Rewarding Learning

Centre Number
71

Candidate Number

**ADVANCED SUBSIDIARY (AS)**
**General Certificate of Education**
**January 2011**

# Geography

## Assessment Unit AS 1

*assessing*

## Physical Geography

**[AG111]**

AG111

**FRIDAY 14 JANUARY, MORNING**

**TIME**

1 hour 30 minutes.

**INSTRUCTIONS TO CANDIDATES**

Write your Centre Number and Candidate Number in the spaces provided at the top of this page.
Section A: candidates must answer this section.
Section B: answer **all three** questions in this section.
You should write your answers for Section A and Section B in the spaces provided in this question paper.
Section C: answer any **two** questions from this section. Write your answers to Section C on the lined paper at the end of this booklet.
**At the end of the examination your summary of fieldwork and table of data should be attached securely to this paper using the treasury tag supplied.**

**INFORMATION FOR CANDIDATES**

The total mark for this paper is 90.
Quality of written communication will be assessed in **all** questions.
Figures in brackets printed down the right-hand side of the pages indicate the marks awarded to each question or part question.

| For Examiner's use only | |
|---|---|
| Question Number | Marks |
| 1 | |
| 2 | |
| 3 | |
| 4 | |
| 5 | |
| 6 | |
| 7 | |
| Total Marks | |

## Section A

### Answer this section

Submitted summary of fieldwork and table of data.

**At the end of the examination these should be attached securely to this paper using the treasury tag supplied.**

**1 (a)** "An awareness of hazards/risks and contingency plans is essential when planning fieldwork."

Discuss this statement with reference to **your fieldwork** planning.

[6]

**(b)** Select **one** of the following statistical techniques which could be used for the analysis of your fieldwork data. Your selected technique must be relevant to your fieldwork aim/hypothesis.

- Spearman's Rank Correlation
- Nearest Neighbour Analysis
- Mean, median, mode **and** range

**(i)** In the box below apply your selected statistical technique to your data and, if relevant, comment on the statistical significance of the outcome. (Formulae and significance graphs are provided – **Resource 1A** and **Resource 1B** overleaf.) [7]

All calculations must be shown clearly in the box below.

Statistical technique selected: _____[no mark]

## Resource 1A

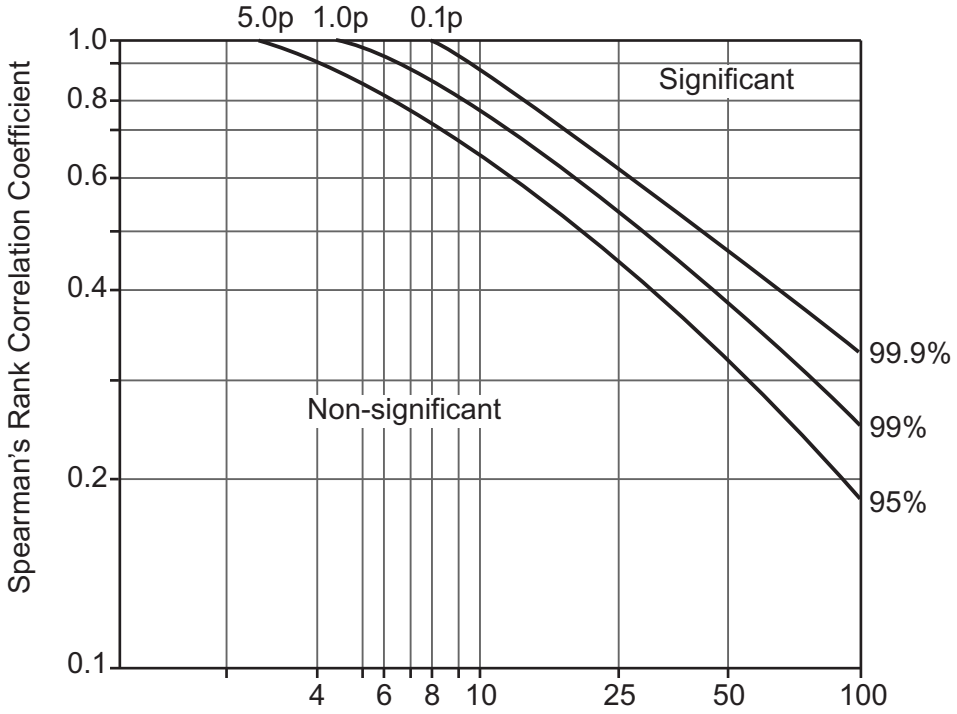
### Spearman's Rank Correlation Equation and Significance Charts

