

Sustainability

What does biodegradable mean?

Answer: Breaks down or rots naturally.

Sustainability

How many drink cans end up in landfill in the UK every day?

- a. 8,000
- b. 80,000
- c. 8 million

Bonus: What else could be done with them?

**Answer: c. 8 million.
Most drink cans are recyclable.**

Sustainability

How many million plastic mobile phone covers are estimated to be thrown away into landfill in Europe each year?

- a. 10 million
- b. 100 million
- c. 200 million

Bonus: What else could be done with them?

**Answer: b. 100 million.
Many phone shops have a recycling bin.**

Sustainability

What do the initials FSC stand for?

Answer: Forestry Stewardship Council. The FSC is an international agency that promotes the responsible management of forests and distribution and timber.

Sustainability

If you are travelling a short distance to school, college or work, it is better for environment and yourself to

- a. walk?
- b. cycle?
- c. go by car?

Bonus: Why?

**Answer: a. walk or b. cycle.
Short journeys waste fuel and increase pollution.**

Sustainability

Why should you buy timber with a FSC certificate of timber production?

Answer: It means that it is from a sustainable and legal source. There are two types of certificate one for the management of forests and the other for the distribution of the timber

Sustainability

In timber production, what is a chain of custody?

Answer: A supplier's guarantee that the timber is sustainable and legally sourced. This is validated by the Forestry Stewardship Council

Sustainability

What helps to prolong the life of any vehicle?

- a. regular town driving
- b. regular servicing
- c. regular short journeys

Bonus: Why?

Answer: b. regular servicing.
This ensures that the vehicle continues to operate efficiently.

Sustainability

Which of the following could be described as responsible sourcing of materials?

- a. taking advantage of cheap labour
- b. using third world resources
- c. using co-operative work forces

Bonus: Why?

Answer: c. using co-operative work forces.
The others are exploitation and misuse of global resources.

Sustainability

Name two benefits of a living roof.

Answer:

- reduces surface water going into drain system
- encourages bio-diversity
- improves air quality; all plants use carbon dioxide and produce oxygen

Sustainability

Why are short journeys by car more damaging to the environment?

Answer: Vehicle engines use more fuel in the first few miles of a journey and are more efficient on longer journeys.

Sustainability

Can you name the three R's of sustainability?

Answer: Reduce, re-use and recycle. Reducing use of materials and fuel is the most important, re-using materials will also reduce the need to use scarce natural resources. Recycling helps in making use of already manufactured products but requires the additional use of energy to re-process them.

Sustainability

Is it better to re-use or recycle a material?
Bonus: Why?

Answer: Re-use.
Recycling requires more energy to make the material useable for another purpose.

Sustainability

To ensure the fewest resources are used, in which order would you put the three R's of sustainability?
Bonus: Explain your answer.

Answer: Reduce, re-use, and recycle.
See glossary for an explanation.

Sustainability

How many traditional light bulbs need to be swapped for low energy bulbs in each UK household to save enough energy to light all the street lamps in the country?
a. all
b. 3
c. 4

Answer: b. 3

Sustainability

Give two reasons why low energy lamps are better for you and the environment.

Answer:
1) They use a lot less energy.
2) They last longer so you don't have to replace them as often.

Sustainability

What is coppicing?

Answer: A method of harvesting timber that allow the plant to re-grow – see glossary for further details.

Sustainability

Give one example of how recycled tyres can be used in the construction industry.
Bonus: Give a second example.

Answer: As roof tiles, internal floor covering, or play area ground covering.

Sustainability

On average, what is the percentage of new materials just thrown away (for example in skips) during the construction process in the UK?

- a. 5%
- b. 10%
- c. 20%

Answer: c. 20%

This compares with a standard allowance for waste of 10%

Sustainability

True or false?

Straw provides a high level of acoustic insulation.

Bonus: Why?

Answer: true

Sound is trapped in the air pockets formed by the straw bales.

Sustainability

When using a company vehicle, you can save fuel by:

- a. driving smoothly and efficiently
- b. accelerating quickly
- c. braking quickly

Answer: a. driving smoothly and efficiently

Sustainability

What do the initials TER stand for?

Answer: Target emission rate for CO₂ in the revised building regulations for new buildings. The introduction of the TER is designed to ensure the reduction of carbon emissions from all new buildings and building renovation.

Sustainability

True or false?

It is a good idea to leave stereos, televisions and other electrical appliances on standby.

Bonus: Why?

Answer: false

Appliances on standby are wasting energy.

Sustainability

True or false?

