

Please check the examination details below before entering your candidate information

Candidate surname

Other names

Centre Number

Candidate Number

Pearson Edexcel Level 3 GCE

Thursday 25 May 2023

Afternoon

Paper
reference

8MA0/21

Mathematics

Advanced Subsidiary

PAPER 21: Statistics

You must have:

Mathematical Formulae and Statistical Tables (Green), calculator

Total Marks

Candidates may use any calculator allowed by Pearson regulations. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.

Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name, centre number and candidate number.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled.
- Answer the questions in the spaces provided
– *there may be more space than you need.*
- You should show sufficient working to make your methods clear.
Answers without working may not gain full credit.
- Values from statistical tables should be quoted in full. If a calculator is used instead of tables the value should be given to an equivalent degree of accuracy.
- Inexact answers should be given to three significant figures unless otherwise stated.

Information

- A booklet 'Mathematical Formulae and Statistical Tables' is provided.
- The total mark for this part of the examination is 30. There are 5 questions.
- The marks for **each** question are shown in brackets
– *use this as a guide as to how much time to spend on each question.*

Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

Turn over ►

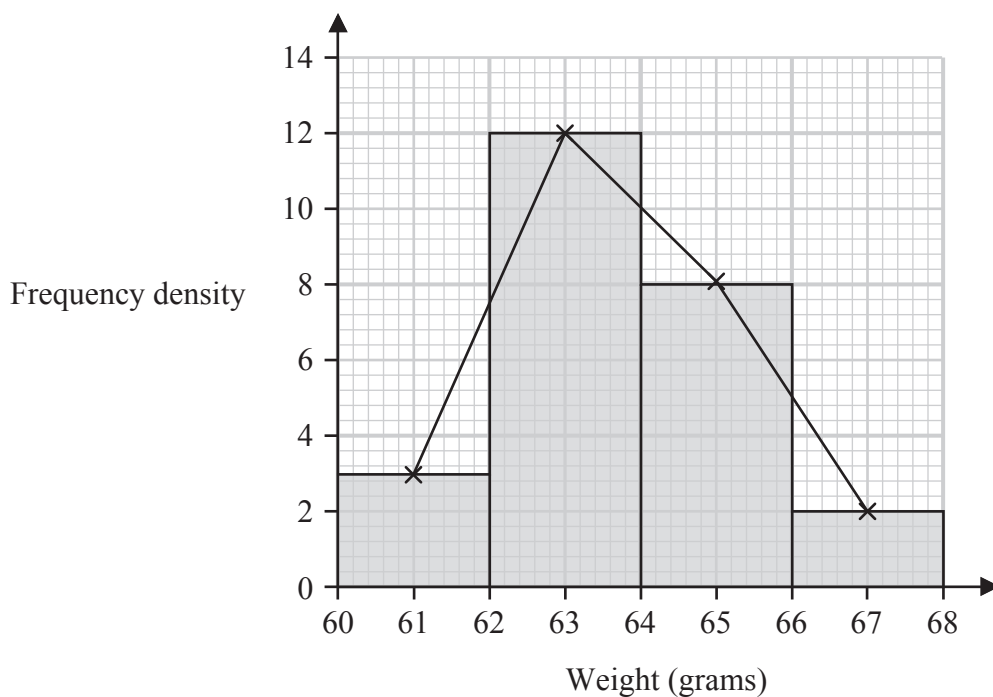
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1. The histogram and its frequency polygon below give information about the weights, in grams, of 50 plums.



- (a) Show that an estimate for the mean weight of the 50 plums is 63.72 grams. (2)
- (b) Calculate an estimate for the standard deviation of the 50 plums. (2)

Later it was discovered that the scales used to weigh the plums were broken.

Each plum actually weighs 5 grams less than originally thought.

- (c) State the effect this will have on the estimate of the standard deviation in part (b).
Give a reason for your answer. (1)



2. Fred and Nadine are investigating whether there is a linear relationship between Daily Mean Pressure, p hPa, and Daily Mean Air Temperature, t °C, in Beijing using the 2015 data from the large data set.

Fred randomly selects one month from the data set and draws the scatter diagram in Figure 1 using the data from that month.

The scale has been left off the horizontal axis.

