

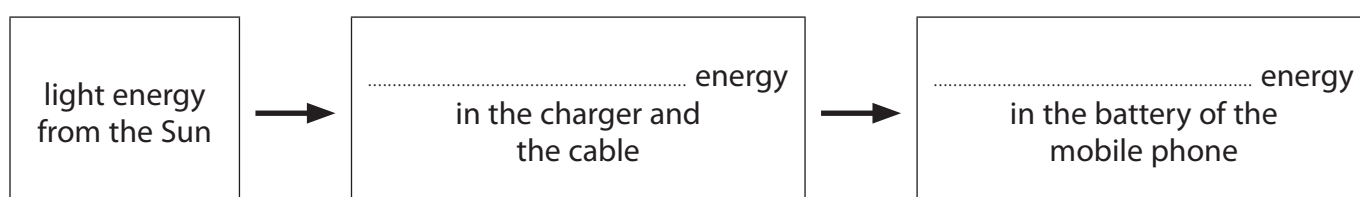
11 The photograph shows a solar-powered battery charger connected to a mobile phone.



When the battery charger is used, it transfers light energy from the Sun to the battery of the mobile phone.

(a) Complete the energy transfer diagram.

(2)



(b) It takes 3.5 hours to recharge the battery fully.

The average current supplied by the charger is 400 mA.

(i) State the equation linking charge, current and time.

(1)

(ii) Calculate the amount of charge needed to recharge the battery fully, and give the unit.

(3)

charge = unit

(c) If the charger is moved into the shade, the output power decreases.

The voltage across the charger stays the same.

Explain how moving the charger into the shade affects the time needed to recharge the battery fully.

(2)

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(Total for Question 11 = 8 marks)

