

Biological Diversity

This worksheet reviews how diversity within and among species supports survival, how characteristics pass from parents to offspring, and how human activity affects biological diversity ([Topic](#), [Outcome](#), [Outcome](#)). Complete each exercise in pencil and check your work against the answer key when you finish.

Exercises

1. Vocabulary matching

Match each term on the left with its correct description on the right. Write the matching letter in the blank.

Term	Blank	Description
Niche	_____	A) The halving of genetic material to form sex cells
Symbiosis	_____	B) A close relationship between two different species
Meiosis	_____	C) The role a species plays within its ecosystem
Binary fission	_____	D) An asexual reproduction process in which a single cell splits into two identical cells

2. Multiple choice: reproduction and variation

Circle the best answer for each question.

a) A yeast cell reproducing by budding is an example of:

- A) Sexual reproduction
- B) Asexual reproduction
- C) A symbiotic relationship
- D) Artificial selection

b) A dog litter with puppies that show a mix of the mother's and father's coat colours illustrates:

- A) Discrete variation only
- B) Characteristics identical to one parent
- C) Intermediate characteristics between parents
- D) Non-heritable variation

c) Which of the following is heritable rather than caused by environment?

- A) A scar from a childhood injury
- B) Suntanned skin
- C) Eye colour
- D) A muscle built from exercise

Cite your reasoning source: these questions relate to [Outcome](#).

3. Short answer: symbiotic relationships

Classify each relationship as mutualism, commensalism, or parasitism, and explain your reasoning in one sentence.

a) A tapeworm living in the intestine of a dog, absorbing nutrients and harming its host.

Classification: _____

Reason: _____

b) Bees collecting nectar from flowers while pollinating them at the same time.

Classification: _____

Reason: _____

c) Barnacles attaching to a whale's skin without helping or harming it.

Classification: _____

Reason: _____

[\(Outcome\)](#)

4. Fill in the blank: genetics and cell division

Use the words below to complete each sentence. Each word is used once.

chromosomes genes DNA mitosis meiosis

a) _____ carry the instructions for inherited characteristics and are found on chromosomes.

b) _____ are structures inside the nucleus made up of tightly coiled genetic material.

c) The molecule that stores genetic information is called _____.

d) Cell division that produces two identical daughter cells is called _____.

e) Cell division that produces sex cells with half the genetic material is called _____.

[\(Outcome\)](#)

5. Short answer: human impact on diversity

Answer each question in one or two complete sentences.

a) Describe one way that changing land use can reduce the diversity of species in an area.

b) Name one strategy used locally or globally to reduce the loss of species diversity, and explain how it helps.

c) Give one example of biotechnology used in agriculture or forest management, and identify one possible concern related to its use.

[\(Outcome\)](#)

6. Applied thinking: natural vs. artificial selection

Read the scenario, then answer the questions.

A farmer breeds only the cows on her farm that produce the most milk each generation. Over many years, the average milk production of her herd increases.

a) Is this an example of natural selection or artificial selection? Explain your answer.

b) Describe one advantage and one disadvantage of reducing genetic variation within a population through this kind of selective breeding.

Advantage: _____

Disadvantage: _____

([Outcome](#), [Outcome](#))

Answer key

1. Niche = C, Symbiosis = B, Meiosis = A, Binary fission = D ([Outcome](#), [Outcome](#), [Outcome](#))
2. a) B, b) C, c) C ([Outcome](#))
3. a) Parasitism, because the tapeworm benefits while the dog is harmed. b) Mutualism, because both the bee and the flower benefit. c) Commensalism, because the barnacle benefits while the whale is unaffected. ([Outcome](#))
4. a) Genes, b) Chromosomes, c) DNA, d) Mitosis, e) Meiosis ([Outcome](#))
5. Answers will vary; look for a reasonable explanation linking land-use change to habitat or species loss, a named strategy (such as protected areas, seed banks, or captive breeding) with an explanation of its benefit, and a biotechnology example (such as patented crop varieties or selective fish breeding) paired with a related concern. ([Outcome](#))
6. a) Artificial selection, because the farmer is choosing which cows reproduce based on a desired trait rather than the trait arising through natural environmental pressures. b) Advantage: higher milk yield in the herd. Disadvantage: reduced genetic variation can make the herd more vulnerable to disease or changing conditions. ([Outcome](#), [Outcome](#))