Formula: $$r_s = 1 - \left( \frac{6\Sigma d^2}{n^3 - n} \right)$$

where $d$ = the difference in rank of the values of each matched pair
$n$ = the number of ranked pairs
$\Sigma$ = the sum of

### Spearman's Rank Correlation Significance Graph and Table

Critical values for $r_s$




**Degrees of freedom [Number of ranked pairs ($n$) – 2]**

Critical values of Spearman's Rank Correlation Coefficient, $r_s$

| | **Significance level** | |
|---|---|---|
| **degrees of freedom** | **0.05 (5%)** | **0.01 (1%)** |
| 4 | 0.88 | 1.00 |
| 5 | 0.83 | 0.96 |
| 6 | 0.80 | 0.91 |
| 7 | 0.77 | 0.87 |
| 8 | 0.72 | 0.84 |
| 9 | 0.68 | 0.80 |
| 10 | 0.64 | 0.77 |
| 11 | 0.60 | 0.74 |
| 12 | 0.57 | 0.71 |
| 15 | 0.50 | 0.65 |
| 20 | 0.47 | 0.59 |
| 25 | 0.44 | 0.54 |

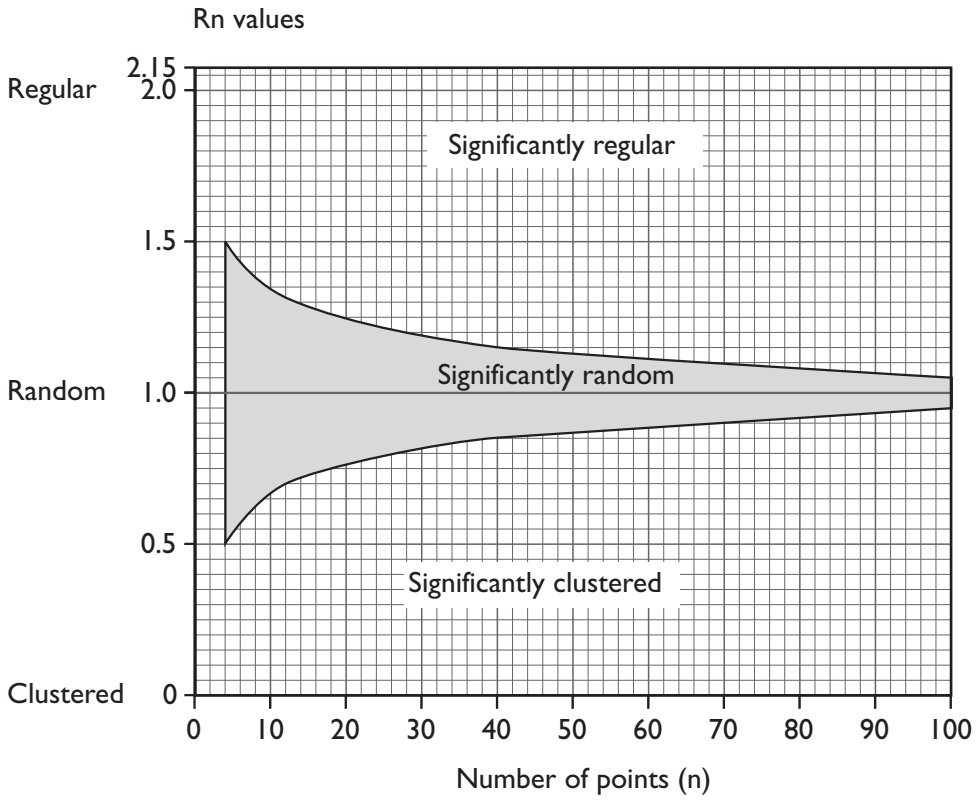
## Resource 1B

### Nearest Neighbour Index Equation

Formula: $$Rn = 2\bar{d}\sqrt{\frac{n}{A}}$$

where $\bar{d}$ = the mean distance between nearest neighbours
$n$ = number of points
$A$ = area in question

### Nearest Neighbour Index Significance Graph



**(ii)** Having completed your statistical analysis, discuss the geographical/theoretical factors which may explain your result in question **1(b)(i)**.