It is important to leave power tool chargers on when you have finished charging your batteries.

Bonus: Why?

Answer: false

Chargers on standby waste energy.

Sustainability

True or false?

It is good to leave the dust that gathers on the coils at the back of a fridge as it insulates them.

Bonus: Why?

Answer: false

Dusty coils use more energy and can be up to 30% less efficient.

Sustainability

The thermal transmittance (U value) of a material is:

- a. the rating of how strong it is under tension
- b. the rating of its thermal properties
- c. the internet rating of how good it is

Answer: b. the rating of its thermal properties. This shows how good the material is as an insulator.

Sustainability

Is material a better insulator if it has a U value that is:

- a. high
- b. low

Answer: b. low

Sustainability

Instead of turning up the radiator temperature you could:

- a. put on a hat
- b. put on another layer of clothing
- c. open a window

Answer: b. put on another layer of clothing. This would save energy.

Sustainability

Name one type of natural material that can be used for ceiling or wall insulation.

Answer: lambs' wool, flax, hemp or cotton.

Sustainability

Describe two ways of reducing the amount of drinking quality water we use in flushing toilets.

Answer:

- **By harvesting rainwater.**
- **By reducing the amount of water used for each flush.**
- **Not flushing after every use.**

Sustainability

Give two examples of building products that use the sun's energy to reduce power needs.

Answer: Solar panels and sun pipes – see glossary for details.

Sustainability

Which of the following two window positions would be create the best return in terms of solar gain?

- a. south facing window
- b. north facing window

Answer: a. south facing window
A room with a south facing window needs less artificial heat to keep it warm.

Sustainability

How could you regulate the temperature of a room more efficiently?

- a. thermostatic radiator valves (TRV)
- b. foil behind the radiator
- c. wall mounted room thermostat

Answer: a. thermostatic radiator valves (TRV)
These enable each room to be controlled separately

Sustainability

Which type of fuel is the most environmentally friendly?

- a. diesel
- b. petrol
- c. biofuel
- d. LPG

Answer: c. biofuel
It can be used as a replacement to the other fossil fuels and is renewable.

Sustainability

How many of the 23 million homes in this country have cavity walls without insulation?

- a. 3 million
- b. 6 million
- c. 9 million

Answer: c. 9 million

Sustainability

Central heating in the average UK 3 bedroom home produces 3.6 tonnes of carbon dioxide (CO₂) every year. That's enough to fill:

- a. 200 party balloons
- b. 20,000 party balloons
- c. 200,000 party balloons

Answer: c. 200,000 party balloons

Sustainability

How much has our demand for water increased in the last 30 years?

- a. 30%
- b. 100%
- c. 200%

Answer: b. 100%

Sustainability

What is the difference between re-using a building material and recycling it?

Bonus: Give an example of each.

Answer:

- **Re-using** - taking the material from one place and using it somewhere else, for example, old bricks or tiles.
- **Recycling** - made from something else, for example, insulation made from fabric.

Sustainability

True or false?

Well maintained straw buildings can have a life cycle similar to buildings constructed out of more traditional materials.

Answer: true

Straw buildings have a very low impact on the environment.

Sustainability

True or false?

Linoleum is made from natural products such as linseed oil, and wood-flour.

Answer: true

This means they are more environmentally friendly than synthetic based floor coverings.

Sustainability

What are mass cob walls made of?

Answer: substrate soil

Sustainability

Name one type of recycled material that could be used as wall or ceiling insulation.

Answer:

- **Fabric** (for example, cotton or wool).
- **Shredded newspaper.**

Sustainability

Name one recycled material that can be used in the production of a kitchen work top.

Bonus: Name another material.

Answer:

- Yoghurt pots.
- Vending machine coffee cups.
- Recycled plastic bottles.

Sustainability

What is a glulam beam?

Bonus: How is it produced?

Answer: A timber beam, factory made to high performance standards from small pieces of timber. The manufacturing process using small pieces of timber reduces waste.

Sustainability

What is a living roof?

Bonus: Give examples of materials used.

Answer: One with a living surface: sedum, grass or locally sourced planting.

Sustainability

What natural material can be added to earth plaster as a binder?

Answer: Animal hair.

Sustainability

What does the term “embodied energy” mean?

Answer: The energy required to make the material or product – see glossary for more information.

Sustainability

Which material has less embodied energy?

- a. earth plaster
- b. cement based render

Bonus: Why?

Answer: a. earth plaster
This is a natural product, whereas cement based render is produced through a manufacturing process.

Sustainability

Name two advantages of pre-fabricated timber panels or components used in modular building, compared to traditional brick buildings constructed on-site.

