

Question	Scheme	Marks	AOs
3(a)	$P(A) = \frac{2}{5} + \frac{4}{15} = \frac{2}{3}$ or $P(B) = \frac{1}{4} + \frac{4}{15} = \frac{31}{60}$	B1	1.1b
	$P(A) \times P(B) = \frac{2}{3} \times \frac{31}{60}$	M1	1.1b
	$= \frac{31}{90} \neq \frac{4}{15} = P(A \cap B)$ so A and B not independent	A1	2.4
	(3)		
(b)	$P(B A') = \frac{P(B \cap A')}{P(A')} = \frac{\frac{1}{4}}{\frac{1}{4} + \frac{1}{12}}$	M1	1.1b
	$= \frac{3}{4}$	A1	1.1b
	(2)		
(c)			
	$P(B A) = \frac{4}{\frac{15}{15} + \frac{2}{5}}$ or $P(B' A) = \frac{2}{\frac{15}{15} + \frac{2}{5}}$		
	All correct	A1	1.1b
	(4)		
(9 marks)			

Notes:

(a)

B1: either $P(A)$ or $P(B)$ correct

M1: use of $P(A) \times P(B) = P(A \cap B)$ independence rule

A1: fully correct explanation supported by correct calculated values

Alt method

M1: use of eg $P(A|B) = P(A)$ or $P(B|A) = P(B)$

A1: $P(A|B) = \frac{16}{31} \neq \frac{2}{3}$ or $P(B|A) = \frac{2}{5} \neq \frac{31}{60}$ and correct conclusion

(b)

M1: use of $P(B|A') = \frac{P(B \cap A')}{P(A')}$ at least one of numerator or denominator correct

A1: cao, just 0.75 oe is M1A1

(c)

B1ft: ' $P(A)$ ' and $P(A') = 1 - 'P(A)'$

B1ft: $P(B|A')$ and $P(B'|A')$ ft their (b)

M1: valid method to find $P(B|A)$ or $P(B'|A)$

A1: all correct cao