

Variation Define variation.	Variation What is continuous variation?
Variation What is discontinuous variation?	Variation What causes continuous and discontinuous variation?
Variation Give two examples of discontinuous variation in peas.	Variation What is mutation?
Variation What increases the rate of mutation?	Variation Supplement Describe gene mutation.

Variation that results in a range of phenotypes between two extremes, for example body length and body mass.

Differences between individuals of the same species.

Continuous: genes and the environment.
Discontinuous: usually genes only.

Variation that results in a limited number of phenotypes with no intermediates, for example ABO blood groups.

Genetic change. It is the way in which new alleles are formed.

Seed shape and seed colour.

A random change in the base sequence of DNA.

Ionising radiation and some chemicals.

Variation **Supplement**

Name four sources of genetic variation in populations.

Adaptive features

Define adaptive feature.

Adaptive features

How does white fur help a polar bear?

Adaptive features

Why do cacti have spines instead of leaves?

Adaptive features **Supplement**

What is a hydrophyte?

Adaptive features **Supplement**

Give two adaptive features of a water lily.

Adaptive features **Supplement**

Give three adaptive features of xerophytes.

Selection

List the steps of natural selection.

An inherited feature that helps an organism to survive and reproduce in its environment.

Mutation, meiosis, random mating and random fertilisation.

Smaller surface area, so less water is lost; also protection from animals.

Camouflage against the snow, so prey cannot see it.

Large air spaces for buoyancy and gas exchange; stomata on the upper surface of floating leaves.

A plant adapted to live in water or very wet places, for example a water lily.

Variation; many offspring; struggle for survival; better adapted reproduce more; they pass on their alleles.

Thick waxy cuticle; reduced leaf surface area (spines or rolled leaves); stem or roots that store or reach water.

Selection

What do organisms compete for in a struggle for survival?

Selection **Supplement**

Define adaptation.

Selection **Supplement**

How do antibiotic-resistant bacteria arise?

Selection **Supplement**

Why does overuse of antibiotics increase resistance?

Selection

Describe selective breeding.

Selection

Over how long is selective breeding carried out?

Selection

Give two features selected in crop plants.

Selection **Supplement**

Who selects in natural and in artificial selection?

The process, resulting from natural selection, by which populations become more suited to their environment over many generations.

Resources such as food, water, light, space and mates.

Each use kills non-resistant bacteria, so resistant bacteria survive, reproduce and pass on the resistance allele more often.

A mutation gives resistance; the antibiotic kills non-resistant bacteria; resistant ones survive, reproduce and pass on the allele.

Many generations, to improve crop plants and domesticated animals.

Humans select individuals with desirable features, cross them, then select offspring showing the features.

The environment in natural selection; humans in artificial selection.

Any two from higher yield, disease resistance, larger fruits or seeds.