Marked example 3

Paper 2 style · Graphic display calculator

3 6 marks SL 1.1 ●●○ Typical

The mean distance from the Earth to the Sun is 1.496×10^8 km. Light travels at 3.00×10^5 km per second.

(a) Find the time, in seconds, that light takes to travel from the Sun to the Earth. Give your answer in standard form. [2]

(b) Assume the Earth moves around the Sun on a circle of radius 1.496×10^8 km. Find the length of one orbit, in standard form. [2]

(c) One orbit takes 365.25 days. Find the mean speed of the Earth, in km per hour, in standard form. [2]

MARKSCHEME (a)

$\dfrac{1.496 \times 10^8}{3 \times 10^5}$ (M1)

4.99×10^2 s $(498.666\ldots)$ A1

Total 2 marks

MARKSCHEME (b)

$2\pi \times 1.496 \times 10^8$ (M1)

9.40×10^8 km $(9.39964\ldots \times 10^8)$ A1

Total 2 marks

MARKSCHEME (c)

$\dfrac{9.39964\ldots \times 10^8}{365.25 \times 24}$ (M1)

1.07×10^5 km/h $(107\,228\ldots)$ A1

Total 2 marks

Note $365.25 \times 24 = 8766$ hours.

Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization. © 2026 Hence