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GEOGRAPHY **0460/41**

Paper 4 Alternative to Coursework **October/November 2025**

1 hour 30 minutes

You must answer on the question paper.

You will need: Insert (enclosed)
Calculator
Protractor
Ruler

INSTRUCTIONS

- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen or correction fluid.
- Do **not** write on any bar codes.
- If additional space is needed, you should use the lined pages at the end of this booklet; the question number or numbers must be clearly shown.

INFORMATION

- The total mark for this paper is 60.
- The number of marks for each question or part question is shown in brackets [ ].
- The insert contains additional resources referred to in the questions.

LEDCs – Less Economically Developed Countries
MEDCs – More Economically Developed Countries

This document has **20** pages. Any blank pages are indicated.

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1 Students in Bangkok, Thailand (a country in Asia), investigated how land use and quality of the environment changed with increasing distance from the local BTS station.

BTS is the Bangkok Mass Transit System. Fig. 1.1 (Insert) shows the train near Bearing station, which is the area where the students did their fieldwork.

The students tested the following hypotheses:

Hypothesis 1: *The total number of shops and services **decreases** away from the BTS station*.

Hypothesis 2: *Overall, the environmental quality **increases** away from the BTS station*.

(a) Before they began their fieldwork, the students studied the different types of shops and services. One student made a summary table of the differences between high-order, middle-order and low-order shops and services. This is shown in Fig. 1.2.

Complete Fig. 1.2 to show the differences between high-order and low-order shops and services.

Shops and services

order	examples of goods and services	how often they are bought or visited	average price of goods or services	distance people are willing to travel for goods or services
high	'designer' fashions jewellers			
middle	clothes health clinic	moderate frequency	moderate price	medium distance
low	food café			

[3]

Fig. 1.2

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(b) To investigate **Hypothesis 1**, the students worked at eight sites, approximately 400 m apart, along a main road going away from the station. At each site, the students completed a tally chart to record the different shops and services seen there.

(i) The results for all eight sites are shown in Table 1.1 (Insert). Use these results **to draw the divided bar graph for site 4** on Fig. 1.3. [3]

