

Year 8 Independent Learning Project (ILP)



Subject: **Maths**

Date for the completion of this project: **Monday 1st October 2018**

ILP Title: **Electricity in the home**

In this project you will learn: <ul style="list-style-type: none"><input type="checkbox"/> To use both mental and written multiplication and division in real life problem solving.	Time you should spend on this project: No more than 6 hours
At the end of this project you should: <ul style="list-style-type: none"><input type="checkbox"/> Have answered all questions and shown your working out.<input type="checkbox"/> Checked your answers using a calculator.<input type="checkbox"/> Hand your completed activities to your maths teacher.	
You should break down your time in the following way: <p>Task 1 – 1.5 hours Task 2 – 1.5 hours Task 3 – 1.5 hours, including spending some time observing which lights get used in your house and how long they are on for. Ask your family to estimate how long they think lights are left on for. Extension – Create a poster with newspaper clippings of advertisements for energy saving products in the house. (1.5 hours)</p>	
Weblinks you should use to help you with this task: www.mymaths.co.uk : search 1243 for help with value for money calculations, search 1025 for help with multiplying double digits.	
Other resources and ideas which may help you could be: Look through newspapers to find advertisements for new home insulation, double glazing and solar panels. How many different suppliers and products can you find? What deals do they offer? Cut these out and make a poster (Extension)	
Your work will be assessed by: <ul style="list-style-type: none"><input type="checkbox"/> Your maths teacher will provide a written or verbal comment on the tasks you have completed.	
The key words to learn in this project are: kWh (kilowatt hours); cavity wall; insulation; lagging; ground based heat pump; draught proofing	
Your parents may be able to help you by: <ul style="list-style-type: none"><input type="checkbox"/> Test you on the definitions of key words and explain them if needed.<input type="checkbox"/> Checking spelling.<input type="checkbox"/> Talking to you about energy use in your house and showing you the energy bills.<input type="checkbox"/> Save newspapers (Telford Journal) to find advertisements for the extension task.<input type="checkbox"/> Ensure you complete all tasks.	



Case study 1: Energy in the home

With headlines like these, many people are looking at alternative forms of energy and other ways of saving energy in their homes.

ELECTRICITY PRICE SHOCK!

Oil cost hits new high

Gas price explodes

Task 1

- Look at all the green labels. Work out how long it would take for the savings to repay the cost of installing the item.
- Which things do you think are most cost effective?
 - Which are not so cost effective?
- Would the length of time you are going to live in the same house alter your decisions?

Solar power

Save up to 70% on your yearly hot water bill. Save money on your electricity bill forever. Cut your CO₂ emissions. Use an everlasting **FREE** source of energy!

Solar water heating

Cost £5000
Save £100 per year

Small wind generator

Cost £5000
Save £250 per year



Loft insulation

Cost £350
Save £200 per year

Solar panels

Cost £6000 per panel
Save £120 per panel per year

Cavity wall insulation

Cost £350
Save £200 per year

Lagging hot water tank

Cost £20
Save £50 per year

Energy efficient light bulbs

Task 3

- A standard light bulb can last up to 1000 hours switched on.
A typical **energy efficient** bulb can last up to 15000 hours.
- Think about a light bulb in your house.
 - How many hours would it be switched on per day on average?
 - Estimate how many hours it would be switched on per year.
 - How long would this bulb last i if it is energy-efficient ii if it is standard?
 - In reality, an energy-efficient bulb might typically last for only 40% of this time. Using your answer to b, estimate how long in years a typical energy-efficient bulb might last.

Efficient A rated boiler

Cost £2000
Save £150 per year

New heating controls

Cost £150
Save £50 per year

Ground based heat pump

Cost £12000
Save £800 per year

Double glazing

Cost £3500
Save £100 per year

Draught proofing

Cost £120
Save £50 per year

