

12	(a)		$k(1 + 2 + 3 + 4 + 5) \quad (= 1)$ $k = \frac{1}{15}$	M1 A1	3.3 1.1	Allow $15k \quad (= 1)$ May be implied	
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			$P(X = 3) = 3 \times \frac{1}{15} \text{ or } \frac{3}{15} \quad (= 0.2 \text{ AG})$	A1 [3]	2.1	Must see $3 \times \frac{1}{15}$ or $\frac{3}{15}$ and answer 0.2	
12	(b)		$\frac{1}{15} \quad \frac{2}{15} \quad \frac{3}{15} \quad \frac{4}{15} \quad \frac{5}{15}$ oe 0.07, 0.13, 0.2, 0.27, 0.33	M1 A1 [2]	1.2 1.1	M1 for ≥ 3 probs correct, ft their <i>k</i> cao. Allow decimals (2 dp) SC: Table with all five probs = 0.2: M1	Allow $X = 0$ or $X = 6$ or $X = 6+$ if prob shown as 0
12	(c)		Both parts. Allow mixture of methods				
12	(c)	(i)	$\frac{3}{15} \times \frac{4}{15} + \frac{2}{15} \times \frac{5}{15}$ oe $\times 2$ $= \frac{44}{225}$ or 0.196 (3 sf)	M1 M1 A1 [3]	3.4 3.1a 1.1	Correct products added, ft their table 2×(Sum of two products of probs) cao	Special cases 2-way table Count 4 pairs M1 But if (b) correct: M0 ÷ 25 M1 = 0.16 A0 All probs = 0.2 0.2²+0.2² M1 But if (b) correct: M0 2×(0.2²+0.2²) Allow without 2× M1 = 0.16 A0
12	(c)	(ii)	$P(\text{one value is 2 \& } T = 7) = 2 \times \frac{2}{15} \times \frac{5}{15}$ $= \frac{4}{45}$ $\frac{P(\text{one value is 2 \& } T = 7)}{P(T = 7)} \quad \left(\frac{\frac{4}{45}}{\frac{44}{225}} \text{ or } = \frac{0.0889}{0.196} \right)$ $= \frac{5}{11}$ or 0.455 (3 sf)	M1 A1f M1 A1 [4]	3.4 1.1 2.1 1.1	Allow without "2×", ft their table ft their table (except if all probs = 0.2) Allow any probability Their (c)(i) or their $P(T = 7)$ cao NB not 0.454 Eg: If (i) $\frac{22}{225}$, $\frac{2}{45} \div \frac{22}{225} = \frac{5}{11}$ M1A0M1A0	Count 2 pairs M1 A0 ÷ 4 M1 = 0.5 A0 2 × 0.2 ² M1 = 0.08 A0 $\frac{0.08}{0.16}$ M1 = 0.5 A0