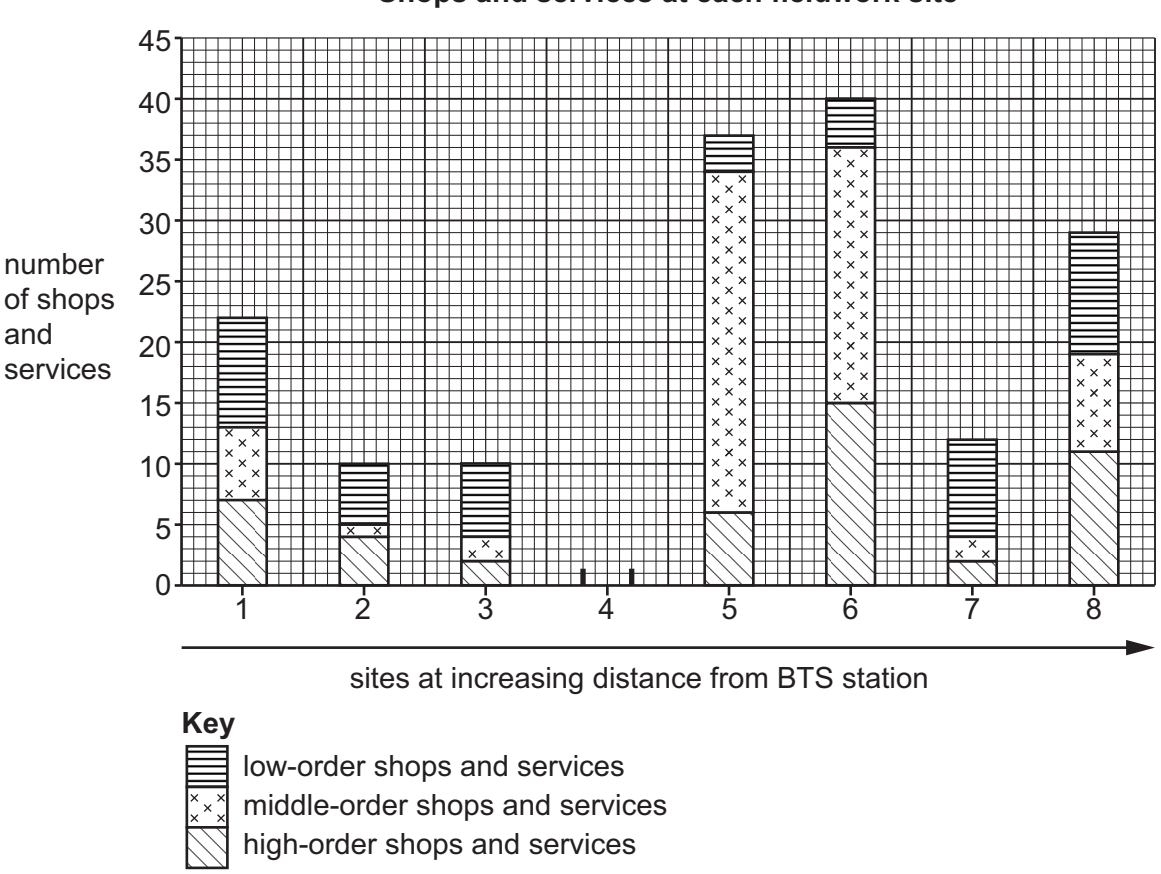

Fig. 1.3

(ii) Do the results of the students' fieldwork support **Hypothesis 1:** *The total number of shops and services* ***decreases*** *away from the BTS station*?

Support your conclusion with evidence from Fig. 1.3 and Table 1.1.

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(c) To get some information to test **Hypothesis 2:** *Overall, the environmental quality* ***increases*** *away from the BTS station*, the students **themselves** looked at the area and completed a bi-polar survey to investigate environmental features at each site. Their recording sheet is shown in Fig. 1.4 (Insert).

(i) Describe how the students would use the recording sheet.

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(ii) Describe how the students should organise their bi-polar survey to obtain reliable results.

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(iii) The results of the students' bi-polar survey are shown in Table 1.2 (Insert). **Plot the results for site 3** on Fig. 1.5. [2]

