Cambridge O Level

CANDIDATE NAME	

CENTRE NUMBER		CANDIDATE NUMBER	

GEOGRAPHY   **2217/03**

Paper 3 Geographical Investigations   **For examination from 2027**

SPECIMEN PAPER   **1 hour 30 minutes**

You must answer on the question paper.

You will need: Insert (enclosed)
                        Calculator
                        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. Do **not** use correction fluid or tape.
- 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.

Definitions
LICs = low-income countries
MICs = middle-income countries
HICs = high-income countries

[Turn over

v2

Answer **all** questions.

1 Two students did fieldwork on a local coastline where there is a pebble beach in a bay. The students investigated the effect of pebbles being moved along the beach from west to east.

(a) The students had learned that pebbles are moved along the beach by longshore drift.

Which of the following statements are true about longshore drift?

Tick **three** answers.

statement	tick (✓)
Movement of material up and down the beach is repeated with each wave.	
The direction of longshore drift depends on the direction of the tide.	
Backwash moves material up the beach.	
The prevailing wind influences the direction of longshore drift movement.	
Swash moves material down the beach.	
Longshore drift occurs in deep water.	
Waves approach the coastline at an angle.	

[3]

The two students tested the following hypotheses.

Hypothesis 1: Pebbles become smaller from west to east along the beach.

Hypothesis 2: Pebbles become rounder from west to east along the beach.

(b) Explain why their teacher gave the following advice about doing fieldwork safely on the beach.

Make sure that their phone is fully charged.

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Do not go into the sea.

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[2]

(c) To investigate hypothesis 1 and 2, the students collected 10 pebbles at each of 15 sites along the beach.

Describe how they could use a quadrat to select pebbles at each site.

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.... [3]

(d) To investigate **Hypothesis 1:** Pebbles become smaller from west to east along the beach, the students used the fieldwork equipment shown in Figure 1.1.

Figure 1.1

(i) Describe how they could use this equipment to measure the length of each pebble.

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.... [2]

(ii) The results of the students' measurements at the 15 sites are shown in Table 1.1 (Insert). Figure 1.2 shows the results of the students' pebble measurements.

On Figure 1.2, plot the mean (average) length of the pebbles at site 6. [1]
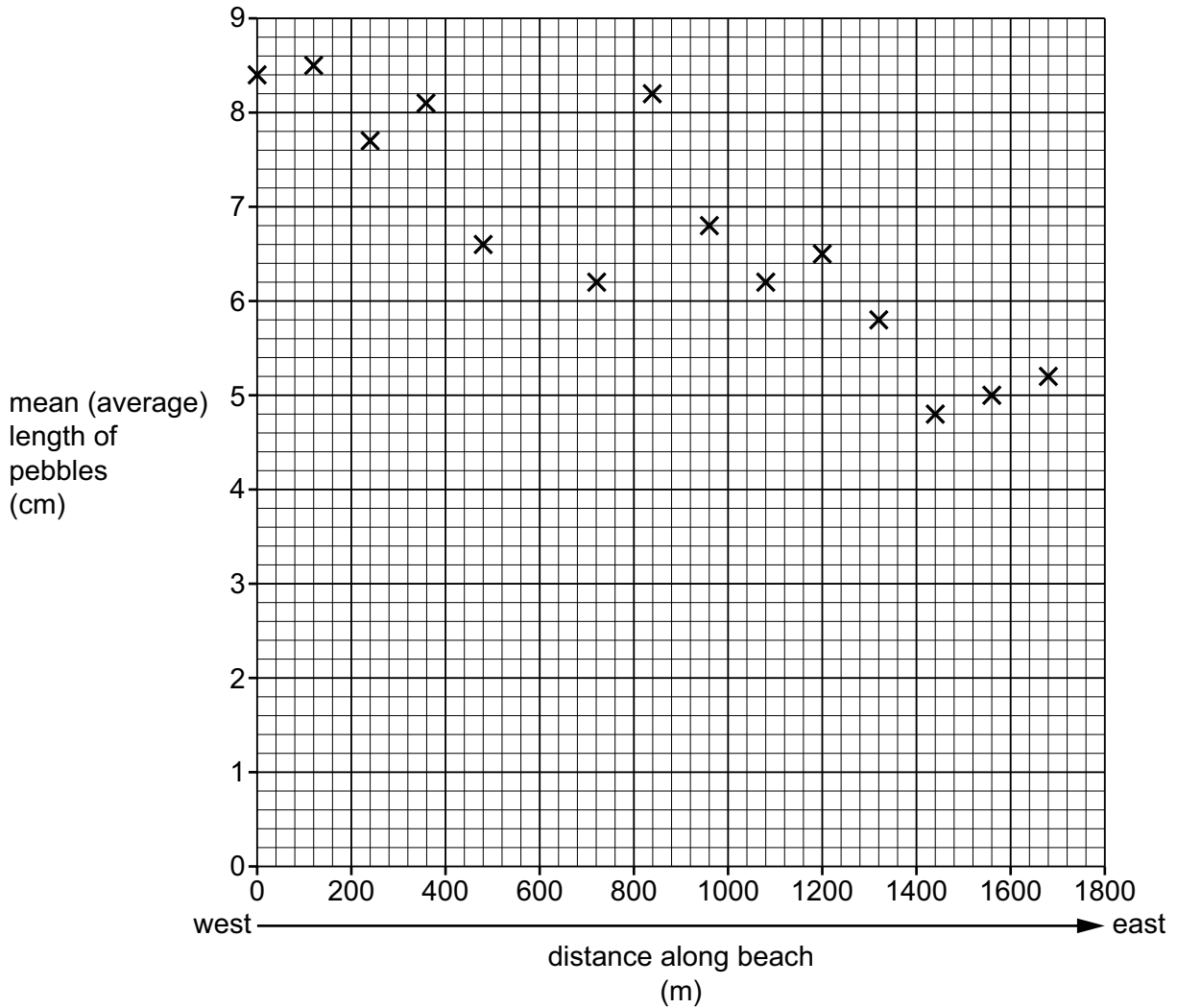
Figure 1.2