_____

_____

_____

_____

_____

_____

_____

_____

_____

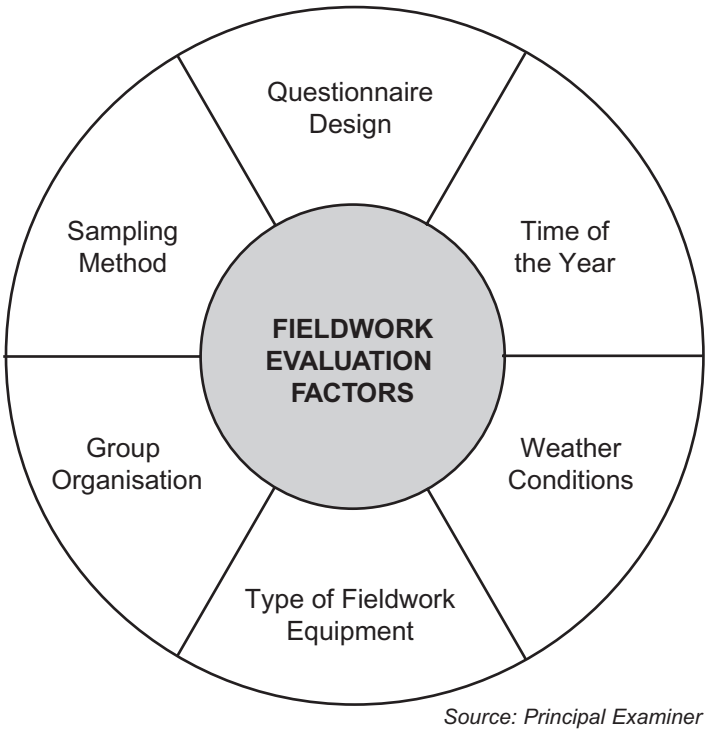
_____

_____

_____ [6]

**(c)** Study **Resource 1C**, which shows some of the factors which can be considered when evaluating a field study.

**Resource 1C**




*Source: Principal Examiner*

Explain how any **two** of these factors may have influenced the nature and reliability of your geographical conclusion.

[8]

**(d)** Explain **one** way in which your chosen fieldwork location proved to be either suitable or unsuitable for the investigation of the **geographical** aim of your study.

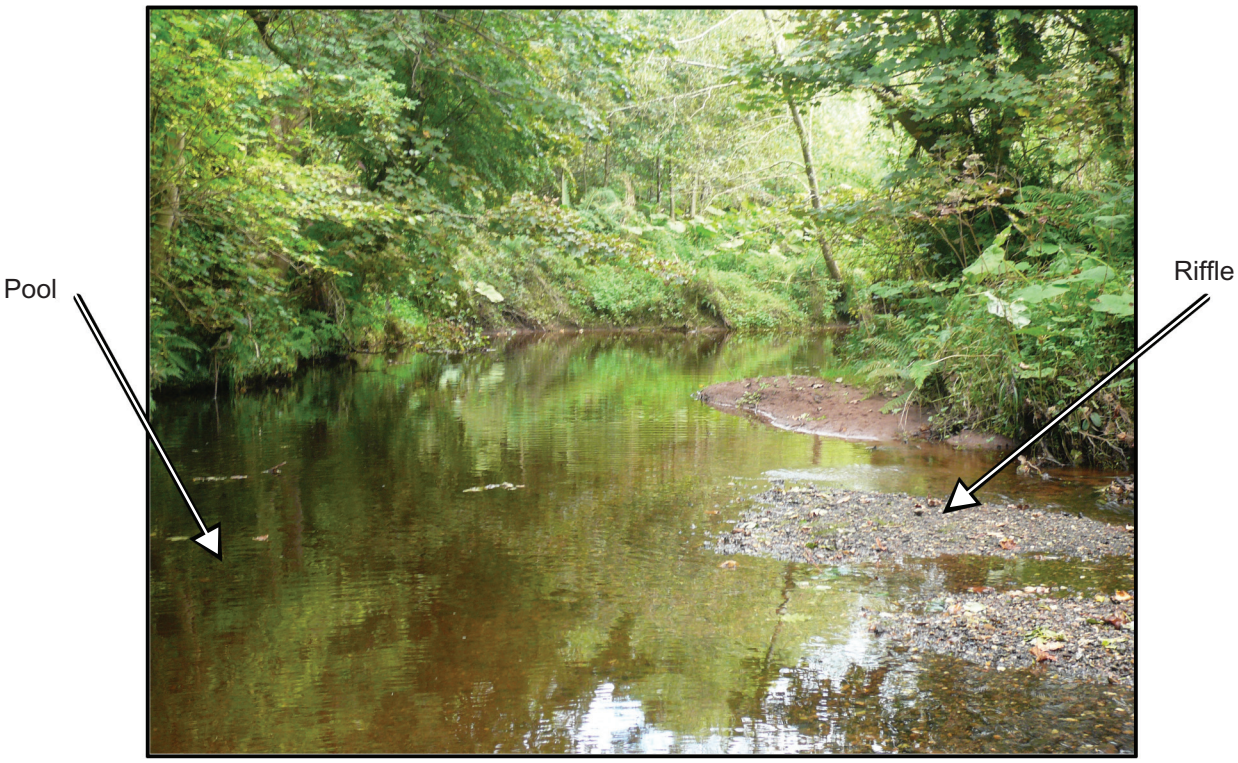
[3]