Results of students' bi-polar survey

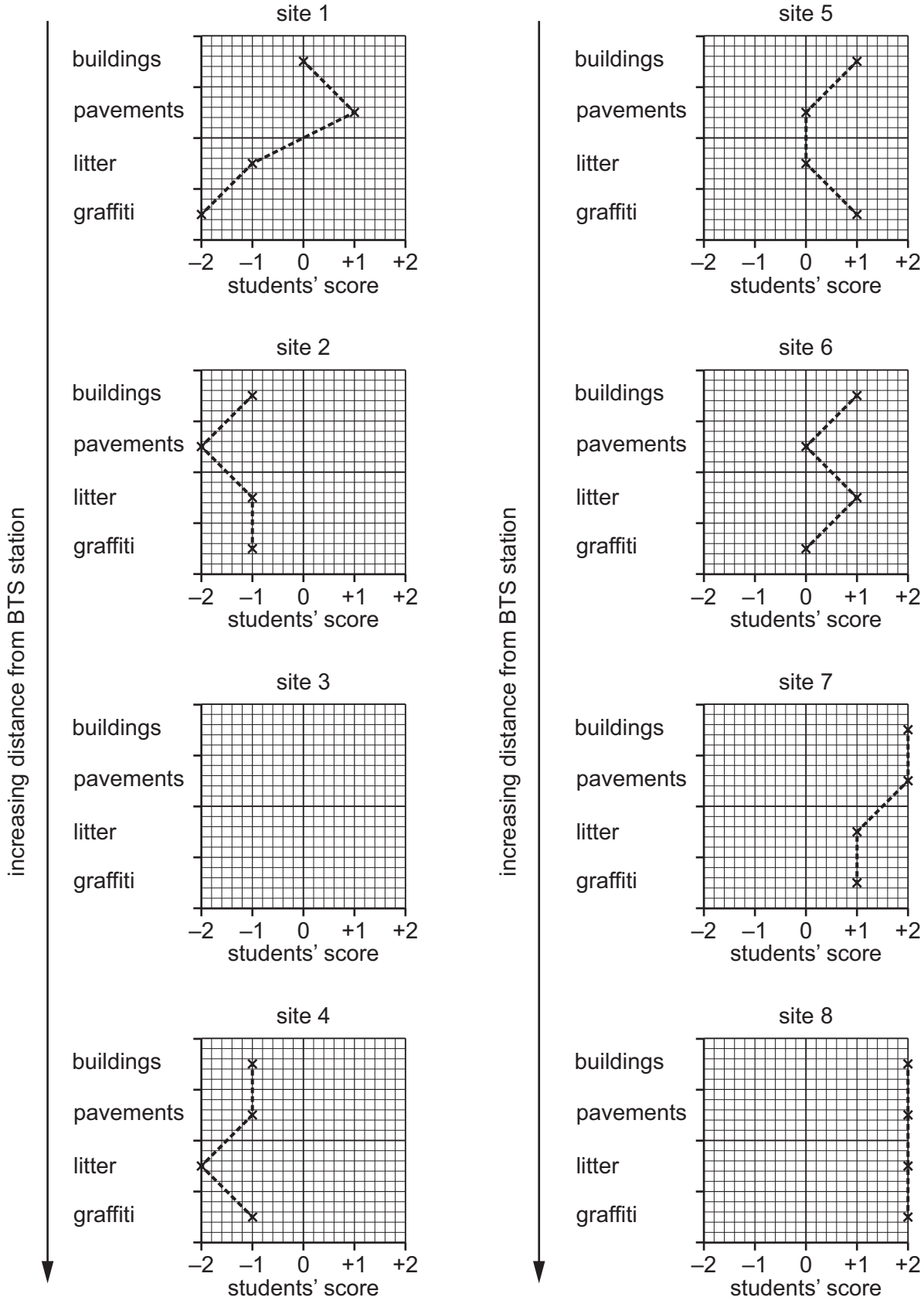

Fig. 1.5

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(iv) What conclusion would the students make about **Hypothesis 2:** *Overall, the environmental quality* ***increases*** *away from the BTS station*? Support your answer with evidence from Fig. 1.5 and Table 1.2 (Insert).

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(v) Having completed the fieldwork, one student suggested that the results of the bi-polar analysis might be unreliable. Give **two** reasons why the results might be unreliable.

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[2]

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(d) The students decided to return to the eight fieldwork sites to measure two factors which might affect the quality of the environment.
They measured noise level by using an app on their mobile phones.
They measured the carbon dioxide (CO_2) level in the air to show air pollution.
One student's fieldwork notes describe their method in Fig. 1.6 (Insert).

(i) The results of these tasks are shown in Table 1.3 (Insert). **Plot the results for site 3** on Fig. 1.7. [2]

