

Answer ALL questions.

Some questions must be answered with a cross in a box ☒. If you change your mind about an answer, put a line through the box ☒ and then mark your new answer with a cross ☒.

1 The phenotype of an individual is dependent on a variety of factors.

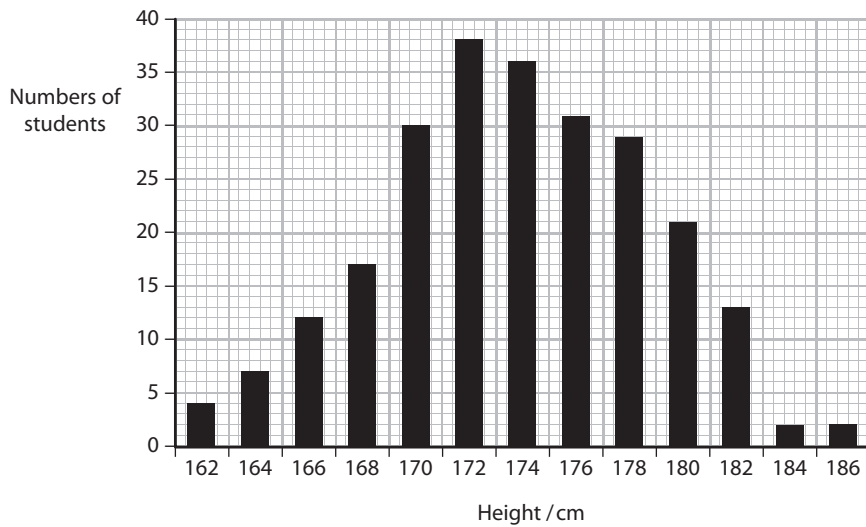
- (a) (i) Complete the following sentence by writing the most appropriate word or words on the dotted lines.

(2)

In polygenic inheritance, the phenotypes are affected by forms of genes called found at many on chromosomes.

- (ii) The graph below shows some data on the numbers of students of different heights.

Height is an example of polygenic inheritance.



State the heights that represents the median and the mode for this group of students.

(2)

Median height cm

Mode height cm



- (b) (i) Complete the following short passage by writing the most appropriate word or words on the dotted lines.

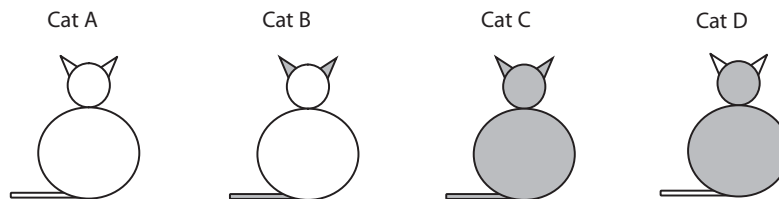
(2)

Animal fur colour is an example of a phenotype. The phenotype of an animal can be the result of an interaction between the and the

- (ii) The enzyme tyrosinase is involved in producing dark coloured fur in cats. Tyrosinase is active at the cat's body temperature.

Some cats have a defective form of tyrosinase. The defective tyrosinase is inactive at normal body temperature, but becomes active in the cooler extremities of cats living in a cold environment.

The diagrams below show four cats with different fur colour distributions. Shaded areas represent dark coloured fur and non-shaded areas represent light coloured fur.



Place a cross ☒ in the most appropriate box to select the diagram which represents:

(3)

- | | | | | |
|---|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| a cat with normal tyrosinase | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> D |
| a cat with defective tyrosinase, in a hot country | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> D |
| a cat in a cold country with defective tyrosinase | <input checked="" type="checkbox"/> A | <input checked="" type="checkbox"/> B | <input checked="" type="checkbox"/> C | <input checked="" type="checkbox"/> D |

(Total for Question 1 = 9 marks)