## Section B

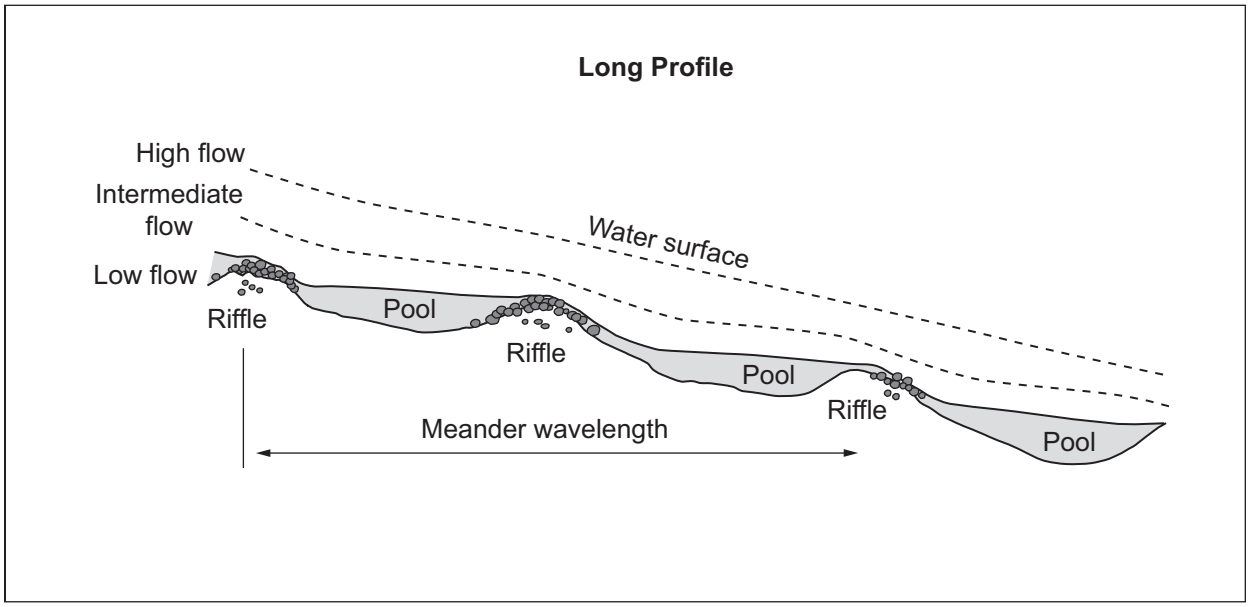
Answer **all three** questions in this section.

**2 (a)** Study **Resource 2** which shows pools and riffles.

**Resource 2**




*Source: Principal Examiner*



Describe the contrasting characteristics of pools and riffles and explain their formation within the river channel.

