1.6 Variation, Classification and Adaptation: 10-minute Pack

Calculator allowed · about 10 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A camel living in a hot desert has large, flat feet and stores fat in a single hump on its back.

(a) Explain how the camel's large, flat feet help it survive in the desert. **(2)**

(b) Explain how storing fat in a hump helps the camel survive long periods without food or water. **(2)**

2 Cheetahs hunt gazelles. Over many generations, both cheetahs and gazelles have become faster runners. Explain how natural selection could cause both populations to become faster.

(3)

3 A class investigates camouflage. They scatter 50 small paper 'prey' shapes, some green and some red, onto a green playing field. Volunteer 'predators' have 60 seconds to spot and collect as many shapes as they can. Identify the independent variable, the dependent variable and one control variable in this investigation.

(3)

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Question 1

(a) large flat feet spread the camel's weight over a bigger area **B1**

(a) so the camel is less likely to sink into soft sand, allowing it to walk more easily to find food and water, oe **B1**

(a) Answer: **Large, flat feet spread the camel's weight over a bigger area, stopping it sinking into soft sand.**

(b) the fat stored in the hump can be broken down (respired) to release energy when food is scarce **B1**

(b) breaking down this fat also releases water, helping the camel survive when water is scarce, oe **B1**

(b) Answer: **The fat in the hump can be broken down to release energy, and this process also releases water, helping the camel survive when food and water are scarce.**

Question 2

faster gazelles are more likely to escape cheetahs and survive to reproduce, passing on genes for speed **B1**

faster cheetahs are more likely to catch enough gazelles to survive and reproduce, passing on genes for speed **B1**

over many generations this increases average speed in both populations, oe **B1**

Answer: **Faster gazelles are more likely to escape and survive to reproduce, and faster cheetahs are more likely to catch food and survive to reproduce; over many generations both populations become faster as these genes are passed on.**

Question 3

independent variable: colour of the paper prey shape (green or red) **B1**

dependent variable: number of that colour of shape found/collected **B1**

a control variable: e.g. searching time (60 s for everyone), number of predators, area searched, or number of shapes scattered, oe **B1**

Answer: **Independent variable: colour of prey shape. Dependent variable: number of shapes of that colour found. Control variable: searching time (60 s for everyone).**

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