

AP Biology

Name: _____ Score: _____

1. Natural selection needs **variation** in a population, which means...
 - ☐ individuals differ from one another
 - ☐ every individual is identical
 - ☐ there is only one individual
 - ☐ no one reproduces
2. In biology, an organism's **fitness** measures its...
 - ☐ reproductive success — how many offspring it leaves
 - ☐ physical strength only
 - ☐ running speed
 - ☐ body size
3. In **artificial selection**, who decides which individuals reproduce?
 - ☐ humans
 - ☐ the environment
 - ☐ predators
 - ☐ no one
4. A **gene pool** is...
 - ☐ all the alleles present in a population
 - ☐ a single gene
 - ☐ a type of cell
 - ☐ a pool of water
5. A population in **Hardy-Weinberg equilibrium** is one that is...
 - ☐ not evolving — its allele frequencies stay constant
 - ☐ evolving very quickly
 - ☐ about to go extinct
 - ☐ made of one individual
6. Artificial and natural selection use the same basic mechanism — differences in who reproduces.
 - ☐ True ☐ False

7. A feature that helps an organism survive in its environment is an _____.

8. At the population level, evolution is a change in allele _____ over generations.

9. If $q^2 = 0.09$, what is the recessive allele frequency q ?

10. A body part that has lost most of its original function, like the human tailbone, is a _____ structure.

AP Biology

1. **individuals differ from one another**

Variation means individuals differ; selection can only act if there are differences to choose between.

2. **reproductive success — how many offspring it leaves**

Fitness is reproductive success — leaving more surviving offspring — not just physical strength.

3. **humans**

In **artificial selection**, humans choose which individuals breed — also called **selective breeding**.

4. **all the alleles present in a population**

A **gene pool** is the whole collection of alleles in a **population** at a given time.

5. **not evolving — its allele frequencies stay constant**

In **Hardy-Weinberg equilibrium**, allele frequencies do not change — the population is *not* evolving.

6. **True**

Both work by some individuals reproducing more than others; only the selector differs.

7. **adaptation**

An **adaptation** is a helpful feature that natural selection has favoured over generations.

8. **frequency**

Evolution is defined as a change in **allele frequency** in a population over time.

9. **0.3**

$q = \sqrt{0.09} = 0.3$. Then $p = 1 - q = 0.7$.

10. **vestigial**

A **vestigial structure** is a reduced leftover from an ancestor that once used it fully.