

Topic: Sustainability

Lesson: Green homes	KS or Year Group: KS3
Resources: <ol style="list-style-type: none">1. Resource 1 – Resource wasting v saving2. Resource 2 – Teacher ideas3. Resource 3 – Sky News video clip:4. ‘Green Houses – Energy Matters For New Homes’5. Resource 4 – Diamond 12 action cards6. Resource 5 – Diamond 12 template	Objectives: <ul style="list-style-type: none">• Students can understand how people waste and save resources in the home.• Students can appreciate why it is important to raise awareness of environmental problems and solutions.• Students are able to classify and evaluate solutions aimed at reducing their carbon footprint in the home.

National Curriculum

Key Concepts: 1.2a, 1.2b

Key Processes: 2.1a, 2.1b, 2.2a, 2.2c

Range and Content: 3a, 3e

Curriculum Opportunities: 4a, 4b, 4g, 4h, 4j

Lesson overview

This lesson will develop students’ understanding of sustainable development. Students will consider different forms of action that individuals can take to reduce their carbon footprints in the home and consider why it is important to raise public awareness of sustainable development. These activities could span two lessons.

Starter

- Using **Resource 1 – Resource wasting v saving**, ask students to consider how people waste resources in the home and how they can save resources.
- Ask students to share their ideas with the rest of the class.

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Main activity

Activity 1:

- Show **Resource 3 – Sky News video clip: ‘Green Houses – Energy Matters For New Homes’**.
- Ask students to add any additional ideas to their copy of Resource 1.
- Refer to **Resource 2 – Teacher ideas** for points that students may have missed.
- Hold a mini debate in which you ask students to share their thoughts on the following questions:
 - ▶ Should the government provide tax incentives/grants to encourage people to reduce their carbon footprint in the home?
 - ▶ Why is it important to raise public awareness of sustainable development?
- Consider the following points in the debate:
 - ▶ During a credit crunch, would the government be better spending money on businesses and employment?
 - ▶ Do individuals have a moral responsibility to protect the environment? If so, should they be rewarded with tax incentives?
 - ▶ Would the money be better spent on improving public transport?
 - ▶ Whose responsibility is it to raise public awareness of climate change – schools, parents, governments?
 - ▶ Should tax incentives only be given to carbon neutral homes or should they also be given to homes where some measures have been taken to offset carbon emissions?
 - ▶ Why is the cost of alternative forms of energy (e.g. solar panels) so high? Is profit the driving force? Do energy providers have a responsibility to produce low-cost alternatives?

Activity 2:

- Issue students with **Resource 4 – Diamond 12 action cards** and **Resource 5 – Diamond 12 template**.
- Discuss with students the idea that individuals have a responsibility as citizens to protect the environment. Explain that this decision-making activity will look at what individuals can do to reduce CO₂ levels in the home.
- Ask students to categorise the actions that individuals can take from most to least effective using the following criteria: cost, practicality, savings, visual impact and ease of implementation.
- Students can either cut out the action cards from Resource 4 and arrange them in a diamond 12 shape as shown on Resource 5, or write the main headings from the action cards into the boxes on Resource 5. (For kinaesthetic learners, it is best to cut out the statements so students can rearrange the statements until they are happy with the order.)

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- Ask students to write up their decisions and explain their choices on the second page of Resource 5. Encourage students to do extra research using the web links in Check the web below to enrich their answers.
- As an extension task, ask students to design a board game for young people to raise awareness about going green in the home. Advise students to use their notes on Resource 1: wasting resources (go back ... spaces), saving resources (go forward ... spaces).

Plenary

- Ask students to share their ideas from the diamond 12 activity and vote on what they think the most effective strategy would be.

Aim high

- Ask students to consider how individuals can reduce their carbon footprint with relation to transport. Ask students to write up their ideas and evaluate their effectiveness.

Assessment

- Students can be assessed on their writing up of the diamond 12 activity.

