

AQA Examination-style questions

1 IQ test scores have been used as a measure of intelligence. Genetic and environmental factors may both be involved in determining intelligence. In an investigation of families with adopted children, the mean IQ scores of the adopted children were closer to the mean IQ scores of their adoptive parents than to that of their biological parents.

- Explain what the results of this investigation suggest about the importance of genetic and environmental factors in determining intelligence.
- Explain how data from studies of identical twins and non-identical twins could provide further evidence about the genetic control of intelligence.

(1 mark)

(4 marks)

AQA, 2006

2 Twin studies have been used to determine the relative effects of genetic and environmental factors on the development of a type of diabetes. The table shows the concordance (where both twins have the condition) in genetically identical and genetically non-identical twins.

Concordance in genetically identical twins /%	Concordance in genetically non-identical twins /%
85	35

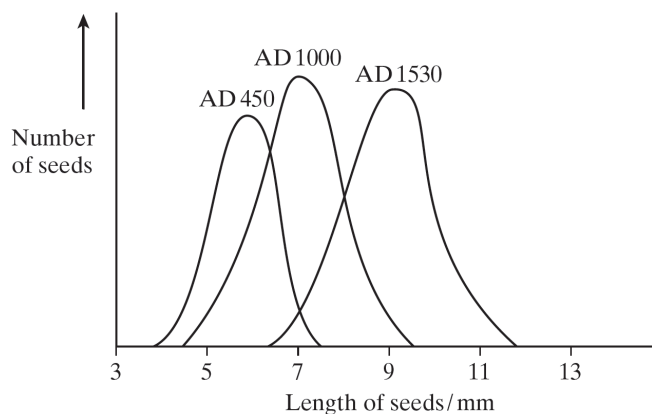
- What do the data show about the relative effects of environmental and genetic factors on the development of diabetes?
- Suggest **two** factors which should be taken into account when collecting the data in order to draw valid conclusions.

(1 mark)

(2 marks)

AQA, 2005

3 Maize seeds were an important food crop for the people who lived in Peru. The seeds could be kept for long periods. Each year, some were sown to grow the next crop. Archaeologists have found well-preserved stores. The graph shows the lengths of seeds collected from three stores of different ages.

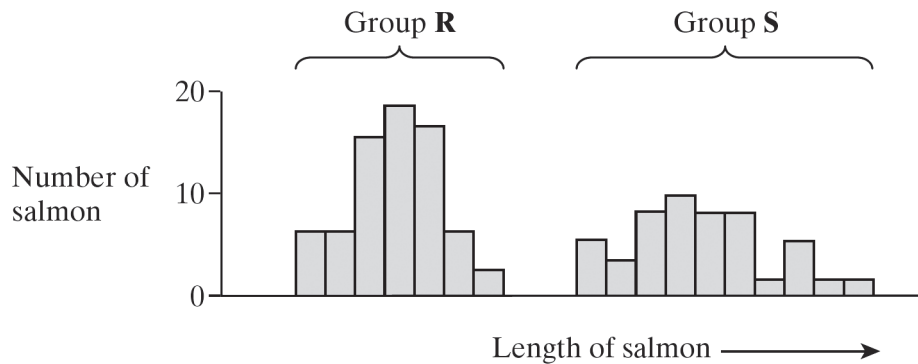


Within each store the maize seeds showed a range of different lengths. Give **two** causes of this variation and an explanation for each.

(4 marks)

AQA, 2004

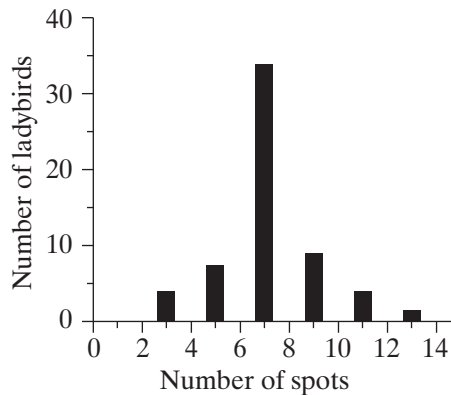
- 4 The graph shows the variation in length of 86 Atlantic salmon.



- (a) Give **two** possible causes of variation. (2 marks)
- (b) When comparing variation in size between two groups of organisms, it is often considered more useful to compare standard deviations rather than ranges. Explain why. (2 marks)

AQA, 2005

- 5 The graph shows variation in the number of spots on the wing-cases of a species of ladybird.



- (a) The number of spots on the wing cases of this species of ladybird is determined by genes. What does the graph suggest about the genetic control of spot number in this species? (1 mark)
- (b) Give **one** piece of evidence from the graph that variation in the number of spots is normally distributed. (1 mark)

AQA, 2003

- 6 ABO blood groups in humans are an example of discontinuous variation, whereas height in humans is an example of continuous variation.

- (a) Describe how discontinuous variation differs from continuous variation in terms of:
- genetic control;
 - the effect of the environment;
 - the range of phenotypes. (3 marks)
- (b) Genetically identical twins often show slight differences in their appearance at birth. Suggest **one** way in which these differences may have been caused. (1 mark)

AQA, 2006