(iii) The students made the conclusion that **Hypothesis 1:** Pebbles become smaller from west to east along the beach was generally true.

Give evidence from Figure 1.2 and Table 1.1 to explain their conclusion.

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.... [2]

(e) To investigate **Hypothesis 2:** Pebbles become rounder from west to east along the beach, the two students used the roundness index shown in Figure 1.3 (Insert).

They compared each pebble they had collected with the index and gave it a roundness score. Their results at site 1 are shown in Table 1.2.

Student A then calculated a total roundness index score for the site.

Table 1.2 Student A and Student B's results of site 1 measurements

Student A results for site 1

roundness class	very angular	angular	slightly angular	slightly rounded	rounded	very rounded
roundness score	1	2	3	4	5	6
number of pebbles collected by student A	2	2	3	1	2	0
index score	2	4	9	4	10	0
total roundness index score = 29						

Student B results for site 1

roundness class	very angular	angular	slightly angular	slightly rounded	rounded	very rounded
roundness score	1	2	3	4	5	6
number of pebbles collected by student B	2	3	4	0	1	0
index score						
total roundness index score =						

(i) Student B's results for the same 10 pebbles at site 1 are also shown in Table 1.2.

Calculate the total roundness index score for student B's results and write the answer on Table 1.2. [1]

(ii) Suggest why the two students' results of using the roundness index are different and how they could agree a total roundness index score for each site.

why results are different ....

....

how to agree a total roundness index score ....

....

[2]

(iii) The students agreed the total roundness index scores at each site. Their results are shown in Table 1.1 (Insert). Figure 1.4 shows the students' total roundness index results.

