Exercise 1

Paper 2 style · Graphic display calculator

1 6 marks SL 4.9 ●○○ Routine

The masses of eggs from a farm are normally distributed with mean 60 g and standard deviation 5 g.

(a) Find the probability that an egg chosen at random weighs less than 68 g. **[2]**

(b) Find the probability that an egg chosen at random weighs between 55 g and 62 g. **[2]**

(c) In a box of 200 eggs, find the expected number that weigh more than 70 g. **[2]**

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.
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MARKSCHEME (a)

$X \sim N(60, 5^2),\ P(X < 68)$ **(M1)**

$0.945\ \ (0.945200\ldots)$ **A1**

Total 2 marks

MARKSCHEME (b)

$P(55 < X < 62)$ **(M1)**

$0.497\ \ (0.496766\ldots)$ **A1**

Total 2 marks

MARKSCHEME (c)

$P(X > 70) = 0.0227501\ldots$ **(A1)**

$200 \times 0.0227501\ldots = 4.55$ **A1**

Total 2 marks

Note An expected number may be a decimal.