Marked example 1

Paper 1 style · No calculator

1 6 marks SL 4.5 · 4.6 · 4.11 ●○○ Routine

In a class of 40 students, 22 play football (F), 15 play tennis (T) and 6 play both.

(a) Find the number of students who play neither sport. **[2]**

(b) Find $P(F \cup T)$. **[1]**

(c) Find $P(T \mid F)$. **[2]**

(d) Determine whether F and T are independent. **[1]**

MARKSCHEME (a)

$22 + 15 - 6 = 31$ play at least one **(M1)**

$40 - 31 = 9$ **A1**

Total 2 marks

MARKSCHEME (b)

$\frac{31}{40}$ **A1**

Total 1 mark

MARKSCHEME (c)

$\frac{P(T \cap F)}{P(F)} = \frac{6/40}{22/40}$ **(M1)**

$= \frac{6}{22} = \frac{3}{11}$ **A1**

Total 2 marks

MARKSCHEME (d)

$P(F)P(T) = \frac{22}{40} \times \frac{15}{40} \neq \frac{6}{40}$: not independent **R1**

Total 1 mark

Note Or: $P(T \mid F) = \frac{3}{11} \neq P(T) = \frac{3}{8}$.

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