Exercise walk-through

Impacts of Mining ▪ 5.9

eXercise

You must be able to

- compare **surface** 露天开采 and **subsurface** 地下开采 mining
- describe impacts (habitat loss, **acid mine drainage** 酸性矿山废水, tailings)
- suggest reclamation

Method — Two mining types

- **Surface mining** (open-pit, strip, mountaintop removal) — removes overlying rock/soil; cheap but destroys large areas of habitat.
- **Subsurface mining** — tunnels underground; less surface damage but more dangerous for workers.

Method — Impacts

- **Habitat destruction** and soil removal.
- **Acid mine drainage** — water reacting with exposed sulfide rock becomes acidic and toxic, polluting streams.
- **Tailings** — leftover waste that can leach toxic metals.

Method — Reclamation

Reclamation restores mined land — replacing soil, replanting vegetation, and treating polluted water — to recover some ecosystem function.

Method — A worked link

Rain washing through exposed sulfide-rich rock produces acid mine drainage that lowers stream pH and kills aquatic life downstream.

Practice 2.1 ▪ 1 mark

State one difference between surface and subsurface mining.

Solution 2.1

Method: Two mining types

Worked steps

Surface mining removes overlying rock/soil (more habitat damage); subsurface mining tunnels underground (less surface damage) B1.

Practice 2.2 ▪ 1 mark

What is acid mine drainage?

Solution 2.2

Worked steps

Acidic, metal-laden water from mines that pollutes streams B1.

Practice 2.3 ▪ 1 mark

What is reclamation?

Solution 2.3

Worked steps

Restoring mined land (soil, vegetation, water treatment) B1.

Exam-style 3.1 ▪ 1 mark

Acid mine drainage harms streams by

A raising their pH

B lowering their pH and adding toxic metals

C adding oxygen

D cooling the water

Solution 3.1

Method: Impacts

A raising their pH

B lowering their pH and adding toxic metals ✓

C adding oxygen

D cooling the water

Worked steps

B — lowering their pH and adding toxic metals.

Exam-style 3.2 ▪ 2 marks

A company strip-mines a forested hillside.
(a) State two environmental impacts.
(b) Suggest one way to restore the land afterward.

Solution 3.2

Worked steps

(a) Any two: habitat destruction, soil loss, acid mine drainage, tailings pollution B1 B1. (b) Reclamation — replace soil and replant vegetation B1.

Exam-style 3.3 ▪ 2 marks

Explain how acid mine drainage forms and why it harms aquatic life.

Solution 3.3

Method: A worked link

Worked steps

Water reacts with exposed sulfide minerals to form acid; this acidic, metal-rich water lowers stream pH, which is toxic to fish and other aquatic organisms M1 A1.