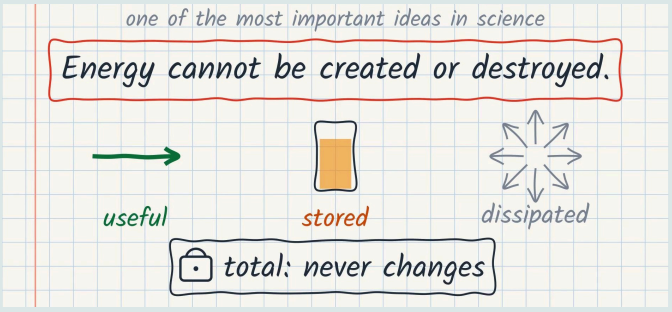
Conservation of energy

and where "wasted" energy goes

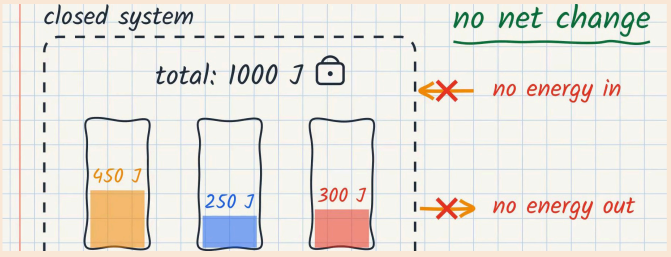
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Summary sheet

1 The big rule



- Energy **cannot be created or destroyed**. It can be transferred usefully, stored or dissipated.
- This is the **conservation of energy**: the total never changes.

2 Closed systems



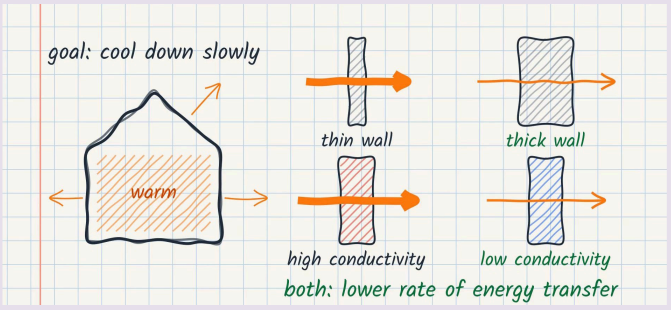
- In a **closed system**, no energy enters or leaves.
- Energy moves between stores inside, but the **total stays the same** (no net change).

3 Where "wasted" energy goes



- Friction and air resistance do work, so energy moves into the **thermal store of the surroundings**.
- It is **dissipated**: spread so thinly that it is hard to use again. Wasted does not mean destroyed.

4 Reducing unwanted transfers



- **Lubrication** reduces friction, so less energy is dissipated by heating.
- **Thicker walls** and materials with a **low thermal conductivity** reduce the rate of energy transfer.

Exam tip

In friction questions, don't write "it's more slippery". Write "less friction, so less energy is dissipated".

Check yourself

- 1 What is a closed system?
- 2 A ball bounces lower each time. Where has the energy gone?
- 3 Which cools faster: a house with thin walls, or thick walls of the same material?

Answers: 1. No energy enters or leaves, so the total stays the same. 2. Dissipated to the thermal store of the surroundings, by sound and heating. 3. The house with thin walls.