

It is claimed that the heights of a particular age group of boys follow a normal distribution with mean 125 cm and standard deviation 12 cm. Observations for a randomly chosen group of 60 boys in this age group are summarised in the following table. The table also gives the expected frequencies, correct to 2 decimal places, based on the normal distribution with mean 125 cm and standard deviation 12 cm.

Height, x cm	$x < 100$	$100 \leq x < 110$	$110 \leq x < 120$	$120 \leq x < 130$	$130 \leq x < 140$	$x \geq 140$
Observed frequency	0	3	15	23	11	8
Expected frequency	1.12	5.22	13.97	19.38	13.97	6.34

(a) Show how the expected frequency for $130 \leq x < 140$ is obtained. [2]

(b) Carry out a goodness of fit test, at the 5% significance level, to determine whether the claim is supported by the data. [6]