

QUESTION 3.2

(a) (i) $\frac{100}{400} \left(\frac{1}{4}, 0.25, 25 \% \right)$ (AI)

(ii) $\frac{90}{400} \left(\frac{9}{40}, 0.225, 22.5 \% \right)$ (AI)

(iii) $\frac{20}{400} \left(\frac{1}{20}, 0.05, 5 \% \right)$ (AI)(AI)

Note: Award (AI) for numerator, (AI) for denominator.

(iv) $\frac{120}{400} \left(\frac{3}{10}, 0.3, 30 \% \right)$ (AI)(AI)

Note: Award (AI) for numerator, (AI) for denominator.

(v) $\frac{30}{110} \left(\frac{3}{11}, 0.273, 27.3 \% \right) (0.272727\dots)$ (AI)(AI) [8 marks]

Note: Award (AI) for numerator, (AI) for denominator. Accept 0.27, do not accept 0.272, do not accept 0.3.

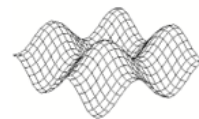
(b) $\frac{1}{20} \neq \frac{1}{4} \times \frac{9}{40}$ (RI)(ft)

Note: The fractions must be used as part of the reason.
 Follow through from (a)(i), (a)(ii) and (a)(iii).

Pam is not correct (AI)(ft) [2 marks]

Notes: Do not award (R0)(AI).
 Accept the events are not independent (dependent).

continued...



Question 3.2 continued

- (c) (i) The mathematics course and language of examination are independent. (A1)

Notes: Accept “There is no association between Mathematics course and language”.
 Do not accept “not related”, “not correlated”, “not influenced”.

(ii) $\frac{110}{400} \times \frac{150}{400} \times 400 \left(= \frac{110 \times 150}{400} \right)$ (M1)
 $= 41.25$ (A1)
 $= 41.3$ (AG) [3 marks]

Note: 41.25 and 41.3 must be seen to award final (A1).

- (d) (i) 7.67 (7.67003...) (G2)

Note: Accept 7.7, do not accept 8 or 7.6.
 Award (G1) if formula with all nine terms seen but their answer is not one of those above.

(ii) 4 (G1)
 (iii) 9.488 (A1)(ft) [4 marks]

Notes: Accept 9.49 or 9.5, do not accept 9.4 or 9.
 Follow through from their degrees of freedom.

- (e) $7.67 < 9.488$ (R1)

OR

$p = 0.104...$, $p > 0.05$ (R1)
 Accept (Do not reject) H_0 (Pam’s belief is correct) (A1)(ft) [2 marks]

Notes: Follow through from part (d). Do not award (R0)(A1).

Total [19 marks]