Assessment Schedule – 2006

Statistics and Modelling: Solve straightforward problems involving probability (90643)

Evidence Statement

	Achievement Criteria	Q	Evidence	Code	Judgement	Sufficiency
Achievement	Solve straightforward problems involving probability.	1	$P(SS \cup NZ) = \dfrac{4}{15} = 0.27$	A	Or equivalent.	*Achievement:* Three of Code A.
		2	$P(S \cap M) = \dfrac{14}{45} = 0.311$	A	Or equivalent.	
		3	$P(\text{at least one head}) = \dfrac{9}{16} = 0.5625$	A	Or equivalent.	
Achievement with Merit	Solve probability problems.	4	(see table below) $E[X] = 3\dfrac{5}{6} = 3.83$ OR (see table below) $E[X] + E[Y] = \dfrac{10}{6} + \dfrac{13}{6} = \dfrac{23}{6}$	M A	Or equivalent.	*Merit:* Achievement **plus** Two of Code M
		5	$P(F|O) = 0.75$	M A	Or equivalent.	
		6	$P(\text{Rewa first and Stefan last}) = \dfrac{8!}{10!} = \dfrac{1}{90} = 0.011$	M A	Or equivalent.	
Achievement with Excellence	Apply probability theory.	7	$E[X] = 2 - k$ $E[X^2] = 4 - 3k$ $Var[X] = 4 - 3k - (2-k)^2$ $\qquad\qquad = k(1-k)$	M A E	Need evidence of the probability distribution of X and a calculation of variance based on that probability distribution, with evidence of how it simplifies to $k(1-k)$.	*Excellence:* Merit **plus** Code E.

Question 4 tables:

x	2	3	4	5	6
$P(X=x)$	$\dfrac{6}{36}\left(=\dfrac{1}{6}\right)$	$\dfrac{7}{36}$	$\dfrac{13}{36}$	$\dfrac{7}{36}$	$\dfrac{3}{36}\left(=\dfrac{1}{12}\right)$

x	1	2	3		y	1	2	3
$P(X=x)$	$\dfrac{3}{6}$	$\dfrac{2}{6}$	$\dfrac{1}{6}$		$P(Y=y)$	$\dfrac{2}{6}$	$\dfrac{1}{6}$	$\dfrac{3}{6}$

Question 7 table:

x	1	2
$P(X=x)$	k	$1 - k$

Judgement Statement

Statistics and Modelling: Solve straightforward problems involving probability (90643)

Achievement	Achievement with Merit	Achievement with Excellence
Solve straightforward problems involving probability. $3 \times$ A	Solve probability problems. Achievement *plus* $2 \times$ M	Apply probability theory. Merit *plus* $1 \times$ E