Marked example 2

Paper 2 style · Graphic display calculator

2 6 marks SL 4.8 ●●○ Typical

A spinner lands on red with probability 0.3. It is spun 12 times. Let X be the number of times it lands on red.

(a) Find $P(X = 4)$. **[2]**

(b) Find the probability that it lands on red at least 5 times. **[2]**

(c) Write down $E(X)$ and find $\text{Var}(X)$. **[2]**

MARKSCHEME (a)

$X \sim B(12, 0.3)$ **(M1)**

$0.231 \quad (0.231139\ldots)$ **A1**

Total 2 marks

MARKSCHEME (b)

$P(X \geq 5) = 1 - P(X \leq 4)$ **(M1)**

$0.276 \quad (0.276344\ldots)$ **A1**

Total 2 marks

Note "At least 5": 4 is the last value excluded.

MARKSCHEME (c)

$E(X) = 3.6$ **A1**

$\text{Var}(X) = 12 \times 0.3 \times 0.7 = 2.52$ **A1**

Total 2 marks

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