On Figure 1.4, plot the total roundness index score for site 15. [1]
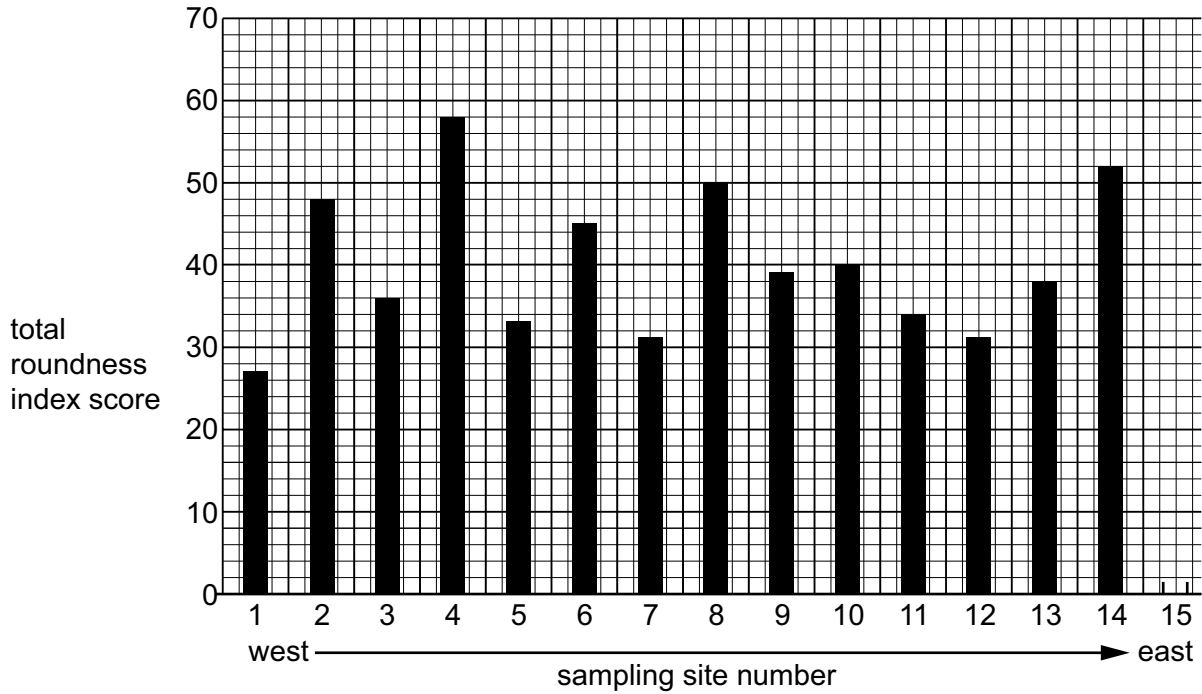
Figure 1.4

(iv) What conclusion should the students make about **Hypothesis 2:** Pebbles become rounder from west to east along the beach?

Justify your decision with evidence from Figure 1.4 and Table 1.1.

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.... [3]

(f) To extend their fieldwork, the students studied **three** coastal defences on the coastline. Groynes are shown in Figure 1.5 (Insert) and a sea wall and rock armour are shown in Figure 1.6 (Insert).

(i) To compare the **three** coastal defences, the students completed a bi-polar survey by looking at each defence and recording their decision on the form shown in Table 1.3 (Insert).

Describe how the students could complete their bi-polar survey.

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.... [3]

(ii) The results of the students' bi-polar survey are shown in Figure 1.7 and Table 1.4 (Insert).

On Figure 1.7, plot the score for how well the rock armour stops wave erosion using the results from Table 1.4. [1]

(iii) Use Figure 1.7 and Table 1.4 to decide which coastal defence is the best. Use data to justify your decision.

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.... [6]