Answer:

- quicker and easier to put up
- less waste
- greater accuracy in construction

Sustainability

What method of construction can make steel frames more sustainable?

Answer: Ensuring the frame can be readily taken apart for re-use.

Sustainability

What do you pour the earth into to create a rammed earth wall?

- a. shutters
- b. chutes
- c. a trench

Answer: a. shutters

Sustainability

Cob blocks are dried:

- a. in an oven
- b. naturally
- c. in a kiln

Answer: b. naturally

Sustainability

Which of the following types of floor finish is more sustainable?

- a. tropical hardwood flooring
- b. linoleum

Bonus: Why?

Answer: b. linoleum

Both are naturally occurring materials but sourcing of tropical hardwoods is not sustainable.

Sustainability

Which of the following two paints is considered the most environmentally friendly?

- a. oil based gloss paint
- b. water based stain

Bonus: Why?

Answer: b. water based stain

The production process does not rely on petrochemicals and the disposal of waste is less harmful.

Sustainability

Which of these two foundation systems would have the least embodied energy?

- a. trench fill
- b. strip foundation

Bonus: Why?

Answer: b. strip foundation

It uses less concrete, a material with a high embodied energy.

Sustainability

What percentage of UK carbon dioxide (CO₂) emissions comes from producing building materials before the building process starts?

- a. 5%
- b. 10%
- c. 15%

Answer: b. 10%

Twenty per cent of these materials are just thrown away.

Sustainability

The roof covering with the greatest lifespan is:

- a. clay tiles
- b. slate
- c. untreated corrugated tin

Answer: b. slate

A slate roof can last up to 200 years.

Sustainability

Which of the following roof coverings is considered the most environmentally friendly and why?

- a. thatch roof
- b. living roof
- c. tiled roof

Answer: b. living roof

See glossary for more information.

Sustainability

Which of these drainage pipes is considered to be more environmentally friendly?

- a. vitrified clay pipe
- b. polyvinyl chloride (PVC) pipe

Bonus: Why?

Answer: a. vitrified clay

It is durable, has low embodied energy.

Sustainability

Put the following window frame materials in order of sustainability.

- a. UPVC
- b. aluminium
- c. timber sourced from a sustainable forest

Answer:

- c. timber**
- b. aluminium**
- a. UPVC**

Sustainability

Which technique used for creating wall coverings is considered the most environmentally friendly and why?

- a. lime plaster
- b. plasterboard

Answer: a. lime plaster – see glossary for details.

Sustainability

From what source do ground source heat pumps get their energy?

- a. the sun
- b. steam or hot water
- c. heat within the soil

Answer: c. heat within the soil

Sustainability

Which of the following boilers used for heating a home is most efficient and why?

- a. gas fired condensing boilers
- b. traditional gas fired boilers

Answer: a. gas fired condensing boiler
They only lose about 5% of the heat they produce. The heat exchanger makes this possible by reducing the heat lost in gases through the flue.

Sustainability

Which of the following types of light fittings could be considered the most environmentally friendly?

- a. energy saving lamp
- b. traditional incandescent lamp
- c. florescent tube

Bonus: Why?

Answer: a. energy saving lamp
Despite the initial higher cost, these lamps use less energy and have a longer life span.

Sustainability

By the year 2025, how much of the world's population is likely to face a water shortage?

- a. none
- b. half
- c. two thirds

Answer: c. two thirds

Sustainability

True or false?

A five minute shower with a power shower uses less water than the average bath.

Bonus: Why?

Answer: false
It uses approximately the same, whereas a standard shower uses approximately half the amount of water.

Sustainability

How much of the UK carbon dioxide (CO₂) emissions come from the lighting and heating of buildings?

- a. 30%
- b. 50%
- c. 70%

Answer: b. 50%

Sustainability

If your tap is dripping at home, you should ask a plumber to:

- a. check to see what the problem is, it may be just a worn washer
- b. replace the tap straightaway. It's better for the environment not to waste water
- c. consider a way of re-using the waste water

Answer: a. check to see what the problem is
It may use fewer resources.

Sustainability

True or false?

It has to be really windy for wind turbines to generate electricity.

Bonus: Why?

Answer: false

Most wind turbines generate electricity at wind speeds of three to four metres per second.

Sustainability

Windfarms consisting of hundreds of large turbines built on land and offshore in the UK have the potential to provide:

- a. 5% of our power needs over the next 20 years
- b. 10% of our power needs over the next 20 years
- c. 15% of our power needs over the next 20 years.

