? How to use this worksheet

- You will need pictures of ordinary light bulbs and their low energy (LED) 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 hour, 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 hour (1000 watt hours) 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.

⚡ Key Electricity Facts

- Most bulbs have their wattage (W) printed on the glass. This indicates the number of watt hours.

- Voltage, which is also printed on the bulb, indicates the voltage required to produce the indicated wattage.

- Household light bulbs work on 230V. If you tried to power them with, say, a 12V battery, the current would be too weak to produce any noticeable light.

Exercise Extension: 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.

National Curriculum supporting information

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

b) respond to a range of stimuli and accompaniment

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

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)

Related Material
www.energysavingtrust.org.uk/domestic/content/energy-efficient-lighting

POWER
DISCOVERY
ZONE

KS2
WORKSHEET 13

MATHS

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 watt hours they use per hour then look at pictures of low energy versions of these bulbs.

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	watt hours	kilowatt hours	low energy light bulb	watt hours	kilwatt hours

1. 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: _____

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

	kilowatt hours used per year if left on 6 hours per day		
wattage	ordinary bulb	low energy lightbulb	energy save per year

Now try this!

- 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