groynes total score = +3
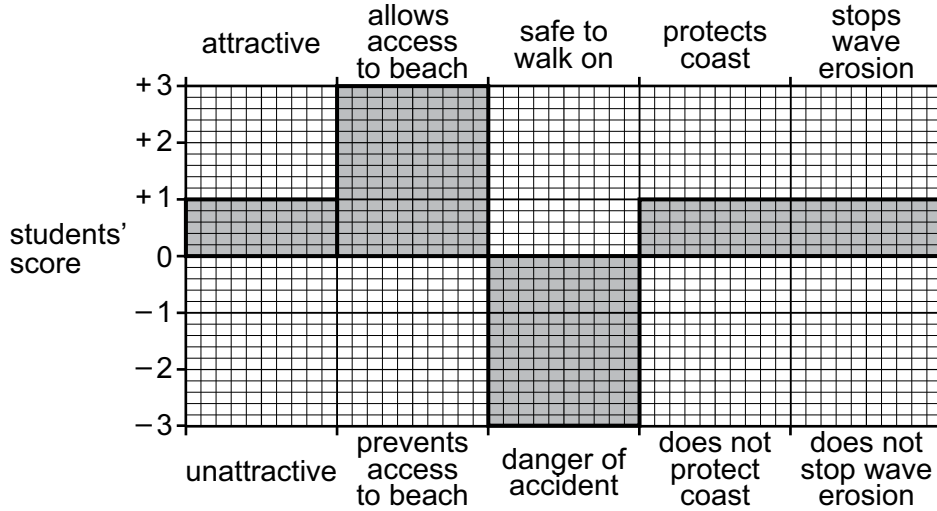
sea wall total score = 0
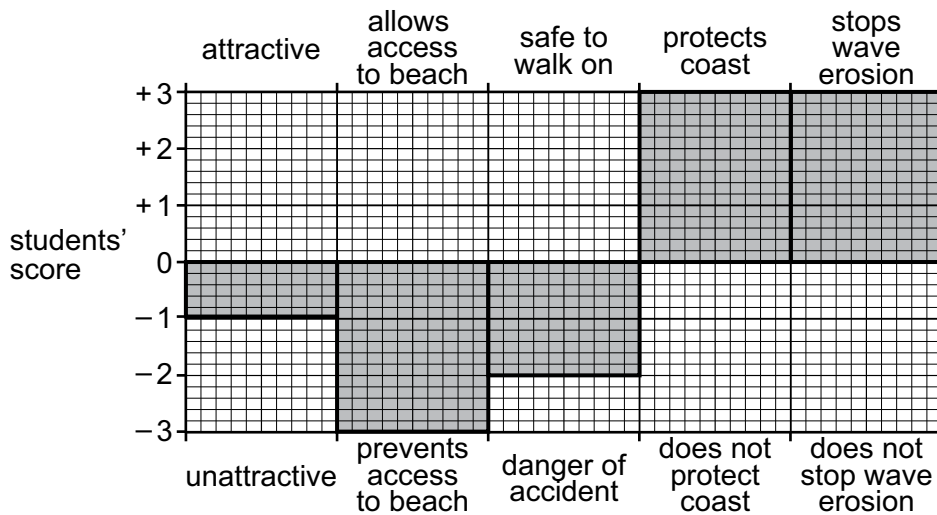
rock armour total score = −3

Figure 1.7

[Total: 30]
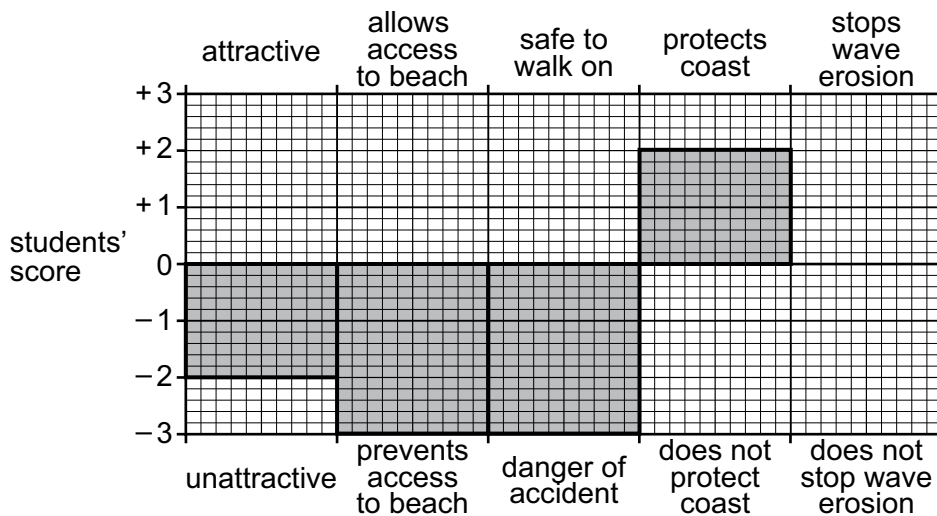
2 Students at a school in Rome, Italy (an HIC in Europe), were studying international migration. They did a fieldwork investigation about migration to Rome.

They revised key terms about migration.

(a) (i) Define the following terms.

economic migrant

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refugee

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[2]

(ii) Explain what is meant by push and pull factors. Do **not** give examples.

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.... [2]

(b) Before they began their fieldwork, the students used an internet search and found that 12% of the people living in Rome were migrants from other countries and 88% were born in Italy.

(i) Which of the following methods would be suitable to show this data?

Tick **one** answer.

	tick (✓)
line graph	
population pyramid	
pie graph	
scatter graph	
triangular graph	

[1]

(ii) What name is given to the type of data or information researched from the internet or another source, and **not** collected by the students themselves?

.... [1]

The students wanted to test the following hypotheses.

Hypothesis 1: Most international migrants who live in Rome were born in Europe.

Hypothesis 2: Pull factors affected the decision to migrate to Rome more than push factors.

(c) The students went to a district of Rome near the main railway station where many migrant families lived. They used the questionnaire shown in Figure 2.1 (Insert).