Answer: b. 10%

Sustainability

How many people in the world do not have clean safe water?

- a. one in every ten
- b. one in every four
- c. everyone has clean safe water

Answer: b. one in every four

Sustainability

Which of the following, used for controlling the temperature in a home, is considered the most efficient?

- a. room thermostat
- b. thermostatic radiator valve (TRV)

Answer: b. TRV.

This allows individual room temperatures to be controlled, whereas the other regulates the whole house.

Sustainability

What materials are most commonly burned in a biomass boiler in the UK?

- a. diesel oil
- b. waste wood and pellets
- c. recycled tyres

Answer: b. waste wood and pellets

Sustainability

Which of these is an energy crop?

- a. potatoes
- b. miscanthus grass
- c. durum wheat

Answer: b. miscanthus grass

Sustainability

What is the name of the flat panel used to capture energy on a solar panel?

Answer: Photovoltaic cell – see glossary for more information.

Sustainability

State two alternative methods of generating electricity for use at home, other than the national grid.

Answer: Wind turbines and solar panels. This is often referred to as micro-generation.

Sustainability

Solar photovoltaic systems use sunlight to generate:

- a. electricity
- b. hot water
- c. gas

Answer: a. electricity

Sustainability

The constant ground source heat temperature in the UK used by ground source heat pumps is:

- a. 6 degrees Celsius
- b. 12 degrees Celsius
- c. 20 degrees Celsius

Answer: b. 12 degrees Celsius

Challenge

Challenge

Challenge

Challenge

Challenge

Calculation

If the thickness of insulation in a wall is increased, does it:

- a. increase the U value?
- b. decrease the U value?

Answer: b. decrease the U value

Calculation

If the thickness of insulation in a wall is increased does it:

- a. increase the heat loss?
- b. decrease the heat loss?

Answer: b. decrease the heat loss

Calculation

If a solid brick wall loses heat at the rate of 440 watts, what would the rate of heat loss be if the same wall was built with a different material so that its U value was halved?

Answer: 220 watts

Calculation

If a solid brick wall loses heat at the rate of 440 watts, what would the rate of heat loss be if the same wall was built with a different material so that its U value was three times bigger?

Answer: 1320 watts

Calculation

If a timber framed wall with recycled paper insulation has an energy loss of 120 watts, what would the energy loss be if the same wall is built of a different material so that the U value is four times as big?

Answer: 480 watts

Calculation

A small construction company is wasting 1,000 kg of materials a year. They aim to reduce this by 10% a year. In two years time how much material will they waste:

- a. 800 kg
- b. 200 kg
- c. 810 kg

Answer: c. 810 kg

Calculation

A new build house uses on average 40 kg of copper pipe. How much pipe would be used in a development of 500 new homes? Give your answer in metric tonnes.

Answer: 20 metric tonnes

Calculation

You are taking 18.7 kg of scrap copper from a refurbishment project to be recycled. You are offered £4.00 per kg. How much would you expect to receive?

Answer: £74.80

Calculation

Your company has removed 300 kg of aluminium partition framing from an office block. If the scrap value for recycling is £6.50 per kg how much money would they save by recycling it?

Answer: £1,950, and they would not need to pay to dump the aluminium in landfill

Calculation

If a straw bale used for building a wall is 600 mm high, how many courses of standard brickwork make up the same height?

- a. 8
- b. 12
- c. 16

Answer: a. 8

Calculation

A low energy light bulb uses 1/6 of the energy of a traditional incandescent lamp. If a householder spends £100 per year on energy for lighting, how much could they save by using low energy bulbs?

- a. £16.67
- b. £83.33
- c. £66.67

Answer: b. £83.33

Calculation

If a water saving device in a WC saves 3 litres of water every flush and water is charged at 0.15 pence per litre, estimate the saving for a family of four?

**Answer: Anything between £20 – £40.
20 flushes a day saves approximately £33.**

Calculation

If the plan area of a house is 60 m² and the average rainfall is 900 mm per year, what is maximum amount of water that can be harvested per year?

Answer: 54 m³

Calculation

If I can harvest 54 m³ of water per year from rainfall to reuse in the house, how much would I be saving a year if water is charged at 0.15p per litre?

Answer: £81.00

Calculation

If two adults living in a small house use 1,000 litres per year of heating oil, what is their individual carbon footprint?

Answer: 1487 kg

Calculation

If one adult living in a small house uses 1,100 litres of oil a year, what is their individual carbon footprint?

Answer: 3273 kg

Calculation

If two adults living in a small house use 9,000 kW hrs per year of gas, what is their individual gas carbon footprint?

