Exercise 3

Paper 2 style · Graphic display calculator

3 6 marks SL 4.6 · 4.11 ●●○ Typical

Of the commuters in a city, 40 % travel by bus (B). The probability of arriving late (L) is 0.15 for a commuter who travels by bus and 0.3 for one who does not.

(a) Find the probability that a commuter chosen at random arrives late. **[2]**

(b) Given that a commuter arrived late, find the probability that they travelled by bus. **[2]**

(c) Among 500 commuters, find the expected number who arrive late. **[2]**

The markscheme is on the next page: try the question first. 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.
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MARKSCHEME (a)

$0.4 \times 0.15 + 0.6 \times 0.3$ **(M1)**

$= 0.24$ **A1**

Total 2 marks

MARKSCHEME (b)

$$\frac{0.4 \times 0.15}{0.24}$$ **(M1)**

$= 0.25$ **A1**

Total 2 marks

MARKSCHEME (c)

500×0.24 **(M1)**

120 **A1**

Total 2 marks