Exercise 1

Paper 1 style · No calculator

1 5 marks SL 4.7

●○○ Routine

The probability distribution of a discrete random variable X is

x	0	1	2	3
$P(X = x)$	0.1	$3k$	0.3	k

(a) Find the value of k. **[2]**

(b) Find $E(X)$. **[2]**

(c) Find $P(X \leq 1)$. **[1]**

The markscheme is on the next page: try the question first. Written and verified by a practising IB mathematics teacher, produced with AI assistance; solved twice and recomputed by software. Not affiliated with or endorsed by the International Baccalaureate Organization.
© 2026 Hence

Exercise 1 — markscheme

Paper 1 style · No calculator

1 5 marks SL 4.7 ●○○ Routine

The probability distribution of a discrete random variable X is

x	0	1	2	3
$P(X = x)$	0.1	$3k$	0.3	k

(a) Find the value of k. **[2]**

(b) Find $E(X)$. **[2]**

(c) Find $P(X \leq 1)$. **[1]**

MARKSCHEME (a)

$0.1 + 3k + 0.3 + k = 1$ **(M1)**

$k = 0.15$ **A1**

Total 2 marks

Note The probabilities add up to 1.

MARKSCHEME (b)

$0 \times 0.1 + 1 \times 0.45 + 2 \times 0.3 + 3 \times 0.15$ **(M1)**

$E(X) = 1.5$ **A1**

Total 2 marks

MARKSCHEME (c)

$0.1 + 0.45 = 0.55$ **A1**

Total 1 mark