Results of students' measurements of noise and air pollution

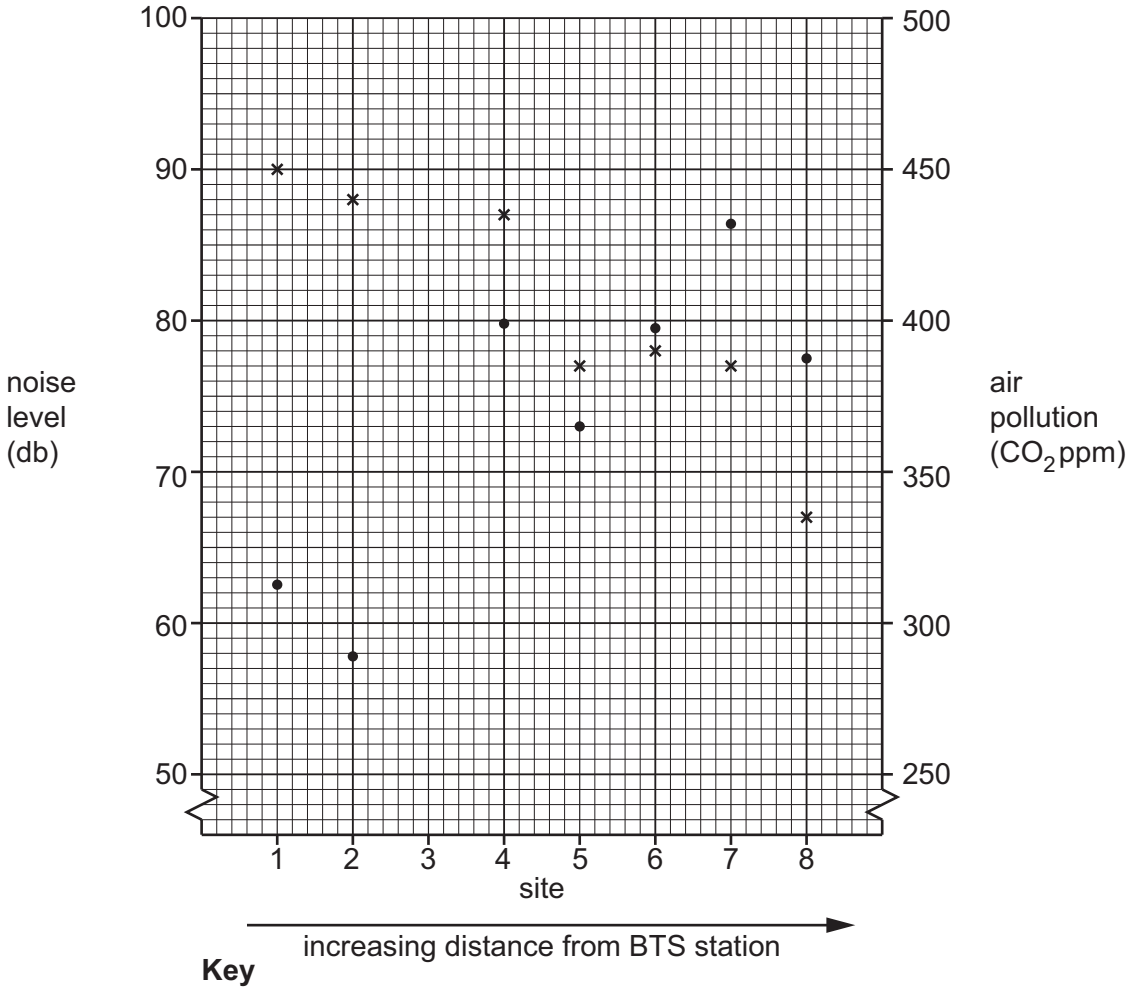

Fig. 1.7

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(ii) Which set of results shown in Fig. 1.7 best supports **Hypothesis 2:** *Overall, the environmental quality **increases** away from the BTS station*? (Circle) your choice.

noise level air pollution

Use the information in Fig. 1.7 and Table 1.3 to explain your choice. Refer to both factors and use data in your answer.

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..... [3]

(e) Other students did some extension work by using a questionnaire with local people to find out their opinions about noise and air pollution where they lived. Describe a sampling method to select people to take part in this survey.

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2 Students in London, UK, did a fieldwork investigation on the topic of weather. They used a variety of traditional instruments to collect weather data about their city.

(a) (i) The students measured some weather features. **Complete Table 2.1** by naming the instruments used to measure rainfall and wind speed.

Table 2.1

weather feature	measuring instrument
atmospheric pressure	barometer
temperature	maximum-minimum thermometer
rainfall	.....
sunshine hours	sunshine recorder
wind speed	.....
wind direction	wind vane

[2]

(ii) From Table 2.1 identify **one** measuring instrument used inside a Stevenson Screen and **one** measuring instrument used outside a Stevenson Screen.

used inside a Stevenson Screen .....

used outside a Stevenson Screen .....

