Marked example 3

Paper 2 style · Graphic display calculator

3 6 marks SL 4.6 · 4.11 ●●○ Typical

In a town, 35 % of the people have been vaccinated (V). The probability of catching a cold (C) in winter is 0.25 for a vaccinated person and 0.6 for a person who has not been vaccinated.

(a) Find the probability that a person chosen at random catches a cold. **[2]**

(b) Given that a person caught a cold, find the probability that they were vaccinated. **[2]**

(c) In a sample of 400 people, find the expected number who catch a cold. **[2]**

MARKSCHEME (a)

$0.35 \times 0.25 + 0.65 \times 0.6$ **(M1)**

$= 0.4775$ **A1**

Total 2 marks

Note Accept 0.478.

MARKSCHEME (b)

$\dfrac{0.35 \times 0.25}{0.4775}$ **(M1)**

$= 0.183 \ \ (0.183246\ldots)$ **A1**

Total 2 marks

MARKSCHEME (c)

400×0.4775 **(M1)**

191 **A1**

Total 2 marks

Note Exactly 191.

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