Building an energy chain

Show where the energy comes from, what it goes through, and in what form.

1 Transfer or conversion?

Compare the form of the energy before and after it: that is the whole rule.

Same form → transfer

Energy **mechanical** → the object → Energy **mechanical**

The energy changes place, not form.

Different form → conversion

Energy **mechanical** → the object → Energy **electrical**

The object is a converter.

2 The method in 4 steps

1 Find the reservoir.
Where the energy starts: the wind, the petrol, the food, the Sun.

2 Follow the objects it goes through, in order.
One box per object, joined by arrows, from left to right.

3 Label every arrow.
Energy followed by its form. Never the form on its own.

4 Compare the forms around each object.
You then know which are transfers and which are conversions.

3 The forms of energy

mechanical	movement, height	**thermal**	temperature	**chemical**	matter
electrical	current	**light**	radiation	**nuclear**	nuclei

Mechanical energy covers kinetic energy (speed) and potential energy (height, deformation).

4 A worked example: the wind turbine

The wind (reservoir) → Energy **mechanical** → The blades (transfer) → Energy **mechanical** → The alternator (conversion: The alternator is a converter) → Energy **electrical**

Energy **thermal** → Energy Lost

The wind and the blades carry the same form of energy: that is a transfer.
The alternator makes it electrical: that is a conversion.

5 Do / Avoid

Do	Avoid
✓ Write “Energy” before every form.	✗ Writing “electrical” on its own on the arrow.
✓ Start the chain at the reservoir.	✗ Starting halfway, without saying where the energy comes from.
✓ Compare the forms around each object.	✗ Calling an object a converter when it changes nothing.

Check before handing it in

- ✓ My chain starts at a reservoir
- ✓ Every arrow says “Energy” and its form
- ✓ The objects are in order
- ✓ I have marked where there is a conversion