

## B2.5 Variation and Natural Selection

In this section, students develop understanding of the nature of variation in living organisms and the relationship between variation and selection.

Test Date: \_\_\_\_\_

Name: \_\_\_\_\_

Score: \_\_\_\_\_ / 21 \_\_\_\_\_ %

1.

The photograph shows two snails of the same species.

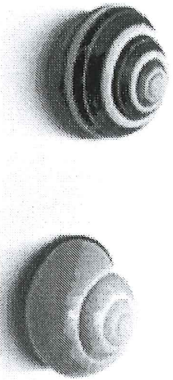
One snail has a dark banded shell while the other shell is yellow.

The banding pattern in these snails is controlled by genes.

The snails are often eaten by birds such as thrushes.

Dark banded snail

Yellow snail



Source: Principal Examiner.

Students sampled the different shell types of the snails in a woodland and grassland.

The table shows the results.

Shell type	Number of snails found	
	Woodland	Grassland
Yellow	46	89
Dark banded	78	49

(a) Use data to describe the difference in the total number of each type of snail.

\_\_\_\_\_

\_\_\_\_\_

[1]

10148

(b) Describe two other trends in the data.

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

[2]

(c) Explain how natural selection could have caused this distribution of snails.

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[5]

10148

Turn over

2.

Height is an example of variation.

(a) Name the type of variation shown by height.

\_\_\_\_\_

[1]

(b) The heights of 10 pupils in a class of 26 were measured to the nearest centimetre.

The results are shown.

182 186 180 172 168 169 165 178 166 168

(i) Complete the tally chart for these results. The first three have been done for you.

Height/cm	Tally	Number of pupils
155-159	I	1
160-164	II	2
165-169		
170-174		
175-179		

[2]

(ii) Suggest which type of graph should be used to present these results.

Put a **(circle)** around the correct answer.

bar chart

histogram

pie chart

[1]

(iii) What percentage of pupils were less than 165 cm tall? Show your working.

\_\_\_\_\_ % [2]

5/5 04 R

(iv) Suggest why this percentage may not be reliable.

\_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_ [1]

(c) (i) Height may be affected by a number of environmental factors. Suggest one.

\_\_\_\_\_ [1]

(ii) Give one cause, other than environmental, of variation in height.

\_\_\_\_\_ [1]

3.

(a) A group of Year 10 pupils carried out a survey of their class.

The numbers of tongue rollers and non-rollers were counted.

The table shows the results.

Number of pupils	
Tongue rollers	Non-rollers
17	3

(i) Suggest which type of graph should be used to present these results.

Draw a **(circle)** around the correct answer.

bar chart

histogram

scatter graph [1]

The pupils could have made the results of the survey more reliable.

(ii) Describe how.

\_\_\_\_\_ [1]

(b) Tongue rolling is an example of variation.

(i) Name this type of variation.

\_\_\_\_\_ [1]

Tongue rolling is controlled by genes.

Height can also be controlled by genes.

(ii) Give one other cause of variation in height.

\_\_\_\_\_ [1]