

## coal to electricity

**Title:** Coal To Electricity

**Level:** Middle School

**Time:** 40 minutes

**KERA Goals:** 1.9; 2.13; 2.4

### Objective:

Over 56 percent of the electricity in U.S. is generated from coal. In fact, more than 84 percent of the coal consumed each year in the U.S. is used to generate electricity. It takes about one pound of coal to generate one kilowatt hour (kwh) of electricity.

<b>Electric Appliance</b>	<b>Average Wattage</b>	<b>Average Kilowatts</b>	<b>Estimated Pounds of Coal Consumed Annually</b>
Dishwasher	1,201	1.20	363
Microwave	1,450	1.45	190
Range	12,200	12.20	730
Clothes Dryer	4,856	4.86	993
Iron	1,100	1.10	60
Washing Machine	512	0.51	103
Refrigerators/Freezers	2,250	2.25	1,500
Hair Dryer	600	0.60	25
B/W Television	45	0.05	100
Color Television	145	0.14	320
Clock	2	0.01	320
Vacuum Cleaner	630	0.63	46

### Materials:

Graph paper

Colored pens

Copy of "Coal to Electricity" table

### Questions:

1. Construct a bar graph that indicates the amount of coal required to run each of the following appliances for one hour.

dishwasher

clothes dryer

coal to electricity

microwave      water heater  
range            color TV

2. How many pounds of coal would be needed to operate a color TV for 8 hours? 16 hours? 24 hours?
3. How many hours of electricity annually do the following appliances consume based upon the "Coal to Electricity" table? Color TV? Water Heater? Dishwasher? Clock?
4. How much more coal is needed to run a color TV for one hour than to run a B/W TV?
5. A 100 watt light bulb uses 1kw of electricity per hour. How many pounds of coal are needed to run one 100 watt light bulb for 6 hours? 8 hours? 10 hours?

Answers:

1. Answers will vary.
2. Eight hours = 1.12 pounds, 16 hours = 2.24 pounds, 24 hours = 3.36 pounds
3. Color TV = 320 kwh, water heater = 4,219kwh, dishwasher = 363kwh, clock = 320 kwh
4. 0.09 pounds per hour
5. Six hours = 0.6 pounds, eight hours = 0.8 pounds, ten hours = 1 pound

Provided by National Energy Foundation.