Check the web

<http://www.globalactionplan.org.uk/>

Global Action Plan

<http://www.cat.org.uk/index.tmpl?refer=index&init=1>

Centre for Alternative Technology

<http://www.communities.gov.uk/news/corporate/newecotownscould>

Eco-towns

<http://campaigns2.direct.gov.uk/actonco2/home.html>

Act on CO₂

<http://www.energysavingtrust.org.uk/>

Energy Saving Trust

Summary of key learning

- Students know what measures can be taken to reduce their carbon footprint in the home and the benefits that this brings.
- Students appreciate the importance of raising awareness of sustainable development.

Resource 1 – Resource wasting v saving

Governments around the world have recognised the importance of protecting the environment and preventing the problems associated with climate change. Whilst we need to use resources (such as water, energy and food) for everyday living, it is important that we don't harm the environment for future generations.

Think about how people may waste resources **in their home** and what they can do to save resources. Complete the table.

Wasting resources ☹️	Saving resources 😊

Resource 3 – Teacher ideas

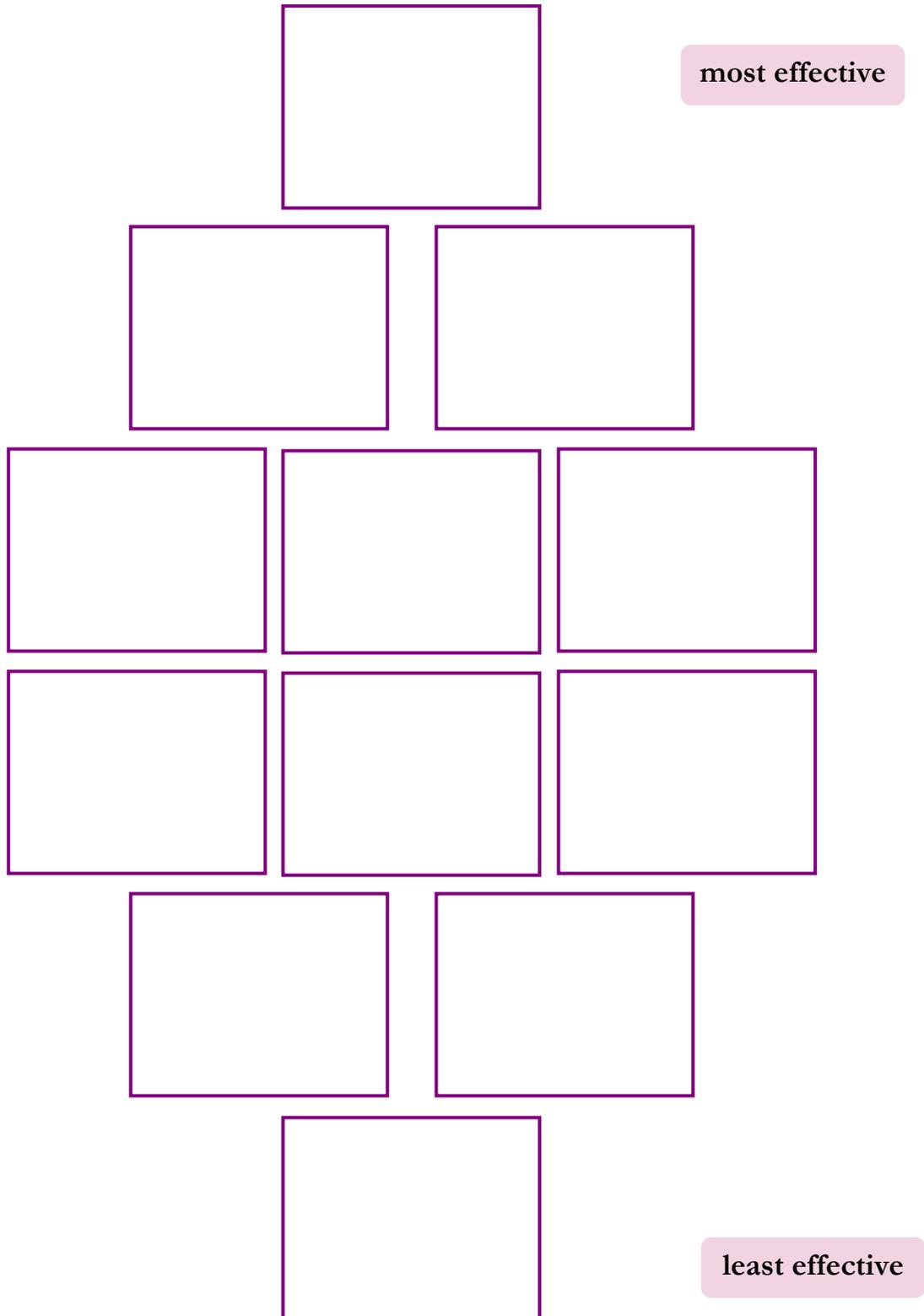
Wasting resources ☹️	Saving resources 😊
Leaving electrical goods on standby	Turn off all electrical goods at the plug
Heat escaping through walls/roof/doors	Insulate roof/fill wall cavities Fit boilers with an insulation jacket Fit draught seals on doors, windows Turn thermostats down
Leaving lights on	Use energy-saving light bulbs Fit timers on light switches so that they turn off automatically
Filling up the kettle to boil water	Only boil the necessary amount of water Fix dripping taps
Using washing machines and dishwashers with half loads	Wash full loads of clothes and dishes
Using fresh water to hose your garden	Use a water butt to store rainwater
Having a bath	Use the shower instead of the bath Fix dripping taps
Using full flush toilets	Use low/dual flush toilets
Throwing all rubbish away	Recycle plastic, paper, cans, etc Use a compost bin Grow your own fruit and vegetables.

