

## LC 2015 (SET A): PAPER 2

**QUESTION 1 (25 MARKS)**

**Question 1 (a)**

W = Win, L = Loss

		Die 2					
		1	2	3	4	5	6
Die 1	1	[2] = L	[3] = L	[4] = L	[5] = L	[6] = L	[7] = L
	2	[3] = L	[4] = L	[5] = L	[6] = L	[7] = L	[8] = L
	3	[4] = L	[5] = L	[6] = L	[7] = L	[8] = L	[9] = W
	4	[5] = L	[6] = L	[7] = L	[8] = L	[9] = W	[10] = W
	5	[6] = L	[7] = L	[8] = L	[9] = W	[10] = W	[11] = W
	6	[7] = L	[8] = L	[9] = W	[10] = W	[11] = W	[12] = W

**MARKING SCHEME NOTES**

**Question 1 (a) [Scale 10C (0, 4, 8, 10)]**

- 4:**
- At least one other correct entry
  - Partially correct table with at least 5 correct totals or couples
- 8:**
- Five or more correct entries including at least one other loss and one other win
  - Table correctly completed with totals or couples but no indication of W or L

**Question 1 (b)**

$$P(\text{Event}) = \frac{\text{Number of desired outcomes}}{\text{Number of possible outcomes}}$$

(i)  $P(W) = \frac{\text{Number of wins}}{\text{Number of possible outcomes}} = \frac{10}{36} = \frac{5}{18}$

(ii)  $P(L) = \frac{\text{Number of losses}}{\text{Number of possible outcomes}} = \frac{26}{36} = \frac{13}{18}$

$P(\text{L and then L and then L}) = \frac{13}{18} \times \frac{13}{18} \times \frac{13}{18} = 0.3767$

**MARKING SCHEME NOTES**

**Question 1 (b) [Scale 10C (0, 4, 8, 10)]**

- 4:**
- Favourable outcomes identified
  - (i) correct only ( $\frac{10}{36}$ ,  $\frac{5}{18}$ , 0.27, 0.28, 0.3)

- 8:**
- (i) omitted or of no merit but (ii)  $\left(\frac{13}{18}\right)^3$

**Question 1 (c)**

This is a possible outcome: L W L L L W L L L W

The last W *has* to happen. The other 9 letters can be in any order.

$$P(3W's with a W on tenth throw) = {}^9C_2 \left(\frac{5}{18}\right)^2 \left(\frac{13}{18}\right)^7 \times \left(\frac{5}{18}\right) = 0.0791$$

**MARKING SCHEME NOTES**

**Question 1 (c) [Scale 5C (0, 2, 4, 5)]**

- 2: • Relevant binomial formula with some substitution  
• Identifies  $p^7$  or  $(1-p)^3$  or  $(1-p)^2$  or  $1-p$   
• Listing at least any two of the ten throws
- 4: • Probability of two wins in nine throws