The geometric distribution

Answers

Further Maths topic practice

This topic online

Q	Answer	Marks
1	**a)** 0.1029 **b)** 0.16807 **c)** 0.657	4
2	**a)** X ~ Geo(1/8); rolls independent, probability of an 8 constant at 1/8 **b)** 0.0733 **c)** E(X) = 8, Var(X) = 56	6
3	**a)** p = 0.4 **b)** 0.3320 **c)** 1.94	5
4	**a)** p = 0.25 (shown) **b)** 0.3164 **c)** 28	7
5	**a)** 0.0633 **b)** 24	6
6	**a)** 0.0627 **b)** 0.0753 **c)** 5/11 (shown)	7
7	**a)** 0.5578 **b)** 0.0623 **c)** Bulbs are independent, so after 5 good bulbs the count starts afresh: more than 7 more bulbs needed	6
8	**a)** 3/16 **b)** 25/64 **c)** 1/5 (shown)	8
9	**a)** E(X) = 3, Var(X) = 6 **b)** X^2, since E(X^2) = 15 > 14 = E(5X - 1) **c)** 16/81 = 0.1975	8
10	**a)** p = 0.4 (shown) **b)** 0.216 **c)** 0.2202 **d)** mean 25, sd 6.12	8
11	**a)** 0.0655 **b)** 25/61 (shown) **c)** 16/61 **d)** 0.1904 **e)** mean 5, sd 4.47	10
12	**a)** £13.33 **b)** 0.1969 **c)** 0.7275 **d)** N ≥ n exactly when the first n - 1 attempts all fail **e)** £9.70	10

Full worked solutions, written out by hand, are on the solutions sheet for this topic.

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