Resource 4 – Diamond 12 action cards

<p>Draught seals £50 for whole house</p> <ul style="list-style-type: none"> • Place on doors, letterboxes and keyholes to reduce draughts • Save £40 a year on heating bills 	<p>Loft insulation £300</p> <ul style="list-style-type: none"> • Half of the heat from homes is lost through the walls and roof • Insulate your roof and save up to £250 a year on heating bills 	<p>Insulating jacket for hot water tank £10</p> <ul style="list-style-type: none"> • Reduces heat loss by up to 75% • Save £10–15 a year on your water bill
<p>Cavity wall insulation £450</p> <ul style="list-style-type: none"> • Prevents heat loss from walls • Save approx. £92 a year on fuel bills 	<p>Compost bin £40</p> <ul style="list-style-type: none"> • Throw away scrap vegetables and cardboard to make you own compost • Save approx. £2 per bag of compost 	<p>Grow your own fruit and vegetables £300 to buy greenhouse, plants and seeds</p>
<p>Low flush toilet (water cistern) £25</p> <ul style="list-style-type: none"> • Reduces the amount of water per flush by up to 30% 	<p>Energy-saving light bulb £2 per bulb</p> <ul style="list-style-type: none"> • Use up to 80% less electricity than a standard bulb 	<p>Water butt £15</p> <ul style="list-style-type: none"> • Collects rainwater from gutters and stores in a water tank • Can be used to water gardens
<p>Upgrade plumbing £60</p> <ul style="list-style-type: none"> • Fix dripping taps • Fix an aerator to water taps – this mixes air with water and can reduce water consumption by 50% • Put lagging on outside pipes to help avoid water loss from burst pipes 	<p>Solar panel £3,000</p> <ul style="list-style-type: none"> • Save up to a third off your electricity bill • Opportunity to sell excess electricity to energy providers 	<p>Home wind turbine kit £2,000</p> <ul style="list-style-type: none"> • Save up to 80% on your electricity bill • Opportunity to sell excess electricity to energy providers • Lasts 30-40 years

Resource 5 – Diamond 12 template

1. Classify the actions from most to least effective. You should consider the following criteria: cost, practicality, savings, visual impact and ease of implementation.



Resource 5 – Diamond 12 template (continued)

2. Write up your choices. Try to justify your answers by giving facts and statistics to back up your points. You may wish to do additional research to support your arguments.

I would chooseas the most effective option.

The reason I chose this is because

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I also thinkand would be effective options because

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The option that I think would be the least effective is because

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