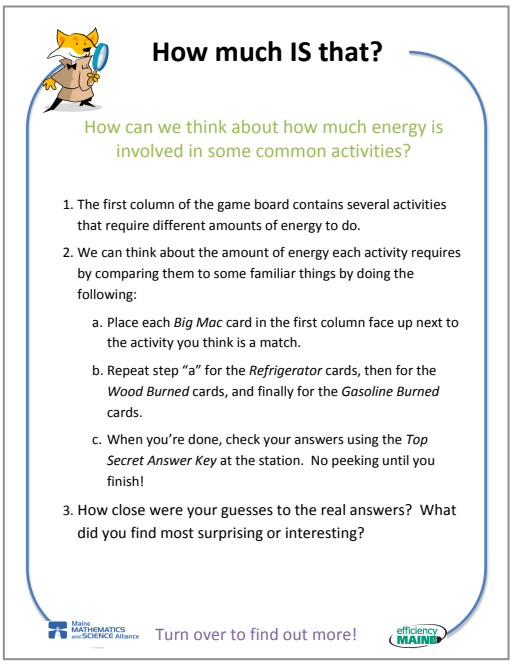
3. Tape all the sections together.
4. Consider laminating the game board before proceeding.

5. On card stock and in color, print one set each of the Big Mac, Refrigerator, Wood Burned, and Gasoline Burned cards. Cut them out and sort them into their individual piles.
6. Print a copy of the Top Secret Answer Key and fold it so the answers are inside.

Activity Supplies

- Station card (1)
- Game board (1)
- Big Mac cards (1 set of 6 cards)
- Refrigerator cards (1 set of 6 cards)
- Gasoline burned cards (1 set of 6 cards)
- Wood burned cards (1 set of 6 cards)
- Top Secret Answer Key

Activity Steps



How much IS that?

How can we think about how much energy is involved in some common activities?

1. The first column of the game board contains several activities that require different amounts of energy to do.
2. We can think about the amount of energy each activity requires by comparing them to some familiar things by doing the following:
   a. Place each *Big Mac* card in the first column face up next to the activity you think is a match.
   b. Repeat step "a" for the *Refrigerator* cards, then for the *Wood Burned* cards, and finally for the *Gasoline Burned* cards.
   c. When you're done, check your answers using the *Top Secret Answer Key* at the station. No peeking until you finish!
3. How close were your guesses to the real answers? What did you find most surprising or interesting?

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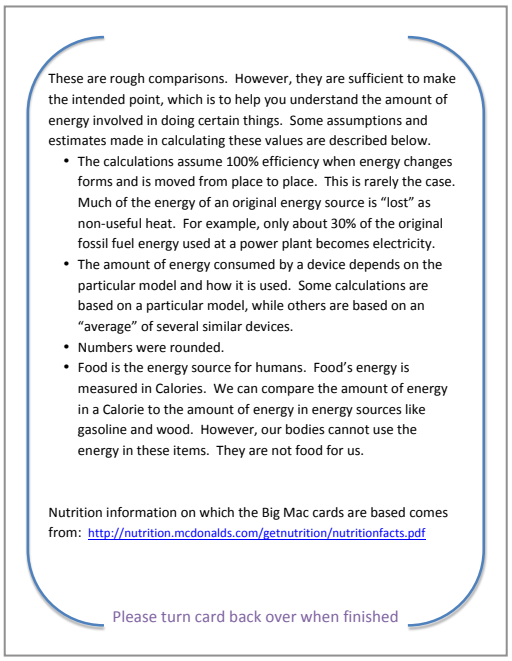
Turn over to find out more!

efficiency MAINE



These are rough comparisons. However, they are sufficient to make the intended point, which is to help you understand the amount of energy involved in doing certain things. Some assumptions and estimates made in calculating these values are described below.

- The calculations assume 100% efficiency when energy changes forms and is moved from place to place. This is rarely the case. Much of the energy of an original energy source is "lost" as non-useful heat. For example, only about 30% of the original fossil fuel energy used at a power plant becomes electricity.
- The amount of energy consumed by a device depends on the particular model and how it is used. Some calculations are based on a particular model, while others are based on an "average" of several similar devices.
- Numbers were rounded.
- Food is the energy source for humans. Food's energy is measured in Calories. We can compare the amount of energy in a Calorie to the amount of energy in energy sources like gasoline and wood. However, our bodies cannot use the energy in these items. They are not food for us.

Nutrition information on which the Big Mac cards are based comes from: http://nutrition.mcdonalds.com/getnutrition/nutritionfacts.pdf

Please turn card back over when finished

Variations and Extensions

- Encourage families to look up the units used to measure energy in food, electricity, gasoline, and wood.
- Encourage families to determine how much solar, or wind power it would take to accomplish one or more of the activities identified at this station.