

14 The mean intensity of solar radiation arriving at the Earth is 1.37 kW m^{-2} .

(a) The distance of the Earth from the Sun is $1.50 \times 10^{11} \text{ m}$.

Show that the luminosity of the Sun is about $4 \times 10^{26} \text{ W}$.

(2)

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(b) The energy radiated from the Sun results in a decrease in the mass of the Sun.

Calculate the decrease in the mass of the Sun due to this radiation over a period of 1 year.

1 year = $3.15 \times 10^7 \text{ s}$

(2)

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Decrease in mass =

(Total for Question 14 = 4 marks)