[2]

Some students used their data about atmospheric pressure, temperature and hours of sunshine to test the following hypotheses:

Hypothesis 1: *There is a **positive** relationship between maximum temperature and hours of sunshine*.

Hypothesis 2: *Temperatures increase as atmospheric pressure increases, and temperatures decrease as atmospheric pressure decreases*.

(b) The students used a maximum-minimum thermometer shown in Fig. 2.1 (Insert). Explain how they would **use** the thermometer to measure the daily **maximum** temperature.

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(c) To measure the daily hours of sunshine the students used a sunshine recorder.

(i) Which **one** of the following statements about using a sunshine recorder is correct? Tick (✓) your answer.

	tick (✓)
The sunshine recorder should face north in the northern hemisphere and south in the southern hemisphere.	
The sunshine recorder measures sunshine in oktas.	
The sunshine recorder should be put under trees or next to a tall building.	
The results of the sunshine recorder should be recorded at the same time each day.	

[1]

(ii) Four sunshine recording cards taken from a sunshine recorder are shown in Fig. 2.2 (Insert). Which card (**A** to **D**) shows the most hours of sunshine recorded?
Explain your choice.

chosen recording card (**A** to **D**) .....

reason for choice

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..... [2]

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(d) The results of the students' measurements of maximum temperatures and hours of sunshine on some days in September are shown in Table 2.2 (Insert).

(i) **Plot the results for 4 and 20 September** on Fig. 2.3. [2]

Daily maximum temperature and hours of sunshine

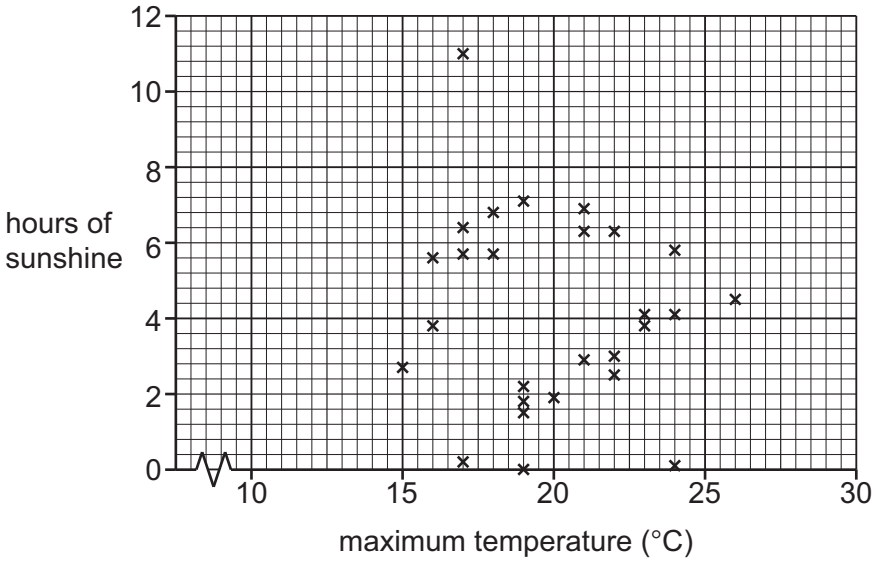

Fig. 2.3

(ii) The students decided that **Hypothesis 1:** *There is a **positive** relationship between maximum temperature and hours of sunshine* was **false**. Do you agree with this decision? Give evidence from Fig. 2.3 and Table 2.2 to support your conclusion.

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(e) To investigate **Hypothesis 2:** *Temperatures increase as atmospheric pressure increases, and temperatures decrease as atmospheric pressure decreases*, the students used a barometer shown in Fig. 2.4 (Insert) to measure atmospheric pressure.

(i) What is the atmospheric pressure reading shown by the measuring hand in Fig. 2.4?

.....mb [1]

(ii) What does the unit of measurement, 'mb', shown on a barometer, stand for?

