16.1 Asexual reproduction

Name: _____ Class: _____ Date: _____ **Total: 10 marks**

KEY WORDS reproduction • sexual reproduction • asexual reproduction • offspring • parent

Objective

Build the skills to answer exam questions on **asexual reproduction** – what it is, and its advantages and disadvantages.

You must be able to:

- define asexual reproduction (one parent, identical offspring)
- give the advantages and disadvantages
- compare it with sexual reproduction

1 Key knowledge and worked examples

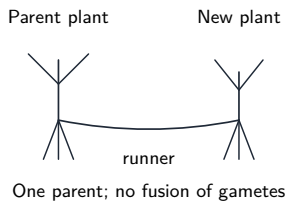
■ Asexual reproduction

Asexual reproduction uses one parent and no fusion of gametes; offspring are genetically identical apart from mutation.

- **advantage:** fast; only one parent needed; good in stable conditions.
- **disadvantage:** no variation – a change (e.g. a new disease) could kill them all.

■ Worked application: One parent does not mean no possible mutation

A strawberry plant can grow a runner that develops into another plant. There is no fusion of gametes and one parent supplies the genetic material, so this is asexual reproduction. The offspring are genetically identical to the parent unless a mutation occurs. Producing many plants quickly preserves a successful combination in stable conditions. If all plants have the same susceptibility to a new disease, however, that lack of genetic variation can put the group at risk. It does not mean every environmental change must kill every clone. A flower and fertilisation instead illustrate sexual reproduction and should not be used as the defining diagram for this method.



2 Practice

2.1 State how many parents are needed in asexual reproduction. [1]

2.2 State how the offspring of asexual reproduction compare with the parent. [1]

3 Exam-style questions

3.1 A disadvantage of asexual reproduction is that the offspring: [1]

☐ **A** are all different
B are genetically identical, so a change could kill them all
C need two parents
D grow slowly

3.2 A farmer grows a field of genetically identical crop plants.

(a) State one advantage of this. [1]

(b) Explain one risk of growing identical plants. [2]

3.3 A strawberry plant produces offspring by runners. State two features showing that this is asexual reproduction, then explain one advantage in stable conditions and one disadvantage if a new disease spreads. [4]

Solutions

Each answer shows the steps, then the **result**.

2.1

- asexual reproduction needs **one** parent

2.2

- the offspring are **genetically identical** to the parent (clones)

3.1 B

- identical offspring could **all be killed** by a single change
- A is sexual; C is two parents; D is not the main risk

3.2

(a)

- the plants are **uniform** / give an even harvest

(b)

- the plants are **genetically identical**
- so one disease could **wipe out the whole crop**

3.3

One parent; no fusion of gametes; rapid reproduction preserves a successful genetic combination in stable conditions; low genetic variation can make many offspring susceptible to the same disease.