Answer: 855 kg

Calculation

If two adults and three children living in a medium house use 18,000 kW hrs per year of gas, what is their individual carbon footprint?

Answer: 684 kg

Calculation

If two adults and two children living in a medium house use 2800 kW hrs per year of electricity, what is their individual carbon footprint?

Answer: 301 kg

Calculation

If two adults and two children living in a medium house use 3,500 kW hrs per year of electricity, what is their individual carbon footprint?

Answer: 376 kg

Calculation

If two adults living in a small house use 11,000 kW hrs per year of gas, what is their individual carbon footprint?

Answer: 1045 kg

Calculation

Internal wall insulation costs £15.00 per m². A householder fits 200 m² and saves the household £250.00 a year. How long will it take for this to pay for itself?

Answer: 12 years

Calculation

If cavity wall insulation costs £175 and saves the household £100 a year, how many years would it take to pay for itself?

Answer: 1 year and 9 months

Challenge

Customer care

Why should we be consistently on time for work?

- a. to present a professional image for the company
- b. so you don't get told off
- c. to get the job done in the agreed time frame

Answer: a. to present a professional image for the company

Customer care

If the customer makes you a cup of tea you should:

- a. leave the unwashed cup in the kitchen as you don't want to 'make yourself at home' in somebody else's house
- b. leave the cup in your work area so it can be used the next day
- c. ask the customer's permission to wash the cup yourself

Answer: c. ask the customer's permission to wash the cup yourself

Customer care

If wood shavings have been left on the floor you should:

- a. vacuum them up using your own equipment
- b. use the customer's vacuum cleaner without asking permission
- c. leave them for the customer to clean up

Answer: a. vacuum them up using your own equipment

Customer care

When working at a customer's house, building waste should be disposed of by:

- a. the customer. It's their responsibility not yours, so you leave it at the side of the house
- b. you taking it to a tip which has recycling facilities
- c. you disposing of it at the nearest tip

Answer: b. you taking it to a tip which has recycling facilities

Customer care

Respect for the customer is important in construction. This is a:

- a. skill
- b. knowledge
- c. attitude

Answer: c. attitude

Customer care

The best way to communicate essential information to your customer is:

- a. in writing (letter or email)
- b. verbally over the phone
- c. in person

Answer: a. in writing (letter or email)

Customer care

You are working on a private housing site and you are approached by the customer to make some small alterations. You should:

- a. do it as part of your daily duties
- b. report to the site agent
- c. do it on the weekend as a private job

Answer: b. report to the site agent

Customer care

A local resident complains about the level of noise created by your building work. You should:

- a. apologise and offer them a set of ear defenders
- b. tell the project manager
- c. sympathetically explain that it can't be helped

Answer: b. tell the project manager

Customer care

You are working at a customer's house and need to park your van. You should:

- a. ask the customer where they would like you to park
- b. park in the customer's garage where your tools will be safe
- c. park on the driveway

Answer: a. ask the customer where they would like you to park

Customer care

Your fellow tradespeople could also be known as internal customers. As the carpenter on site, the plumber approaches you to remove a floorboard as he suspects a leak. You should:

- a. tell him to do it himself as you are very busy
- b. as the carpenter, take the floorboard up yourself
- c. get the apprentice to do it as he/she is not busy

Answer: b. as the carpenter, take the floorboard up yourself

Customer care

You have spilled paint on the carpet. You should:

- a. try to clean it up yourself
- b. report it
- c. try to cover it up

Answer: b. report it

Customer care

It is important to store bagged materials such as cement and plaster correctly because:

- a. it will cost you more if the product goes off and you have to buy more materials
- b. it will avoid mistakes when mixing batches
- c. you can see where everything is

Answer: a. it will cost you more if the product goes off and you have to buy more materials

Customer care

A contractor needs to travel to a site outside of their local area. They should get their workers to the site by:

- a. car
- b. train
- c. mini-bus

Answer: c. mini-bus

Customer care

You need to buy some timber for a job. You should choose to buy:

- a. locally, even if it is more expensive
- b. from abroad where it is cheaper
- c. from your usual supplier as he always has the best prices

Bonus: Why?

Answer: a. locally, even if it's more expensive
Local timber has less embodied energy.

Customer care

The best way to reduce risk for the general public is:

- a. to put up the appropriate warning signs and barriers
- b. to let the client take responsibility for this
- c. to give public responsibility for their own individual safety

Answer: a. to put up the appropriate warning signs and barriers

Challenge

Challenge

Challenge