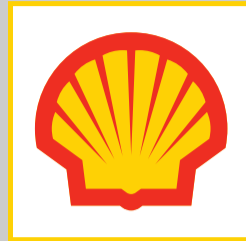


TEACHER'S GUIDE

Activity 2 - Energy Through The Ages



OBJECTIVE

Determine the energy required to run various appliances

ANSWER KEY

APPLIANCE	DAILY WATTS*	HOURS USED PER MONTH	WATTS USED PER MONTH	EQUIVALENT KWH
TELEVISION	113	X 60 HOURS	=6,780	=6.78
COMPUTER & MONITOR	270	X 120 HOURS	=32,400	=32.4
CLOTHES WASHER	425	X 20 HOURS	=8,500	=8.5
CLOTHES DRYER	3,400	X 20 HOURS	=68,00	=68
			TOTAL MONTHLY KWH	=115.68

1. (Total Monthly kWh x 3,400); $115.68 \times 3,400 = 393,312$ Btu
2. (Total Btu ÷ 1,031); $393,312 \div 1,031 = 381.49$ cubic feet of natural gas

CHALLENGE ANSWERS FOR THE PROS AND CONS CHART MIGHT INCLUDE:

TYPE OF FUEL	PROS	CONS
COAL	<ul style="list-style-type: none"> ■ Inexpensive ■ Well established ■ Large amounts available for many years ■ Can be used to generate electricity 	<ul style="list-style-type: none"> ■ Air pollution ■ Nonrenewable ■ Negative impacts of mining ■ Safety issues ■ Restoration issues
OIL	<ul style="list-style-type: none"> ■ Widely available ■ Well established distribution network ■ Cars are currently designed to run on gasoline 	<ul style="list-style-type: none"> ■ Air pollution ■ Nonrenewable ■ Getting more expensive ■ Increase worldwide demand (e.g., China, India) affects price
NATURAL GAS	<ul style="list-style-type: none"> ■ Widely available ■ Burns more cleanly than coal and oil (lower CO₂ emissions) ■ Easily transported 	<ul style="list-style-type: none"> ■ Cleaner burning than others but still has emissions ■ Nonrenewable ■ Price fluctuates

NATIONAL STANDARDS

Science

Standard 9. Understands the sources and properties of energy
Standard 12. Understands the nature of scientific inquiry

Math

Standard 1. Uses a variety of strategies in the problem-solving process
Standard 2. Understands and applies basic and advanced properties of the concepts of numbers
Standard 3. Uses basic and advanced procedures while performing the processes of computation
Standard 9. Understands the general nature and uses of mathematics

Geography

Standard 7. Knows the physical processes that shape patterns on Earth's surface
Standard 14. Understands how human actions modify the physical environment
Standard 16. Understands the changes that occur in the meaning, use, distribution, and importance of resources
Standard 18. Understands global development and environmental issues

TIME CONSIDERATIONS

Approximately one class period