..... [1]

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(f) The students' results of measuring atmospheric pressure and daily maximum temperature are shown in Table 2.3 (Insert).

(i) Plot the atmospheric pressure and maximum temperature results for 4 September on Fig. 2.5. [2]

Atmospheric pressure and daily maximum temperature results

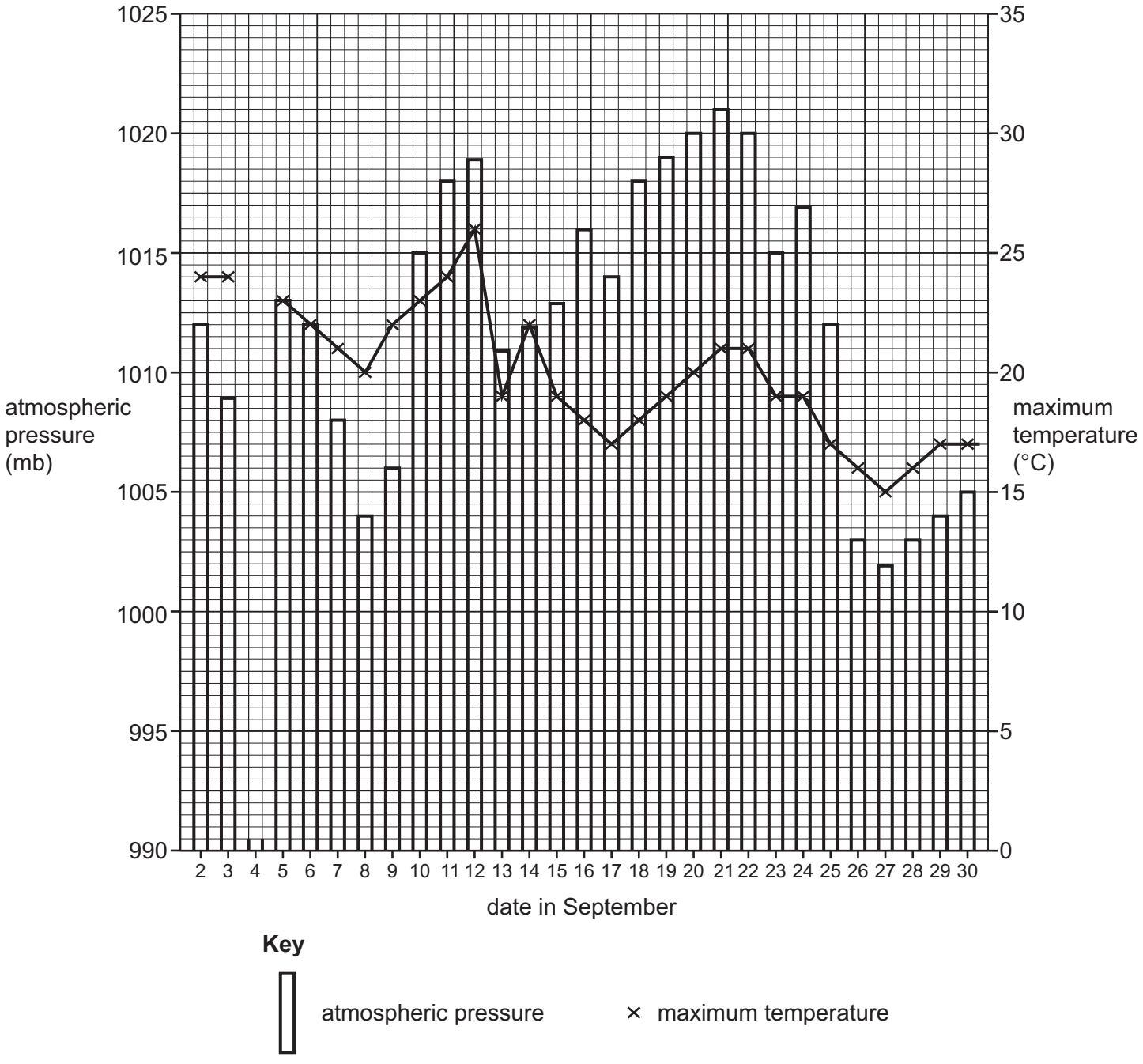

Fig. 2.5

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(ii) What conclusion did the students make about **Hypothesis 2:** *Temperatures increase as atmospheric pressure increases, and temperatures decrease as atmospheric pressure decreases*? Support your decision with data from Fig. 2.5 and Table 2.3.

