

Knowing Energy: Tea at Home

Energy Revealed
Learner Worksheet
Level 1-2: Grades 3-8
Level 3-4: Grades 9-12



Reminder:

- $kWh = (\text{Watts}/1000) \times \text{Time (hours)}$
- $1kW = 1000 W$

Level 1 Questions/Activities:

1. How long does it take for the water to boil in hours? (1 hour = 3600 seconds/3600 seconds per hour)

2. How many kW is your machine? See reminder above.

3. How many kWh does the machine use per pot?

4. If you make one pot a day, how many kWh are used in one year?

Level 2 Questions/Activities:

- **Note:** Complete level 1 questions/activities first if you haven't already done so.

1. How many pots of coffee would it take to consume 1 kWh of energy?

2. Try the experiment with refrigerated water and then hot water. What are the results in time to boil water?

3. Check to see if your kettle uses any phantom power. (Power used when water isn't being boiled).

Level 3 Questions/Activities:

- **Note:** Complete levels 1-2 questions/activities first if you haven't already done so.

1. How does the volume of water in the pot affect the energy used to boil?

2. What other appliances in your home can you find that have phantom power as well?

Level 4 Questions/Activities:

- **Note:** Complete levels 1-3 questions/activities first if you haven't already done so.

1. What uses more energy; the kettle boiling water or the kettle sitting idle in a year? (Assume 5 Watts idle power or phantom power and one pot a day boiled)

2. What other variables can you change to influence the time that it takes for the water to boil, assuming the volume is the same?

3. **BONUS:** Calculate how many kWh you could eliminate in your house with phantom power reduction (Tip: Phantom power is 24/7, 365).
