

National grid

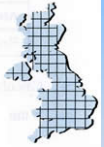
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Q1 Number these statements 1 to 5 to show the order of the steps that are needed to deliver energy to Mrs Miggins' house so that she can boil the kettle.

3	An electrical current flows through power cables across the country.
5	Mrs Miggins boils the kettle for tea.
1	Electrical energy is generated in power stations.
2	The voltage of the supply is raised.
4	The voltage of the supply is reduced.



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Q2 Using **high voltages** in power cables means you need some **expensive** equipment.

a) Make a list of the main equipment you need for **high voltage transmission**.

Step-up transformer (to raise the voltage and lower the current at which the power is transferred), pylons (to support the high voltage cables), step-down transformer (to lower the voltage and raise the current at which the power is transferred), insulators (to prevent current leaking down the pylons)

b) Explain why it is still **cheaper** to use **high voltages** for transmission.

If you transported the power at low voltages the current would be higher and that would mean that more of the electrical energy you wanted to transfer would be converted to and lost as heat energy to the atmosphere. It would therefore mean that the efficiency of energy transfer would not be as good and that would mean smaller profits for the power company.

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Q3 Each of the following sentences is incorrect. Write a correct version of each.



a) The National Grid transmits energy at **high voltage** and **high current**.

... and low current

They are electrical insulation NOT heat insulation!

b) Huge **insulators** are needed because the **cables get so hot**.

... because the cables are at high voltage

c) A step-up transformer is used to **reduce the voltage** of the supply before electricity is transmitted.

...increase the voltage... (or you could put 'reduce the current')

d) Using a **high current** makes sure there is not much energy wasted.

... low current... (or you could put 'high voltage')

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