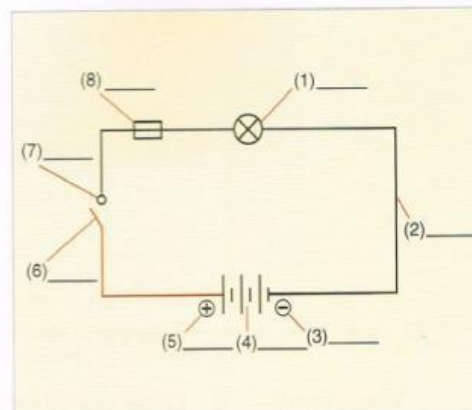## 2 Electrical circuit

Start here 1 Do you know these electrical symbols? Label the circuit diagram with the words in the box.
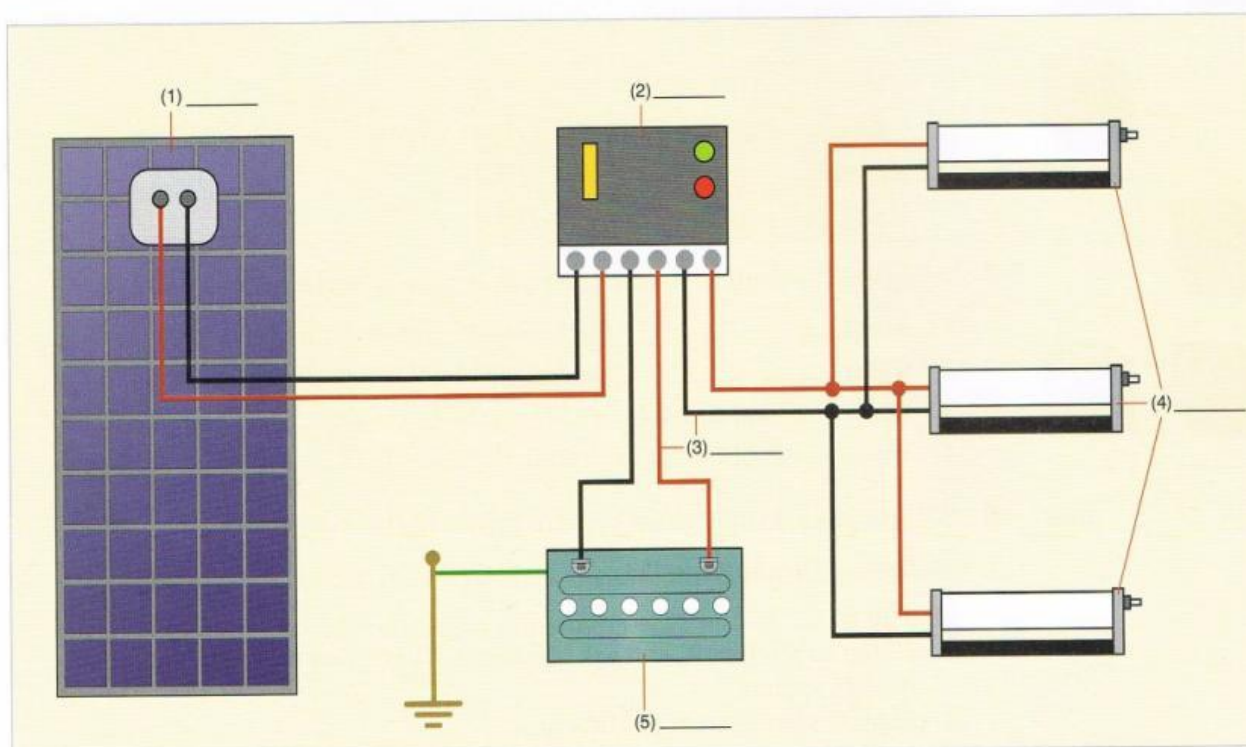
| battery | conductor | fuse | lamp |
| negative | positive | switch | terminal |

See the glossary of electrical symbols on page 109 for answers.

Listening 2 [▶ 28] Listen and label the diagram with the words in the box.

| battery | cables | controller | lamps | solar panel |

3 [▶ 29] Listen and match the items with their specifications.

1	solar panel	a)	12V 8W
2	controller	b)	DC
3	battery	c)	5A
4	lamps	d)	60W
5	electrical current	e)	12V 100Ah

Task 4 Work in pairs. Look again at the diagram in 2. Where does the current flow in these three situations? Draw arrows.

Situation 1: The Sun shines. The lamps are on.
Situation 2: The Sun shines. The lamps are off.
Situation 3: The Sun doesn't shine. The lamps are on.

convert = change

5 Read the manual for the solar panel and check your answers to 4.

How does the solar power system work? The panel converts the Sun's energy into a DC electric current. The current flows to the controller. Then it can flow from the controller to the lamps. Or it can flow from the controller into the battery. The battery stores the electricity. The current can flow from the battery into the lamps through the controller.

If the Sun shines, the DC current can flow from the panel, through the controller and into the lamps. If the Sun doesn't shine, the current can flow from the battery, through the controller and into the lamps. If the lamps are off, the current can flow from the panel, through the controller, and into the battery.

The controller controls the flow of the current. If the battery is full, the controller stops the flow from the panel into the battery. If the battery is empty, the controller stops the flow from the battery into the lamps.

Language

If	the Sun		shine	-s	,	the current flows from the panel.
	the Sun	does not/doesn't	shine		,	the current flows from the battery.

If	the battery	is	full	,	the current doesn't flow into the battery.
	the lamps	are not/aren't	on	,	the current flows into the battery.

Task

6 Work in pairs. How do you think the controller below works? Make notes.

7 Complete the text explaining how the controller works. Choose the correct verb and use the correct form of the verb.

If the battery is full, switch A (1) _____ (open/close). Then the current (2) _____ (flow/not flow) from the panel to the battery. The controller short-circuits the panel.

If the battery is empty, switch B (3) _____ (open/close). Then the current (4) _____ (flow/not flow) from the battery to the lamp.

switch B

switch A

this component measures the voltage of the battery

controller

LIVEWORKSHEETS