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(g) To extend the fieldwork, one student used the results from measuring daily **minimum** temperatures. She plotted the daily minimum and maximum temperatures on the graph shown in Fig. 2.6.

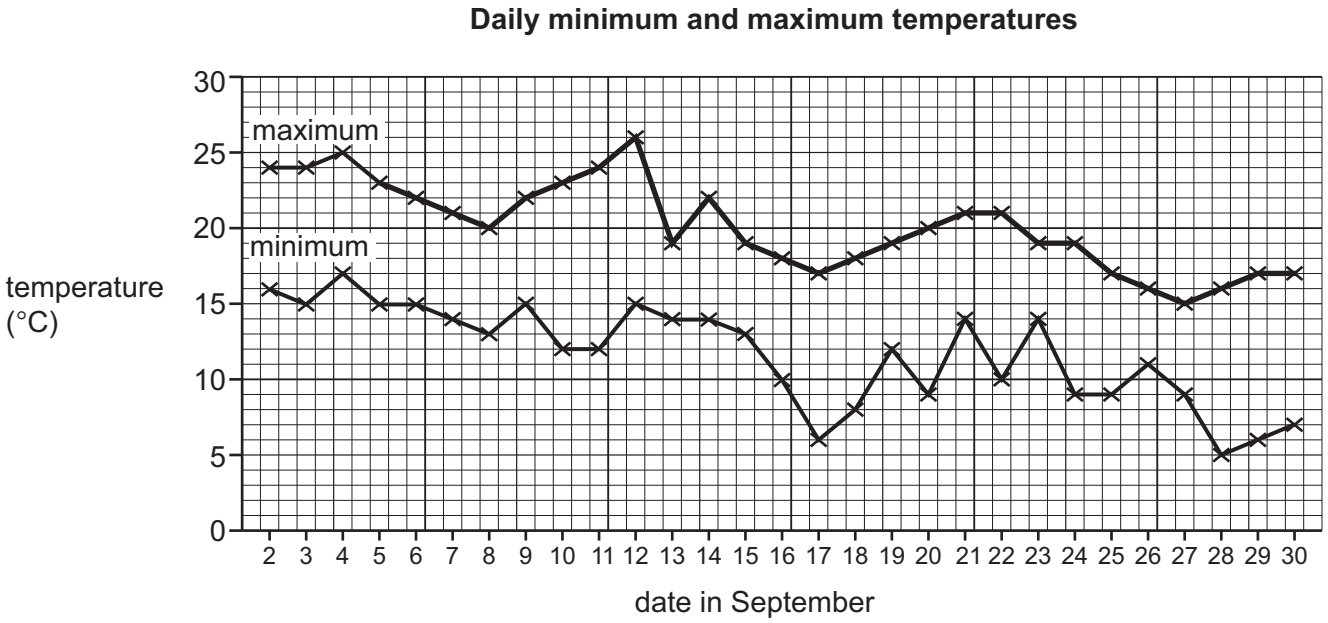

Fig. 2.6

(i) On what date in September is the daily variation in temperature largest at 12 °C?

..... [1]

(ii) Calculate the **smallest** difference between maximum and minimum temperatures on one day.

..... °C [1]

(iii) Describe the changes in **both** maximum and minimum temperatures during September. Use temperature data from Fig. 2.6 in your answer.

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(h) Fig. 2.7 (Insert) shows a digital weather recording station. Identify **two** features which are different from a traditional weather station.

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[2]

[Total: 30]

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