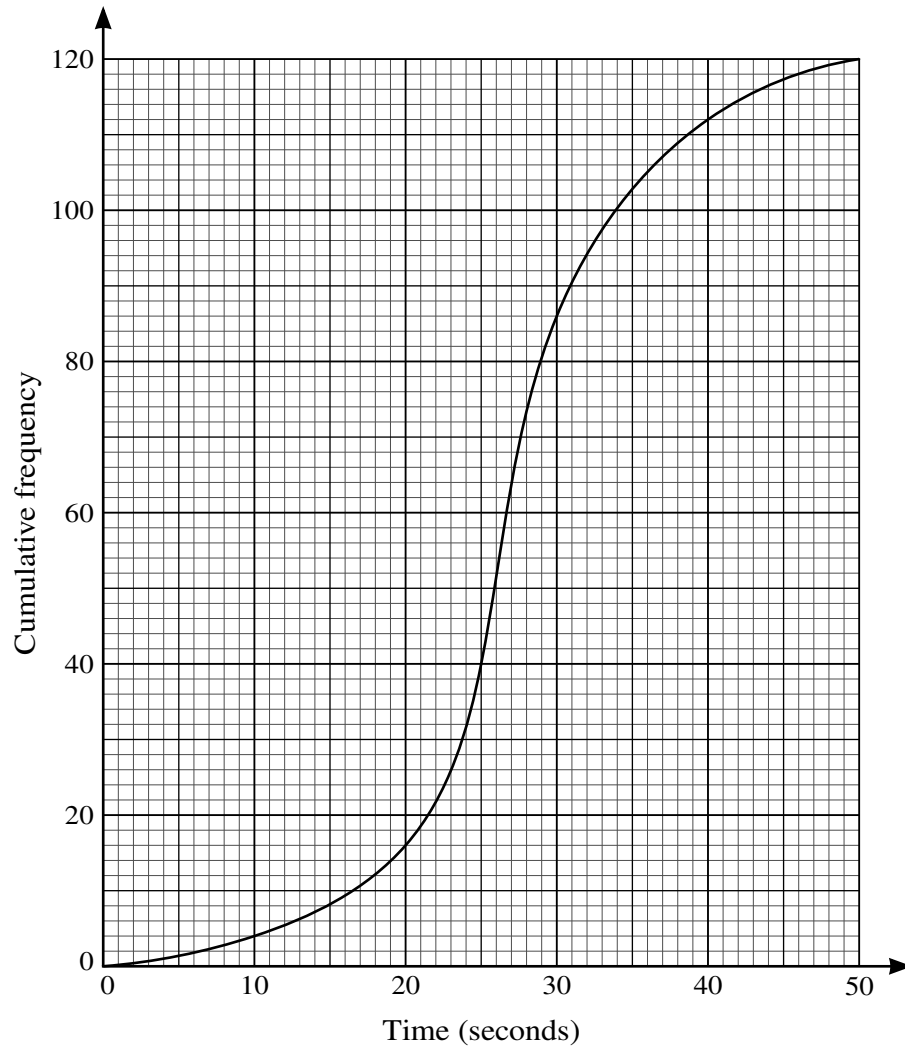


[Turn over

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1



The times taken by 120 children to complete a particular puzzle are represented in the cumulative frequency graph.

- (a) Use the graph to estimate the interquartile range of the data. [2]

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35% of the children took longer than T seconds to complete the puzzle.

- (b) Use the graph to estimate the value of T . [2]

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- 2** Hazeem repeatedly throws two ordinary fair 6-sided dice at the same time. On each occasion, the score is the sum of the two numbers that she obtains.

- (a)** Find the probability that it takes exactly 5 throws of the two dice for Hazeem to obtain a score of 8 or more. [2]

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- (b)** Find the probability that it takes no more than 4 throws of the two dice for Hazeem to obtain a score of 8 or more. [2]

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- [illegible]

- 3** A farmer sells eggs. The weights, in grams, of the eggs can be modelled by a normal distribution with mean 80.5 and standard deviation 6.6. Eggs are classified as small, medium or large according to their weight. A small egg weighs less than 76 grams and 40% of the eggs are classified as medium.

(a) Find the percentage of eggs that are classified as small. [3]

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(b) Find the least possible weight of an egg classified as large. [3]

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(c) Use an approximation to find the probability that more than 68 of these eggs were classified as medium. [5]