(i) Describe how the students could use a random sampling method to select 100 people to complete their questionnaire.

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....[2]

(ii) Suggest why the students asked people 'Have you moved to live in Rome from abroad?' before beginning the questionnaire.

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.... [2]

(iii) Suggest **two** other pieces of advice the teacher could give the students about how to use the questionnaire.

1 ....

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2 ....

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[2]

(d) The students used the answers to Question 1 in the questionnaire (In which country were you born?) to investigate **Hypothesis 1:** Most international migrants who live in Rome were born in Europe.

(i) Figure 2.2, a flow line map, shows the countries in Africa, Asia and South America where migrants were born.

On Figure 2.2, use the following data to plot the number of migrants born in Mali and the Philippines. [2]

country	number of migrants
Mali	2
Philippines	11
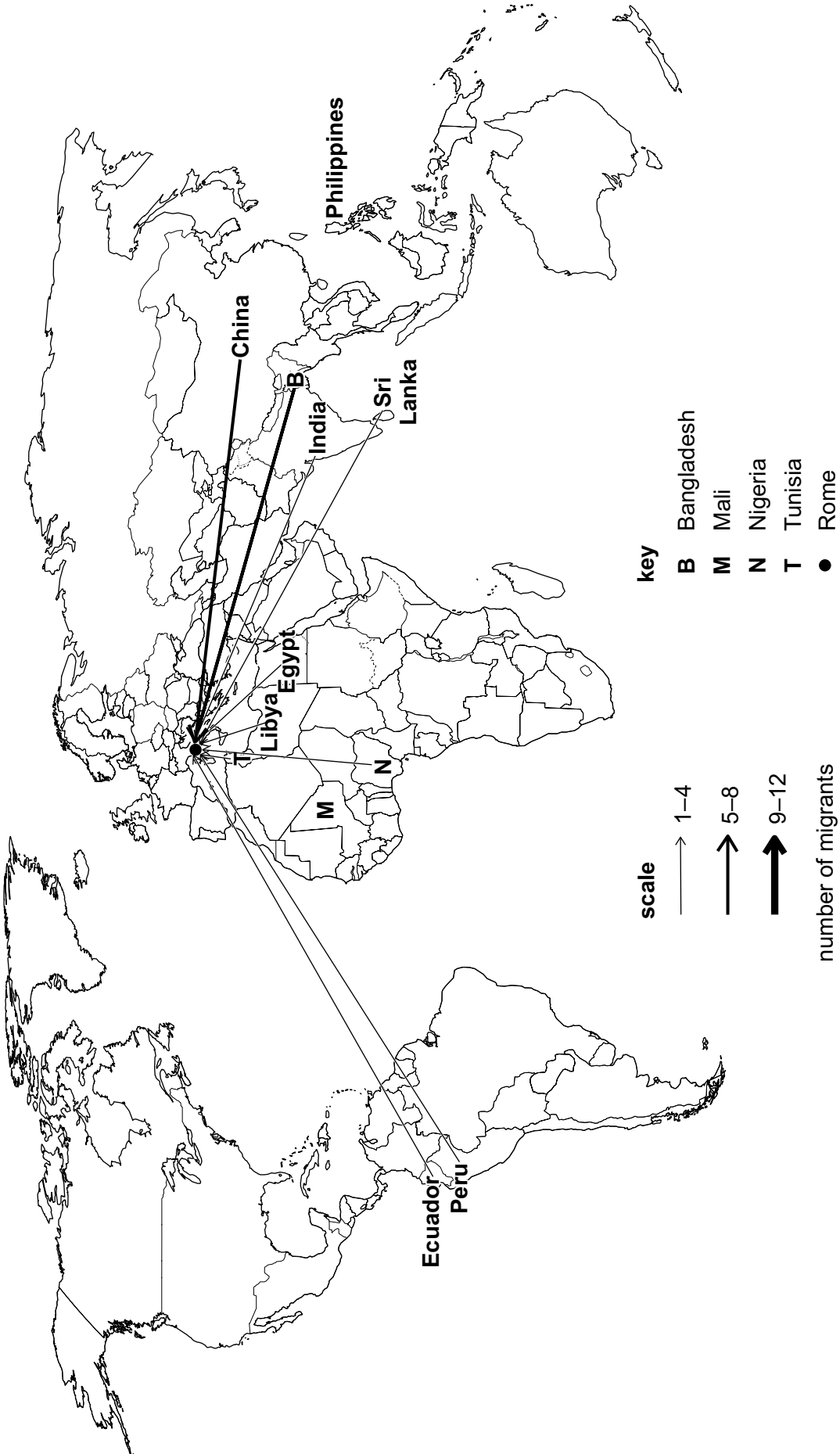
Figure 2.2 Flow line map

(ii) Why is a flow line map an appropriate method to show the data from Question 1 of the questionnaire?