[6]

**(b)** Select **one** factor from the list below and explain how it influences the **storage** and **transfer** of water within the drainage basin.

- Geology
- Soil Type
- Relief

[4]

**(c)** Describe **one** factor which influences the **rate** of delta formation.

_____

_____

_____

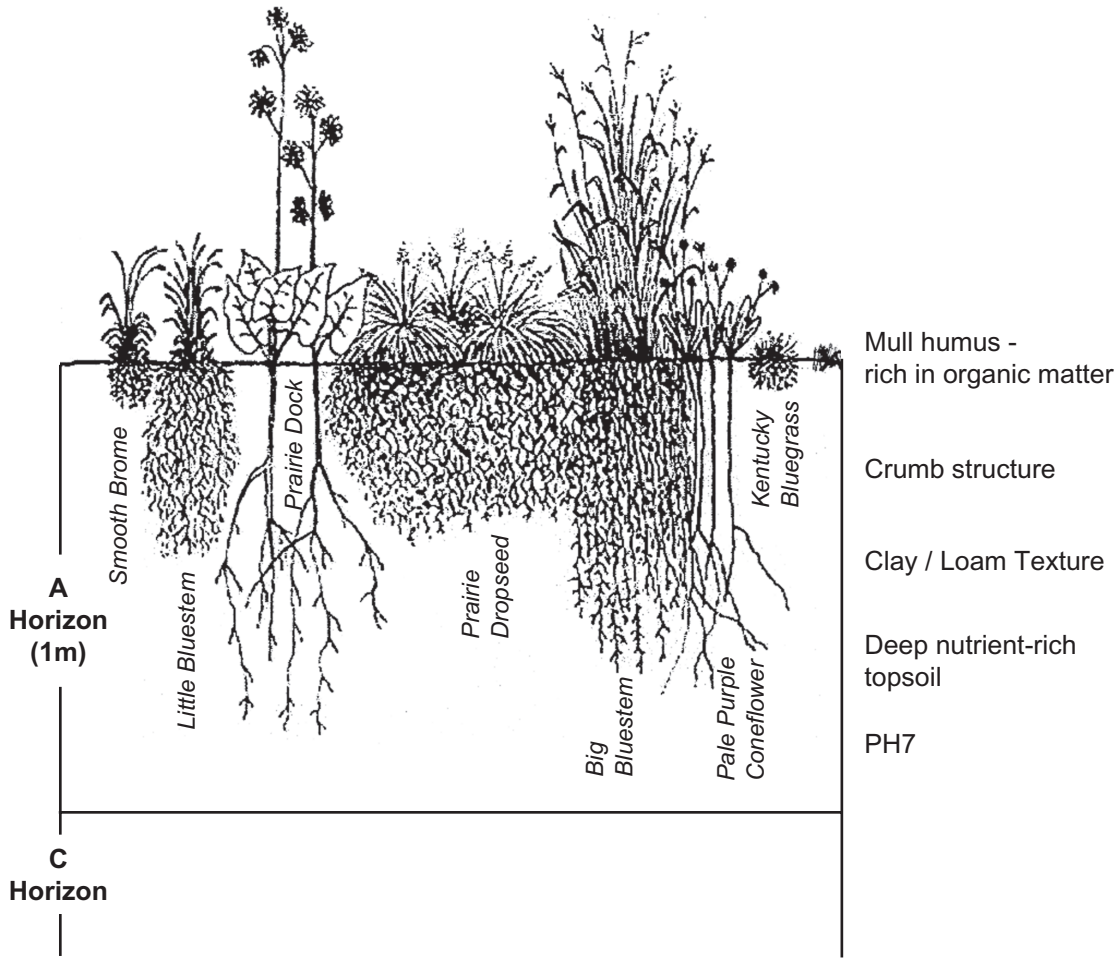
_____ [2]

**BLANK PAGE**

**(Questions continue overleaf)**

3 **(a)** Study **Resource 3** which illustrates a natural mid-latitude grassland ecosystem in North America.

**Resource 3**




© *Janet Wissink*

**(i)** Use **Resource 3** to help you describe any **one** characteristic of the natural grassland vegetation.

_____

_____ [1]

**(ii)** With reference to **Resource 3**, explain the impact of monoculture on the vegetation and soil of this ecosystem.

