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 two: people buy more goods; more packaged and processed food; products replaced more often (short life, fashion); more single-use items

2.2

reducing means the item is never made, so no raw materials or energy are used to make it; recycling still needs collection, transport, sorting and energy to process; recycled material is often lower quality, and not everything can be recycled, so some still becomes waste

3.1

(a) $0.15 \times 400\,000 = \mathbf{60\,000}$ t

(b) food: $0.40 \times 400\,000 = \mathbf{160\,000}$ t

(c) food decomposes without oxygen and releases methane, a greenhouse gas; leachate (polluted liquid) can seep into groundwater and soil

3.2

(a) it contains toxic metals such as lead, mercury and cadmium; when burned or dumped, these enter the air, soil and water and harm health

(b) strength: recovers valuable metals (gold, copper, rare metals), reducing mining; limitation: informal recycling by hand or burning harms workers' health and the environment; judgement: worthwhile only with safe, regulated recycling plants and producer take-back schemes

3.3

award up to [6]: landfill: cheap to run; methane can be captured for energy; but uses land, releases methane and leachate, and the site fills up; incineration: cuts volume by about 90% and makes electricity; but high building cost, air pollution and toxic ash, CO_2 from plastics; both are low in the waste hierarchy; incinerators need a steady flow of waste, which can discourage recycling; conclusion: incineration may be better where land is scarce, but reduce, reuse and recycle first, with justification

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