# Natural selection and antibiotic resistance

Teacher / technician

YEAR 11 / LESSON 98 / BIOLOGY + SCIENCE (DOUBLE AWARD)

Staff preparation and answer guidance. Keep separate from student sheets. Original learning tasks; no supplied numerical example represents class measurements.

## Coverage and delivery

Shared Biology / Double Award: 3.38–3.39. Biology-only extension: 3.37B mutagens.

Allow about 60 minutes. Follow the student sequence and use the answers to check reasoning.

## Requisition • class of 30, working in 15 pairs

| Item | Per pair / setup | Class total |
|---|---|---|
| Student booklets | 1 per learner | 30 |
| Paper population cards labelled susceptible or resistant | 1 set per pair | 15 sets |
| Rulers | 1 per pair | 15 |

## Immediate safety

Paper, modelling and written reasoning only. No chemicals or biological samples are handled.

# Preparation and delivery

Read alongside the student method

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**1.** Provide 30 booklets, 15 rulers and 15 sets of paper population cards labelled susceptible or resistant.

**2.** Keep answers separate until learners have attempted the tasks; discuss the reasons for corrections.

**3.** Each set needs 9 susceptible and 2 resistant reusable cards. Follow the stated illustrative survival rule; do not present the rule as an actual drug-response rate.

## Close of lesson

• Return models and keep the corrected work.

## Check before teaching

Check the cards, reference data and quantities against this requisition. Keep the staff answer guide separate until the checking stage. Supplied numerical practice datasets are labelled examples; they are not class measurements.

# Answers and teaching notes

Expected explanations • do not give as experimental observations

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- The relevant variation.
- No.
- The frequencies of inherited variants.
- Bacteria, not the patient.
- Susceptible competitors are reduced while resistant survivors reproduce.
- No, although it can still cause DNA damage.

## References and provenance

Pearson Biology specification

Prepared 22 November 2026. Original wording, tables and questions. Sources inform the concepts and technique; the lesson scope and classroom quantities are explicitly described here. No laboratory trial or final school risk approval is claimed.