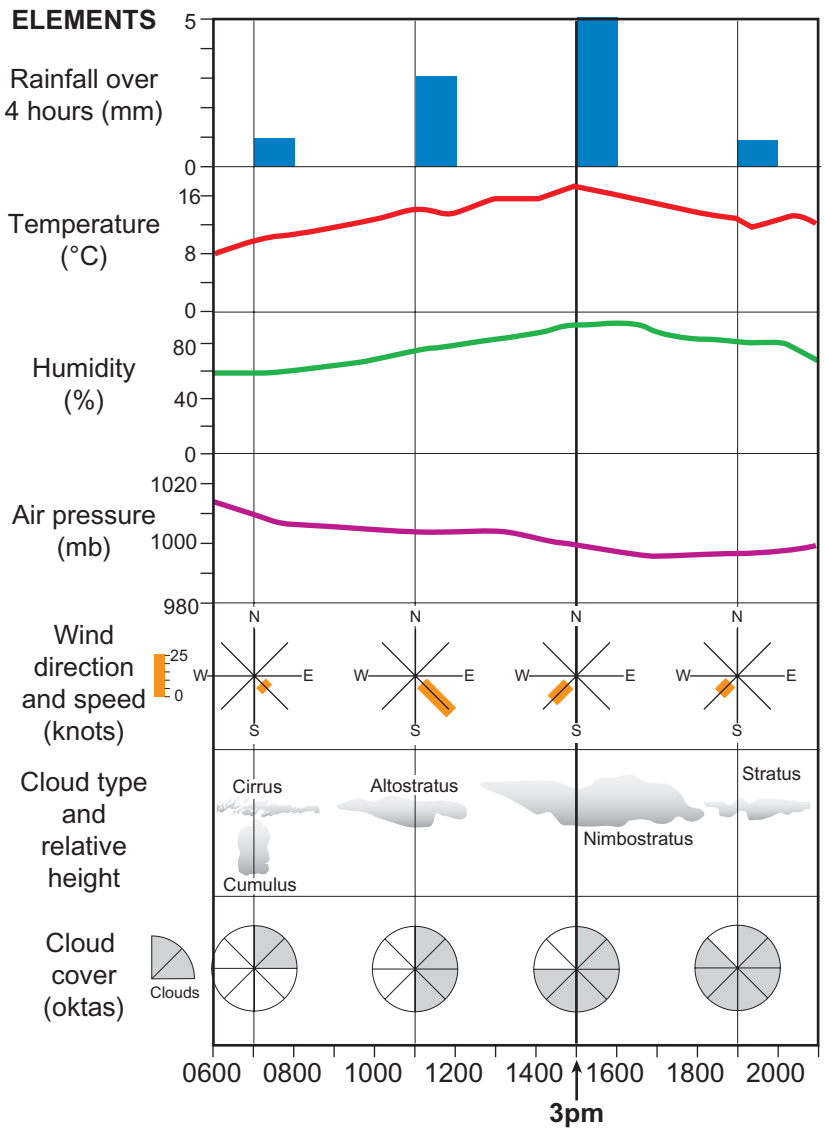
[6]

**(b)** Describe how nutrients are cycled within a small scale ecosystem you have studied.

[5]

**4 (a)** Study **Resource 4** which shows changes in seven weather elements associated with the passage of a warm front in a mid-latitude depression.

**Resource 4**




*© Adapted from Practical Geography – local weather by David Holmes, Geography Review, Vol. 20, Number 1, published by Philip Allan Updates. "Reproduced by permission of Hodder Education".*

Describe and explain, with reference to any **four** of the elements, the weather associated with the passage of the warm front at **3pm**.

[8]

**(b)** Explain the importance of ocean currents in relation to the global energy balance.

[4]

## Section C

Answer **any two** questions in this section.

**5** "The causes of flooding, although complex, are related predominantly to climatic factors." To what extent do you agree that this statement is valid for the large scale drainage basin or delta you have studied? [12]

**6** Explain the processes of environmental change which have produced all the stages in a vegetation succession you have studied at a small or regional scale. [12]

**7** With reference to a hurricane or tropical cyclone you have studied at a national or regional scale, evaluate the protective measures used to reduce the loss of life and damage to property. [12]

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

Question Number

Number your answers clearly

111545