Solutions

Marking: **M1** a correct method, **A1** the correct answer, **B1** an independent mark.

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

2.1

any one: **predation**; **competition** for food; disease

2.2

- **humans**

2.3

- the antibiotic does **not kill** the bacteria

2.4

any two: high **yield** / more grain; **short** stems; **disease** resistance; drought resistance

2.5

- to kill **all** the bacteria
- so no partly resistant bacteria **survive and reproduce**

2.6

- the useful **allele** increases only a little in each generation, as survivors **reproduce**

3.1

C

3.2

B

3.3

(a)

- **rose** from 2% to 95% between 1850 and 1950
- then **fell** to 10% by 2010

(b)

- dark moths were **camouflaged** on dark bark
- pale moths were seen and **eaten** by birds
- dark moths **survived** and **reproduced**
- passed on the **allele** for dark colour, which became more common

(c) the bark became **pale** again, so dark moths were seen and eaten more

3.4

(a) the antibiotic **kills** the bacteria

(b) they have a **mutation** / allele that makes them **resistant**

(c)

- resistant bacteria **survive** while others die
- they **reproduce** with no competition
- offspring inherit the **resistance allele**, so the population is resistant

(d) use antibiotics only when **needed** / not for viral infections; finish the course; use antibiotics less in farming