

# Fuels and Energy Resources

KS3 Physics · Follows the national curriculum

Name \_\_\_\_\_ Class \_\_\_\_\_ Date \_\_\_\_\_

## 1. Worked example

### Why is natural gas called non-renewable?

Step 1 · How it formed

From the remains of tiny sea creatures, over millions of years.

Step 2 · How fast we use it

We are using it far faster than it can form, so it will run out.

**Answer: It cannot be replaced is used**

Check: Renewable resources are replaced naturally use them.

## 2. Now try one with the steps

### Coal releases 30 kJ per gram when burned. How much energy does 100 g release?

Step 1 · Energy per gram × mass

Answer:

## 3. Practice

Show your working. The marks tell you how much is expected.

1. Name the three fossil fuels. [1]

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2. What does 'renewable' mean for an energy resource? [1]

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3. Name two renewable energy resources. [1]

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4. Which gas, released by burning fossil fuels, contributes to climate change? [1]

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5. Is nuclear power renewable or non-renewable? Explain. [2]

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6. Wood releases 15 kJ per gram when burned. How much energy does 40 g of wood release, in kJ? [1]
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7. Coal releases 30 kJ per gram. What mass of coal, in grams, releases 900 kJ? [2]
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8. Give one disadvantage of solar power in the UK. [1]
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9. A small wind turbine is rated 5 kW. It runs at full power for 6 hours. How many kWh does it generate? [2]
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10. A home needs 20 kWh of heat. Gas costs 7p per kWh. What does the gas cost, in pence? [1]
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11. The same 20 kWh of heat from electric heaters costs 25p per kWh. How much more does electricity cost than gas, in pence? [2]
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12. Explain why biomass is called renewable even though burning it releases carbon dioxide. [2]
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13. Why does the UK still need some reliable sources, such as nuclear, alongside wind and solar? [2]
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14. Tidal power is renewable and very predictable. Suggest one reason why the UK does not get most of its electricity from it. [1]
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#### 4. Before you hand it in

**"Renewable resources produce no pollution at all."**

Say renewables will not run out and most release no carbon dioxide while running.

**Calling nuclear renewable because it is low-carbon.**

Nuclear is non-renewable but low-carbon.

**"Electricity is an energy resource."**

The resource is the fuel, wind, sunlight or water; electricity is how the energy is delivered.