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.... [2]

(iii) Table 2.1 (Insert) shows the results from Question 1 in the questionnaire: In which country were you born?

What conclusion should the students make about **Hypothesis 1:** Most international migrants who live in Rome were born in Europe?

Support your answer with data from Table 2.1.

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....[2]

Turn over

(e) (i) Table 2.2 (Insert) shows the results of Question 2 in the questionnaire: What is the main reason why you moved to Rome? Figure 2.3 shows the results for the push and pull factors.

Use the key to plot the results for push factors on the divided bar graph in Figure 2.3.

[3]

Pull factors

0   5   10   15   20   25   30   35

number of migrants

key

employment or higher wages

better education for children

better quality of life

family already live in Rome

Push factors

0   5   10   15   20   25   30   35   40   45   50   55   60   65

number of migrants

key

war or conflict

racial or religious persecution

natural hazard or famine
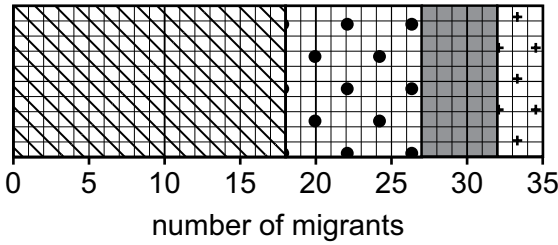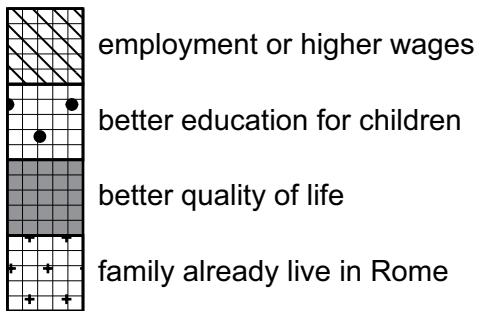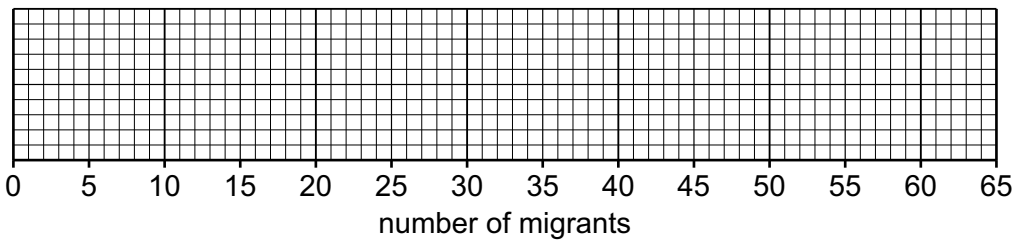
poverty
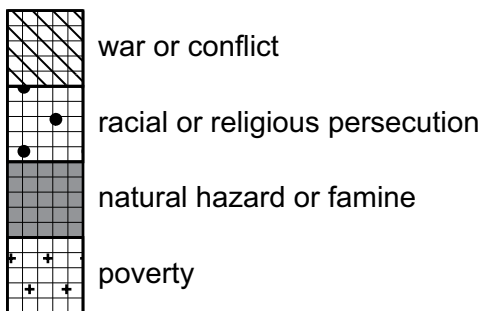
Figure 2.3

(ii) Does the data support **Hypothesis 2:** Pull factors affected the decision to migrate to Rome more than push factors?

Use evidence from Figure 2.3 and Table 2.2 to justify your decision.

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.... [3]

(f) To find out more about what the migrants thought about their decision to migrate to Rome, the students asked Question 3 in the questionnaire: What do you think are the benefits and problems of living in Rome?

The results are shown in Table 2.3 (Insert).

Use the data in Table 2.3 to explain to what extent was the migrants' move to Rome a success for the migrants. Include statistics from Table 2.3 to justify your answer.

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Additional page

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