

Biological Diversity Quiz

Time: 20 min. 6 questions.

Instructions

Answer each question in the space provided. Read each question carefully, and for multiple choice questions, select the one best answer. You may use your notes on biological diversity, reproduction and genetics to help you.

Questions

1. A barnacle attaches to the skin of a whale and is carried to nutrient-rich feeding waters, while the whale is neither helped nor harmed by the barnacle's presence. Which type of symbiotic relationship does this describe?

- A) Mutualism
- B) Commensalism
- C) Parasitism
- D) Predation

[\(Outcome\)](#)

2. A gardener notices that a strawberry plant grows new plants from runners, but the same plant also produces seeds after flowering. Name the two types of reproduction shown here, and explain one advantage that sexual reproduction has over asexual reproduction.

[\(Outcome\)](#)

[2 marks: 1 mark for naming both reproduction types; 1 mark for explaining one advantage of sexual reproduction]

3. True or false: Chromosomes, genes and DNA all describe unrelated types of genetic material found in different parts of a cell.

[\(Outcome\)](#)

4. A human sex cell contains 23 chromosomes. When two sex cells fuse during fertilization, the resulting cell contains 46 chromosomes. How many chromosomes does each sex cell contain before fertilization?

[\(Outcome\)](#)

5. Describe how artificial selection differs from natural selection, and provide one example of a trait that has been modified in a domesticated organism through artificial selection.

[\(Outcome\)](#)

6. Clearing forest for farmland can lead to the extirpation of a native species. Name one strategy used to reduce loss of biological diversity.

[\(Outcome\)](#)

[2 marks: 1 mark for naming a valid strategy; 1 mark for briefly explaining how it reduces biodiversity loss]

Curriculum coverage

Question	Outcome alias
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1	Outcome
2	Outcome
3	Outcome
4	Outcome
5	Outcome
6	Outcome

Answer key

1. **B) Commensalism.** The barnacle benefits from transport to nutrient-rich waters while the whale is neither helped nor harmed, which fits the definition of commensalism ([Outcome](#)).
2. **Asexual reproduction (runners) and sexual reproduction (seeds); sexual reproduction allows recombination of characteristics from two parents, which can produce offspring better suited to changing conditions.** Both reproduction types occur in the same organism, and asexual reproduction is efficient at transmitting identical characteristics while sexual reproduction creates variation ([Outcome](#)).
3. **False.** Chromosomes are structures made of DNA, genes are specific segments of DNA, and together they act as the repository of genetic information in a cell ([Outcome](#)).
4. **23 chromosomes.** Sex cells are produced by meiosis, which halves the genetic material of a parent cell, so each sex cell contains half of 46, which equals 23 ([Outcome](#)).
5. **Artificial selection is when humans choose which individuals reproduce based on desired traits, while natural selection occurs when environmental pressures determine survival; example: selective breeding of dairy cows for high milk production.** Humans intentionally direct breeding in artificial selection, whereas natural selection is driven by environmental factors and survival advantages ([Outcome](#)).
6. **Designating protected areas, establishing seed banks, or breeding endangered populations in zoos.** These strategies preserve habitat and genetic diversity to prevent further loss of species ([Outcome](#)).