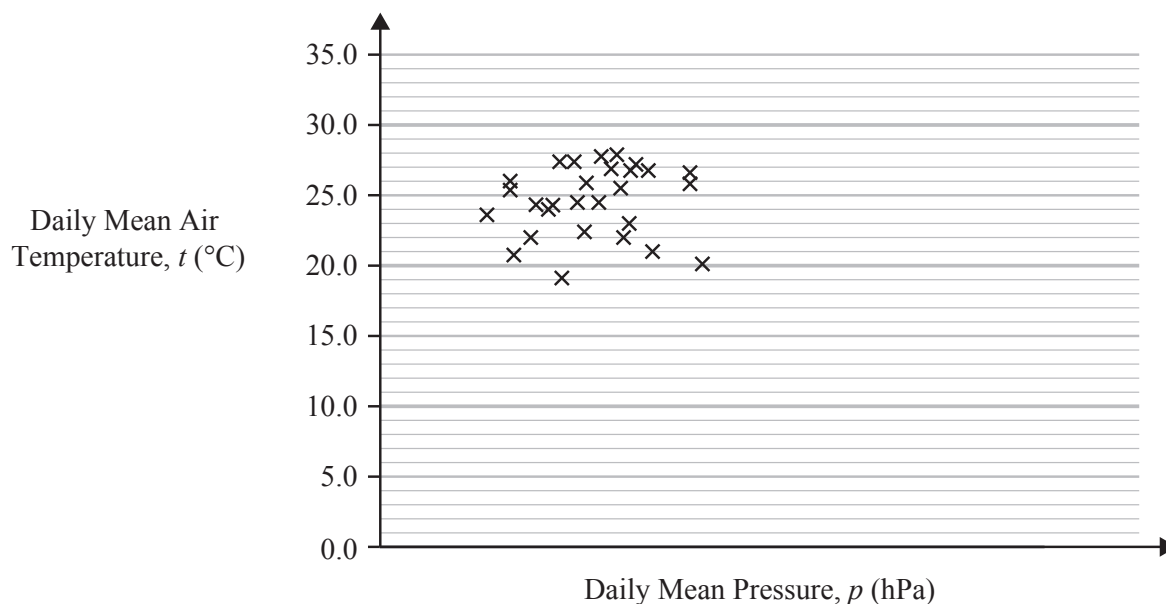


Figure 1

- (a) Describe the correlation shown in Figure 1.

(1)

Nadine chooses to use all of the data for Beijing from 2015 and draws the scatter diagram in Figure 2.

She uses the same scales as Fred.

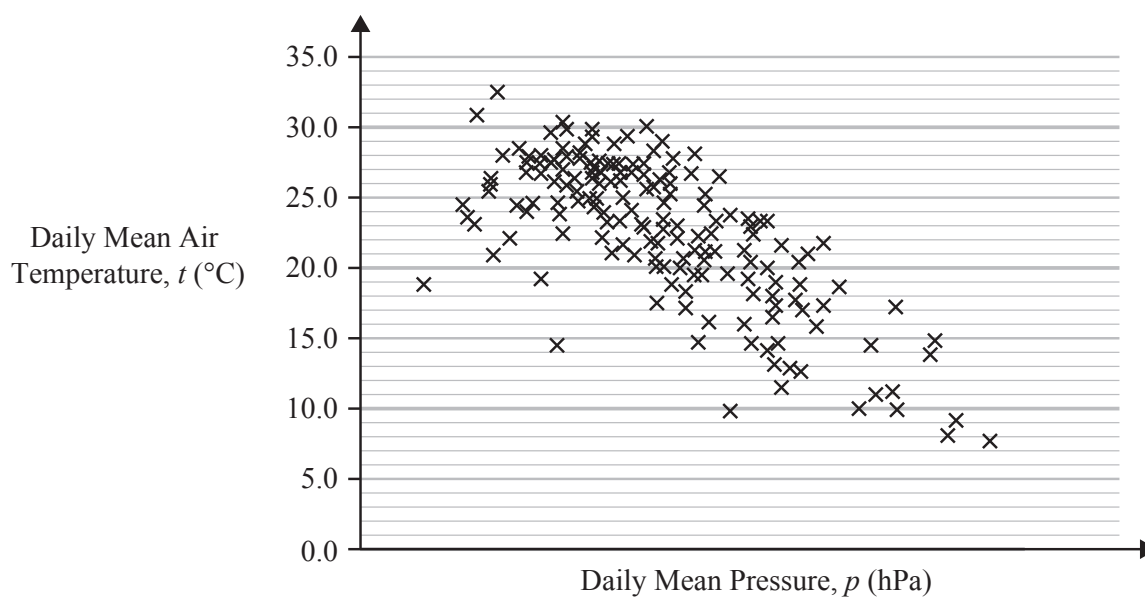


Figure 2



