

## GOING GREEN

### Lighting-up time



### National Curriculum

This activity supports work in:

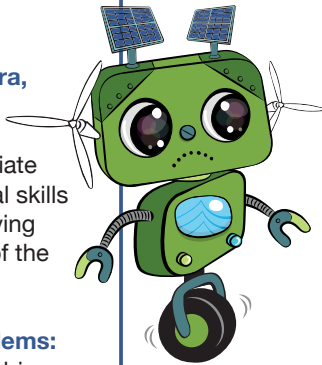
#### MATHS

##### Ma2 Number and algebra, Problem solving:

1a) Make connections in mathematics and appreciate the need to use numerical skills and knowledge when solving problems in other parts of the mathematics curriculum.

##### Solving numerical problems:

4a) Choose, use and combine any of the four number operations to solve word problems involving numbers in 'real life', money or measures of length, mass, capacity or time, then perimeter and area.



### How to use the worksheet

- You will need pictures of ordinary (incandescent) light bulbs and their low energy (compact fluorescent) counterparts. Several internet sites provide these. Use the first table to convert the watts per hour into kilowatts per hour. The children should then use a calculator to work out how much energy they would save by switching to a low energy bulb, and record their results in the second table.
- Using the figure of 9.1p per kilowatt (kWh), or the unit price stated on your electricity bill, calculate the cost-saving of switching to low energy light bulbs. Explain that 1 unit = 1 kilowatt (1000 watts) of power used for 1 hour. Do not ask children to bring in electricity bills from home, as they can be used in identity fraud if mislaid.
- Children could also compare bulbs by taking into account how much they cost and how long in hours they last on average. You can find these facts from electricity company websites or manufacturers.
- As an extension activity, do a survey of light bulbs used at school or home. Use a spreadsheet for recording wattage, average number of hours used per day, kilowatts used per year and cost, as appropriate for the children's levels of attainment in maths and ICT. Use a database to produce graphs for comparison of different light bulbs.



Also supports work in:

#### ICT

##### Exchanging and sharing information:

3a) Learn how to share and exchange information in a variety of forms.

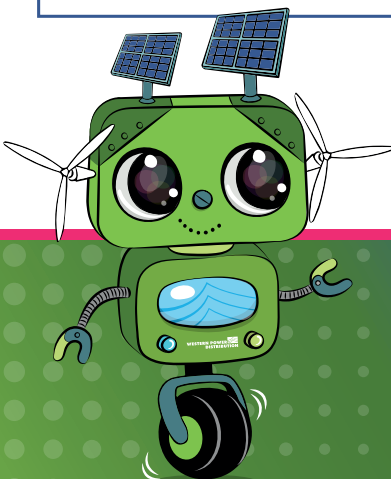
##### Breadth of study:

5b) Work with others to explore a variety of information sources and ICT tools (for example, searching the internet for information).

### Key electricity facts

- Most bulbs have their wattage (W) printed on the glass. This indicates the number of watts used per hour.
- Voltage, which is also printed on the bulb, indicates the power of the electric current required to provide the correct wattage.
- Household light bulbs work on 220 to 240 volts. If you tried to power them with, say, a 12V battery, the current would be too weak to produce any noticeable light.

**Ecobot says:** For more information see [www.energysavingtrust.org.uk/energy-at-home](http://www.energysavingtrust.org.uk/energy-at-home)



## GOING GREEN

### Lighting-up time

The amount of electricity that equipment uses is measured in watts.

**1.** Look at pictures of ordinary light bulbs to find out how many watts (W) they use per hour.

**2.** Draw all the bulbs and write the number of watts they use in the chart below.

**3.** Convert the watts to kilowatts (kW).  
1 kW = 1000W.



Ordinary light bulb	Watts per hour	KW per hour	Low energy light bulb	Watts per hour	KW per hour



**4.** Use a calculator to find out how many watts the first ordinary bulb would use in a year if it was left on for six hours per day. Write the calculation you will use here:

.....  
.....  
.....

**5.** Complete the chart below to show how much energy would be saved by swapping the bulb for a low energy one.

WATTAGE	Kilowatts used per year if left on 6 hours per day		Energy saved per year
	Ordinary bulb	Low energy light bulb	

**Ecobot says:**

Copy the second chart and extend it to work out the figures for all your light bulbs.

Work out how much energy could be saved in one room by swapping all the bulbs for low energy ones.

