

Biological Diversity: Reproduction, Variation and Survival

This worksheet reviews how species reproduce, pass on characteristics, and depend on each other to survive. It also looks at how reproductive processes transmit species characteristics, which means the variety of traits passed from parents to offspring([Outcome](#), [Outcome](#), [Outcome](#)). Use a pencil to work through each exercise. Show your reasoning where asked.

Exercises

1. Matching: Symbiotic Relationships

Match each example on the left to the correct type of symbiotic relationship on the right ([Outcome](#)).

Example	Relationship Type
a) A tick feeds on a deer's blood, harming the deer	_____
b) A clownfish lives safely among sea anemone tentacles, and in return it chases away predators of the anemone and provides it with nutrients from its wastes	_____
c) Bees collect nectar from flowers and pollinate them in return	_____
d) Barnacles attach to a whale's skin for transport, without affecting the whale	_____

Options: A) Mutualism B) Commensalism C) Parasitism

2. Short Answer: Sexual vs. Asexual Reproduction

Answer each question in one or two sentences ([Outcome](#)).

a) Name one mechanism of asexual reproduction and describe it briefly.

b) Give one example of an organism that can reproduce both sexually and asexually.

c) State one advantage of sexual reproduction over asexual reproduction.

3. Multiple Choice: Heritable vs. Non-Heritable Characteristics

Circle the letter of the correct answer for each question ([Outcome](#)).

a) Which of the following is a heritable characteristic?

A) A scar from a bicycle accident

B) Eye colour

C) A suntan

D) A pierced ear

b) Height in humans is best described as:

A) Determined entirely by heredity

B) Determined entirely by environment

C) Possibly influenced by both heredity and environment

D) Not influenced by either heredity or environment

- c) An offspring with a characteristic that is intermediate between its two parents' characteristics shows:
- A) A discrete variation only
 - B) A dominant characteristic only
 - C) A blend of parent characteristics
 - D) A characteristic different from both parents

4. Fill in the Blank: Variation and Survival

Use the following terms to complete the sentences: niche, variation, extinction, environmental factors ([Outcome](#), [Outcome](#)).

- a) A specific role that a species plays within its ecosystem is called its _____.
- b) When closely related species live in the same ecosystem, _____ among them allows each to occupy a different role and avoid direct competition.
- c) The permanent disappearance of a species from Earth is called _____.
- d) Scientists investigate the role of _____ such as changing land use or river conditions in causing loss of biological diversity.

5. Applying Concepts: Human Impact on Diversity

Read the scenario, then answer the questions below ([Outcome](#)).

A river has been dammed for hydroelectric power. Since the dam was built, the water flow downstream has become slower and warmer. Several fish species that once lived in the river have disappeared from that stretch of water.

- a) Suggest one reason why changing the river's characteristics might cause a loss of species diversity.
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- b) Name one strategy that could be used to help minimize the loss of species diversity in a situation like this.
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6. Extended Response: Discrete vs. Continuous Variation

Explain the difference between discrete variation and continuous variation. Give one example of each that is different from the examples used in class ([Outcome](#)).

Discrete variation: _____

Example: _____

Continuous variation: _____

Example: _____

Answer Key

1. a) C (Parasitism); b) A (Mutualism); c) A (Mutualism); d) B (Commensalism)
2. a) Answers will vary; accept binary fission, budding, or spore production with a correct brief description. b) Answers will vary; accept examples such as yeast (buds and reproduces sexually) or plants that reproduce by runners/bulbs and by seed. c) Answers will vary; accept that sexual reproduction allows recombination of characteristics, creating variation.
3. a) B; b) C; c) C
4. a) niche; b) variation; c) extinction; d) environmental factors
5. a) Answers will vary; accept that slower, warmer water changes the habitat conditions fish need to survive (e.g., oxygen levels, temperature tolerance, spawning conditions). b) Answers will vary; accept strategies such as designating protected areas, breeding programs, or regulating land/water use.

6. Discrete variation is a characteristic that falls into distinct, separate categories with no in-between values (example answers will vary). Continuous variation is a characteristic that varies gradually along a range of values (example answers will vary).