

Natural Selection

GCSE Biology · Written to the shared content for AQA, Edexcel and OCR

Name _____ Class _____ Date _____

1. Worked example

Variation can be genetic, environmental or both. Give one example of each. (3 marks)

Step 1 · Genetic

Blood group or natural eye colour.

Step 2 · Environmental

A scar, a tattoo, or a language spoken.

Step 3 · Both

Height or body mass: genes set a range, diet and health affect where in the range a person ends up.

Answer: e.g. blood group; scar; height

Check: Most characteristics are affected by both.

2. Now try one with the steps

Explain how giraffes evolved long necks, according to natural selection. (4 marks)

Step 1 · Variation

Step 2 · Advantage

Step 3 · Reproduction

Step 4 · Over time

Answer:

3. Practice

Show your working. The marks tell you how much is expected.

1. What is variation? [1]

2. Give the three possible causes of variation. [3]

3. What is a mutation? [1]
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4. What is evolution? [2]
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5. Who proposed the theory of evolution by natural selection? [1]
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6. When are two populations said to be different species? [1]
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7. Explain why mutations are important for evolution. [2]
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8. In a population of 400 rabbits, 60 have a new fur colour. Calculate the percentage. [1]
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9. Explain why individuals in a population compete. [1]
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10. Describe the evolution of a faster-running prey species in four steps. [4]
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11. A beneficial allele increases from 12% to 30% of a population. By how many percentage points has it increased? [1]
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12. Explain why identical twins can still show some variation. [2]
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13. Explain why evolution by natural selection usually takes many generations. [2]

14. Explain why bacteria can evolve much faster than mammals. [2]

4. Before you hand it in

"Animals adapt because they need to."

Variation already exists; the environment 'selects' individuals whose characteristics help them survive and breed.

"Acquired characteristics are passed on."

Only changes in DNA in gametes are inherited; a stretched neck or big muscles are not.

"Survival of the fittest means the strongest."

Fittest = best adapted to the environment, and so most likely to survive AND reproduce.