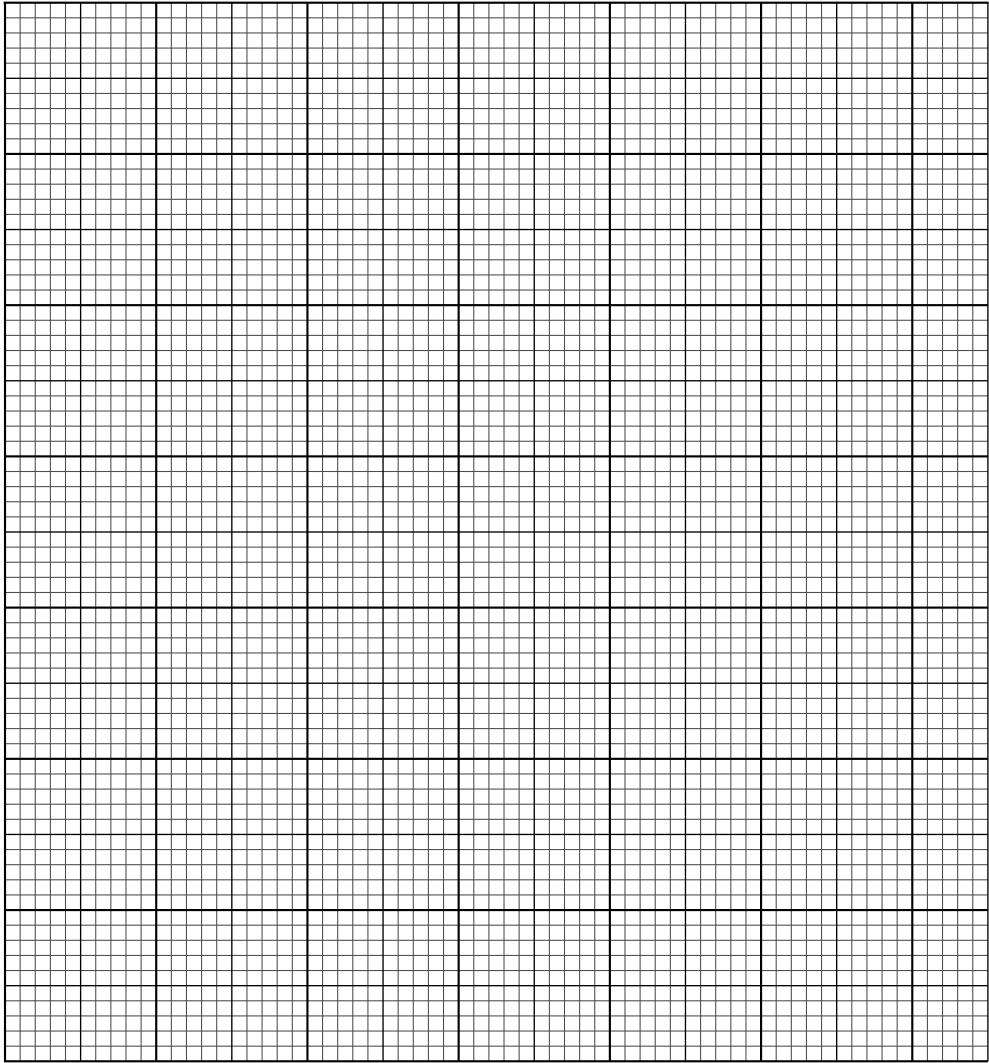


- 3** The times, t minutes, taken to complete a walking challenge by 250 members of a club are summarised in the table.

Time taken (t minutes)	$t \leq 20$	$t \leq 30$	$t \leq 35$	$t \leq 40$	$t \leq 50$	$t \leq 60$
Cumulative frequency	32	66	112	178	228	250

- (a)** Draw a cumulative frequency graph to illustrate the data. [2]



- (b)** Use your graph to estimate the 60th percentile of the data. [1]

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It is given that an estimate for the mean time taken to complete the challenge by these 250 members is 34.4 minutes.

- (c) Calculate an estimate for the standard deviation of the times taken to complete the challenge by these 250 members. [4]

This image shows a single page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.