

LC 2015 (SET B): PAPER 1

QUESTION 2 (25 MARKS)

Question 2 (a)

John paid €25, Mary paid €15 and Eileen paid €10 for each part of the ticket.

25:15:10 is the ratio of how they will divide out the €20 000 prize money.

25:15:10 ← Divide across by 5.

5:3:2 ← Add the numbers to get 10 (5 + 3 + 2). This means John gets $\frac{5}{10}$ of the prize money,

Mary gets $\frac{3}{10}$ of the prize money and Eileen gets $\frac{2}{10}$ of the money.

$$\text{John: } \frac{5}{10} \times €20\,000 = €10\,000$$

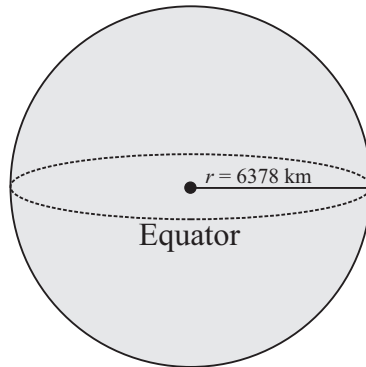
$$\text{Mary: } \frac{3}{10} \times €20\,000 = €6\,000$$

$$\text{Eileen: } \frac{2}{10} \times €20\,000 = €4\,000$$

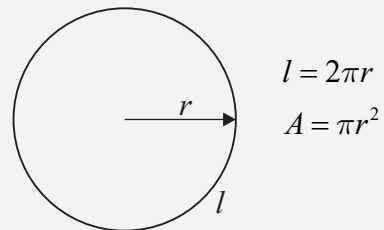
Question 2 (b) (i)

The equator is a circle that passes around the Earth which is a sphere. You need to find the length l of this circle.

$$\begin{aligned} l &= 2\pi r \\ &= 2\pi(6378) \\ &\approx 40\,074 \text{ km} \end{aligned}$$



FORMULAE AND TABLES BOOK Length and area: Circle [page 8]



Question 2 (b) (ii)

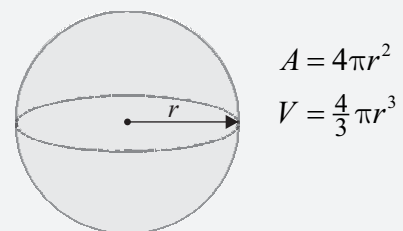
SCIENTIFIC NOTATION

$$a \times 10^n, 1 \leq a < 10, n \in \mathbb{Z}$$

Ex. 2.3×10^{-5}

$$\begin{aligned} V &= \frac{4}{3} \pi r^3 = \frac{4}{3} \pi (6378)^3 \\ &= 1.087 \times 10^{12} \text{ km}^3 \leftarrow \text{Your calculator turns this into} \\ &\quad \text{scientific notation automatically.} \end{aligned}$$

FORMULAE AND TABLES BOOK Surface area and volume: Sphere [page 8]



Question 2 (c)

$$\frac{\text{Mass of Sun}}{\text{Mass of Earth}} = \frac{1.99 \times 10^{30} \text{ kg}}{5.97 \times 10^{24} \text{ kg}} \approx 333\,333$$

USING YOUR CALCULATOR

Press the **fraction button**.

Input 1.99.

Press $\times 10^x$ button followed by 30.

Scroll down to bottom of the fraction.

Input 5.97×10^{24}

Press =

MARKING SCHEME NOTES

Question 2 (a) [Scale 15B (0, 3, 15)]

3: • Any correct ratio established or one correct amount

Question 2 (b) (i) (ii) [Scale 5C (0, 3, 4, 5)]

3: • Correct formula or work of relevance in either part

• Finds diameter (12 756 km)

4: • One part correct

• Substitutes correctly into both formulae

Question 2 (c) [Scale 5B (0, 3, 5)]

3: • Formulates division
