

Exercise walk-through

Energy Conservation ■ 6.13

eXercise

You must be able to

- distinguish **conservation** 节约 from **efficiency** 效率
- give examples of each
- explain why conservation reduces impacts and cost

Method — Conservation vs efficiency

- **Energy conservation** — **using less** energy (turning off lights, driving less).
- **Energy efficiency** — getting the **same service using less** energy (LED bulbs, insulation, efficient appliances).

Method — Examples of efficiency

LED lights, better insulation, hybrid/electric vehicles, and Energy Star appliances all deliver the same benefit with less energy.

Method — Why it matters

Conservation and efficiency **reduce demand**, cutting fossil-fuel use, CO₂ emissions, and cost — often the **cheapest** way to reduce environmental impact.

Method — A worked example

Replacing incandescent bulbs with LEDs is **efficiency** (same light, less energy); switching them off when not needed is **conservation** (using less).

Practice 2.1 ■ 1 mark

What is energy conservation?

Solution 2.1

Worked steps

Using less energy **B1**.

Practice 2.2 ■ 1 mark

Give one example of energy efficiency.

Solution 2.2

Method: A worked example

Worked steps

Any one: LED bulbs, insulation, efficient appliances, hybrid cars **B1**.

Practice 2.3 ■ 1 mark

Why does reducing energy demand help the environment?

Solution 2.3

Worked steps

It reduces fossil-fuel use and the CO₂ and pollution that go with it **B1**.

Exam-style 3.1 ■ 1 mark

Installing better home insulation is an example of energy

- A** conservation (using less service)
- B** efficiency (same service, less energy)
- C** production
- D** extraction

Solution 3.1

Method: Examples of efficiency

- A conservation (using less service)
- B efficiency (same service, less energy)**
- C production
- D extraction



Worked steps

B — efficiency (same service, less energy).

Exam-style 3.2 ■ 2 marks

A household wants to cut its energy use.

- (a) Give one conservation action and one efficiency measure.
- (b) Explain how these reduce environmental impact.

Solution 3.2

Method: Why it matters

Worked steps

(a) Conservation: e.g. turn off lights / drive less; efficiency: e.g. LED bulbs / insulation **B1** **B1**. (b) Using less energy lowers fossil-fuel demand, cutting CO₂ emissions and pollution **M1** **A1**.

Exam-style 3.3 ■ 2 marks

Explain why energy efficiency is often described as the cheapest way to cut emissions.

Solution 3.3

Method: Why it matters

Worked steps

Saving energy avoids the cost of generating it, and efficiency measures often pay for themselves through lower bills, so they cut emissions at negative or low net cost

M1 **A1**.