4. The probability that a person completes a particular task in less than 15 minutes is 0.4

Jeffrey selects 20 people at random and asks them to complete the task. The random variable, X, represents the number of people who complete the task in less than 15 minutes.

(a) Find $P(5 \leqslant X < 8)$

(3)

Mia takes a random sample of 140 people.
Using a normal approximation, the probability that fewer than n of these 140 people complete the task in less than 15 minutes is 0.0239 to 4 decimal places.

(b) Find the value of n
Show your working clearly.

(6)

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Question 4 continued

(Total for Question 4 is 9 marks)