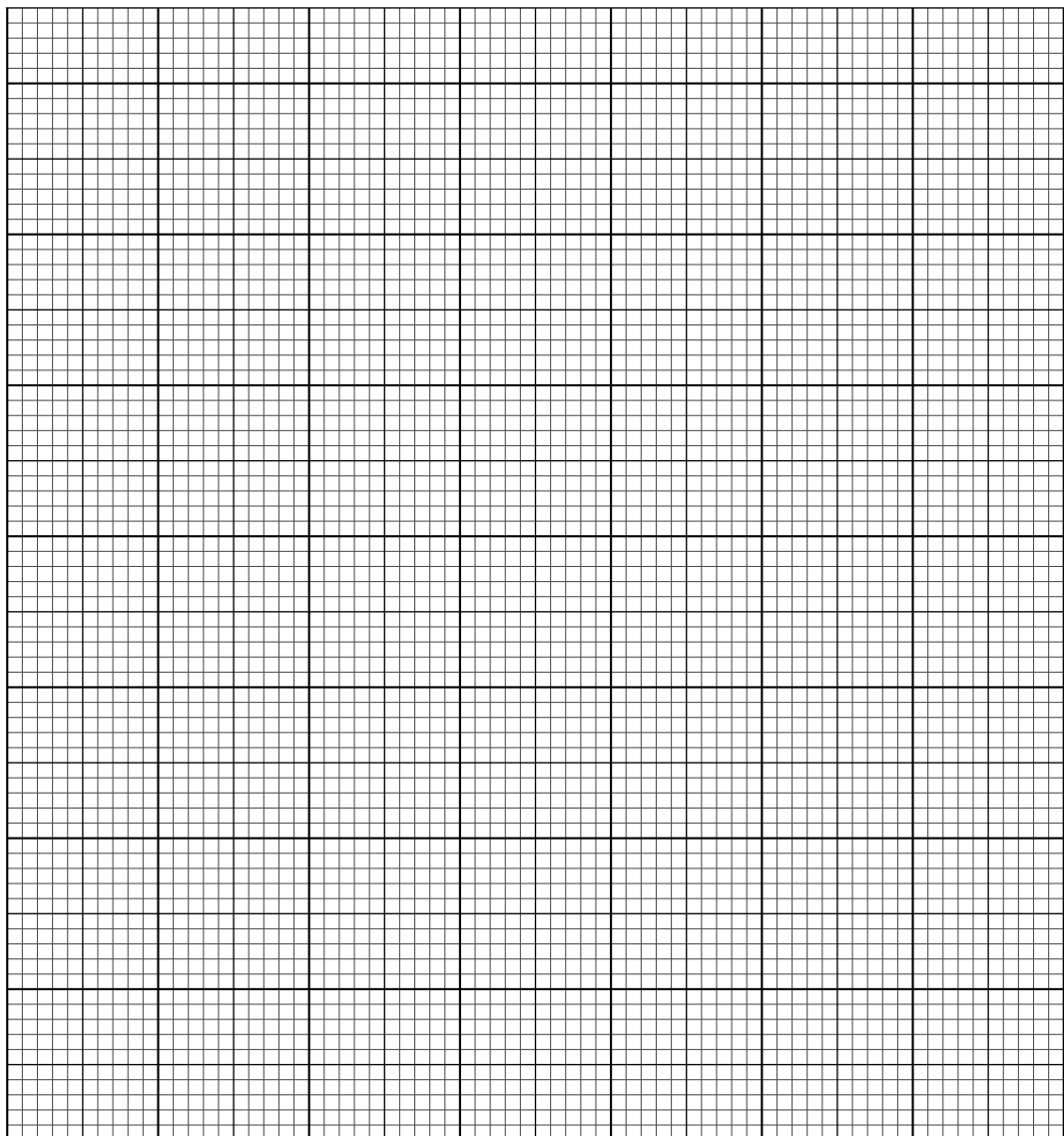
[illegible]

- 4 The times, to the nearest minute, of 150 athletes taking part in a charity run are recorded. The results are summarised in the table.

Time in minutes	101 – 120	121 – 130	131 – 135	136 – 145	146 – 160
Frequency	18	48	34	32	18

- (a) Draw a histogram to represent this information.

[4]



- (b)** Calculate estimates for the mean and standard deviation of the times taken by the athletes. [5]

This image shows a full page of a handwriting practice worksheet. It consists of multiple sets of three horizontal dotted lines, providing a guide for letter height and placement. The lines are evenly spaced across the entire page, leaving ample room for writing practice. There is no text or other markings on the page.

- 5 A red spinner has four sides labelled 1, 2, 3, 4. When the spinner is spun, the score is the number on the side on which it lands. The random variable X denotes this score. The probability distribution table for X is given below.

x	1	2	3	4
$P(X = x)$	0.28	p	$2p$	$3p$

- (a) Show that $p = 0.12$. [1]

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A fair blue spinner and a fair green spinner each have four sides labelled 1, 2, 3, 4. All three spinners (red, blue and green) are spun at the same time.

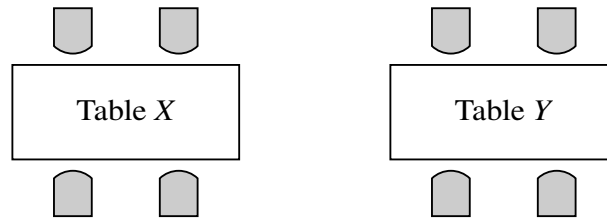
- (b) Find the probability that the sum of the three scores is 4 or less. [3]

[illegible]

- (c) Find the probability that the product of the three scores is 4 or less given that X is odd. [5]

This image shows a full page of white paper with horizontal dotted lines. The lines are evenly spaced and run across the width of the page, providing a guide for handwriting practice. There are no margins, text, or other markings on the page.

6



In a restaurant, the tables are rectangular. Each table seats four people: two along each of the longer sides of the table (see diagram). Eight friends have booked two tables, *X* and *Y*. Rajid, Sue and Tan are three of these friends.

- (a) The eight friends will be divided into two groups of 4, one group for table *X* and one group for table *Y*.

Find the number of ways in which this can be done if Rajid and Sue must sit at the same table as each other and Tan must sit at the other table. [3]

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When the friends arrive at the restaurant, Rajid and Sue now decide to sit at table *X* on the same side as each other. Tan decides that he does not mind at which table he sits.

- (b) Find the number of different seating arrangements for the 8 friends. [3]

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As they leave the restaurant, the 8 friends stand in a line for a photograph.

- (c) Find the number of different arrangements if Rajid and Sue stand next to each other, but neither is at an end of the line. [4]

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Additional Page

If you use the following lined page to complete the answer(s) to any question(s), the question number(s) must be clearly shown.

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and extend across the width of the page, typical of notebook or legal stationery. There are no margins, text, or other markings on the page.

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