

Name:	Class:	Date given:
		Date due in:

Energy in the Home

1. Circle the items that use electricity. [3]



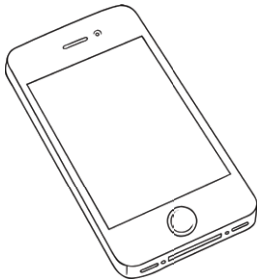
hairdryer



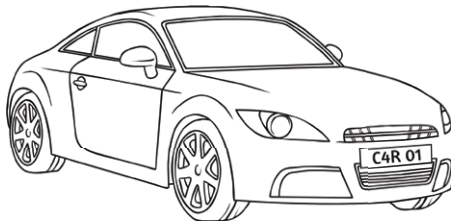
kettle



television



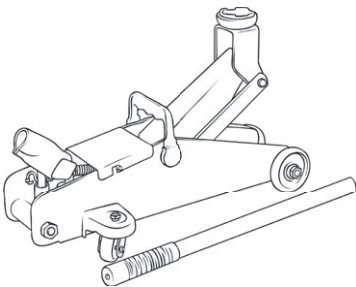
mobile phone



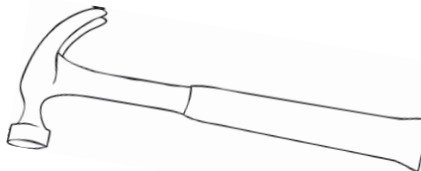
car



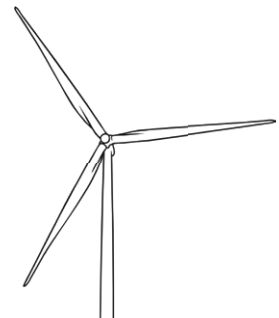
watch



trolley jack



hammer



wind turbine

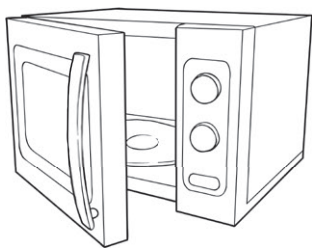
2. Which units is energy measured in? Circle one answer. [1]

watts (W) joules (J) hours (h)

3. Which units is power measured in? Circle one answer. [1]

watts (W) joules (J) hours (h)

$$\text{energy transferred (J)} = \text{power (W)} \times \text{time (s)}$$



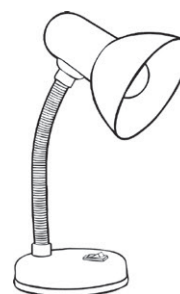
microwave
900W
2½ mins



hairdryer
2100W
6 mins



kettle
3000W
60 secs



lamp
4W
8 hrs

4a. Calculate the energy transferred in each device. [4]

microwave: _____

hairdryer: _____

kettle: _____

lamp: _____

4b. Which device transfers the most energy? [1]

4c. Calculate the energy transfer per minute for each device and present the information in the table below. [5]

The Electricity Co.

Mr and Mrs Smith

Your electricity bill

Quarter	Usage
Jan - Mar 2015	1013 kWh
Apr - Jun 2015	864 kWh
Jul - Sep 2015	692 kWh
Oct - Dec 2015	1273 kWh

Price per unit £00.18p

5a. Look at the electricity bill above. Calculate the average monthly cost for electricity. [3]

£ _____ / month

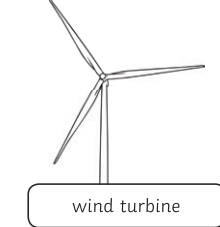
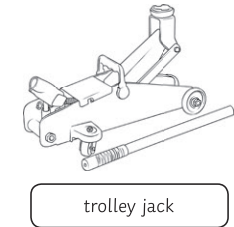
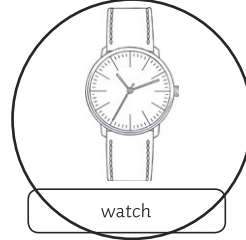
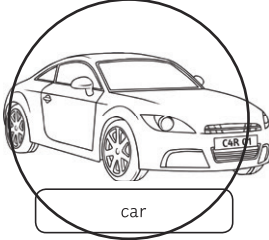
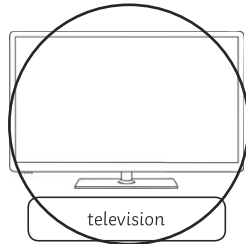
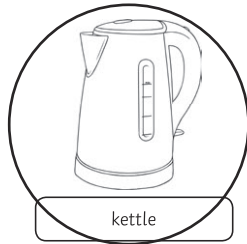
5b. Suggest why there is higher electricity usage between October and March.

Learning Outcomes (tick if achieved)

Q1	I can identify appliances that run using electricity	
Q2	I can recall the units that energy is measured in	
Q3	I can recall the units that power is measured in	
Q4	I can calculate energy transfer in devices	
Q5	I can calculate the cost of electricity usage	

Energy in the Home Answers

1. Circle the items that use electricity. [3]



2. Which units is energy measured in? Circle one answer. [1]

watts (W)

joules (J)

hours (h)

3. Which units is power measured in? Circle one answer. [1]

watts (W)

joules (J)

hours (h)

4a. Calculate the energy transferred in each device. [4]

microwave: $900\text{W} \times 150\text{s} = 135000\text{J}$ (135kJ)

hairdryer: $100\text{W} \times 360\text{s} = 756000\text{J}$ (756kJ)

kettle: $3000\text{W} \times 60\text{s} = 180000\text{J}$ (180kJ)

lamp: $4\text{W} \times 28800\text{s} = 115200\text{J}$ (115.2kJ)

4b. Which device transfers the most energy? [1]

The hairdryer

4c. Calculate the energy transfer per minute for each device and present the information into the table below. [5]

Appliance	Energy Transfer / minute (J)
Microwave	$900 \times 60 = 54\,000$
Hairdryer	$2\,100 \times 60 = 126\,000$
Kettle	$3\,000 \times 60 = 180\,000$
Lamp	$4 \times 60 = 240$

5a. Look at the electricity bill above. Calculate the average monthly cost for electricity. [3]

1 mark for each step:

$$\text{Total usage per year} = 1013 + 864 + 692 + 1273 = 3842$$

$$\text{Average usage per month} = 3842 \div 12 = 320.167$$

$$\text{Average cost per month} = 320.167 \times 0.18 = 57.63$$

£57.63/month

5b. Suggest why there is higher usage between October and March.

There is higher usage in the winter months when it is darker and colder, so lights and heating appliances are used more often.